

ScienceDaily

周五, 01 9月 2017

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- [Technology News](#)
- [Environment News](#)
- [Society News](#)
- [Strange & Offbeat News](#)

Latest Science News

Breaking science news and articles on global warming, extrasolar planets, stem cells, bird flu, autism, nanotechnology, dinosaurs, evolution -- the latest discoveries in astronomy, anthropology, biology, chemistry, climate and environment, computers, engineering, health and medicine, math, physics, psychology, technology, and more -- from the world's leading universities and research organizations.

- [**Study reveals ways collegiate sports venues can achieve 'zero waste'**](#) [周五, 01 9月 02:13]

A new study analyzing waste and recyclables during Mizzou's 2014 home football season demonstrates that by implementing several recommendations the team developed, such as offering better recycling receptacles and better sorting options for waste, sporting venues could be well on their way to achieving environmental benefits that exceed the standards for 'zero-waste' operations.

- [**New source for brain's development discovered**](#) [周五, 01 9月 02:13]

An unexpected source for the brain's development has been discovered by researchers, a finding that offers new insights into the building of the nervous system.

- [**Does indoor spraying help prevent dengue?**](#) [周五, 01 9月 02:13]

The prevention of dengue, the most prevalent mosquito-borne virus in the world, relies heavily on controlling mosquito populations, as the currently available dengue vaccine is only partially effective. Indoor spraying -- which involves spraying of insecticides inside houses -- has the potential to be a key part of those prevention efforts, researchers report.

[**Drugs targeting the beta2-adrenoreceptor linked to Parkinson's disease**](#) [周五, 01 9月 02:12]

Researchers want to prevent alpha-synuclein from accumulating in the brain. To do so, the team searched for drugs that turn down alpha-synuclein production. They then tested the drugs in mice and stem cells and studied in data from the health records of millions of people living in Norway. The results of their efforts, point to a new drug development path for PD.

[**Reconstructing life at its beginning, cell by cell**](#) [周五, 01 9月 02:12]

In a technological tour de force, scientists have created a virtual model of an early fly embryo. Its interactive interface allows researchers to explore the blueprint that underlies development at unprecedented spatial resolution and predict which cells express which genes.

[**Cross-kingdom regulation of honeybee caste development by dietary plant miRNAs**](#) [周五, 01 9月 02:05]

Honeybee larvae develop into workers but not queens, in part, because their diet of beebread/pollen is enriched in plant miRNAs. While miRNAs are generally negative regulators of gene expression in eukaryotes, they also negatively regulate larval development when honeybee larvae consume beebread/pollen and take up plant miRNAs.

[**Pinpointing the sources of trans-pacific dust**](#) [周五, 01 9月 02:05]

Airborne dust from Asia travels across the Pacific passport-free, carrying pollution, building soil, and coloring sunsets thousands of miles from its source. Identifying that source is important for understanding atmospheric circulation, contaminant pathways, and climate. But collecting enough airborne dust to pinpoint its source is challenging. Now, a team of researchers has developed a way to match microscopic quartz grains to the desert they blew in from.

[**Protein transport channel offers new target for thwarting pathogen**](#) [周五, 01 9月 01:42]

A bacterium that attacks people suffering from chronic lung disease and

compromised immune systems could be halted by disrupting the distribution channels the organism uses to access the nutrient-rich cytoplasm of its host cell.

- [**Fossil footprints challenge established theories of human evolution**](#) [周五, 01 9月 01:42]

Newly discovered human-like footprints from Crete may put the established narrative of early human evolution to the test. The footprints are approximately 5.7 million years old and were made at a time when previous research puts our ancestors in Africa -- with ape-like feet.

- [**New findings on brain functional connectivity may lend insights into mental disorders**](#) [周五, 01 9月 01:13]

Ongoing advances in understanding the functional connections within the brain are producing exciting insights into how the brain circuits function together to support human behavior — and may lead to new discoveries in the development and treatment of psychiatric disorders, according to a review.

- [**Human bones in south Mexico: Stalagmite reveals their age as 13,000 years old**](#) [周五, 01 9月 01:12]

A prehistoric human skeleton found on the Yucatán Peninsula is at least 13,000 years old and most likely dates from a glacial period at the end of the most recent ice age, the late Pleistocene. A German-Mexican team of researchers has now dated the fossil skeleton based on a stalagmite that grew on the hip bone.

- [**Yawning: Why is it so contagious and why should it matter?**](#) [周五, 01 9月 00:30]

Feeling tired? Even if we aren't tired, why do we yawn if someone else does? Experts have published research that suggests the human propensity for contagious yawning is triggered automatically by primitive reflexes in the primary motor cortex -- an area of the brain responsible for motor function. Their study is another stage in their research into the underlying biology of neuropsychiatric disorders and their search for new methods of treatment.

- [**Scents and social preference: Neuroscientists ID the roots of attraction**](#) [周五, 01 9月 00:30]

Culminating a series of studies stretching back eight years, biologists have identified the cellular and molecular basis for social preference, known in the animal kingdom as 'imprinting.' Through in vivo experiments, the researchers found the neurological roots of kinship attraction and aversion. They also employed genetics screening to find the regulators controlling this behavior. The study carries implications for understanding social attraction and aversion in a range of animals and humans.

- [**What changes when you warm the Antarctic Ocean just 1 degree? Lots**](#) [周五, 01 9月 00:30]

After warming a natural seabed in the Antarctic Ocean by just 1° or 2° Celsius, researchers observed massive impacts on a marine assemblage, as growth rates nearly doubled. The findings of what the researchers call the 'most realistic ocean warming experiment to date' show that the effects of future warming may far exceed expectations.

- [**Bacterial protein acts as aphrodisiac for choanoflagellates**](#) [周五, 01 9月 00:30]

Researchers investigating how single-celled organisms evolved to become multicellular stumbled across a strange phenomenon during their experiments: Single-celled eukaryotes called choanoflagellates, which are the closest living relatives to animals, begin to sexually reproduce in response to a protein produced by bacteria. Why this happens in natural settings is still unclear, though they speculate that it could help the choanoflagellates easily mate with others from the same species.

- [**Caching system could make data centers more energy efficient**](#) [周四, 31 8月 23:52]

Researchers have developed a new system for data center caching that uses flash memory, the kind of memory used in most smartphones.

- [**Songbird study shows how estrogen may stop infection-induced brain inflammation**](#) [周四, 31 8月 23:30]

Estrogen synthesis, a process naturally occurring in the brains of zebra finches, may also fight off neuroinflammation caused by infection that occurs elsewhere in the body, new research indicates.

- [**First hints of possible water content on TRAPPIST-1 planets**](#) [周四, 31 8月 23:30]

Astronomers have been trying to determine whether there might be water on the seven Earth-sized planets orbiting the nearby dwarf star TRAPPIST-1. The results suggest that the outer planets of the system might still harbor substantial amounts of water. This includes the three planets within the habitable zone of the star, lending further weight to the possibility that they may indeed be habitable.

- [**People become more economically conservative when angered**](#) [周四, 31 8月 23:30]

People tend to lean more economically conservative when they're angry, according to a new article. Researchers came to the conclusion after running multiple studies that included more than 1,000 participants.

- [**How reading and writing with your child boost more than just literacy**](#) [周四, 31 8月 22:21]

Children who read and write at home -- whether for assignments or just for fun -- are building long-term study and executive function skills, according to a new article

- [**Newly emerged superbug discovered**](#) [周四, 31 8月 22:15]

Scientists have discovered a newly emerged superbug, hyper-resistant and hypervirulent *Klebsiella pneumoniae*, which may cause untreatable and fatal infections in relatively healthy individuals and will pose enormous threat to human health.

- [**Why are coyote populations difficult to control?**](#) [周四, 31 8月 22:15]

Conventional wisdom suggests that coyote control efforts actually result in an increase in the number of coyotes due to increasing litter sizes and

pregnancy rates among individuals that survive.

- [**Antidepressants found in fish brains in Great Lakes region**](#) [周四, 31 8月 22:14]

Human antidepressants are building up in the brains of bass, walleye and several other fish common to the Great Lakes region, scientists say.

- [**Mind wandering is common during driving**](#) [周四, 31 8月 22:14]

Scientists have investigated mind wandering in volunteers during a driving simulation. Astonishingly, during the simulation, the volunteers reported mind wandering 70 percent of the time. The researchers could identify specific changes in brain patterns when the volunteers were mind wandering, but need to do further work to clarify if it is dangerous during driving.

- [**How Neanderthals made the very first glue**](#) [周四, 31 8月 21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

- [**Children's sleep quality linked to mothers' insomnia**](#) [周四, 31 8月 21:33]

Children sleep more poorly if their mothers suffer from insomnia symptoms – potentially affecting their mental wellbeing and development - according to new research. Nearly 200 school kids and their parents were studied, results indicating that children whose mothers have insomnia symptoms fall asleep later, get less sleep and spend less time in deep sleep. There appeared to be no link between fathers' insomnia symptoms and children's sleep.

- [**Little known theory could hold key to sporting success**](#) [周四, 31 8月 21:33]

An established but little known psychological theory is likely to improve performances across a range of activities, including sport, according to new research.

- [**New possibility of studying how Alzheimer's disease affects the brain at different ages**](#) [周四, 31 8月 21:33]

Alzheimer's disease can lead to several widely divergent symptoms and, so far, its various expressions have mainly been observed through the behavior and actions of patients. Researchers have now produced images showing the changes in the brain associated with these symptoms – a development which increases knowledge and could facilitate future diagnostics and treatment.

- [**First look at potentially deadly metabolic disorder that strikes infants**](#) [周四, 31 8月 21:32]

You may have never heard of congenital disorder of glycosylation, but parents whose children are born with forms of this rare -- and underreported -- metabolic disorder know all too well the dangers they pose, including developmental delay, failure to thrive, stroke-like symptoms, seizures and cerebellar dysfunction.

- [**Using DNA to predict schizophrenia, autism**](#) [周四, 31 8月 21:32]

A single amino acid substitution in the protein CX3CR1 may act as predictor for schizophrenia and autism, a multi-institute collaboration demonstrates.

- [**Faulty DNA repair depresses neural development**](#) [周四, 31 8月 21:32]

Researchers have discovered DNA polymerase δ (Pol δ) deficiency in neural stem cells affects neuronal survival and neural network in the developing brain.

- [**A philosophical mythbuster**](#) [周四, 31 8月 21:32]

Cognitive neuroscience gives us a glimpse into our brain activity; it allows us to learn more about ourselves. Or do brain scans actually not say very much about who we are? A philosopher examines four myths about neuroscience and self-understanding.

- [**Alcohol abuse, dental conditions, mental health found to be causes of avoidable US emergency**](#)

[visits](#) [周四, 31 8月 21:26]

Alcohol abuse, dental conditions, and mental health were found to be the main causes of avoidable emergency room visits in the US, a new report reveals.

• [Record-low 2016 Antarctic sea ice due to 'perfect storm' of tropical, polar conditions](#) [周四, 31 8月 21:26]

The sudden, unexpected nosedive in Antarctic sea ice last year was due to a unique one-two punch from atmospheric conditions both in the tropical Pacific Ocean and around the South Pole.

• [Improving earthquake resistance with a single crystal](#) [周四, 31 8月 21:26]

A new heating method for certain metals could lead to improved earthquake-resistant construction materials.

• [Apes' abilities misunderstood by decades of poor science](#) [周四, 31 8月 21:14]

Hundreds of scientific studies over two decades have told us that apes are clever -- just not as clever as us. New analysis argues that what we think we know about apes' social intelligence is based on wishful thinking and flawed science.

• [Mass production of biodegradable plastic](#) [周四, 31 8月 21:14]

Introducing a simple step to the production of plant-derived, biodegradable plastic could improve its properties while overcoming obstacles to manufacturing it commercially, says new research.

• [Love your beauty rest? You can thank these brain cells](#) [周四, 31 8月 21:14]

Researchers report the unexpected presence of a type of neuron in the brains of mice that appears to play a central role in promoting sleep by turning 'off' wake-promoting neurons. The newly identified brain cells, located in a part of the hypothalamus called the zona incerta, they say, could offer novel drug targets to treat sleep disorders, such as insomnia

and narcolepsy, caused by the dysfunction of sleep-regulating neurons.

• [**Turning heat energy into a viable fuel source**](#) [周四, 31 8月 21:14]

A new device could one day turn the heat generated by a wide array of electronics into a usable fuel source. The device is a multicomponent, multilayered composite material called a van der Waals Schottky diode. It converts heat into electricity up to three times more efficiently than silicon -- a semiconductor material widely used in the electronics industry.

• [**Perfect mannequins a turnoff for some consumers**](#) [周四, 31 8月 21:14]

Mannequins' long legs, tiny waistlines and perfect busts can sour some shoppers on the products they're wearing, especially consumers who don't like the look of their own bodies.

• [**Robot learns to follow orders like Alexa**](#) [周四, 31 8月 21:14]

Computer scientists have developed an Alexa-like system that allows robots to understand a wide range of commands that require contextual knowledge about objects and their environments. They've dubbed the system 'ComText,' for 'commands in context.'

• [**Forensic science techniques help discover new molecular fossils**](#) [周四, 31 8月 21:14]

Researchers believe they have found new molecular fossils of archaea using a method of analysis commonly used in forensic science.

• [**Fathers of American newborns keep getting older, study finds**](#) [周四, 31 8月 21:14]

While data on the moms of newborn American children has been abundant, equivalent data on dads hasn't -- a gap that scientists have now filled.

• [**E-cigarettes can help smokers quit, but there's a catch**](#) [周四, 31 8月 21:14]

Frequent e-cigarette use does help smokers quit -- a finding that

researchers say supports the use of e-cigarettes as a cessation aid for those trying to quit cigarette smoking. But, they note, an examination of a recent national survey uncovers important clues about who's successful at quitting and why.

- [**Three policies to improve children's language development**](#) [周四, 31 8月 21:14]

Bilingual children from low-income homes are at greater risk of falling behind their peers in developing the appropriate language skills for their age group, leading to poorer academic achievement over time. A new article addresses how inequality impacts children's language development and details policies that can intervene.

- [**New hope for reef fish living in a high CO2 world**](#) [周四, 31 8月 21:14]

New research examining the possible impacts of ocean acidification provides fresh hope for the survival of reef fish.

- [**American pika disappears from large area of California's Sierra Nevada mountains**](#) [周四, 31 8月 08:21]

The American pika, a small mammal adapted to high altitudes and cold temperatures, has died out from a 165-square-mile span of habitat in California's northern Sierra Nevada mountains, and the cause appears to be climate change. Researchers surveyed pika habitat throughout the north Lake Tahoe area and found that pikas had disappeared from an area that stretches from near Tahoe City to Truckee, more than 10 miles away, and includes Mount Pluto.

- [**How certain ants snap their jaws shut in the blink of an eye**](#) [周四, 31 8月 08:21]

Few victims stand a chance against the formidable mandibles of a trap-jaw ant. In conflicts between predators and prey, speed is a decided advantage, and evolution has given these insects an edge with spring-loaded jaws that snap shut with astonishing speed. Biologists have now provided the first mechanical description of the jaws of a little-known group of trap-jaw ants.

• [Profitable cooperation: Ants protect and fertilize plants](#) [周四, 31 8月 08:21]

Biologists describe how the waste left by ants on plant leaves serves as a valuable fertilizer for the plants -- handed on a silver platter.

• [Good as gold](#) [周四, 31 8月 08:21]

Few experiences invoke as much anxiety as a call from your doctor saying 'you need to come back for more tests.' Your imagination goes wild and suddenly a routine medical screening becomes a minefield of potential life-threatening diseases. It's highly likely, however, that you have fallen victim to a false positive -- a result that, despite the accuracy of the test, erroneously yields an affirmative result that points toward illness. To increase the accuracy of medical screening and reduce the i...

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New source for brain's development discovered -- ScienceDaily

A team of biologists has found an unexpected source for the brain's development, a finding that offers new insights into the building of the nervous system.

The research, which appears in the journal *Science*, discovered that glia, a collection of non-neuronal cells that had long been regarded as passive support cells, in fact are vital to nerve-cell development in the brain.

"The results lead us to revise the often neuro-centric view of brain development to now appreciate the contributions for non-neuronal cells such as glia," explains Vilaiwan Fernandes, a postdoctoral fellow in New York University's Department of Biology and the study's lead author. "Indeed, our study found that fundamental questions in brain development with regard to the timing, identity, and coordination of nerve cell birth can only be understood when the glial contribution is accounted for."

The brain is made up of two broad cell types, nerve

cells or neurons and glia, which are non-nerve cells that make up more than half the volume of the brain. Neurobiologists have tended to focus on the former because these are the cells that form networks that process information.

However, given the preponderance of glia in the brain's cellular make-up, the NYU researchers hypothesized that they could play a fundamental part in brain development.

To explore this, they examined the visual system of the fruit fly. The species serves as a powerful model organism for this line of study because its visual system, like the one in humans, holds repeated mini-circuits that detect and process light over the entire visual field.

This dynamic is of particular interest to scientists because, as the brain develops, it must coordinate the increase of neurons in the retina with other neurons in distant regions of the brain.

In their study, the NYU researchers found that the coordination of nerve-cell development is achieved through a population of glia, which relay cues from the

retina to the brain to make cells in the brain become nerve cells.

"By acting as a signaling intermediary, glia exert precise control over not only when and where a neuron is born, but also the type of neuron it will develop into," notes NYU Biology Professor Claude Desplan, the paper's senior author.

Story Source:

Materials provided by [New York University](#). *Note: Content may be edited for style and length.*

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| [Section menu](#) | [主菜单](#) |

Does indoor spraying help prevent dengue? -- ScienceDaily

The prevention of dengue, the most prevalent mosquito-borne virus in the world, relies heavily on controlling mosquito populations, as the currently available dengue vaccine is only partially effective. Indoor spraying -- which involves spraying of insecticides inside houses -- has the potential to be a key part of those prevention efforts, researchers report in *PLOS Neglected Tropical Diseases*.

Dengue infects between 300 and 500 million people every year, causing symptoms in around 100 million individuals and severe disease in half a million. The virus is primarily spread by *Aedes aegypti* mosquitoes, which live in tropical and subtropical areas of the world. Numerous insecticides are known to kill adult and immature *Aedes* mosquitoes, but exposing the mosquitoes to the insecticides can be challenging, since the insects tend to rest in hidden, indoor areas.

To determine the effectiveness of indoor spraying in preventing dengue, Olaf Horstick, of the University of

Heidelberg, Germany, and colleagues searched seven research databases for existing literature on indoor residual spraying (IRS) and indoor space spraying (ISS). They then systematically reviewed papers that were identified pertaining to the effect of IRS and ISS on dengue.

Out of seven studies -- three on IRS and four on ISS -- all concluded that there was some effect on either mosquito populations or dengue case numbers. The strength of evidence was strongest for the effect of IRS and ISS on adult mosquito populations, with multiple studies reporting no adult mosquitoes surviving the indoor treatments. Evidence on the indoor treatments to reduce larval populations or dengue cases was more limited. More research is needed on indoor spraying, the team concluded, although the review results are very promising, particularly in comparison with other *Aedes* control methods.

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| [Section menu](#) | [主菜单](#) |

Drugs targeting the beta2-adrenoreceptor linked to Parkinson's disease -- ScienceDaily

Lewy bodies -- abnormal clumps of alpha-synuclein protein that accumulate in the brain -- are a hallmark of Parkinson's disease (PD). Traditional drug development approaches for PD have focused on clearing alpha-synuclein from the brain or on preventing its downstream effects. But researchers from Brigham and Women's Hospital want to prevent alpha-synuclein from accumulating in the first place. To do so, the team searched for drugs that turn down alpha-synuclein production. They then tested the drugs in mice and stem cells and studied the health records of millions of people living in Norway. The results of their efforts, which point to a new drug development path for PD, are published in *Science*.

"Our study suggests a potential new pathway to target PD," said corresponding author Clemens Scherzer, MD, a neurologist and principal investigator at the Ann Romney Center for Neurologic Diseases at BWH and

Harvard Medical School.

The research team screened more 1,100 drugs already approved for treating diseases other than PD, looking for compounds that could be repurposed for lowering alpha-synuclein production in neuronal cells. They narrowed in on promising candidates, members of a class of drugs known as beta2-adrenergic agonists.

The team studied the effects of this class of drugs in mice, finding that it could significantly reduce alpha-synuclein levels. Working with collaborators from the University of Bergen, the team combed through data from the health records of more than 4 million Norwegians, pulling out information on patients who had been taking salbutamol, a beta2-adrenergic agonist commonly used to treat of asthma. They found that these patients were significantly less likely to develop PD -- PD risk was reduced by 34 percent for those taking the drug compared to those who were not.

Conversely, people taking propranolol -- a hypertension drug that increased alpha-synuclein production in cultured cells -- were at greater risk for developing PD.

"Clinical trials will be needed to determine if these insights can be translated into patients with PD." said Scherzer. " We are excited about this innovative drug development strategy. We hope it will speed up drug development for patients with PD and inspire therapeutic strategies for other brain diseases."

Story Source:

Materials provided by [Brigham and Women's Hospital](#). *Note: Content may be edited for style and length.*

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| [Section menu](#) | [主菜单](#) |

Reconstructing life at its beginning, cell by cell -- ScienceDaily

After 13 rapid divisions a fertilized fly egg consists of about 6,000 cells. They all look alike under the microscope. However, each cell of a *Drosophila melanogaster* embryo already knows by then whether it is destined to become a neuron or a muscle cell -- or part of the gut, the head, or the tail. Now, Nikolaus Rajewsky's and Robert Zinzen's teams at the Berlin Institute of Medical Systems Biology (BIMSB) of the Max Delbrück Center for Molecular Medicine in the Helmholtz Association (MDC) have analyzed the unique gene expression profiles of thousands of single cells and reassembled the embryo from these data using a new spatial mapping algorithm. The result is a virtual fly embryo showing exactly which genes are active where at this point in time. "It is basically a transcriptomic blueprint of early development," says Robert Zinzen, head of the Systems Biology of Neural Tissue Differentiation Lab. Their paper appears as a First Release in the online issue of *Science*.

"Only recently has it become possible to analyze genome-wide gene expression of individual cells at a large scale. Nikolaus recognized the potential of this technology very early on and established it in his lab," says Zinzen. "He started to wonder whether -- given a complex organized tissue -- one would be able to compute genome-wide spatial gene expression patterns from single-cell transcriptome data alone." BIMSB combines laboratories with different backgrounds and expertise, emphasizing the need of bringing computing power to biological problems. It turns out the institute had not only the perfect model system -- the *Drosophila* embryo -- to address Rajewsky's question, but also the right people with the right expertise, from physics and mathematics to biochemistry and developmental biology.

"The virtual embryo is much more than merely a cell mapping exercise," says Nikolaus Rajewsky, head of the Systems Biology of Gene Regulatory Elements Lab, who enjoyed returning to fly development 15 years after studying gene regulatory elements in *Drosophila* embryos during his post-doctoral time at the Rockefeller University. Using the interactive *Drosophila* Virtual Expression eXplorer (DVEX) database, researchers can now look at any of about

8,000 expressed genes in each cell and ask, "Gene X, where are you expressed and at what level? What other genes are active at the same time and in the same cells?" It also works with the enigmatic long non-coding RNAs. "Instead of time-consuming imaging experiments, scientists can do virtual ones to identify new regulatory players and even get ideas for biological mechanisms," says Rajewsky. "What would normally take years using standard approaches can now be done in a couple of hours."

Breaking the synchronicity of the first cell divisions

In their paper, the MDC researchers describe a dozen new transcription factors and many more long non-coding RNAs that have never been studied before. Also, they propose an answer to a question that has puzzled scientists for 35 years: How does the embryo break synchronicity of cell divisions to develop more complex structures?

In a process called gastrulation, distinct germ layers form and cells become restricted with regard to which tissues and organs they may differentiate into. "We believe that the Hippo signaling pathway is at least partly responsible for setting up gastrulation," says

Rajewsky. The pathway controls organ size, cell cycles and cell proliferation, but had never been implicated in the development of the early embryo. "We not only showed that Hippo is active in the fly, but we could even predict in which regions of the embryo this would lead to a different onset of mitosis and therefore break synchronicity. And that is just one example for how useful our tool is to understand mechanisms that have escaped traditional science."

Project underwent a tough gestation period

When the researchers started creating the virtual embryo, they did not know whether it would be possible. A key pillar of their eventual success is the Drop-Seq technology, a droplet-based, microfluidic method that allows the transcriptional profiling of thousands of individual cells at low cost. This technique had been newly set up in the Rajewsky lab by Jonathan Alles, a summer student.

However, the fly embryos needed to be selected precisely at the onset of gastrulation. Philipp Wahle, a PhD student in Robert Zinzen's lab, hand-picked about 5,000 of them before dissociating them into single cells. "I was convinced this would give us a large and

completely unique data set. This was a great motivation for me," says Wahle. That laborious process created a new challenge. "You need to collect over several sessions to have enough material for a sequencing run," says Christine Kocks, who led the single-cell sequencing team. It was composed of Jonathan Alles, Salah Ayoub and Anastasiya Boltengagen, who jointly with computational scientist Nikos Karaiskos optimized the droplet-based sequencing. "So we had to find a way to stabilize the transcriptomes in the cells," added Kocks. "Finally, based on his earlier work with *C. elegans* embryos, Nikolaus suggested using methanol." The new single-cell fixation method was published in *BMC Biology* in May 2017.

As the data got better and better, Nikos Karaiskos, a theoretical physicist and computational expert in Rajewsky's lab, took on the challenge of spatially mapping such a large number of cells to their precise embryonic position. None of the existing approaches in the field of spatial transcriptomics was suitable to reconstruct the *Drosophila* embryo. "It was a reiterative process to filter the data, see what is inside and try to map it. It changed many times along the way," says Karaiskos. There was a lot of back and forth

between members of the computer lab and wet lab -- exchanges that are a defining characteristic of the BIMS. "I had to question my work all the time, see where it was lacking and develop something better." He came up with a new algorithm called DistMap that can map transcriptomic data of cells back to their original position in the virtual embryo.

Navigating uncharted territory

The construction of the virtual embryo allowed Karaikos to readily predict the expression of thousands of genes, an almost impossible task by traditional experimental means. Philipp Wahle, supported by Claudia Kipar, validated these predictions by visualizing the gene expression profiles at the bench with a traditional approach: In situ hybridization allows visualizing patterns of gene expression with colorful dyes that are visible under the microscope. "At this stage, a single layer of cells surrounds the entire fly embryo," says Wahle. "This makes it very accessible, thus enabling you to compare the computational data with imaging."

It is the first time that it has been possible to look at the about 6,000 cells of the embryo individually, assess

their gene expression profiles -- and understand what determines their behavior in the embryo. "The most important technological advance of this study is that we don't lose the spatial information that is required to understand how embryonic cells act in concert," say the scientists. "This really is uncharted territory and requires new bioinformatics approaches to make sense of the collected data. This worked beautifully in our collaboration, not least because of the unique make-up of the Rajewsky lab, which integrates wet lab and computational approaches." One major advantage is that both groups are not only interested in technology but have specific biological questions that motivate them, says Rajewsky. "Robert has a deep understanding of early development. We can do single-cell sequencing runs and have the computational power to develop the tools that help us actually understand the underlying gene regulatory interactions."

The groups are already planning follow-up projects. One example would be to map the cells at different time points to see how they work together to form organs and tissues. Another would be to check whether the mapping approaches are applicable to more complex tissues.

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| [Section menu](#) | [主菜单](#) |

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All Top News

Top science stories featured on ScienceDaily's home page.

- [Reconstructing life at its beginning, cell by cell](#) [周五, 01 9月 02:12]

In a technological tour de force, scientists have created a virtual model of an early fly embryo. Its interactive interface allows researchers to explore the blueprint that underlies development at unprecedented spatial resolution and predict which cells express which genes.

- [Fossil footprints challenge established theories of human evolution](#) [周五, 01 9月 01:42]

Newly discovered human-like footprints from Crete may put the established narrative of early human evolution to the test. The footprints are approximately 5.7 million years old and were made at a time when previous research puts our ancestors in Africa -- with ape-like feet.

- [Human bones in south Mexico: Stalagmite reveals their age as 13,000 years old](#) [周五, 01 9月 01:12]

A prehistoric human skeleton found on the Yucatán Peninsula is at least 13,000 years old and most likely dates from a glacial period at the end of the most recent ice age, the late Pleistocene. A German-Mexican team of researchers has now dated the fossil skeleton based on a stalagmite that grew on the hip bone.

- [Yawning: Why is it so contagious and why should it matter?](#) [周五, 01 9月 00:30]

Feeling tired? Even if we aren't tired, why do we yawn if someone else does? Experts have published research that suggests the human propensity for contagious yawning is triggered automatically by primitive reflexes in the primary motor cortex -- an area of the brain

responsible for motor function. Their study is another stage in their research into the underlying biology of neuropsychiatric disorders and their search for new methods of treatment.

- [**What changes when you warm the Antarctic Ocean just 1 degree? Lots**](#) [周五, 01 9月 00:30]

After warming a natural seabed in the Antarctic Ocean by just 1° or 2° Celsius, researchers observed massive impacts on a marine assemblage, as growth rates nearly doubled. The findings of what the researchers call the 'most realistic ocean warming experiment to date' show that the effects of future warming may far exceed expectations.

- [**First hints of possible water content on TRAPPIST-1 planets**](#) [周四, 31 8月 23:30]

Astronomers have been trying to determine whether there might be water on the seven Earth-sized planets orbiting the nearby dwarf star TRAPPIST-1. The results suggest that the outer planets of the system might still harbor substantial amounts of water. This includes the three planets within the habitable zone of the star, lending further weight to the possibility that they may indeed be habitable.

- [**How Neanderthals made the very first glue**](#) [周四, 31 8月 21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

- [**Apes' abilities misunderstood by decades of poor science**](#) [周四, 31 8月 21:14]

Hundreds of scientific studies over two decades have told us that apes are clever -- just not as clever as us. New analysis argues that what we think we know about apes' social intelligence is based on wishful thinking and flawed science.

- [**Robot learns to follow orders like Alexa**](#) [周四, 31 8月 21:14]

Computer scientists have developed an Alexa-like system that allows robots to understand a wide range of commands that require contextual

knowledge about objects and their environments. They've dubbed the system 'ComText,' for 'commands in context.'

- [**New hope for reef fish living in a high CO2**](#)

[**world**](#) [周四, 31 8月 21:14]

New research examining the possible impacts of ocean acidification provides fresh hope for the survival of reef fish.

- [**How certain ants snap their jaws shut in the blink of an eye**](#) [周四, 31 8月 08:21]

Few victims stand a chance against the formidable mandibles of a trap-jaw ant. In conflicts between predators and prey, speed is a decided advantage, and evolution has given these insects an edge with spring-loaded jaws that snap shut with astonishing speed. Biologists have now provided the first mechanical description of the jaws of a little-known group of trap-jaw ants.

- [**Star-formation 'fuel tanks' found around distant galaxies**](#) [周四, 31 8月 05:25]

Astronomers have studied six distant starburst galaxies and discovered that five of them are surrounded by turbulent reservoirs of hydrogen gas, the fuel for future star formation.

- [**Toward a smart graphene membrane to desalinate water**](#) [周四, 31 8月 05:23]

A simple, sturdy graphene-based hybrid desalination membrane can provide clean water for agriculture and possibly human consumption.

- [**Protecting the guardians**](#) [周四, 31 8月 03:55]

A guardian gene that protects against type 1 diabetes and other autoimmune diseases exerts its pancreas-shielding effects by altering the gut microbiota. Experiments in mice born with the protective gene show that exposure to antibiotics during critical windows of development fuels risk for type 1 diabetes and leads to loss of genetic protection by altering the gut microbiota. Scientists say the findings underscore the importance of avoiding antibiotic use during late pregnancy and early

infancy.

- [**Bioengineering a functional vascularized lung scaffold**](#) [周四, 31 8月 02:12]

A team of researchers is the first to successfully bioengineer a functional lung with perfusable and healthy vasculature in an ex vivo rodent lung. Their new approach allows the removal of the pulmonary epithelium while maintaining the viability and function of the vascular network and the lung matrix.

- [**Gut bacteria that 'talk' to human cells may lead to new treatments**](#) [周四, 31 8月 02:12]

Scientists developed a method to genetically engineer gut bacteria to produce molecules that have the potential to treat certain disorders by altering human metabolism.

- [**Scientists recover nova first spotted 600 years ago by Korean astrologers**](#) [周四, 31 8月 01:22]

A new study pinpoints the location of a nova first spotted by Korean astrologers almost 600 years ago that now undergoes smaller-scale 'dwarf nova' eruptions. The work supports that idea that novae go through a very long-term life cycle after erupting, fading to obscurity for thousands of years, and then building back up to become full-fledged novae once more.

- [**Monkeys with Parkinson's disease benefit from human stem cells**](#) [周四, 31 8月 01:22]

Japanese neurosurgeons report two new strategies to improve outcomes of iPS cell-based therapies for Parkinson's disease in monkey brains. The findings are a key step for patient recruitment of the first iPS cell-based therapy to treat neurodegenerative diseases.

- [**Motorized molecules drill through cells**](#) [周四, 31 8月 01:22]

Motorized molecules that target diseased cells may deliver drugs to or kill the cells by drilling into the cell membranes. Scientists have demonstrated them on cancer and other cells.

• [**Volcanic eruptions drove ancient global warming event**](#) [周四, 31 8月 01:22]

A natural global warming event that took place 56 million years ago was triggered almost entirely by volcanic eruptions that occurred as Greenland separated from Europe during the opening of the North Atlantic Ocean, according to new research.

• [**Acting like a muscle, nano-sized device lifts 165 times its own weight**](#) [周四, 31 8月 01:22]

Engineers have discovered a simple, economical way to make a nano-sized device that can match the friendly neighborhood Avenger, on a much smaller scale. Their creation weighs 1.6 milligrams (about as much as five poppy seeds) and can lift 265 milligrams (the weight of about 825 poppy seeds) hundreds of times in a row.

• [**Uncovering factors that shape sea life**](#) [周四, 31 8月 01:22]

Researchers have proposed a new conceptual model of island biogeography for marine organisms -- a theory that explores how different processes (like sea level fluctuations and geographic isolation) influence marine species diversity around islands.

• [**Otters learn by copying each other**](#) [周四, 31 8月 01:11]

Otters can learn how to solve puzzles by watching and copying each other, new research shows.

• [**What lit up the universe? Black holes may have punctured darkened galaxies, allowing light to escape**](#) [周三, 30 8月 23:48]

Researchers have a new explanation for how the universe changed from darkness to light. They propose that black holes within galaxies produce winds strong enough to fling out matter that punctures holes in galaxies, allowing light to escape.

• [**Shifting school start times could contribute \\$83 billion to US economy within a decade**](#) [周三, 30 8月 22:36]

RAND Corporation and RAND Europe have released the first-ever

analysis of the economic implications of a shift in school start times in the US. The study shows that a nationwide move to 8.30 a.m. could lead to an economic gain of \$83 billion to the US economy within a decade. The gains projected through the study's economic model would be realized through the higher academic and professional performance of students, and reduced car crash rates.

- [**Patient plays saxophone while surgeons remove brain tumor**](#) [周三, 30 8月 22:36]

Music is not only a major part of Dan Fabbio's life, as a music teacher it is his livelihood. So when doctors discovered a tumor located in the part of his brain responsible for music function, he began a long journey that involved a team of physicians, scientists, and a music professor and culminated with him awake and playing a saxophone as surgeons operated on his brain.

- [**Understanding ancient geometric earthworks in southwestern Amazonia**](#) [周三, 30 8月 22:34]

Researchers examine pre-colonial geometric earthworks in the southwestern Amazonia from the point of view of indigenous peoples and archaeology. The study shows that the earthworks were once important ritual communication spaces.

- [**New robot rolls with the rules of pedestrian conduct**](#) [周三, 30 8月 22:34]

Engineers have designed an autonomous robot with 'socially aware navigation,' that can keep pace with foot traffic while observing these general codes of pedestrian conduct.

- [**Robot probes mystery of prehistoric sea creature's swimming style**](#) [周三, 30 8月 22:26]

A new study has shed light on the swimming style of plesiosaurs by creating a robot to mimic its movements.

- [**Methane emissions tackled with gas-guzzling bacteria**](#) [周三, 30 8月 21:45]

Methane-oxidizing bacteria -- key organisms responsible for greenhouse gas mitigation -- are more flexible and resilient than previously thought, an international research has shown.

- [**Fossil whales' teeth shows what ferocious predators they were**](#) [周三, 30 8月 21:45]

The feeding habits of the whale -- the world's biggest animal -- have evolved to filter feeding, shows new international research. Ancient whales appear to have been ferocious predators, investigators explain.

- [**Century-old seal pelts reveal changes in Ross Sea ecosystem**](#) [周三, 30 8月 21:43]

Scientists sampled a pile of frozen pelts left in a hut by Antarctic explorers for Weddell seal tissue from a century ago, at the very start of human activities in Antarctica. By using sophisticated isotope analysis to compare samples from modern and century-old seals, they were able to investigate human impacts on the Antarctic ecosystem.

- [**Why does rubbing a balloon on your hair make it stick?**](#) [周三, 30 8月 01:53]

New research indicates that tiny holes and cracks in a material -- changes in the microstructure -- can control how the material becomes electrically charged through friction.

- [**Sense of smell is key factor in bird navigation, new study shows**](#) [周二, 29 8月 23:38]

How do birds navigate over long distances? This complex question has been the subject of debate and controversy among scientists for decades, with Earth's magnetic field and the bird's own sense of smell among the factors said to play a part. Now, researchers from the universities of Oxford, Barcelona and Pisa have shown in a new experiment that olfaction -- or sense of smell -- is almost certainly a key factor in long-distance oceanic navigation, eliminating previous misgivings about this hypoth...

- [**Woolly rhino neck ribs provide clues about their**](#)

[decline and eventual extinction](#) [周二, 29 8月 21:10]

A study reports on the incidence of abnormal cervical (neck) vertebrae in woolly rhinos, which strongly suggests a vulnerable condition in the species. Given the considerable birth defects that are associated with this condition, the researchers argue it is very possible that developmental abnormalities contributed towards the eventual extinction of these late Pleistocene rhinos.

[An alternative to wolf control to save endangered caribou](#) [周二, 29 8月 21:10]

The iconic woodland caribou across North America face increasing predation pressures from wolves. A short-term solution to caribou conservation would be to kill wolves. But a new government policy looks at reducing the invasive species moose numbers propping up the wolf population. Researchers have now evaluated the effects of this policy on the caribou population.

[Moderate consumption of fats, carbohydrates best for health, international study shows](#) [周二, 29 8月 21:10]

A diet that includes a moderate intake of fat and fruits and vegetables, and avoidance of high carbohydrates, is associated with lower risk of death, research with more than 135,000 people across five continents has shown.

[Complete remission of brain metastasis of difficult-to-treat tumor](#) [周二, 29 8月 02:07]

Medical researchers report a remarkable treatment response in a patient participating in a clinical trial of a novel immune-system-based cancer therapy.

[Algae fortifies coral reefs in past and present](#) [周二, 29 8月 02:07]

The Great Barrier Reef, and most other large reefs around the world, owe their bulk in large part to a type of red algae that grows on corals and strengthens them. New research has found that ancient coral reefs were also bolstered by their bond with red algae, a finding that could

help scientists better understand how reefs will respond to climate change.

- [**Galaxy 5 billion light-years away shows we live in a magnetic universe**](#) [周二, 29 8月 00:45]

A chance combination of a gravitational lens and polarized waves coming from a distant quasar gave astronomers the tool needed to make a measurement important to understanding the origin of magnetic fields in galaxies.

- [**Keeping pandas off endangered list ledge**](#) [周一, 28 8月 22:54]

Things aren't all black and white for giant pandas. The beloved Chinese icons have basked in good press lately -- their extinction risk status downgraded from 'endangered' to 'vulnerable,' their good fortunes have shown to rub off on their less charismatic forest neighbors that benefit from panda-centric conservation efforts.

- [**Compounds in cocoa may help delay onset of type 2 diabetes**](#) [周一, 28 8月 22:27]

What if eating chocolate helped prevent and treat diabetes? It's crazy enough to laugh off. But here's the thing: Researchers have discovered certain compounds found in cocoa can actually help your body release more insulin and respond to increased blood glucose better. Insulin is the hormone that manages glucose, the blood sugar that reaches unhealthy levels in diabetes.

- [**Eating triggers endorphin release in the brain**](#) [周一, 28 8月 22:27]

Researchers have revealed how eating stimulates brain's endogenous opioid system to signal pleasure and satiety.

- [**Oil and gas wells as a strong source of greenhouse gases**](#) [周一, 28 8月 22:27]

Boreholes in the North Sea could constitute a significantly more important source of methane, a strong greenhouse gas, than previously thought. Large amounts of methane are released from the sediments surrounding boreholes, probably over long periods of time.

• [**New ancient sea reptile found in Germany, the earliest of its kind**](#) [周一, 28 8月 21:39]

A previously unrecognized 132 million-year-old fossilized sea monster from northern Germany has been identified.

• [**Statins linked to lower rates of breast cancer and mortality**](#) [周一, 28 8月 21:38]

A 14 year study in more than one million people has found that women with high cholesterol have significantly lower rates of breast cancer and improved mortality. The research suggests that statins are associated with lower rates of breast cancer and subsequent mortality.

• [**Air temperature is external trigger for heart attack**](#) [周一, 28 8月 21:38]

A 16-year study in more than 280,000 patients has suggested that air temperature is an external trigger for heart attack. The average number of heart attacks per day was significantly higher during seasons with colder outdoor temperatures as compared to warmer.

• [**Largest Ichthyosaurus was pregnant mother**](#) [周一, 28 8月 21:37]

Scientists have discovered the largest Ichthyosaurus on record and found it was pregnant at the time of death.

• [**80-year-olds as street-savvy as 18-year-olds**](#) [周一, 28 8月 21:37]

Our gut instinct about whether a stranger poses a threat is as good when we're 80 as when we're 18, according to new research. Older people are as good as young adults at knowing when someone is potentially aggressive, and being streetwise appears to be a skill honed in childhood but not fully reliable until adulthood.

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

- [**New source for brain's development discovered**](#) [周五, 01 9月 02:13]

An unexpected source for the brain's development has been discovered by researchers, a finding that offers new insights into the building of the nervous system.

- [**Does indoor spraying help prevent dengue?**](#) [周五, 01 9月 02:13]

The prevention of dengue, the most prevalent mosquito-borne virus in the world, relies heavily on controlling mosquito populations, as the currently available dengue vaccine is only partially effective. Indoor spraying -- which involves spraying of insecticides inside houses -- has the potential to be a key part of those prevention efforts, researchers report.

- [**Drugs targeting the beta2-adrenoreceptor linked to Parkinson's disease**](#) [周五, 01 9月 02:12]

Researchers want to prevent alpha-synuclein from accumulating in the brain. To do so, the team searched for drugs that turn down alpha-synuclein production. They then tested the drugs in mice and stem cells and studied in data from the health records of millions of people living in Norway. The results of their efforts, point to a new drug development path for PD.

- [**New findings on brain functional connectivity may lend insights into mental disorders**](#) [周五, 01 9月 01:13]

Ongoing advances in understanding the functional connections within the brain are producing exciting insights into how the brain circuits

function together to support human behavior — and may lead to new discoveries in the development and treatment of psychiatric disorders, according to a review.

• [**Yawning: Why is it so contagious and why should it matter?**](#) [周五, 01 9月 00:30]

Feeling tired? Even if we aren't tired, why do we yawn if someone else does? Experts have published research that suggests the human propensity for contagious yawning is triggered automatically by primitive reflexes in the primary motor cortex -- an area of the brain responsible for motor function. Their study is another stage in their research into the underlying biology of neuropsychiatric disorders and their search for new methods of treatment.

• [**Scents and social preference: Neuroscientists ID the roots of attraction**](#) [周五, 01 9月 00:30]

Culminating a series of studies stretching back eight years, biologists have identified the cellular and molecular basis for social preference, known in the animal kingdom as 'imprinting.' Through in vivo experiments, the researchers found the neurological roots of kinship attraction and aversion. They also employed genetics screening to find the regulators controlling this behavior. The study carries implications for understanding social attraction and aversion in a range of animals and humans.

• [**Songbird study shows how estrogen may stop infection-induced brain inflammation**](#) [周四, 31 8月 23:30]

Estrogen synthesis, a process naturally occurring in the brains of zebra finches, may also fight off neuroinflammation caused by infection that occurs elsewhere in the body, new research indicates.

• [**People become more economically conservative when angered**](#) [周四, 31 8月 23:30]

People tend to lean more economically conservative when they're angry, according to a new article. Researchers came to the conclusion after running multiple studies that included more than 1,000 participants.

- [**How reading and writing with your child boost more than just literacy**](#) [周四, 31 8月 22:21]

Children who read and write at home -- whether for assignments or just for fun -- are building long-term study and executive function skills, according to a new article

- [**Newly emerged superbug discovered**](#) [周四, 31 8月 22:15]

Scientists have discovered a newly emerged superbug, hyper-resistant and hypervirulent *Klebsiella pneumoniae*, which may cause untreatable and fatal infections in relatively healthy individuals and will pose enormous threat to human health.

- [**Mind wandering is common during driving**](#) [周四, 31 8月 22:14]

Scientists have investigated mind wandering in volunteers during a driving simulation. Astonishingly, during the simulation, the volunteers reported mind wandering 70 percent of the time. The researchers could identify specific changes in brain patterns when the volunteers were mind wandering, but need to do further work to clarify if it is dangerous during driving.

- [**Children's sleep quality linked to mothers' insomnia**](#) [周四, 31 8月 21:33]

Children sleep more poorly if their mothers suffer from insomnia symptoms – potentially affecting their mental wellbeing and development - according to new research. Nearly 200 school kids and their parents were studied, results indicating that children whose mothers have insomnia symptoms fall asleep later, get less sleep and spend less time in deep sleep. There appeared to be no link between fathers' insomnia symptoms and children's sleep.

- [**Little known theory could hold key to sporting success**](#) [周四, 31 8月 21:33]

An established but little known psychological theory is likely to improve performances across a range of activities, including sport, according to new research.

- [**New possibility of studying how Alzheimer's disease affects the brain at different ages**](#) [周四, 31 8月 21:33]

Alzheimer's disease can lead to several widely divergent symptoms and, so far, its various expressions have mainly been observed through the behavior and actions of patients. Researchers have now produced images showing the changes in the brain associated with these symptoms – a development which increases knowledge and could facilitate future diagnostics and treatment.

- [**First look at potentially deadly metabolic disorder that strikes infants**](#) [周四, 31 8月 21:32]

You may have never heard of congenital disorder of glycosylation, but parents whose children are born with forms of this rare -- and underreported -- metabolic disorder know all too well the dangers they pose, including developmental delay, failure to thrive, stroke-like symptoms, seizures and cerebellar dysfunction.

- [**Using DNA to predict schizophrenia, autism**](#) [周四, 31 8月 21:32]

A single amino acid substitution in the protein CX3CR1 may act as predictor for schizophrenia and autism, a multi-institute collaboration demonstrates.

- [**Faulty DNA repair depresses neural development**](#) [周四, 31 8月 21:32]

Researchers have discovered DNA polymerase δ (Pol δ) deficiency in neural stem cells affects neuronal survival and neural network in the developing brain.

- [**A philosophical mythbuster**](#) [周四, 31 8月 21:32]

Cognitive neuroscience gives us a glimpse into our brain activity; it allows us to learn more about ourselves. Or do brain scans actually not say very much about who we are? A philosopher examines four myths about neuroscience and self-understanding.

- [**Alcohol abuse, dental conditions, mental health found to be causes of avoidable US emergency**](#)

[visits](#) [周四, 31 8月 21:26]

Alcohol abuse, dental conditions, and mental health were found to be the main causes of avoidable emergency room visits in the US, a new report reveals.

. [Love your beauty rest? You can thank these brain cells](#) [周四, 31 8月 21:14]

Researchers report the unexpected presence of a type of neuron in the brains of mice that appears to play a central role in promoting sleep by turning 'off' wake-promoting neurons. The newly identified brain cells, located in a part of the hypothalamus called the zona incerta, they say, could offer novel drug targets to treat sleep disorders, such as insomnia and narcolepsy, caused by the dysfunction of sleep-regulating neurons.

. [Perfect mannequins a turnoff for some consumers](#) [周四, 31 8月 21:14]

Mannequins' long legs, tiny waistlines and perfect busts can sour some shoppers on the products they're wearing, especially consumers who don't like the look of their own bodies.

. [Fathers of American newborns keep getting older, study finds](#) [周四, 31 8月 21:14]

While data on the moms of newborn American children has been abundant, equivalent data on dads hasn't -- a gap that scientists have now filled.

. [E-cigarettes can help smokers quit, but there's a catch](#) [周四, 31 8月 21:14]

Frequent e-cigarette use does help smokers quit -- a finding that researchers say supports the use of e-cigarettes as a cessation aid for those trying to quit cigarette smoking. But, they note, an examination of a recent national survey uncovers important clues about who's successful at quitting and why.

. [Three policies to improve children's language development](#) [周四, 31 8月 21:14]

Bilingual children from low-income homes are at greater risk of falling behind their peers in developing the appropriate language skills for their age group, leading to poorer academic achievement over time. A new article addresses how inequality impacts children's language development and details policies that can intervene.

• [Good as gold](#) [周四, 31 8月 08:21]

Few experiences invoke as much anxiety as a call from your doctor saying 'you need to come back for more tests.' Your imagination goes wild and suddenly a routine medical screening becomes a minefield of potential life-threatening diseases. It's highly likely, however, that you have fallen victim to a false positive -- a result that, despite the accuracy of the test, erroneously yields an affirmative result that points toward illness. To increase the accuracy of medical screening and reduce the i...

• [Gold nanoparticles fry cancer on glowing mice](#) [周四, 31 8月 08:21]

A new study takes a new approach to killing cancer: Why not fry it into oblivion with vibrating gold nanoparticles?

• [Z-endoxifen shows promise as new treatment for common breast cancer type](#) [周四, 31 8月 08:21]

Z-endoxifen, a potent derivative of the drug tamoxifen, could itself be a new treatment for the most common form of breast cancer in women with metastatic disease, report investigators.

• [Concerns regarding radioactivity in migratory seafood negated](#) [周四, 31 8月 03:55]

New research shows negligible risk from consumption of meat from migratory marine predators following Fukushima nuclear disaster.

• [Protecting the guardians](#) [周四, 31 8月 03:55]

A guardian gene that protects against type 1 diabetes and other autoimmune diseases exerts its pancreas-shielding effects by altering the gut microbiota. Experiments in mice born with the protective gene show that exposure to antibiotics during critical windows of development fuels risk for type 1 diabetes and leads to loss of genetic protection by altering the gut microbiota. Scientists say the findings underscore the

importance of avoiding antibiotic use during late pregnancy and early infancy.

- [**Breastfeeding reduces risk of endometriosis diagnosis**](#) [周四, 31 8月 03:55]

Women who breastfed for longer periods of time had significantly lower risk of being diagnosed with endometriosis, offering new insights into a condition that, up until now, has had very few known, modifiable risk factors, a new study concludes.

- [**Understanding perceptions of reputation, identity offers opportunity, study shows**](#) [周四, 31 8月 03:54]

Regardless of how people personally view another person, they also are aware of how that person sees themselves, as well as how they are generally perceived by others, research concludes.

- [**Bioengineering a functional vascularized lung scaffold**](#) [周四, 31 8月 02:12]

A team of researchers is the first to successfully bioengineer a functional lung with perfusable and healthy vasculature in an ex vivo rodent lung. Their new approach allows the removal of the pulmonary epithelium while maintaining the viability and function of the vascular network and the lung matrix.

- [**Gut bacteria that 'talk' to human cells may lead to new treatments**](#) [周四, 31 8月 02:12]

Scientists developed a method to genetically engineer gut bacteria to produce molecules that have the potential to treat certain disorders by altering human metabolism.

- [**Blunting CRISPR's 'scissors' gives new insight into autoimmune disorders**](#) [周四, 31 8月 01:22]

A research team has used a modified version of the gene-editing technique CRISPR to find enhancers -- not by editing them but by prompting them into action.

- [**Powerful resource to advance treatment of pediatric solid tumors**](#) [周四, 31 8月 01:22]

St. Jude Children's Research Hospital is offering the global scientific community no-cost access to an unprecedented collection of pediatric solid tumor samples and data to fuel research and move treatment forward.

- [**Monkeys with Parkinson's disease benefit from human stem cells**](#) [周四, 31 8月 01:22]

Japanese neurosurgeons report two new strategies to improve outcomes of iPS cell-based therapies for Parkinson's disease in monkey brains. The findings are a key step for patient recruitment of the first iPS cell-based therapy to treat neurodegenerative diseases.

- [**Motorized molecules drill through cells**](#) [周四, 31 8月 01:22]

Motorized molecules that target diseased cells may deliver drugs to or kill the cells by drilling into the cell membranes. Scientists have demonstrated them on cancer and other cells.

- [**Blood test can predict early lung cancer prognosis**](#) [周四, 31 8月 01:22]

Cancer cells obtained from a blood test may be able to predict how early-stage lung cancer patients will fare, a team of researchers has shown.

- [**Dating? A magic formula to predict attraction is more elusive than ever**](#) [周四, 31 8月 01:22]

Dating websites often claim attraction between two people can be predicted from the right combination of traits and preferences, but a new study casts doubt on that assertion. The study, which used speed dating data, found a computer could predict who is desirable and how much someone would desire others -- who's hot and who's not -- but it could not unravel the mystery of unique desire for a specific person.

- [**Robotic system monitors specific neurons**](#) [周四, 31 8月 00:49]

Engineers have devised a way to automate the process of patch-

clamping, using a computer algorithm that analyzes microscope images and guides a robotic arm to the target cell to record its electrical activity.

- **[Millennials prefer healthy habits, less likely to choose opioids to manage pain](#)** [周四, 31 8月 00:49]

Often spending their days hunched over phones, tablets or computers and their free time at spin class or playing sports, millennials are the next generation poised to experience chronic pain. Even at their young age, millennials say acute and chronic pain are already interfering with their quality of life.

- **[Federal preemption of taxes on state and local sugar-sweetened beverages is not warranted](#)** [周四, 31 8月 00:49]

Federal and state government can alter or hinder state and local activity through a legal mechanism called preemption -- when a higher level of government blocks the action of a lower level of government. A new study evaluates whether it could be used to block taxes on sugar-sweetened beverages.

- **[When making decisions, monkeys use different brain areas to weigh value and availability](#)** [周四, 31 8月 00:26]

Seventeenth-century mathematician Blaise Pascal first introduced the idea of expected value, which is reached by multiplying the value of something (how much it's wanted or needed) with the probability that we might be able to obtain it. Now some very 21st century research is showing for the first time in monkeys which parts of the brain are involved in the two-pronged decision-making process that determines this expected value.

- **[A decline in navigational skills could predict neurodegenerative disease](#)** [周四, 31 8月 00:26]

Changes in how humans map their surroundings and construct and follow directions as they age have been understudied compared to effects on memory and learning. However, age-related declines in navigational ability are independent of those more well-known cognitive

downturns, and could form the basis for tools for the early diagnosis of Alzheimer's disease.

- [**'Seeing' robot learns tricky technique for studying brain cells in mammals**](#) [周四, 31 8月 00:25]

Scientists have successfully taught robots to perform a challenging brain technique only previously mastered by a handful of humans.

- [**How dietary fats' impact healthy or obese adults**](#) [周三, 30 8月 23:48]

Metabolically healthy obese adults consuming a diet high in unsaturated fat and low in saturated fat may be able to decrease their total cholesterol by 10 points, a new study suggests. However, there was little research evidence to support current dietary recommendations that replacing saturated fat with unsaturated fat aids in weight loss, the researchers also reported.

- [**Researchers raise health concerns about off-road vehicles and inhalation of asbestos**](#) [周三, 30 8月 23:47]

Preventing injuries may not be the only reason children shouldn't use off-road vehicles (ORVs). In a new study, public health scientists raise concerns that people who use ORVs in many regions of the country may face exposure to hazardous mineral fibers.

- [**Breakthrough in understanding mitochondria**](#) [周三, 30 8月 23:47]

Scientists have made a breakthrough in understanding how mitochondria -- the 'powerhouses' of human cells -- are made.

- [**Is changing languages effortful for bilingual speakers? Depends on the situation**](#) [周三, 30 8月 22:37]

Research on the neurobiology of bilingualism has suggested that switching languages is inherently effortful, requiring executive control to manage cognitive functions, but a new study shows this is only the case when speakers are prompted, or forced, to do so.

- [**Fetal membranes may help transform regenerative medicine**](#) [周三, 30 8月 22:36]

A new review looks at the potential of fetal membranes, which make up the amniotic sac surrounding the fetus during pregnancy, for regenerative medicine.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

- [**Caching system could make data centers more energy efficient**](#) [周四, 31 8月 23:52]

Researchers have developed a new system for data center caching that uses flash memory, the kind of memory used in most smartphones.

- [**First hints of possible water content on TRAPPIST-1 planets**](#) [周四, 31 8月 23:30]

Astronomers have been trying to determine whether there might be water on the seven Earth-sized planets orbiting the nearby dwarf star TRAPPIST-1. The results suggest that the outer planets of the system might still harbor substantial amounts of water. This includes the three planets within the habitable zone of the star, lending further weight to the possibility that they may indeed be habitable.

- [**How Neanderthals made the very first glue**](#) [周四, 31 8月 21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

- [**Improving earthquake resistance with a single crystal**](#) [周四, 31 8月 21:26]

A new heating method for certain metals could lead to improved earthquake-resistant construction materials.

- [**Mass production of biodegradable plastic**](#) [周四, 31 8月 21:14]

Introducing a simple step to the production of plant-derived,

biodegradable plastic could improve its properties while overcoming obstacles to manufacturing it commercially, says new research.

• [**Turning heat energy into a viable fuel source**](#) [周四, 31 8月 21:14]

A new device could one day turn the heat generated by a wide array of electronics into a usable fuel source. The device is a multicomponent, multilayered composite material called a van der Waals Schottky diode. It converts heat into electricity up to three times more efficiently than silicon -- a semiconductor material widely used in the electronics industry.

• [**Robot learns to follow orders like Alexa**](#) [周四, 31 8月 21:14]

Computer scientists have developed an Alexa-like system that allows robots to understand a wide range of commands that require contextual knowledge about objects and their environments. They've dubbed the system 'ComText,' for 'commands in context.'

• [**Good as gold**](#) [周四, 31 8月 08:21]

Few experiences invoke as much anxiety as a call from your doctor saying 'you need to come back for more tests.' Your imagination goes wild and suddenly a routine medical screening becomes a minefield of potential life-threatening diseases. It's highly likely, however, that you have fallen victim to a false positive -- a result that, despite the accuracy of the test, erroneously yields an affirmative result that points toward illness. To increase the accuracy of medical screening and reduce the i...

• [**Gold nanoparticles fry cancer on glowing mice**](#) [周四, 31 8月 08:21]

A new study takes a new approach to killing cancer: Why not fry it into oblivion with vibrating gold nanoparticles?

• [**Star-formation 'fuel tanks' found around distant galaxies**](#) [周四, 31 8月 05:25]

Astronomers have studied six distant starburst galaxies and discovered that five of them are surrounded by turbulent reservoirs of hydrogen gas, the fuel for future star formation.

• [**Toward a smart graphene membrane to**](#)

[desalinate water](#) [周四, 31 8月 05:23]

A simple, sturdy graphene-based hybrid desalination membrane can provide clean water for agriculture and possibly human consumption.

• [New bar set for water-splitting, CO2-splitting techniques](#) [周四, 31 8月 02:13]

Researchers have significantly boosted the efficiency of two techniques, for splitting water to create hydrogen gas and splitting carbon dioxide to create carbon monoxide. The products are valuable feedstock for clean energy and chemical manufacturing applications.

• [Bioengineering a functional vascularized lung scaffold](#) [周四, 31 8月 02:12]

A team of researchers is the first to successfully bioengineer a functional lung with perfusable and healthy vasculature in an ex vivo rodent lung. Their new approach allows the removal of the pulmonary epithelium while maintaining the viability and function of the vascular network and the lung matrix.

• [Scientists recover nova first spotted 600 years ago by Korean astrologers](#) [周四, 31 8月 01:22]

A new study pinpoints the location of a nova first spotted by Korean astrologers almost 600 years ago that now undergoes smaller-scale 'dwarf nova' eruptions. The work supports that idea that novae go through a very long-term life cycle after erupting, fading to obscurity for thousands of years, and then building back up to become full-fledged novae once more.

• [Artificial intelligence analyzes gravitational lenses 10 million times faster](#) [周四, 31 8月 01:22]

Researchers have for the first time shown that neural networks -- a form of artificial intelligence -- can accurately analyze the complex distortions in spacetime known as gravitational lenses 10 million times faster than traditional methods.

• [Motorized molecules drill through cells](#) [周四, 31 8月 01:22]

Motorized molecules that target diseased cells may deliver drugs to or kill the cells by drilling into the cell membranes. Scientists have demonstrated them on cancer and other cells.

- [**Acting like a muscle, nano-sized device lifts 165 times its own weight**](#) [周四, 31 8月 01:22]

Engineers have discovered a simple, economical way to make a nano-sized device that can match the friendly neighborhood Avenger, on a much smaller scale. Their creation weighs 1.6 milligrams (about as much as five poppy seeds) and can lift 265 milligrams (the weight of about 825 poppy seeds) hundreds of times in a row.

- [**Dating? A magic formula to predict attraction is more elusive than ever**](#) [周四, 31 8月 01:22]

Dating websites often claim attraction between two people can be predicted from the right combination of traits and preferences, but a new study casts doubt on that assertion. The study, which used speed dating data, found a computer could predict who is desirable and how much someone would desire others -- who's hot and who's not -- but it could not unravel the mystery of unique desire for a specific person.

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Scientists have successfully taught robots to perform a challenging brain technique only previously mastered by a handful of humans.

- [**Machine-learning earthquake prediction in lab shows promise**](#) [周四, 31 8月 00:25]

By listening to the acoustic signal emitted by a laboratory-created earthquake, a computer science approach using machine learning can predict the time remaining before the fault fails.

- [**Silicon solves problems for next-generation battery technology**](#) [周三, 30 8月 23:48]

Silicon -- the second most abundant element in the earth's crust -- shows great promise in Li-ion batteries, according to new research. By replacing graphite anodes with silicon, it is possible to quadruple anode capacity.

- [**What lit up the universe? Black holes may have punctured darkened galaxies, allowing light to escape**](#) [周三, 30 8月 23:48]

Researchers have a new explanation for how the universe changed from darkness to light. They propose that black holes within galaxies produce winds strong enough to fling out matter that punctures holes in galaxies, allowing light to escape.

- [**Stroke patient improvement with a brain-computer interface**](#) [周三, 30 8月 22:35]

It is possible for stroke patients to improve motor function using special training involving connecting brain signals with a computer, research shows.

- [**Leaf sensors can tell farmers when crops need to be watered**](#) [周三, 30 8月 22:34]

Plant-based sensors that measure the thickness and electrical capacitance of leaves show great promise for telling farmers when to activate their irrigation systems, preventing both water waste and parched plants, according to researchers.

- [**New robot rolls with the rules of pedestrian conduct**](#) [周三, 30 8月 22:34]

Engineers have designed an autonomous robot with 'socially aware navigation,' that can keep pace with foot traffic while observing these general codes of pedestrian conduct.

- [**Robot probes mystery of prehistoric sea**](#)

[creature's swimming style](#) [周三, 30 8月 22:26]

A new study has shed light on the swimming style of plesiosaurs by creating a robot to mimic its movements.

• [Electricity production: When enzymes rival platinum](#) [周三, 30 8月 22:19]

Making a biocell that is as effective as a platinum fuel cell: that's the feat that researchers have achieved. Three years after making their first prototype biocell, the researchers have just reached a new milestone and increased its performance and stability. This biocell could, in the long run, offer an alternative to fuel cells that require rare and costly metals, such as platinum.

• [New significance of unheralded chemical reactions](#) [周三, 30 8月 21:45]

Researchers reveal new significance to a decades-old chemical reaction theory, increasing our understanding of the interaction of gases, relevant to combustion and planetary atmospheres.

• [New mini tool has massive implications](#) [周三, 30 8月 21:43]

Researchers have created a miniaturized, portable version of a tool now capable of analyzing Mars' atmosphere -- and that's just one of its myriad possible uses.

• [Making 3-D printing safer](#) [周三, 30 8月 21:42]

Within the past decade, 3-D printers have gone from bulky, expensive curiosities to compact, more affordable consumer products. At the same time, concerns have emerged that nanoparticles released from the machines during use could affect consumers' health. Now researchers report a way to eliminate almost all nanoparticle emissions from some of these printers.

• [Nanoparticles loaded with mRNA give disease-fighting properties to cells](#) [周三, 30 8月 21:42]

A new biomedical tool using nanoparticles that deliver transient gene changes to targeted cells could make therapies for a variety of diseases --

including cancer, diabetes and HIV -- faster and cheaper to develop, and more customizable.

- [**Adoption of robotics into a hospital's daily operations requires broad cooperation**](#) [周三, 30 8月 21:42]

Investigators studied the implementation of a logistics robot system at the Seinäjoki Central Hospital in South Ostrobothnia. The aim was to reduce transportation costs, improve the availability of supplies and alleviate congestion on hospital hallways by running deliveries around the clock on every day of the week.

- [**Nano chip system measures light from single bacterial cell to enable chemical detection**](#) [周三, 30 8月 21:42]

Researchers have created a nanophotonic chip system using lasers and bacteria to observe fluorescence emitted from a single bacterial cell. The novel system paves the way for an efficient and portable on-chip system for diverse cell-based sensing applications, such as detecting chemicals in real-time.

- [**NASA's Lunar mission captures solar eclipse as seen from the moon**](#) [周三, 30 8月 04:45]

LRO captured an image of the Moon's shadow over a large region of the United States, centered just north of Nashville, Tennessee.

- [**Why does rubbing a balloon on your hair make it stick?**](#) [周三, 30 8月 01:53]

New research indicates that tiny holes and cracks in a material -- changes in the microstructure -- can control how the material becomes electrically charged through friction.

- [**Chemist synthesizes pure graphene**](#) [周三, 30 8月 01:53]

A chemist has patented a one-of-a-kind process for exfoliating graphene in its pure (unoxidized) form, as well as manufacturing innovative graphene nanocomposites that have potential uses in a variety of applications, including desalination of brackish water.

- [**Tiny nanopackages built out of DNA help scientists peek at how neurons work**](#) [周三, 30 8月 01:22]

Scientists have designed a way to use microscopic capsules made out of DNA to deliver a payload of tiny molecules directly into a cell. The technique gives scientists an opportunity to understand certain interactions among cells that have previously been hard to track.

- [**Scientists move graphene closer to transistor applications**](#) [周三, 30 8月 01:14]

Scientists were able to successfully manipulate the electronic structure of graphene, which may enable the fabrication of graphene transistors -- faster and more reliable than existing silicon-based transistors.

- [**Brain stimulation for children with learning difficulties?**](#) [周三, 30 8月 00:47]

Applying a brain stimulation method, which was previously suggested to enhance mathematical learning in healthy adults, may improve the performance of children with mathematical learning difficulties, according to an exploratory study.

- [**Photosynthesis discovery could help design more efficient artificial solar cells**](#) [周三, 30 8月 00:44]

A natural process that occurs during photosynthesis could lead to the design of more efficient artificial solar cells, according to researchers.

- [**Clamping down on causality by probing laser cavities**](#) [周二, 29 8月 23:39]

By monitoring the optical response of an externally probed laser cavity before and after gain clamping, researchers reveal the underlying mechanisms driving the cavity's responses.

- [**Scientists power past solar efficiency records**](#) [周二, 29 8月 23:39]

The high potential of silicon-based multijunction solar cells has now been demonstrated through new research.

- [**Researchers validate UV light's use in improving**](#)

[semiconductors](#) [周二, 29 8月 23:39]

A discovery by two scientists could aid the development of next-generation semiconductor devices, explains a new report.

• **[Lasers zap decontaminates from soil](#)** [周二, 29 8月 23:38]

There might be a new and improved way to rid contaminated soil of toxins and pollutants: zap it with lasers. By directly breaking down pollutants, researchers say, high-powered lasers can now be more efficient and cheaper than conventional decontamination techniques. They have shown how such a laser system could work and described the proof-of-principle results.

• **[Designing effective antennas 1000 times smaller](#)** [周二, 29 8月 23:38]

A new article describes a new approach to designing antennas. The discovery enables researchers to construct antennas that are up to a thousand times smaller than currently available antennas.

• **[Analysis identifies where commercial customers might benefit from energy storage](#)** [周二, 29 8月 23:38]

Commercial electricity customers who are subject to high demand charges may be able to reduce overall costs by using battery energy storage to manage demand, according to research.

• **[High-tech electronics made from autumn leaves](#)** [周二, 29 8月 23:38]

Northern China's roadsides are peppered with deciduous phoenix trees, producing an abundance of fallen leaves in autumn. These leaves are generally burned in the colder season, exacerbating the country's air pollution problem. Investigators in Shandong, China, recently discovered a new method to convert this organic waste matter into a porous carbon material that can be used to produce high-tech electronics.

• **[New technique to aid IVF embryo selection](#)** [周二, 29 8月 21:35]

An advanced new imaging technique that can help assess the quality of early-stage embryos has now been developed, investigators report.

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Environment News

Top stories featured on ScienceDaily's Plants & Animals, Earth & Climate, and Fossils & Ruins sections.

- [**Study reveals ways collegiate sports venues can achieve 'zero waste'**](#) [周五, 01 9月 02:13]

A new study analyzing waste and recyclables during Mizzou's 2014 home football season demonstrates that by implementing several recommendations the team developed, such as offering better recycling receptacles and better sorting options for waste, sporting venues could be well on their way to achieving environmental benefits that exceed the standards for 'zero-waste' operations.

- [**Does indoor spraying help prevent dengue?**](#) [周五, 01 9月 02:13]

The prevention of dengue, the most prevalent mosquito-borne virus in the world, relies heavily on controlling mosquito populations, as the currently available dengue vaccine is only partially effective. Indoor spraying -- which involves spraying of insecticides inside houses -- has the potential to be a key part of those prevention efforts, researchers report.

- [**Reconstructing life at its beginning, cell by cell**](#) [周五, 01 9月 02:12]

In a technological tour de force, scientists have created a virtual model of an early fly embryo. Its interactive interface allows researchers to explore the blueprint that underlies development at unprecedented spatial resolution and predict which cells express which genes.

- [**Cross-kingdom regulation of honeybee caste development by dietary plant miRNAs**](#) [周五, 01 9月 02:05]

Honeybee larvae develop into workers but not queens, in part, because

their diet of beebread/pollen is enriched in plant miRNAs. While miRNAs are generally negative regulators of gene expression in eukaryotes, they also negatively regulate larval development when honeybee larvae consume beebread/pollen and take up plant miRNAs.

• [Pinpointing the sources of trans-pacific dust](#) [周五, 01 9月 02:05]

Airborne dust from Asia travels across the Pacific passport-free, carrying pollution, building soil, and coloring sunsets thousands of miles from its source. Identifying that source is important for understanding atmospheric circulation, contaminant pathways, and climate. But collecting enough airborne dust to pinpoint its source is challenging. Now, a team of researchers has developed a way to match microscopic quartz grains to the desert they blew in from.

• [Protein transport channel offers new target for thwarting pathogen](#) [周五, 01 9月 01:42]

A bacterium that attacks people suffering from chronic lung disease and compromised immune systems could be halted by disrupting the distribution channels the organism uses to access the nutrient-rich cytoplasm of its host cell.

• [Fossil footprints challenge established theories of human evolution](#) [周五, 01 9月 01:42]

Newly discovered human-like footprints from Crete may put the established narrative of early human evolution to the test. The footprints are approximately 5.7 million years old and were made at a time when previous research puts our ancestors in Africa -- with ape-like feet.

• [Human bones in south Mexico: Stalagmite reveals their age as 13,000 years old](#) [周五, 01 9月 01:12]

A prehistoric human skeleton found on the Yucatán Peninsula is at least 13,000 years old and most likely dates from a glacial period at the end of the most recent ice age, the late Pleistocene. A German-Mexican team of researchers has now dated the fossil skeleton based on a stalagmite that grew on the hip bone.

[**What changes when you warm the Antarctic Ocean just 1 degree? Lots**](#) [周五, 01 9月 00:30]

After warming a natural seabed in the Antarctic Ocean by just 1° or 2° Celsius, researchers observed massive impacts on a marine assemblage, as growth rates nearly doubled. The findings of what the researchers call the 'most realistic ocean warming experiment to date' show that the effects of future warming may far exceed expectations.

[**Bacterial protein acts as aphrodisiac for choanoflagellates**](#) [周五, 01 9月 00:30]

Researchers investigating how single-celled organisms evolved to become multicellular stumbled across a strange phenomenon during their experiments: Single-celled eukaryotes called choanoflagellates, which are the closest living relatives to animals, begin to sexually reproduce in response to a protein produced by bacteria. Why this happens in natural settings is still unclear, though they speculate that it could help the choanoflagellates easily mate with others from the same species.

[**Why are coyote populations difficult to control?**](#) [周四, 31 8月 22:15]

Conventional wisdom suggests that coyote control efforts actually result in an increase in the number of coyotes due to increasing litter sizes and pregnancy rates among individuals that survive.

[**Antidepressants found in fish brains in Great Lakes region**](#) [周四, 31 8月 22:14]

Human antidepressants are building up in the brains of bass, walleye and several other fish common to the Great Lakes region, scientists say.

[**How Neanderthals made the very first glue**](#) [周四, 31 8月 21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

[**Record-low 2016 Antarctic sea ice due to**](#)

['perfect storm' of tropical, polar conditions](#) [周四, 31 8月 21:26]

The sudden, unexpected nosedive in Antarctic sea ice last year was due to a unique one-two punch from atmospheric conditions both in the tropical Pacific Ocean and around the South Pole.

• [Apes' abilities misunderstood by decades of poor science](#) [周四, 31 8月 21:14]

Hundreds of scientific studies over two decades have told us that apes are clever -- just not as clever as us. New analysis argues that what we think we know about apes' social intelligence is based on wishful thinking and flawed science.

• [Mass production of biodegradable plastic](#) [周四, 31 8月 21:14]

Introducing a simple step to the production of plant-derived, biodegradable plastic could improve its properties while overcoming obstacles to manufacturing it commercially, says new research.

• [Forensic science techniques help discover new molecular fossils](#) [周四, 31 8月 21:14]

Researchers believe they have found new molecular fossils of archaea using a method of analysis commonly used in forensic science.

• [New hope for reef fish living in a high CO2 world](#) [周四, 31 8月 21:14]

New research examining the possible impacts of ocean acidification provides fresh hope for the survival of reef fish.

• [American pika disappears from large area of California's Sierra Nevada mountains](#) [周四, 31 8月 08:21]

The American pika, a small mammal adapted to high altitudes and cold temperatures, has died out from a 165-square-mile span of habitat in California's northern Sierra Nevada mountains, and the cause appears to be climate change. Researchers surveyed pika habitat throughout the north Lake Tahoe area and found that pikas had disappeared from an area that stretches from near Tahoe City to Truckee, more than 10 miles

away, and includes Mount Pluto.

- [**How certain ants snap their jaws shut in the blink of an eye**](#) [周四, 31 8月 08:21]

Few victims stand a chance against the formidable mandibles of a trap-jaw ant. In conflicts between predators and prey, speed is a decided advantage, and evolution has given these insects an edge with spring-loaded jaws that snap shut with astonishing speed. Biologists have now provided the first mechanical description of the jaws of a little-known group of trap-jaw ants.

- [**Profitable cooperation: Ants protect and fertilize plants**](#) [周四, 31 8月 08:21]

Biologists describe how the waste left by ants on plant leaves serves as a valuable fertilizer for the plants -- handed on a silver platter.

- [**Jordan faces likelihood of much more frequent long and severe droughts**](#) [周四, 31 8月 08:21]

Jordan is among the world's most water-poor nations, and a new, comprehensive analysis of regional drought and land-use changes in upstream Syria suggests the conditions could get significantly worse.

- [**Concerns regarding radioactivity in migratory seafood negated**](#) [周四, 31 8月 03:55]

New research shows negligible risk from consumption of meat from migratory marine predators following Fukushima nuclear disaster.

- [**Protecting the guardians**](#) [周四, 31 8月 03:55]

A guardian gene that protects against type 1 diabetes and other autoimmune diseases exerts its pancreas-shielding effects by altering the gut microbiota. Experiments in mice born with the protective gene show that exposure to antibiotics during critical windows of development fuels risk for type 1 diabetes and leads to loss of genetic protection by altering the gut microbiota. Scientists say the findings underscore the importance of avoiding antibiotic use during late pregnancy and early infancy.

• [**Tracking down the whale-shark highway**](#) [周四, 31 8月 03:55]

Researchers recently discovered that whale sharks in the Eastern Tropical Pacific follow fronts -- the dynamic boundaries between warm and cold ocean waters.

• [**Bioengineering a functional vascularized lung scaffold**](#) [周四, 31 8月 02:12]

A team of researchers is the first to successfully bioengineer a functional lung with perfusable and healthy vasculature in an ex vivo rodent lung. Their new approach allows the removal of the pulmonary epithelium while maintaining the viability and function of the vascular network and the lung matrix.

• [**Peptide mass fingerprinting can identify whale species based solely on their baleen**](#) [周四, 31 8月 02:12]

Peptide mass fingerprinting accurately identified 10 species of whales from their baleen alone, according to a new study.

• [**Gut bacteria that 'talk' to human cells may lead to new treatments**](#) [周四, 31 8月 02:12]

Scientists developed a method to genetically engineer gut bacteria to produce molecules that have the potential to treat certain disorders by altering human metabolism.

• [**Monkeys with Parkinson's disease benefit from human stem cells**](#) [周四, 31 8月 01:22]

Japanese neurosurgeons report two new strategies to improve outcomes of iPS cell-based therapies for Parkinson's disease in monkey brains. The findings are a key step for patient recruitment of the first iPS cell-based therapy to treat neurodegenerative diseases.

• [**Volcanic eruptions drove ancient global warming event**](#) [周四, 31 8月 01:22]

A natural global warming event that took place 56 million years ago was triggered almost entirely by volcanic eruptions that occurred as

Greenland separated from Europe during the opening of the North Atlantic Ocean, according to new research.

• [**Uncovering factors that shape sea life**](#) [周四, 31 8月 01:22]

Researchers have proposed a new conceptual model of island biogeography for marine organisms -- a theory that explores how different processes (like sea level fluctuations and geographic isolation) influence marine species diversity around islands.

• [**A big difference between Asian and African elephants is diet**](#) [周四, 31 8月 01:22]

New research has shown that there are significant differences between the Asian and the African forest elephant -- and it isn't just about size and the shape of their ears. It is about what they eat and how they affect forest ecosystems.

• [**Otters learn by copying each other**](#) [周四, 31 8月 01:11]

Otters can learn how to solve puzzles by watching and copying each other, new research shows.

• [**Fungal spore 'death clouds' key in gypsy moth fight**](#) [周四, 31 8月 00:49]

A fungus known to decimate populations of gypsy moths creates 'death clouds' of spores that can travel more than 40 miles to potentially infect populations of invasive moths, according to a new study.

• [**When making decisions, monkeys use different brain areas to weigh value and availability**](#) [周四, 31 8月 00:26]

Seventeenth-century mathematician Blaise Pascal first introduced the idea of expected value, which is reached by multiplying the value of something (how much it's wanted or needed) with the probability that we might be able to obtain it. Now some very 21st century research is showing for the first time in monkeys which parts of the brain are involved in the two-pronged decision-making process that determines this expected value.

• [**Hidden deep in the brain, a map that guides**](#)

[animals' movements](#) [周四, 31 8月 00:26]

New research has revealed that deep in the brain, in a structure called striatum, all possible movements that an animal can do are represented in a map of neural activity. If we think of neural activity as the coordinates of this map, then similar movements have similar coordinates, being represented closer in the map, while actions that are more different have more distant coordinates and are further away.

• [Periodic table of ecological niches could aid in predicting effects of climate change](#) [周四, 31 8月 00:25]

A group of ecologists has started creating a periodic table of ecological niches similar to chemistry's periodic table. It will be a critical resource for scientists seeking to understand how a warming climate may be spurring changes in species around the globe.

• [Machine-learning earthquake prediction in lab shows promise](#) [周四, 31 8月 00:25]

By listening to the acoustic signal emitted by a laboratory-created earthquake, a computer science approach using machine learning can predict the time remaining before the fault fails.

• [Infested fossil worms show ancient examples of symbiosis](#) [周四, 31 8月 00:11]

One of the earliest examples of two invertebrate species living together in a symbiotic relationship has been found in 520-million-year-old fossils from China. The fossils show two species of marine worms with other, smaller worm-like animals attached to the outer surface of their body.

• [New clue may reveal the fate of famous French explorer](#) [周三, 30 8月 23:48]

An anthropologist may have stumbled across a clue to resolving one of the most enduring mysteries of Pacific history - the fate of famous French navigator, Jean François de Galaup, Comte de La Pérouse who disappeared in 1788.

• [**Hope for improving protection of the reticulated python**](#) [周三, 30 8月 23:48]

Trading in skins of the reticulated python is such a lucrative business that illegal exports are rising sharply and existing trade restrictions are being circumvented on a large scale. This is endangering the stability of populations. Therefore, researchers are developing genetic methods for tracking down individual origins and potential trade routes of the skins.

• [**Breakthrough in understanding mitochondria**](#) [周三, 30 8月 23:47]

Scientists have made a breakthrough in understanding how mitochondria -- the 'powerhouses' of human cells -- are made.

• [**How invasive species threaten bats**](#) [周三, 30 8月 22:35]

A new review is the first to describe the scope of threats to bats by invasive species.

• [**Understanding ancient geometric earthworks in southwestern Amazonia**](#) [周三, 30 8月 22:34]

Researchers examine pre-colonial geometric earthworks in the southwestern Amazonia from the point of view of indigenous peoples and archaeology. The study shows that the earthworks were once important ritual communication spaces.

• [**Do squirrels teach bears to cross the railroad?**](#)

[**Grizzlies dig squirrel middens for grains**](#) [周三, 30 8月 22:34]

Grains have been reported to regularly trickle from hopper cars travelling via the railway through Canada's Banff and Yoho National Parks. As a result, the local red squirrels collect and bury the spilled seeds in their winter larders, which are sometimes discovered by hungry grizzly bears. Grain-conditioned bears may frequent the railway more often than usual, resulting in increased mortality by trains strikes.

• [**Wolf behavior undeterred by tailings ponds and pit mines**](#) [周三, 30 8月 22:34]

New research shows that predation rates of moose have increased near areas of high human disturbance, but low human activity, such as

tailings ponds and pit mines.

• [**Robot probes mystery of prehistoric sea creature's swimming style**](#) [周三, 30 8月 22:26]

A new study has shed light on the swimming style of plesiosaurs by creating a robot to mimic its movements.

• [**An unusual delivery service**](#) [周三, 30 8月 22:15]

Is it better to produce locally or to import? That can be a crucial question for simple lifeforms as well. Mitochondria, the power plants of the cell, have their own protein factories although the cell apparatus could easily do the job for them. A special species of eukaryotes even has all the transfer-RNA it needs for protein assembly promptly delivered. Researchers have now uncovered how this highly unusual import mechanism works in detail.

• [**An island getaway: Why some Listeria strains survive good food hygiene standards**](#) [周三, 30 8月 21:50]

Despite the high standards of cleanliness and hygiene in the food industry, bacteria such as *Listeria monocytogenes* can still be found in the food processing environment. In a new study, a team of researchers has now shown that certain *Listeria* strains – figuratively speaking – take refuge on an island. An “islet” of two genes located in one area of the genome increases the bacteria’s survival under alkaline and oxidative stress conditions. The researchers were able to identify the two genes as a...

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- [**Study reveals ways collegiate sports venues can achieve 'zero waste'**](#) [周五, 01 9月 02:13]

A new study analyzing waste and recyclables during Mizzou's 2014 home football season demonstrates that by implementing several recommendations the team developed, such as offering better recycling receptacles and better sorting options for waste, sporting venues could be well on their way to achieving environmental benefits that exceed the standards for 'zero-waste' operations.

- [**People become more economically conservative when angered**](#) [周四, 31 8月 23:30]

People tend to lean more economically conservative when they're angry, according to a new article. Researchers came to the conclusion after running multiple studies that included more than 1,000 participants.

- [**How reading and writing with your child boost more than just literacy**](#) [周四, 31 8月 22:21]

Children who read and write at home -- whether for assignments or just for fun -- are building long-term study and executive function skills, according to a new article

- [**Three policies to improve children's language development**](#) [周四, 31 8月 21:14]

Bilingual children from low-income homes are at greater risk of falling behind their peers in developing the appropriate language skills for their age group, leading to poorer academic achievement over time. A new

article addresses how inequality impacts children's language development and details policies that can intervene.

• [**Jordan faces likelihood of much more frequent long and severe droughts**](#) [周四, 31 8月 08:21]

Jordan is among the world's most water-poor nations, and a new, comprehensive analysis of regional drought and land-use changes in upstream Syria suggests the conditions could get significantly worse.

• [**Federal preemption of taxes on state and local sugar-sweetened beverages is not warranted**](#) [周四, 31 8月 00:49]

Federal and state government can alter or hinder state and local activity through a legal mechanism called preemption -- when a higher level of government blocks the action of a lower level of government. A new study evaluates whether it could be used to block taxes on sugar-sweetened beverages.

• [**Hope for improving protection of the reticulated python**](#) [周三, 30 8月 23:48]

Trading in skins of the reticulated python is such a lucrative business that illegal exports are rising sharply and existing trade restrictions are being circumvented on a large scale. This is endangering the stability of populations. Therefore, researchers are developing genetic methods for tracking down individual origins and potential trade routes of the skins.

• [**Researchers raise health concerns about off-road vehicles and inhalation of asbestos**](#) [周三, 30 8月 23:47]

Preventing injuries may not be the only reason children shouldn't use off-road vehicles (ORVs). In a new study, public health scientists raise concerns that people who use ORVs in many regions of the country may face exposure to hazardous mineral fibers.

• [**Is changing languages effortful for bilingual speakers? Depends on the situation**](#) [周三, 30 8月 22:37]

Research on the neurobiology of bilingualism has suggested that switching languages is inherently effortful, requiring executive control

to manage cognitive functions, but a new study shows this is only the case when speakers are prompted, or forced, to do so.

- [**Shifting school start times could contribute \\$83 billion to US economy within a decade**](#) [周三, 30 8月 22:36]

RAND Corporation and RAND Europe have released the first-ever analysis of the economic implications of a shift in school start times in the US. The study shows that a nationwide move to 8.30 a.m. could lead to an economic gain of \$83 billion to the US economy within a decade. The gains projected through the study's economic model would be realized through the higher academic and professional performance of students, and reduced car crash rates.

- [**Leaf sensors can tell farmers when crops need to be watered**](#) [周三, 30 8月 22:34]

Plant-based sensors that measure the thickness and electrical capacitance of leaves show great promise for telling farmers when to activate their irrigation systems, preventing both water waste and parched plants, according to researchers.

- [**Methane emissions tackled with gas-guzzling bacteria**](#) [周三, 30 8月 21:45]

Methane-oxidizing bacteria -- key organisms responsible for greenhouse gas mitigation -- are more flexible and resilient than previously thought, an international research has shown.

- [**Conservation hindered by geographical mismatches between capacity, need**](#) [周三, 30 8月 21:45]

Geographical mismatches between conservation needs and expertise may hinder global conservation goals, new research suggests.

- [**Shared custody equals less stress for children**](#) [周三, 30 8月 21:42]

Children who live full time with one parent are more likely to feel stressed than children in shared custody situations. The benefit holds regardless of the level of conflict between the parents or between parent and child.

- [**Brain stimulation for children with learning difficulties?**](#) [周三, 30 8月 00:47]

Applying a brain stimulation method, which was previously suggested to enhance mathematical learning in healthy adults, may improve the performance of children with mathematical learning difficulties, according to an exploratory study.

- [**Exclusion from school can trigger long-term psychiatric illness**](#) [周三, 30 8月 00:45]

Excluding children from school may lead to long-term psychiatric problems and psychological distress, a study of thousands of children has shown.

- [**Where's the line? Managing extreme speech on social media**](#) [周三, 30 8月 00:45]

A new study shows that while people tend to dislike extreme speech on social media, there is less support for outright censorship. Instead, people believe sites need to do a better job promoting healthy discourse online.

- [**Photosynthesis discovery could help design more efficient artificial solar cells**](#) [周三, 30 8月 00:44]

A natural process that occurs during photosynthesis could lead to the design of more efficient artificial solar cells, according to researchers.

- [**Scientists power past solar efficiency records**](#) [周二, 29 8月 23:39]

The high potential of silicon-based multijunction solar cells has now been demonstrated through new research.

- [**Mental health linked to retirement savings**](#) [周二, 29 8月 23:38]

The question of how mental health status affects decisions regarding retirement savings is becoming a pressing issue in the United States. Key factors contributing to this issue include the tenuous state of the Social Security system, greater use of defined-contribution pension plans by employers, longer lifespans, and the rise of depression and

other mental health issues in older Americans.

• [**Origins of autism: Abnormalities in sensory processing at six months**](#) [周二, 29 8月 23:38]

The origins of autism remain mysterious. What areas of the brain are involved, and when do the first signs appear? New findings brings us closer to understanding the pathology of autism, and the point at which it begins to take shape in the human brain. Such knowledge will allow earlier interventions in the future and better outcomes for autistic children.

• [**Analysis identifies where commercial customers might benefit from energy storage**](#) [周二, 29 8月 23:38]

Commercial electricity customers who are subject to high demand charges may be able to reduce overall costs by using battery energy storage to manage demand, according to research.

• [**Inattentive kids show worse grades in later life**](#) [周二, 29 8月 21:50]

Researchers found that inattentiveness in childhood was linked to worse academic performance up to 10 years later in children with and without ADHD, even when they accounted for the children's intellectual ability. The results highlight the long-term effects that childhood inattention can have on academic performance, and suggest that parents and teachers should address inattentiveness in childhood.

• [**Doping in sports: Official tests fail to pick up majority of cases**](#) [周二, 29 8月 21:09]

A new scientific study has found that doping is far more common in professional sport than the rates suggested by blood and urine tests of the athletes.

• [**Cutbacks in foreign aid for HIV treatment would produce great harm, generate few savings**](#) [周二, 29 8月 06:34]

Proposed reductions in US foreign aid would have a devastating impact on HIV treatment and prevention programs in countries receiving such aid, an international team of investigators reports.

- **[Dispersants improved air quality for responders at Deepwater Horizon](#)** [周二, 29 8月 04:41]

A recent study adds a new dimension to the controversial decision to inject large amounts of chemical dispersants immediately above the crippled oil well at the seafloor during the Deepwater Horizon disaster in 2010.

- **[Americans' risk of needing nursing home care is higher than previously estimated](#)** [周二, 29 8月 04:41]

One worry Americans face as they grow older is the possibility of needing nursing home care and paying for the associated costs. A new study finds that the average American's lifetime risk of using a nursing home is substantially greater than previously believed, but the financial costs will be affordable for most people.

- **[Self-identifying as disabled and developing pride in disability aid overall well-being](#)** [周二, 29 8月 04:41]

Experiencing stigma, the severity of a disability and a person's age and income level help determine whether someone with an impairment considers themselves to be a person with a disability, and experiencing stigma predicts whether those individuals will ultimately develop disability pride, new research shows.

- **[Romance and affection top most popular sexual behaviors](#)** [周二, 29 8月 02:07]

Researchers have published a new US nationally representative study of sexual behavior, the first of its kind to capture a wide range of diverse sexual behaviors not previously examined in the general population.

- **[Nanoparticles pollution rises 30 percent when flex-fuel cars switch from bio to fossil](#)** [周二, 29 8月 00:45]

Use of ethanol in vehicles reduces pollution by nanoparticles, a study shows. Levels of ultrafine particulate matter in São Paulo City, Brazil, increased by up to 30 percent at times when ethanol prices rose and consumption fell.

• [**Preventing overcrowding in emergency rooms**](#) [周二, 29 8月 00:45]

A new study identifies four key strategies to reduce overcrowding in emergency rooms. The study concludes that engaged executive leadership can alleviate the problem when combined with a data-driven approach and coordination across the hospital from housekeepers to the CEO. Crowding in emergency rooms has been associated with decreased patient satisfaction and even death.

• [**'Marrying up' is now easier for men, improves their economic well-being, study finds**](#) [周一, 28 8月 22:54]

As the number of highly educated women has increased in recent decades, the chances of 'marrying up' have increased significantly for men and decreased for women, according to a new study.

• [**Popularity outranks strategy in supply chain integration decisions**](#) [周一, 28 8月 22:27]

Conscious comparison and indirect copying increase the similarity of supply chain management practices of peer group companies, sometimes at the cost of quality and operating culture.

• [**Deforestation in Cambodia linked to higher risk of ill health in young children**](#) [周一, 28 8月 21:41]

New research findings suggest the importance of considering health impacts when assessing trade-offs in land use planning.

• [**Expectations for all-day schools are too high**](#) [周一, 28 8月 21:39]

Children in the German-speaking part of Switzerland who utilize extended education offerings in the first two years of primary school generally perform no better in school than other children, an project has found. Overall, the research shows that all-day schools do not fulfil all the expectations people place in them.

• [**After Hurricane Katrina, personal debt fell for those worst hit, but at a cost**](#) [周一, 28 8月 21:37]

After Hurricane Katrina devastated New Orleans a dozen years ago,

there was a sharp and immediate drop in personal debt among residents living in city's most flooded blocks, according to a new study.

Researchers predicted when cholera epidemic in Yemen would peak [周五, 25 8月 21:11]

Scientists have developed a new mathematical model which accurately forecast that a devastating cholera epidemic in Yemen would peak by early July, the 26th week of 2017 and the cumulative incidence would be the order of 700-800 thousand cases.

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [**First hints of possible water content on TRAPPIST-1 planets**](#) [周四, 31 8月 23:30]

Astronomers have been trying to determine whether there might be water on the seven Earth-sized planets orbiting the nearby dwarf star TRAPPIST-1. The results suggest that the outer planets of the system might still harbor substantial amounts of water. This includes the three planets within the habitable zone of the star, lending further weight to the possibility that they may indeed be habitable.

- [**How Neanderthals made the very first glue**](#) [周四, 31 8月 21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

- [**How certain ants snap their jaws shut in the blink of an eye**](#) [周四, 31 8月 08:21]

Few victims stand a chance against the formidable mandibles of a trap-jaw ant. In conflicts between predators and prey, speed is a decided advantage, and evolution has given these insects an edge with spring-loaded jaws that snap shut with astonishing speed. Biologists have now provided the first mechanical description of the jaws of a little-known group of trap-jaw ants.

- [**Gold nanoparticles fry cancer on glowing mice**](#) [周四, 31 8月 08:21]

A new study takes a new approach to killing cancer: Why not fry it into oblivion with vibrating gold nanoparticles?

. [**Motorized molecules drill through cells**](#) [周四, 31 8月 01:22]

Motorized molecules that target diseased cells may deliver drugs to or kill the cells by drilling into the cell membranes. Scientists have demonstrated them on cancer and other cells.

. [**Acting like a muscle, nano-sized device lifts 165 times its own weight**](#) [周四, 31 8月 01:22]

Engineers have discovered a simple, economical way to make a nano-sized device that can match the friendly neighborhood Avenger, on a much smaller scale. Their creation weighs 1.6 milligrams (about as much as five poppy seeds) and can lift 265 milligrams (the weight of about 825 poppy seeds) hundreds of times in a row.

. [**Otters learn by copying each other**](#) [周四, 31 8月 01:11]

Otters can learn how to solve puzzles by watching and copying each other, new research shows.

. [**What lit up the universe? Black holes may have punctured darkened galaxies, allowing light to escape**](#) [周三, 30 8月 23:48]

Researchers have a new explanation for how the universe changed from darkness to light. They propose that black holes within galaxies produce winds strong enough to fling out matter that punctures holes in galaxies, allowing light to escape.

. [**Understanding ancient geometric earthworks in southwestern Amazonia**](#) [周三, 30 8月 22:34]

Researchers examine pre-colonial geometric earthworks in the southwestern Amazonia from the point of view of indigenous peoples and archaeology. The study shows that the earthworks were once important ritual communication spaces.

. [**Do squirrels teach bears to cross the railroad? Grizzlies dig squirrel middens for grains**](#) [周三, 30 8月 22:34]

Grains have been reported to regularly trickle from hopper cars travelling via the railway through Canada's Banff and Yoho National

Parks. As a result, the local red squirrels collect and bury the spilled seeds in their winter larders, which are sometimes discovered by hungry grizzly bears. Grain-conditioned bears may frequent the railway more often than usual, resulting in increased mortality by trains strikes.

• [**New robot rolls with the rules of pedestrian conduct**](#) [周三, 30 8月 22:34]

Engineers have designed an autonomous robot with 'socially aware navigation,' that can keep pace with foot traffic while observing these general codes of pedestrian conduct.

• [**Robot probes mystery of prehistoric sea creature's swimming style**](#) [周三, 30 8月 22:26]

A new study has shed light on the swimming style of plesiosaurs by creating a robot to mimic its movements.

• [**Fossil whales' teeth shows what ferocious predators they were**](#) [周三, 30 8月 21:45]

The feeding habits of the whale -- the world's biggest animal -- have evolved to filter feeding, shows new international research. Ancient whales appear to have been ferocious predators, investigators explain.

• [**Why does rubbing a balloon on your hair make it stick?**](#) [周三, 30 8月 01:53]

New research indicates that tiny holes and cracks in a material -- changes in the microstructure -- can control how the material becomes electrically charged through friction.

• [**High-tech electronics made from autumn leaves**](#) [周二, 29 8月 23:38]

Northern China's roadsides are peppered with deciduous phoenix trees, producing an abundance of fallen leaves in autumn. These leaves are generally burned in the colder season, exacerbating the country's air pollution problem. Investigators in Shandong, China, recently discovered a new method to convert this organic waste matter into a porous carbon material that can be used to produce high-tech electronics.

• [**Galaxy 5 billion light-years away shows we live in a magnetic universe**](#) [周二, 29 8月 00:45]

A chance combination of a gravitational lens and polarized waves coming from a distant quasar gave astronomers the tool needed to make a measurement important to understanding the origin of magnetic fields in galaxies.

• [**New ancient sea reptile found in Germany, the earliest of its kind**](#) [周一, 28 8月 21:39]

A previously unrecognized 132 million-year-old fossilized sea monster from northern Germany has been identified.

• [**Largest Ichthyosaurus was pregnant mother**](#) [周一, 28 8月 21:37]

Scientists have discovered the largest Ichthyosaurus on record and found it was pregnant at the time of death.

• [**Microbes compete for nutrients, affect metabolism, development in mice**](#) [周六, 26 8月 04:39]

If our microbiome overindulges, we might not have access to the nutrients we need. That's the suggestion from new research that shows mice that harbor high levels of microbes that eat choline are deprived of this essential nutrient.

• [**Given the choice, zebrafish willingly dose themselves with opioids**](#) [周六, 26 8月 02:06]

Researchers devised a system that allowed zebrafish to self-administer doses of hydrocodone, an opioid commonly prescribed to people for pain, to study drug dependency behavior.

• [**Drones relay RFID signals for inventory control**](#) [周五, 25 8月 23:28]

Researchers have developed a system that enables small, safe, aerial drones to read RFID tags from tens of meters away while identifying the tags' locations. The system could be used in large warehouses to prevent inventory mismatches and locate individual items.

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周六, 02 9月 2017

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- [**Intellectual disabilities caused by protein defect**](#)

[周五, 01 9月 23:36]

Intellectual disabilities are often caused by a mutation that damages a gene, preventing the associated protein from functioning properly. However, a mutation can also change the function of a gene. As a result, the gene in question acts in a completely different way. Researchers discovered this mechanism in fifteen genes playing a role in the development of intellectual disabilities. Their research results show that these changes in function play a more prominent role than previously thought.

- [**Reusable ruthenium-based catalyst could be a game-changer for the biomass industry**](#)

[周五, 01 9月 22:46]

Researchers have developed a highly efficient reusable catalyst for the production of primary amines. By cutting the amount of undesired by-products, the catalyst is set to revolutionize the production of bio-based fuels, pharmaceuticals, agricultural chemicals and more.

- [**Bit data goes anti-skyrmions**](#)

[周五, 01 9月 22:46]

Scientists have discovered a new kind of magnetic nano-object in a novel material that could serve as a magnetic bit with cloaking properties to make a magnetic disk drive with no moving parts -- a Racetrack Memory -- a reality in the near future.

- [**Etosis phenomenon discovered in human blood monocytes**](#) [周五, 01 9月 22:46]

The first clear demonstration of etosis in human blood monocytes, a type of immune cell, has now been discovered by scientists.

- [**Can corals survive climate change?**](#) [周五, 01 9月 21:39]

Scientists have issued advice that more research is urgently required to determine whether corals can acclimate and adapt to the rapid pace of climate change.

- [**Molecules move faster near sticky surfaces**](#) [周五, 01 9月 21:39]

Molecules move faster as they get closer to adhesive surfaces, but this effect is not permanent.

- [**Equatorial jet in Venusian atmosphere**](#) [周五, 01 9月 21:38]

Observations by Japan's Venus climate orbiter Akatsuki have revealed an equatorial jet in the lower to middle cloud layer of the planet's atmosphere, a finding that could be pivotal to unraveling a phenomenon called superrotation.

- [**Asthma medicine halves risk of Parkinson's**](#) [周五, 01 9月 06:03]

Using data gathered from 100 million Norwegian prescriptions, researchers have found that asthma medicine can halve a patient's risk of developing Parkinson's disease.

- [**Discovery may be key to obesity, Diabetes Rx**](#) [周五, 01 9月 03:12]

Research has demonstrated the potential of a protein to treat or prevent metabolic diseases including obesity and diabetes.

- [**Measuring the cost of quality measurement**](#) [周五, 01 9月 03:12]

Less than 2 decades after publication of the National Academy of Medicine's (formerly the Institute of Medicine) Crossing the Quality Chasm: A New Health System for the 21st Century, quality measurement has become routine and widespread throughout the US health care system.

• [**Study reveals ways collegiate sports venues can achieve 'zero waste'**](#) [周五, 01 9月 02:13]

A new study analyzing waste and recyclables during Mizzou's 2014 home football season demonstrates that by implementing several recommendations the team developed, such as offering better recycling receptacles and better sorting options for waste, sporting venues could be well on their way to achieving environmental benefits that exceed the standards for 'zero-waste' operations.

• [**New source for brain's development discovered**](#) [周五, 01 9月 02:13]

An unexpected source for the brain's development has been discovered by researchers, a finding that offers new insights into the building of the nervous system.

• [**Drugs targeting the beta2-adrenoreceptor linked to Parkinson's disease**](#) [周五, 01 9月 02:12]

Researchers want to prevent alpha-synuclein from accumulating in the brain. To do so, the team searched for drugs that turn down alpha-synuclein production. They then tested the drugs in mice and stem cells and studied in data from the health records of millions of people living in Norway. The results of their efforts, point to a new drug development path for PD.

• [**Reconstructing life at its beginning, cell by cell**](#) [周五, 01 9月 02:12]

In a technological tour de force, scientists have created a virtual model of an early fly embryo. Its interactive interface allows researchers to explore the blueprint that underlies development at unprecedented spatial resolution and predict which cells express which genes.

• [**Cross-kingdom regulation of honeybee caste development by dietary plant miRNAs**](#) [周五, 01 9月 02:05]

Honeybee larvae develop into workers but not queens, in part, because their diet of beebread/pollen is enriched in plant miRNAs. While miRNAs are generally negative regulators of gene expression in eukaryotes, they also negatively regulate larval development when

honeybee larvae consume beebread/pollen and take up plant miRNAs.

• [**Pinpointing the sources of trans-pacific dust**](#) [周五, 01 9月 02:05]

Airborne dust from Asia travels across the Pacific passport-free, carrying pollution, building soil, and coloring sunsets thousands of miles from its source. Identifying that source is important for understanding atmospheric circulation, contaminant pathways, and climate. But collecting enough airborne dust to pinpoint its source is challenging. Now, a team of researchers has developed a way to match microscopic quartz grains to the desert they blew in from.

• [**Protein transport channel offers new target for thwarting pathogen**](#) [周五, 01 9月 01:42]

A bacterium that attacks people suffering from chronic lung disease and compromised immune systems could be halted by disrupting the distribution channels the organism uses to access the nutrient-rich cytoplasm of its host cell.

• [**New findings on brain functional connectivity may lend insights into mental disorders**](#) [周五, 01 9月 01:13]

Ongoing advances in understanding the functional connections within the brain are producing exciting insights into how the brain circuits function together to support human behavior — and may lead to new discoveries in the development and treatment of psychiatric disorders, according to a review.

• [**Human bones in south Mexico: Stalagmite reveals their age as 13,000 years old**](#) [周五, 01 9月 01:12]

A prehistoric human skeleton found on the Yucatán Peninsula is at least 13,000 years old and most likely dates from a glacial period at the end of the most recent ice age, the late Pleistocene. A German-Mexican team of researchers has now dated the fossil skeleton based on a stalagmite that grew on the hip bone.

• [**Chemo-boosting drug discovered for leukemia**](#) [周五, 01 9月 00:30]

Drugs developed to treat heart and blood vessel problems could be used

in combination with chemotherapy to treat an aggressive form of adult leukemia, new research reveals.

- [**Scents and social preference: Neuroscientists ID the roots of attraction**](#) [周五, 01 9月 00:30]

Culminating a series of studies stretching back eight years, biologists have identified the cellular and molecular basis for social preference, known in the animal kingdom as 'imprinting.' Through in vivo experiments, the researchers found the neurological roots of kinship attraction and aversion. They also employed genetics screening to find the regulators controlling this behavior. The study carries implications for understanding social attraction and aversion in a range of animals and humans.

- [**What changes when you warm the Antarctic Ocean just 1 degree? Lots**](#) [周五, 01 9月 00:30]

After warming a natural seabed in the Antarctic Ocean by just 1° or 2° Celsius, researchers observed massive impacts on a marine assemblage, as growth rates nearly doubled. The findings of what the researchers call the 'most realistic ocean warming experiment to date' show that the effects of future warming may far exceed expectations.

- [**Bacterial protein acts as aphrodisiac for choanoflagellates**](#) [周五, 01 9月 00:30]

Researchers investigating how single-celled organisms evolved to become multicellular stumbled across a strange phenomenon during their experiments: Single-celled eukaryotes called choanoflagellates, which are the closest living relatives to animals, begin to sexually reproduce in response to a protein produced by bacteria. Why this happens in natural settings is still unclear, though they speculate that it could help the choanoflagellates easily mate with others from the same species.

- [**Songbird study shows how estrogen may stop infection-induced brain inflammation**](#) [周四, 31 8月 23:30]

Estrogen synthesis, a process naturally occurring in the brains of zebra

finches, may also fight off neuroinflammation caused by infection that occurs elsewhere in the body, new research indicates.

- [**People become more economically conservative when angered**](#) [周四, 31 8月 23:30]

People tend to lean more economically conservative when they're angry, according to a new article. Researchers came to the conclusion after running multiple studies that included more than 1,000 participants.

- [**How reading and writing with your child boost more than just literacy**](#) [周四, 31 8月 22:21]

Children who read and write at home -- whether for assignments or just for fun -- are building long-term study and executive function skills, according to a new article

- [**Why are coyote populations difficult to control?**](#) [周四, 31 8月 22:15]

Conventional wisdom suggests that coyote control efforts actually result in an increase in the number of coyotes due to increasing litter sizes and pregnancy rates among individuals that survive.

- [**Antidepressants found in fish brains in Great Lakes region**](#) [周四, 31 8月 22:14]

Human antidepressants are building up in the brains of bass, walleye and several other fish common to the Great Lakes region, scientists say.

- [**Untreated sleep apnea shown to raise metabolic and cardiovascular stress**](#) [周四, 31 8月 22:14]

Sleep apnea, left untreated for even a few days, can increase blood sugar and fat levels, stress hormones and blood pressure, according to a new study of sleeping subjects. This research adds further support for the consistent use of continuous positive airway pressure, a machine that increases air pressure in the throat to keep the airway open during sleep.

Intellectual disabilities caused by protein defect -- ScienceDaily

Intellectual disabilities are often caused by a mutation that damages a gene, preventing the associated protein from functioning properly. However, a mutation can also change the function of a gene. As a result, the gene in question acts in a completely different way. Researchers from Radboudumc discovered this mechanism in fifteen genes playing a role in the development of intellectual disabilities. Their research results published in the *American Journal of Human Genetics* on 31 August 2017 show that these changes in function play a more prominent role than previously thought.

Genes are responsible for protein production in cells. A common cause of intellectual disabilities is a de novo mutation (i.e. a mutation present in a child, but not in its parents) damaging a gene so severely that it is no longer able to produce functional proteins. The resulting protein defect will cause illness. In a number of disease-related genes, it is shown that a de novo

mutation does not eliminate the gene, but probably alters its function. These mutations are only located on specific parts of the gene.

Change in function

In order to find out how often this mechanism is involved, researchers from Radboudumc have combined the gene mutations in Dutch patients with a large international database comprising de novo mutations in patients. This research project was led by geneticist Christian Gilissen. "With our method, we were able to detect genes in which mutations not so much eliminate as affect the gene in another way. We found fifteen genes in which mutations cluster closely together, twelve of which being associated with developmental disorders. We also found three new genes that are likely to play a role in the development of intellectual disabilities as well," according to Gilissen.

Interactions

The de novo mutations that were found only change a very small part of a protein. The function of the protein remains largely, but not entirely the same. Gilissen

says: "The mutations are more likely to affect superficial parts of the proteins. These disturb interactions with other proteins and cause problems. Although mutations eliminating genes were often thought to be the main cause of intellectual disabilities, mutations altering the function of genes are now shown to be an important factor as well. That is a surprising finding."

Clustering mutations

Why are the de novo mutations that were found specifically clustered? Gilissen says: "There can be several explanations for that. Firstly, these genes show little natural variation. If such a gene is completely eliminated, a person may not be born. Only mutations located on very specific parts of the gene are viable. Consequently, only these mutations can be found. Another explanation can be that the mutations provide growth benefits to the sperm in which they develop. In that case, only these mutations would be able to survive."

New possibilities

The three newly-discovered genes playing a role in the

development of intellectual disabilities provide new diagnostic possibilities for patients. Gillissen says: "It is important that we have discovered a mechanism that has not yet been a focus of study. We expect this mechanism to play a role in a much larger proportion of patients with intellectual disabilities."

Story Source:

[Materials](#) provided by **[Radboud University Nijmegen Medical Centre](#)**. *Note: Content may be edited for style and length.*

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Reusable ruthenium-based catalyst could be a game-changer for the biomass industry -- ScienceDaily

Known for their outstanding versatility, primary amines (derivatives of ammonia) are industrially important compounds used in the preparation of a wide range of dyes, detergents and medicines. Although many attempts have been made to improve their synthesis using catalysts containing nickel, palladium and platinum, for example, few have succeeded in reducing the formation of secondary and tertiary amines and other undesired by-products.

Now, researchers at Tokyo Institute of Technology (Tokyo Tech) have developed a highly selective catalyst consisting of ruthenium nanoparticles supported on niobium pentoxide ($\text{Ru/Nb}_2\text{O}_5$). In a study published in the *Journal of the American Chemical Society*, the team demonstrated that $\text{Ru/Nb}_2\text{O}_5$ is capable of producing primary amines from carbonyl compounds with ammonia (NH_3) and dihydrogen (H_2), with negligible formation of by-

products.

The study compared the extent to which different catalysts could convert furfural to furfurylamine in a process known as reductive amination¹. This reaction is one of the most useful methods for producing primary amines on an industrial scale. The Ru/Nb₂O₅ catalyst outperformed all other types tested -- remarkably, a yield of 99% was attained when ammonia was used in excess quantity.

Even after three recycles, the Ru/Nb₂O₅ catalyst achieved consistent results, with consecutive yields of over 90%. The superior catalytic efficiency is thought to be due to ruthenium's weak electron-donating properties on the Nb₂O₅ surface.

Michikazu Hara of Tokyo Tech's Laboratory for Materials and Structures and his co-workers then explored how effectively the new catalyst could break down biomass (in the form of glucose) into 2,5-bis(aminomethyl)furan, a monomer for aramid production. Previous experiments using a nickel-based catalyst led to a yield of around 50% from glucose-derived feedstock (5-hydroxymethylfurfural). The new catalyst used in combination with a so-called

ruthenium-xantphos complex produced a yield of 93%. With little to no by-products observed, Ru/Nb₂O₅ represents a major breakthrough in the clean, large-scale production of biomass-derived materials.

Further studies to expand on these initial findings are already underway. By pushing the boundaries of material design, the researchers say that Ru/Nb₂O₅ may accelerate the production of environmentally friendly plastics, rubber and heat-resistant aramid fibers². In future, the Ru/Nb₂O₅ catalyst may also impact the development of novel anti-cancer drugs, anti-bacterials, pesticides, agrochemicals, fertilizers, bio-oils and biofuels.

Story Source:

Materials provided by [Tokyo Institute of Technology](#).

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Bit data goes anti-skyrmions -- ScienceDaily

Today's world, rapidly changing because of "big data," is encapsulated in trillions of tiny magnetic objects -- magnetic bits -- each of which stores one bit of data in magnetic disk drives. A group of scientists from the Max Planck Institutes in Halle and Dresden have discovered a new kind of magnetic nano-object in a novel material that could serve as a magnetic bit with cloaking properties to make a magnetic disk drive with no moving parts -- a Racetrack Memory -- a reality in the near future.

Most digital data is stored in the cloud as magnetic bits within massive numbers of magnetic disk drives. Over the past several decades these magnetic bits have shrunk by many orders of magnitude, reaching limits where the boundaries of these magnetic regions can have special properties. In some special materials these boundaries -- "magnetic domain walls" -- can be described as being topological. What this means is that these walls can be thought of as having a special

magical cloak -- what is referred to by scientists as "topological protection." An important consequence is that such magnetic walls are more stable to perturbations than similar magnetic bits without topological protection that are formed in conventional magnetic materials. Thus, these "topological" magnetic objects could be especially useful for storing "1"s and "0"s, the basic elements of digital data.

One such object is a "magnetic skyrmion" which is a tiny magnetic region, perhaps tens to hundreds of atoms wide, separated from a surrounding magnetic region by a chiral domain wall. Until recently only one type of skyrmion has been found in which it is surrounded by a chiral domain wall that takes the same form in all directions. But there have been predictions of several other types of skyrmions that were not yet observed. Now in a paper published in *Nature*, scientists from Prof. Stuart Parkin's NISE department at the Max Planck Institute for Microstructure Physics in Halle, Germany, have found a second class of skyrmions, what are called "anti-skyrmions," in materials synthesized in Prof. Claudia Felser's Solid State Chemistry Department at the Max Planck Institute for CPFS, Dresden, Germany.

The scientists from Halle and Dresden have found these tiny magnetic objects in a special class of versatile magnetic compounds called Heusler compounds that Claudia Felser and her colleagues have explored extensively over the past 20 years. Of these Heusler compounds, a tiny subset have just the right crystal symmetry to allow for the possibility of forming anti-skyrmions but not skyrmions. Using a highly sensitive transmission electron microscope at the Max Planck Institute for Microstructure Physics, Halle, that was specially modified to allow for the detection of tiny magnetic moments, anti-skyrmions were created and detected over a wide range of temperatures and magnetic fields. Most importantly, anti-skyrmions, both in ordered arrays and as isolated objects, could be seen even at room temperature and in zero magnetic fields.

The special cloaking properties of skyrmions makes them of great interest for a radically new form of solid-state memory -- the Racetrack Memory -- that was proposed by Stuart Parkin a decade ago. In Racetrack Memory digital data is encoded within magnetic domain walls that are packed closely within nanoscopic magnetic wires. One of the unique features of Racetrack Memory, which is distinct from all other

memories, is that the walls are moved around the nanowires themselves using recent discoveries in spin-orbitronics. Very short pulses of current move all the domain walls backwards and forwards along the nanowires. The walls -- the magnetic bits -- can be read and written by devices incorporated directly into the nanowires themselves, thereby eliminating any mechanical parts. Topologically protected magnetic walls are very promising for Racetrack Memory.

Thus, anti-skyrmions could be coming to Racetrack Memory soon! Going even beyond anti-skyrmions the next goal is the realization of a third class of skyrmions -- antiferromagnetic skyrmions -- which are tiny magnetic objects that actually have no net magnetic moment. They are magnetically almost invisible but have unique properties that make them of great interest.

Story Source:

[Materials](#) provided by [Max Planck Institute for Chemical Physics of Solids](#). *Note: Content may be edited for style and length.*

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- [Equatorial jet in Venusian atmosphere](#) [周五, 01 9月 21:38]

Observations by Japan's Venus climate orbiter Akatsuki have revealed an equatorial jet in the lower to middle cloud layer of the planet's atmosphere, a finding that could be pivotal to unraveling a phenomenon called superrotation.

- [Mouth clicks used in human echolocation captured in unprecedented detail](#) [周五, 01 9月 02:13]

Like some bats and marine mammals, people can develop expert echolocation skills, in which they produce a clicking sound with their mouths and listen to the reflected sound waves to 'see' their surroundings. A new study provides the first in-depth analysis of the mouth clicks used in human echolocation.

- [Reconstructing life at its beginning, cell by cell](#) [周五, 01 9月 02:12]

In a technological tour de force, scientists have created a virtual model of an early fly embryo. Its interactive interface allows researchers to explore the blueprint that underlies development at unprecedented spatial resolution and predict which cells express which genes.

- [Fossil footprints challenge established theories of human evolution](#) [周五, 01 9月 01:42]

Newly discovered human-like footprints from Crete may put the established narrative of early human evolution to the test. The footprints are approximately 5.7 million years old and were made at a time when previous research puts our ancestors in Africa -- with ape-like feet.

- [Human bones in south Mexico: Stalagmite](#)

reveals their age as 13,000 years old [周五, 01 9月 01:12]

A prehistoric human skeleton found on the Yucatán Peninsula is at least 13,000 years old and most likely dates from a glacial period at the end of the most recent ice age, the late Pleistocene. A German-Mexican team of researchers has now dated the fossil skeleton based on a stalagmite that grew on the hip bone.

Yawning: Why is it so contagious and why should it matter? [周五, 01 9月 00:30]

Feeling tired? Even if we aren't tired, why do we yawn if someone else does? Experts have published research that suggests the human propensity for contagious yawning is triggered automatically by primitive reflexes in the primary motor cortex -- an area of the brain responsible for motor function. Their study is another stage in their research into the underlying biology of neuropsychiatric disorders and their search for new methods of treatment.

Scents and social preference: Neuroscientists ID the roots of attraction [周五, 01 9月 00:30]

Culminating a series of studies stretching back eight years, biologists have identified the cellular and molecular basis for social preference, known in the animal kingdom as 'imprinting.' Through in vivo experiments, the researchers found the neurological roots of kinship attraction and aversion. They also employed genetics screening to find the regulators controlling this behavior. The study carries implications for understanding social attraction and aversion in a range of animals and humans.

What changes when you warm the Antarctic Ocean just 1 degree? Lots [周五, 01 9月 00:30]

After warming a natural seabed in the Antarctic Ocean by just 1° or 2° Celsius, researchers observed massive impacts on a marine assemblage, as growth rates nearly doubled. The findings of what the researchers call the 'most realistic ocean warming experiment to date' show that the effects of future warming may far exceed expectations.

- [**First hints of possible water content on TRAPPIST-1 planets**](#) [周四, 31 8月 23:30]

Astronomers have been trying to determine whether there might be water on the seven Earth-sized planets orbiting the nearby dwarf star TRAPPIST-1. The results suggest that the outer planets of the system might still harbor substantial amounts of water. This includes the three planets within the habitable zone of the star, lending further weight to the possibility that they may indeed be habitable.

- [**How Neanderthals made the very first glue**](#) [周四, 31 8月 21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

- [**Apes' abilities misunderstood by decades of poor science**](#) [周四, 31 8月 21:14]

Hundreds of scientific studies over two decades have told us that apes are clever -- just not as clever as us. New analysis argues that what we think we know about apes' social intelligence is based on wishful thinking and flawed science.

- [**Robot learns to follow orders like Alexa**](#) [周四, 31 8月 21:14]

Computer scientists have developed an Alexa-like system that allows robots to understand a wide range of commands that require contextual knowledge about objects and their environments. They've dubbed the system 'ComText,' for 'commands in context.'

- [**How certain ants snap their jaws shut in the blink of an eye**](#) [周四, 31 8月 08:21]

Few victims stand a chance against the formidable mandibles of a trap-jaw ant. In conflicts between predators and prey, speed is a decided advantage, and evolution has given these insects an edge with spring-loaded jaws that snap shut with astonishing speed. Biologists have now provided the first mechanical description of the jaws of a little-known group of trap-jaw ants.

- [**Star-formation ‘fuel tanks’ found around distant galaxies**](#) [周四, 31 8月 05:25]

Astronomers have studied six distant starburst galaxies and discovered that five of them are surrounded by turbulent reservoirs of hydrogen gas, the fuel for future star formation.

- [**Toward a smart graphene membrane to desalinate water**](#) [周四, 31 8月 05:23]

A simple, sturdy graphene-based hybrid desalination membrane can provide clean water for agriculture and possibly human consumption.

- [**Protecting the guardians**](#) [周四, 31 8月 03:55]

A guardian gene that protects against type 1 diabetes and other autoimmune diseases exerts its pancreas-shielding effects by altering the gut microbiota. Experiments in mice born with the protective gene show that exposure to antibiotics during critical windows of development fuels risk for type 1 diabetes and leads to loss of genetic protection by altering the gut microbiota. Scientists say the findings underscore the importance of avoiding antibiotic use during late pregnancy and early infancy.

- [**Gut bacteria that 'talk' to human cells may lead to new treatments**](#) [周四, 31 8月 02:12]

Scientists developed a method to genetically engineer gut bacteria to produce molecules that have the potential to treat certain disorders by altering human metabolism.

- [**Scientists recover nova first spotted 600 years ago by Korean astrologers**](#) [周四, 31 8月 01:22]

A new study pinpoints the location of a nova first spotted by Korean astrologers almost 600 years ago that now undergoes smaller-scale 'dwarf nova' eruptions. The work supports that idea that novae go through a very long-term life cycle after erupting, fading to obscurity for thousands of years, and then building back up to become full-fledged novae once more.

• [**Monkeys with Parkinson's disease benefit from human stem cells**](#) [周四, 31 8月 01:22]

Japanese neurosurgeons report two new strategies to improve outcomes of iPS cell-based therapies for Parkinson's disease in monkey brains. The findings are a key step for patient recruitment of the first iPS cell-based therapy to treat neurodegenerative diseases.

• [**Motorized molecules drill through cells**](#) [周四, 31 8月 01:22]

Motorized molecules that target diseased cells may deliver drugs to or kill the cells by drilling into the cell membranes. Scientists have demonstrated them on cancer and other cells.

• [**Volcanic eruptions drove ancient global warming event**](#) [周四, 31 8月 01:22]

A natural global warming event that took place 56 million years ago was triggered almost entirely by volcanic eruptions that occurred as Greenland separated from Europe during the opening of the North Atlantic Ocean, according to new research.

• [**Acting like a muscle, nano-sized device lifts 165 times its own weight**](#) [周四, 31 8月 01:22]

Engineers have discovered a simple, economical way to make a nano-sized device that can match the friendly neighborhood Avenger, on a much smaller scale. Their creation weighs 1.6 milligrams (about as much as five poppy seeds) and can lift 265 milligrams (the weight of about 825 poppy seeds) hundreds of times in a row.

• [**Otters learn by copying each other**](#) [周四, 31 8月 01:11]

Otters can learn how to solve puzzles by watching and copying each other, new research shows.

• [**What lit up the universe? Black holes may have punctured darkened galaxies, allowing light to escape**](#) [周三, 30 8月 23:48]

Researchers have a new explanation for how the universe changed from darkness to light. They propose that black holes within galaxies produce

winds strong enough to fling out matter that punctures holes in galaxies, allowing light to escape.

- [**Shifting school start times could contribute \\$83 billion to US economy within a decade**](#) [周三, 30 8月 22:36]

RAND Corporation and RAND Europe have released the first-ever analysis of the economic implications of a shift in school start times in the US. The study shows that a nationwide move to 8.30 a.m. could lead to an economic gain of \$83 billion to the US economy within a decade. The gains projected through the study's economic model would be realized through the higher academic and professional performance of students, and reduced car crash rates.

- [**Understanding ancient geometric earthworks in southwestern Amazonia**](#) [周三, 30 8月 22:34]

Researchers examine pre-colonial geometric earthworks in the southwestern Amazonia from the point of view of indigenous peoples and archaeology. The study shows that the earthworks were once important ritual communication spaces.

- [**New robot rolls with the rules of pedestrian conduct**](#) [周三, 30 8月 22:34]

Engineers have designed an autonomous robot with 'socially aware navigation,' that can keep pace with foot traffic while observing these general codes of pedestrian conduct.

- [**Robot probes mystery of prehistoric sea creature's swimming style**](#) [周三, 30 8月 22:26]

A new study has shed light on the swimming style of plesiosaurs by creating a robot to mimic its movements.

- [**Methane emissions tackled with gas-guzzling bacteria**](#) [周三, 30 8月 21:45]

Methane-oxidizing bacteria -- key organisms responsible for greenhouse gas mitigation -- are more flexible and resilient than previously thought, an international research has shown.

• [**Why does rubbing a balloon on your hair make it stick?**](#) [周三, 30 8月 01:53]

New research indicates that tiny holes and cracks in a material -- changes in the microstructure -- can control how the material becomes electrically charged through friction.

• [**Woolly rhino neck ribs provide clues about their decline and eventual extinction**](#) [周二, 29 8月 21:10]

A study reports on the incidence of abnormal cervical (neck) vertebrae in woolly rhinos, which strongly suggests a vulnerable condition in the species. Given the considerable birth defects that are associated with this condition, the researchers argue it is very possible that developmental abnormalities contributed towards the eventual extinction of these late Pleistocene rhinos.

• [**An alternative to wolf control to save endangered caribou**](#) [周二, 29 8月 21:10]

The iconic woodland caribou across North America face increasing predation pressures from wolves. A short-term solution to caribou conservation would be to kill wolves. But a new government policy looks at reducing the invasive species moose numbers propping up the wolf population. Researchers have now evaluated the effects of this policy on the caribou population.

• [**Moderate consumption of fats, carbohydrates best for health, international study shows**](#) [周二, 29 8月 21:10]

A diet that includes a moderate intake of fat and fruits and vegetables, and avoidance of high carbohydrates, is associated with lower risk of death, research with more than 135,000 people across five continents has shown.

• [**Complete remission of brain metastasis of difficult-to-treat tumor**](#) [周二, 29 8月 02:07]

Medical researchers report a remarkable treatment response in a patient participating in a clinical trial of a novel immune-system-based cancer

therapy.

• [**Algae fortifies coral reefs in past and present**](#) [周二, 29 8月 02:07]

The Great Barrier Reef, and most other large reefs around the world, owe their bulk in large part to a type of red algae that grows on corals and strengthens them. New research has found that ancient coral reefs were also bolstered by their bond with red algae, a finding that could help scientists better understand how reefs will respond to climate change.

• [**Galaxy 5 billion light-years away shows we live in a magnetic universe**](#) [周二, 29 8月 00:45]

A chance combination of a gravitational lens and polarized waves coming from a distant quasar gave astronomers the tool needed to make a measurement important to understanding the origin of magnetic fields in galaxies.

• [**Keeping pandas off endangered list ledge**](#) [周一, 28 8月 22:54]

Things aren't all black and white for giant pandas. The beloved Chinese icons have basked in good press lately -- their extinction risk status downgraded from 'endangered' to 'vulnerable,' their good fortunes have shown to rub off on their less charismatic forest neighbors that benefit from panda-centric conservation efforts.

• [**Eating triggers endorphin release in the brain**](#) [周一, 28 8月 22:27]

Researchers have revealed how eating stimulates brain's endogenous opioid system to signal pleasure and satiety.

• [**Oil and gas wells as a strong source of greenhouse gases**](#) [周一, 28 8月 22:27]

Boreholes in the North Sea could constitute a significantly more important source of methane, a strong greenhouse gas, than previously thought. Large amounts of methane are released from the sediments surrounding boreholes, probably over long periods of time.

• [**New ancient sea reptile found in Germany, the**](#)

earliest of its kind [周一, 28 8月 21:39]

A previously unrecognized 132 million-year-old fossilized sea monster from northern Germany has been identified.

Statins linked to lower rates of breast cancer and mortality [周一, 28 8月 21:38]

A 14 year study in more than one million people has found that women with high cholesterol have significantly lower rates of breast cancer and improved mortality. The research suggests that statins are associated with lower rates of breast cancer and subsequent mortality.

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

- [**Cognitive fatigue after TBI linked with activation of caudate**](#) [周六, 02 9月 00:51]

Researchers have further elucidated the mechanisms for cognitive fatigue, a disabling symptom that affects many individuals after traumatic brain injury (TBI).

- [**Drug may curb female infertility from cancer treatments**](#) [周六, 02 9月 00:51]

An existing drug may one day protect premenopausal women from life-altering infertility that commonly follows cancer treatments, according to a new study.

- [**Etosis phenomenon discovered in human blood monocytes**](#) [周五, 01 9月 22:46]

The first clear demonstration of etosis in human blood monocytes, a type of immune cell, has now been discovered by scientists.

- [**Lifestyle factors may affect how long individuals live free of disability**](#) [周五, 01 9月 22:46]

New research indicates that a healthy lifestyle may help reduce the duration of an individual's disabled period near the end of life.

- [**Genes fueling neuroblastoma spread now identified**](#) [周五, 01 9月 06:03]

For the first time, researchers present data on how nervous system tumors, called neuroblastomas, spread. Their paper clarifies the

relationship between two genes that fuel the aggressive spread of neuroblastomas.

• [**Asthma medicine halves risk of Parkinson's**](#) [周五, 01 9月 06:03]

Using data gathered from 100 million Norwegian prescriptions, researchers have found that asthma medicine can halve a patient's risk of developing Parkinson's disease.

• [**Discovery may be key to obesity, Diabetes Rx**](#) [周五, 01 9月 03:12]

Research has demonstrated the potential of a protein to treat or prevent metabolic diseases including obesity and diabetes.

• [**Measuring the cost of quality measurement**](#) [周五, 01 9月 03:12]

Less than 2 decades after publication of the National Academy of Medicine's (formerly the Institute of Medicine) Crossing the Quality Chasm: A New Health System for the 21st Century, quality measurement has become routine and widespread throughout the US health care system.

• [**Mouth clicks used in human echolocation captured in unprecedented detail**](#) [周五, 01 9月 02:13]

Like some bats and marine mammals, people can develop expert echolocation skills, in which they produce a clicking sound with their mouths and listen to the reflected sound waves to 'see' their surroundings. A new study provides the first in-depth analysis of the mouth clicks used in human echolocation.

• [**New source for brain's development discovered**](#) [周五, 01 9月 02:13]

An unexpected source for the brain's development has been discovered by researchers, a finding that offers new insights into the building of the nervous system.

• [**Drugs targeting the beta2-adrenoreceptor linked to Parkinson's disease**](#) [周五, 01 9月 02:12]

Researchers want to prevent alpha-synuclein from accumulating in the brain. To do so, the team searched for drugs that turn down alpha-

synuclein production. They then tested the drugs in mice and stem cells and studied in data from the health records of millions of people living in Norway. The results of their efforts, point to a new drug development path for PD.

- [**Drugs found to be more effective against depression than electric current**](#) [周五, 01 9月 02:05]

Medicinal therapy was found to be more than twice as effective as low-intensity brain stimulation in treating depression, according to a study.

- [**New findings on brain functional connectivity may lend insights into mental disorders**](#) [周五, 01 9月 01:13]

Ongoing advances in understanding the functional connections within the brain are producing exciting insights into how the brain circuits function together to support human behavior — and may lead to new discoveries in the development and treatment of psychiatric disorders, according to a review.

- [**Chemo-boosting drug discovered for leukemia**](#) [周五, 01 9月 00:30]

Drugs developed to treat heart and blood vessel problems could be used in combination with chemotherapy to treat an aggressive form of adult leukemia, new research reveals.

- [**Yawning: Why is it so contagious and why should it matter?**](#) [周五, 01 9月 00:30]

Feeling tired? Even if we aren't tired, why do we yawn if someone else does? Experts have published research that suggests the human propensity for contagious yawning is triggered automatically by primitive reflexes in the primary motor cortex -- an area of the brain responsible for motor function. Their study is another stage in their research into the underlying biology of neuropsychiatric disorders and their search for new methods of treatment.

- [**Songbird study shows how estrogen may stop infection-induced brain inflammation**](#) [周四, 31 8月 23:30]

Estrogen synthesis, a process naturally occurring in the brains of zebra

finches, may also fight off neuroinflammation caused by infection that occurs elsewhere in the body, new research indicates.

- [**How reading and writing with your child boost more than just literacy**](#) [周四, 31 8月 22:21]

Children who read and write at home -- whether for assignments or just for fun -- are building long-term study and executive function skills, according to a new article

- [**Mind wandering is common during driving**](#) [周四, 31 8月 22:14]

Scientists have investigated mind wandering in volunteers during a driving simulation. Astonishingly, during the simulation, the volunteers reported mind wandering 70 percent of the time. The researchers could identify specific changes in brain patterns when the volunteers were mind wandering, but need to do further work to clarify if it is dangerous during driving.

- [**Children's sleep quality linked to mothers' insomnia**](#) [周四, 31 8月 21:33]

Children sleep more poorly if their mothers suffer from insomnia symptoms – potentially affecting their mental wellbeing and development - according to new research. Nearly 200 school kids and their parents were studied, results indicating that children whose mothers have insomnia symptoms fall asleep later, get less sleep and spend less time in deep sleep. There appeared to be no link between fathers' insomnia symptoms and children's sleep.

- [**Little known theory could hold key to sporting success**](#) [周四, 31 8月 21:33]

An established but little known psychological theory is likely to improve performances across a range of activities, including sport, according to new research.

- [**Severe stress behind self-perceived memory problems**](#) [周四, 31 8月 21:33]

Stress, fatigue, and feeling like your memory is failing you. These are

the symptoms of a growing group of patients. Result – They may need help, but they are rarely entering the initial stages of dementia.

- [**New possibility of studying how Alzheimer's disease affects the brain at different ages**](#) [周四, 31 8月 21:33]

Alzheimer's disease can lead to several widely divergent symptoms and, so far, its various expressions have mainly been observed through the behavior and actions of patients. Researchers have now produced images showing the changes in the brain associated with these symptoms – a development which increases knowledge and could facilitate future diagnostics and treatment.

- [**First look at potentially deadly metabolic disorder that strikes infants**](#) [周四, 31 8月 21:32]

You may have never heard of congenital disorder of glycosylation, but parents whose children are born with forms of this rare -- and underreported -- metabolic disorder know all too well the dangers they pose, including developmental delay, failure to thrive, stroke-like symptoms, seizures and cerebellar dysfunction.

- [**Using DNA to predict schizophrenia, autism**](#) [周四, 31 8月 21:32]

A single amino acid substitution in the protein CX3CR1 may act as predictor for schizophrenia and autism, a multi-institute collaboration demonstrates.

- [**Faulty DNA repair depresses neural development**](#) [周四, 31 8月 21:32]

Researchers have discovered DNA polymerase ? (Pol?) deficiency in neural stem cells affects neuronal survival and neural network in the developing brain.

- [**A philosophical mythbuster**](#) [周四, 31 8月 21:32]

Cognitive neuroscience gives us a glimpse into our brain activity; it allows us to learn more about ourselves. Or do brain scans actually not say very much about who we are? A philosopher examines four myths about neuroscience and self-understanding.

- [**Alcohol abuse, dental conditions, mental health found to be causes of avoidable US emergency visits**](#) [周四, 31 8月 21:26]

Alcohol abuse, dental conditions, and mental health were found to be the main causes of avoidable emergency room visits in the US, a new report reveals.

- [**Love your beauty rest? You can thank these brain cells**](#) [周四, 31 8月 21:14]

Researchers report the unexpected presence of a type of neuron in the brains of mice that appears to play a central role in promoting sleep by turning 'off' wake-promoting neurons. The newly identified brain cells, located in a part of the hypothalamus called the zona incerta, they say, could offer novel drug targets to treat sleep disorders, such as insomnia and narcolepsy, caused by the dysfunction of sleep-regulating neurons.

- [**New Zealand researchers makes 'natural born killer' cell discovery**](#) [周四, 31 8月 21:14]

An unexpected role for a white blood cell called the Natural Killer (NK) cell -- a critical cell for ridding the body of infection and cancer, has been discovered. The NK cell is a 'vigilante' killer -- a white blood cell that destroys invaders and cancer cells through a process of 'identity card' checking. The researchers' new work shows that violent vigilante NK cells act as helper cells to start up the immune response.

- [**Fathers of American newborns keep getting older, study finds**](#) [周四, 31 8月 21:14]

While data on the moms of newborn American children has been abundant, equivalent data on dads hasn't -- a gap that scientists have now filled.

- [**E-cigarettes can help smokers quit, but there's a catch**](#) [周四, 31 8月 21:14]

Frequent e-cigarette use does help smokers quit -- a finding that researchers say supports the use of e-cigarettes as a cessation aid for

those trying to quit cigarette smoking. But, they note, an examination of a recent national survey uncovers important clues about who's successful at quitting and why.

- [**Three policies to improve children's language development**](#) [周四, 31 8月 21:14]

Bilingual children from low-income homes are at greater risk of falling behind their peers in developing the appropriate language skills for their age group, leading to poorer academic achievement over time. A new article addresses how inequality impacts children's language development and details policies that can intervene.

- [**Good as gold**](#) [周四, 31 8月 08:21]

Few experiences invoke as much anxiety as a call from your doctor saying 'you need to come back for more tests.' Your imagination goes wild and suddenly a routine medical screening becomes a minefield of potential life-threatening diseases. It's highly likely, however, that you have fallen victim to a false positive -- a result that, despite the accuracy of the test, erroneously yields an affirmative result that points toward illness. To increase the accuracy of medical screening and reduce the i...

- [**Gold nanoparticles fry cancer on glowing mice**](#) [周四, 31 8月 08:21]

A new study takes a new approach to killing cancer: Why not fry it into oblivion with vibrating gold nanoparticles?

- [**Eating protein three times a day could make our seniors stronger**](#) [周四, 31 8月 08:21]

Loss of muscle is an inevitable consequence of aging that can lead to frailty, falls or mobility problems. Eating enough protein is one way to remedy it, but it would seem that spreading protein equally among the three daily meals could be linked to greater mass and muscle strength in the elderly.

- [**Z-endoxifen shows promise as new treatment for common breast cancer type**](#) [周四, 31 8月 08:21]

Z-endoxifen, a potent derivative of the drug tamoxifen, could itself be a

new treatment for the most common form of breast cancer in women with metastatic disease, report investigators.

• [**Virus that causes mono may increase risk of MS for multiple races**](#) [周四, 31 8月 05:21]

Like whites, Hispanic and black people who have had mononucleosis, commonly known as mono, which is caused by Epstein-Barr virus, may have an increased risk of multiple sclerosis (MS), according to a new study.

• [**Concerns regarding radioactivity in migratory seafood negated**](#) [周四, 31 8月 03:55]

New research shows negligible risk from consumption of meat from migratory marine predators following Fukushima nuclear disaster.

• [**Breastfeeding reduces risk of endometriosis diagnosis**](#) [周四, 31 8月 03:55]

Women who breastfed for longer periods of time had significantly lower risk of being diagnosed with endometriosis, offering new insights into a condition that, up until now, has had very few known, modifiable risk factors, a new study concludes.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

- [**Reusable ruthenium-based catalyst could be a game-changer for the biomass industry**](#) [周五, 01 9月 22:46]

Researchers have developed a highly efficient reusable catalyst for the production of primary amines. By cutting the amount of undesired by-products, the catalyst is set to revolutionize the production of bio-based fuels, pharmaceuticals, agricultural chemicals and more.

- [**Bit data goes anti-skyrmions**](#) [周五, 01 9月 22:46]

Scientists have discovered a new kind of magnetic nano-object in a novel material that could serve as a magnetic bit with cloaking properties to make a magnetic disk drive with no moving parts -- a Racetrack Memory -- a reality in the near future.

- [**Molecules move faster near sticky surfaces**](#) [周五, 01 9月 21:39]

Molecules move faster as they get closer to adhesive surfaces, but this effect is not permanent.

- [**Equatorial jet in Venusian atmosphere**](#) [周五, 01 9月 21:38]

Observations by Japan's Venus climate orbiter Akatsuki have revealed an equatorial jet in the lower to middle cloud layer of the planet's atmosphere, a finding that could be pivotal to unraveling a phenomenon called superrotation.

- [**Insect eyes inspire new solar cell design**](#) [周五, 01 9月 03:12]

Packing tiny solar cells together, like micro-lenses in the compound eye of an insect, could help scientists overcome a major roadblock to the development of perovskite photovoltaics.

- [**Drugs found to be more effective against depression than electric current**](#) [周五, 01 9月 02:05]

Medicinal therapy was found to be more than twice as effective as low-intensity brain stimulation in treating depression, according to a study.

- [**Caching system could make data centers more energy efficient**](#) [周四, 31 8月 23:52]

Researchers have developed a new system for data center caching that uses flash memory, the kind of memory used in most smartphones.

- [**First hints of possible water content on TRAPPIST-1 planets**](#) [周四, 31 8月 23:30]

Astronomers have been trying to determine whether there might be water on the seven Earth-sized planets orbiting the nearby dwarf star TRAPPIST-1. The results suggest that the outer planets of the system might still harbor substantial amounts of water. This includes the three planets within the habitable zone of the star, lending further weight to the possibility that they may indeed be habitable.

- [**How Neanderthals made the very first glue**](#) [周四, 31 8月 21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

- [**Improving earthquake resistance with a single crystal**](#) [周四, 31 8月 21:26]

A new heating method for certain metals could lead to improved earthquake-resistant construction materials.

- [**Mass production of biodegradable plastic**](#) [周四, 31 8月 21:14]

Introducing a simple step to the production of plant-derived, biodegradable plastic could improve its properties while overcoming obstacles to manufacturing it commercially, says new research.

- [**Turning heat energy into a viable fuel source**](#) [周四, 31 8月 21:14]

A new device could one day turn the heat generated by a wide array of electronics into a usable fuel source. The device is a multicomponent, multilayered composite material called a van der Waals Schottky diode. It converts heat into electricity up to three times more efficiently than silicon -- a semiconductor material widely used in the electronics industry.

• [**Robot learns to follow orders like Alexa**](#) [周四, 31 8月 21:14]

Computer scientists have developed an Alexa-like system that allows robots to understand a wide range of commands that require contextual knowledge about objects and their environments. They've dubbed the system 'ComText,' for 'commands in context.'

• [**Good as gold**](#) [周四, 31 8月 08:21]

Few experiences invoke as much anxiety as a call from your doctor saying 'you need to come back for more tests.' Your imagination goes wild and suddenly a routine medical screening becomes a minefield of potential life-threatening diseases. It's highly likely, however, that you have fallen victim to a false positive -- a result that, despite the accuracy of the test, erroneously yields an affirmative result that points toward illness. To increase the accuracy of medical screening and reduce the i...

• [**Star-formation 'fuel tanks' found around distant galaxies**](#) [周四, 31 8月 05:25]

Astronomers have studied six distant starburst galaxies and discovered that five of them are surrounded by turbulent reservoirs of hydrogen gas, the fuel for future star formation.

• [**Toward a smart graphene membrane to desalinate water**](#) [周四, 31 8月 05:23]

A simple, sturdy graphene-based hybrid desalination membrane can provide clean water for agriculture and possibly human consumption.

• [**Bioengineering a functional vascularized lung scaffold**](#) [周四, 31 8月 02:12]

A team of researchers is the first to successfully bioengineer a functional lung with perfusable and healthy vasculature in an ex vivo rodent lung.

Their new approach allows the removal of the pulmonary epithelium while maintaining the viability and function of the vascular network and the lung matrix.

• [**Environmental chemist flashes warning light on new nanoparticle**](#) [周四, 31 8月 02:12]

Layered BP's cytotoxicity is based on the fact that it generates reactive oxygen species (ROS), scientists have found. ROS are among the most potent cell-damaging agents known. Layered BP also disrupts cell membrane integrity in a particle-size-dependent manner.

• [**Scientists recover nova first spotted 600 years ago by Korean astrologers**](#) [周四, 31 8月 01:22]

A new study pinpoints the location of a nova first spotted by Korean astrologers almost 600 years ago that now undergoes smaller-scale 'dwarf nova' eruptions. The work supports that idea that novae go through a very long-term life cycle after erupting, fading to obscurity for thousands of years, and then building back up to become full-fledged novae once more.

• [**Motorized molecules drill through cells**](#) [周四, 31 8月 01:22]

Motorized molecules that target diseased cells may deliver drugs to or kill the cells by drilling into the cell membranes. Scientists have demonstrated them on cancer and other cells.

• [**Acting like a muscle, nano-sized device lifts 165 times its own weight**](#) [周四, 31 8月 01:22]

Engineers have discovered a simple, economical way to make a nano-sized device that can match the friendly neighborhood Avenger, on a much smaller scale. Their creation weighs 1.6 milligrams (about as much as five poppy seeds) and can lift 265 milligrams (the weight of about 825 poppy seeds) hundreds of times in a row.

• [**Dating? A magic formula to predict attraction is more elusive than ever**](#) [周四, 31 8月 01:22]

Dating websites often claim attraction between two people can be

predicted from the right combination of traits and preferences, but a new study casts doubt on that assertion. The study, which used speed dating data, found a computer could predict who is desirable and how much someone would desire others -- who's hot and who's not -- but it could not unravel the mystery of unique desire for a specific person.

- [**Robotic system monitors specific neurons**](#) [周四, 31 8月 00:49]

Engineers have devised a way to automate the process of patch-clamping, using a computer algorithm that analyzes microscope images and guides a robotic arm to the target cell to record its electrical activity.

- [**'Seeing' robot learns tricky technique for studying brain cells in mammals**](#) [周四, 31 8月 00:25]

Scientists have successfully taught robots to perform a challenging brain technique only previously mastered by a handful of humans.

- [**Machine-learning earthquake prediction in lab shows promise**](#) [周四, 31 8月 00:25]

By listening to the acoustic signal emitted by a laboratory-created earthquake, a computer science approach using machine learning can predict the time remaining before the fault fails.

- [**Silicon solves problems for next-generation battery technology**](#) [周三, 30 8月 23:48]

Silicon -- the second most abundant element in the earth's crust -- shows great promise in Li-ion batteries, according to new research. By replacing graphite anodes with silicon, it is possible to quadruple anode capacity.

- [**Robot probes mystery of prehistoric sea creature's swimming style**](#) [周三, 30 8月 22:26]

A new study has shed light on the swimming style of plesiosaurs by creating a robot to mimic its movements.

- [**Electricity production: When enzymes rival platinum**](#) [周三, 30 8月 22:19]

Making a biocell that is as effective as a platinum fuel cell: that's the feat that researchers have achieved. Three years after making their first prototype biocell, the researchers have just reached a new milestone and increased its performance and stability. This biocell could, in the long run, offer an alternative to fuel cells that require rare and costly metals, such as platinum.

- [**New mini tool has massive implications**](#) [周三, 30 8月 21:43]

Researchers have created a miniaturized, portable version of a tool now capable of analyzing Mars' atmosphere -- and that's just one of its myriad possible uses.

- [**Making 3-D printing safer**](#) [周三, 30 8月 21:42]

Within the past decade, 3-D printers have gone from bulky, expensive curiosities to compact, more affordable consumer products. At the same time, concerns have emerged that nanoparticles released from the machines during use could affect consumers' health. Now researchers report a way to eliminate almost all nanoparticle emissions from some of these printers.

- [**Nanoparticles loaded with mRNA give disease-fighting properties to cells**](#) [周三, 30 8月 21:42]

A new biomedical tool using nanoparticles that deliver transient gene changes to targeted cells could make therapies for a variety of diseases -- including cancer, diabetes and HIV -- faster and cheaper to develop, and more customizable.

- [**Adoption of robotics into a hospital's daily operations requires broad cooperation**](#) [周三, 30 8月 21:42]

Investigators studied the implementation of a logistics robot system at the Seinäjoki Central Hospital in South Ostrobothnia. The aim was to reduce transportation costs, improve the availability of supplies and alleviate congestion on hospital hallways by running deliveries around the clock on every day of the week.

- [**Nano chip system measures light from single bacterial cell to enable chemical detection**](#) [周三, 30 8月

21:42]

Researchers have created a nanophotonic chip system using lasers and bacteria to observe fluorescence emitted from a single bacterial cell. The novel system paves the way for an efficient and portable on-chip system for diverse cell-based sensing applications, such as detecting chemicals in real-time.

- [**NASA's Lunar mission captures solar eclipse as seen from the moon**](#) [周三, 30 8月 04:45]

LRO captured an image of the Moon's shadow over a large region of the United States, centered just north of Nashville, Tennessee.

- [**Why does rubbing a balloon on your hair make it stick?**](#) [周三, 30 8月 01:53]

New research indicates that tiny holes and cracks in a material -- changes in the microstructure -- can control how the material becomes electrically charged through friction.

- [**Tiny nanopackages built out of DNA help scientists peek at how neurons work**](#) [周三, 30 8月 01:22]

Scientists have designed a way to use microscopic capsules made out of DNA to deliver a payload of tiny molecules directly into a cell. The technique gives scientists an opportunity to understand certain interactions among cells that have previously been hard to track.

- [**Brain stimulation for children with learning difficulties?**](#) [周三, 30 8月 00:47]

Applying a brain stimulation method, which was previously suggested to enhance mathematical learning in healthy adults, may improve the performance of children with mathematical learning difficulties, according to an exploratory study.

- [**Photosynthesis discovery could help design more efficient artificial solar cells**](#) [周三, 30 8月 00:44]

A natural process that occurs during photosynthesis could lead to the design of more efficient artificial solar cells, according to researchers.

[Scientists power past solar efficiency records](#) [周二, 29]

8月 23:39]

The high potential of silicon-based multijunction solar cells has now been demonstrated through new research.

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Environment News

Top stories featured on ScienceDaily's Plants & Animals, Earth & Climate, and Fossils & Ruins sections.

- [**Etosis phenomenon discovered in human blood monocytes**](#) [周五, 01 9月 22:46]

The first clear demonstration of etosis in human blood monocytes, a type of immune cell, has now been discovered by scientists.

- [**Can corals survive climate change?**](#) [周五, 01 9月 21:39]

Scientists have issued advice that more research is urgently required to determine whether corals can acclimate and adapt to the rapid pace of climate change.

- [**New light shed on photosynthesis**](#) [周五, 01 9月 21:38]

A team of scientists has taken us a step closer to unlocking the secrets of photosynthesis, and possibly to cleaner fuels. Their discovery describes the structure of a reaction center (from a heliobacterium) which preserves the characteristics of the ancestral one, and so provides new insight into the evolution of photosynthesis.

- [**Coming soon to Montreal: The infrastructure cost of climate change**](#) [周五, 01 9月 03:13]

The climate of Montreal is changing and will continue to do so at a rapidly increasing rate and with much more spatial variability in the future, according to new research.

- [**Insect eyes inspire new solar cell design**](#) [周五, 01 9月 03:12]

Packing tiny solar cells together, like micro-lenses in the compound eye of an insect, could help scientists overcome a major roadblock to the development of perovskite photovoltaics.

[**More research needed on effects of maternal stress in wild animals**](#) [周五, 01 9月 03:12]

If a human mother is stressed while pregnant, research shows her child is much more likely to have emotional, cognitive or even physiological problems, such as attention deficit, hyperactivity, anxiety, language delay, obesity, diabetes and hypertension. Conversely, the results of maternal stress on the offspring of other animals -- particularly wildlife under threat from predators -- is believed to be positive, and contributes to their survival.

[**Does indoor spraying help prevent dengue?**](#) [周五, 01 9月 02:13]

The prevention of dengue, the most prevalent mosquito-borne virus in the world, relies heavily on controlling mosquito populations, as the currently available dengue vaccine is only partially effective. Indoor spraying -- which involves spraying of insecticides inside houses -- has the potential to be a key part of those prevention efforts, researchers report.

[**Reconstructing life at its beginning, cell by cell**](#) [周五, 01 9月 02:12]

In a technological tour de force, scientists have created a virtual model of an early fly embryo. Its interactive interface allows researchers to explore the blueprint that underlies development at unprecedented spatial resolution and predict which cells express which genes.

[**Cross-kingdom regulation of honeybee caste development by dietary plant miRNAs**](#) [周五, 01 9月 02:05]

Honeybee larvae develop into workers but not queens, in part, because their diet of beebread/pollen is enriched in plant miRNAs. While miRNAs are generally negative regulators of gene expression in eukaryotes, they also negatively regulate larval development when honeybee larvae consume beebread/pollen and take up plant miRNAs.

[**Pinpointing the sources of trans-pacific dust**](#) [周五, 01 9月 02:05]

Airborne dust from Asia travels across the Pacific passport-free, carrying pollution, building soil, and coloring sunsets thousands of miles

from its source. Identifying that source is important for understanding atmospheric circulation, contaminant pathways, and climate. But collecting enough airborne dust to pinpoint its source is challenging. Now, a team of researchers has developed a way to match microscopic quartz grains to the desert they blew in from.

[**Protein transport channel offers new target for thwarting pathogen**](#) [周五, 01 9月 01:42]

A bacterium that attacks people suffering from chronic lung disease and compromised immune systems could be halted by disrupting the distribution channels the organism uses to access the nutrient-rich cytoplasm of its host cell.

[**Human bones in south Mexico: Stalagmite reveals their age as 13,000 years old**](#) [周五, 01 9月 01:12]

A prehistoric human skeleton found on the Yucatán Peninsula is at least 13,000 years old and most likely dates from a glacial period at the end of the most recent ice age, the late Pleistocene. A German-Mexican team of researchers has now dated the fossil skeleton based on a stalagmite that grew on the hip bone.

[**What changes when you warm the Antarctic Ocean just 1 degree? Lots**](#) [周五, 01 9月 00:30]

After warming a natural seabed in the Antarctic Ocean by just 1° or 2° Celsius, researchers observed massive impacts on a marine assemblage, as growth rates nearly doubled. The findings of what the researchers call the 'most realistic ocean warming experiment to date' show that the effects of future warming may far exceed expectations.

[**Antidepressants found in fish brains in Great Lakes region**](#) [周四, 31 8月 22:14]

Human antidepressants are building up in the brains of bass, walleye and several other fish common to the Great Lakes region, scientists say.

[**How Neanderthals made the very first glue**](#) [周四, 31 8月 21:34]

The world's oldest known glue was made by Neanderthals. But how did

they make it 200,000 years ago? Archaeologists have discovered three possible ways.

• [**Record-low 2016 Antarctic sea ice due to 'perfect storm' of tropical, polar conditions**](#) [周四, 31 8月 21:26]

The sudden, unexpected nosedive in Antarctic sea ice last year was due to a unique one-two punch from atmospheric conditions both in the tropical Pacific Ocean and around the South Pole.

• [**Apes' abilities misunderstood by decades of poor science**](#) [周四, 31 8月 21:14]

Hundreds of scientific studies over two decades have told us that apes are clever -- just not as clever as us. New analysis argues that what we think we know about apes' social intelligence is based on wishful thinking and flawed science.

• [**Forensic science techniques help discover new molecular fossils**](#) [周四, 31 8月 21:14]

Researchers believe they have found new molecular fossils of archaea using a method of analysis commonly used in forensic science.

• [**New hope for reef fish living in a high CO2 world**](#) [周四, 31 8月 21:14]

New research examining the possible impacts of ocean acidification provides fresh hope for the survival of reef fish.

• [**American pika disappears from large area of California's Sierra Nevada mountains**](#) [周四, 31 8月 08:21]

The American pika, a small mammal adapted to high altitudes and cold temperatures, has died out from a 165-square-mile span of habitat in California's northern Sierra Nevada mountains, and the cause appears to be climate change. Researchers surveyed pika habitat throughout the north Lake Tahoe area and found that pikas had disappeared from an area that stretches from near Tahoe City to Truckee, more than 10 miles away, and includes Mount Pluto.

• [**How certain ants snap their jaws shut in the blink of an eye**](#) [周四, 31 8月 08:21]

Few victims stand a chance against the formidable mandibles of a trap-jaw ant. In conflicts between predators and prey, speed is a decided advantage, and evolution has given these insects an edge with spring-loaded jaws that snap shut with astonishing speed. Biologists have now provided the first mechanical description of the jaws of a little-known group of trap-jaw ants.

• [**Profitable cooperation: Ants protect and fertilize plants**](#) [周四, 31 8月 08:21]

Biologists describe how the waste left by ants on plant leaves serves as a valuable fertilizer for the plants -- handed on a silver platter.

• [**Jordan faces likelihood of much more frequent long and severe droughts**](#) [周四, 31 8月 08:21]

Jordan is among the world's most water-poor nations, and a new, comprehensive analysis of regional drought and land-use changes in upstream Syria suggests the conditions could get significantly worse.

• [**Concerns regarding radioactivity in migratory seafood negated**](#) [周四, 31 8月 03:55]

New research shows negligible risk from consumption of meat from migratory marine predators following Fukushima nuclear disaster.

• [**Protecting the guardians**](#) [周四, 31 8月 03:55]

A guardian gene that protects against type 1 diabetes and other autoimmune diseases exerts its pancreas-shielding effects by altering the gut microbiota. Experiments in mice born with the protective gene show that exposure to antibiotics during critical windows of development fuels risk for type 1 diabetes and leads to loss of genetic protection by altering the gut microbiota. Scientists say the findings underscore the importance of avoiding antibiotic use during late pregnancy and early infancy.

• [**Tracking down the whale-shark highway**](#) [周四, 31 8月 03:55]

Researchers recently discovered that whale sharks in the Eastern Tropical Pacific follow fronts -- the dynamic boundaries between warm and cold ocean waters.

- [**Bioengineering a functional vascularized lung scaffold**](#) [周四, 31 8月 02:12]

A team of researchers is the first to successfully bioengineer a functional lung with perfusable and healthy vasculature in an ex vivo rodent lung. Their new approach allows the removal of the pulmonary epithelium while maintaining the viability and function of the vascular network and the lung matrix.

- [**Gut bacteria that 'talk' to human cells may lead to new treatments**](#) [周四, 31 8月 02:12]

Scientists developed a method to genetically engineer gut bacteria to produce molecules that have the potential to treat certain disorders by altering human metabolism.

- [**Monkeys with Parkinson's disease benefit from human stem cells**](#) [周四, 31 8月 01:22]

Japanese neurosurgeons report two new strategies to improve outcomes of iPS cell-based therapies for Parkinson's disease in monkey brains. The findings are a key step for patient recruitment of the first iPS cell-based therapy to treat neurodegenerative diseases.

- [**Uncovering factors that shape sea life**](#) [周四, 31 8月 01:22]

Researchers have proposed a new conceptual model of island biogeography for marine organisms -- a theory that explores how different processes (like sea level fluctuations and geographic isolation) influence marine species diversity around islands.

- [**A big difference between Asian and African elephants is diet**](#) [周四, 31 8月 01:22]

New research has shown that there are significant differences between the Asian and the African forest elephant -- and it isn't just about size and the shape of their ears. It is about what they eat and how they affect

forest ecosystems.

- [Otters learn by copying each other](#) [周四, 31 8月 01:11]

Otters can learn how to solve puzzles by watching and copying each other, new research shows.

- [Fungal spore 'death clouds' key in gypsy moth fight](#) [周四, 31 8月 00:49]

A fungus known to decimate populations of gypsy moths creates 'death clouds' of spores that can travel more than 40 miles to potentially infect populations of invasive moths, according to a new study.

- [When making decisions, monkeys use different brain areas to weigh value and availability](#) [周四, 31 8月 00:26]

Seventeenth-century mathematician Blaise Pascal first introduced the idea of expected value, which is reached by multiplying the value of something (how much it's wanted or needed) with the probability that we might be able to obtain it. Now some very 21st century research is showing for the first time in monkeys which parts of the brain are involved in the two-pronged decision-making process that determines this expected value.

- [Hidden deep in the brain, a map that guides animals' movements](#) [周四, 31 8月 00:26]

New research has revealed that deep in the brain, in a structure called striatum, all possible movements that an animal can do are represented in a map of neural activity. If we think of neural activity as the coordinates of this map, then similar movements have similar coordinates, being represented closer in the map, while actions that are more different have more distant coordinates and are further away.

- [Infested fossil worms show ancient examples of symbiosis](#) [周四, 31 8月 00:11]

One of the earliest examples of two invertebrate species living together in a symbiotic relationship has been found in 520-million-year-old fossils from China. The fossils show two species of marine worms with

other, smaller worm-like animals attached to the outer surface of their body.

• [**New clue may reveal the fate of famous French explorer**](#) [周三, 30 8月 23:48]

An anthropologist may have stumbled across a clue to resolving one of the most enduring mysteries of Pacific history - the fate of famous French navigator, Jean François de Galaup, Comte de La Pérouse who disappeared in 1788.

• [**Hope for improving protection of the reticulated python**](#) [周三, 30 8月 23:48]

Trading in skins of the reticulated python is such a lucrative business that illegal exports are rising sharply and existing trade restrictions are being circumvented on a large scale. This is endangering the stability of populations. Therefore, researchers are developing genetic methods for tracking down individual origins and potential trade routes of the skins.

• [**Soybean rust develops 'rolling' epidemics as spores travel north**](#) [周三, 30 8月 23:47]

Although Midwestern soybean growers have yet to experience the brunt of soybean rust, growers in the southern United States are very familiar with the disease. Every year, the fungus slowly moves northward from its winter home in southern Florida and the Gulf Coast states, and eventually reaches Illinois soybean fields -- often just before harvest.

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- [**New boarding procedures, smaller cabin size may limit infection on planes**](#) [周五, 01 9月 03:13]

During major epidemics, cramped airplane cabins are fertile ground for the spread of infection, but new research suggests changing routine boarding protocols could be a key to reducing rampant transmission of disease.

- [**Study reveals ways collegiate sports venues can achieve 'zero waste'**](#) [周五, 01 9月 02:13]

A new study analyzing waste and recyclables during Mizzou's 2014 home football season demonstrates that by implementing several recommendations the team developed, such as offering better recycling receptacles and better sorting options for waste, sporting venues could be well on their way to achieving environmental benefits that exceed the standards for 'zero-waste' operations.

- [**People become more economically conservative when angered**](#) [周四, 31 8月 23:30]

People tend to lean more economically conservative when they're angry, according to a new article. Researchers came to the conclusion after running multiple studies that included more than 1,000 participants.

- [**How reading and writing with your child boost more than just literacy**](#) [周四, 31 8月 22:21]

Children who read and write at home -- whether for assignments or just for fun -- are building long-term study and executive function skills,

according to a new article

• [**Federal preemption of taxes on state and local sugar-sweetened beverages is not warranted**](#) [周四, 31 8月 00:49]

Federal and state government can alter or hinder state and local activity through a legal mechanism called preemption -- when a higher level of government blocks the action of a lower level of government. A new study evaluates whether it could be used to block taxes on sugar-sweetened beverages.

• [**Hope for improving protection of the reticulated python**](#) [周三, 30 8月 23:48]

Trading in skins of the reticulated python is such a lucrative business that illegal exports are rising sharply and existing trade restrictions are being circumvented on a large scale. This is endangering the stability of populations. Therefore, researchers are developing genetic methods for tracking down individual origins and potential trade routes of the skins.

• [**Researchers raise health concerns about off-road vehicles and inhalation of asbestos**](#) [周三, 30 8月 23:47]

Preventing injuries may not be the only reason children shouldn't use off-road vehicles (ORVs). In a new study, public health scientists raise concerns that people who use ORVs in many regions of the country may face exposure to hazardous mineral fibers.

• [**Shifting school start times could contribute \\$83 billion to US economy within a decade**](#) [周三, 30 8月 22:36]

RAND Corporation and RAND Europe have released the first-ever analysis of the economic implications of a shift in school start times in the US. The study shows that a nationwide move to 8.30 a.m. could lead to an economic gain of \$83 billion to the US economy within a decade. The gains projected through the study's economic model would be realized through the higher academic and professional performance of students, and reduced car crash rates.

• [**Leaf sensors can tell farmers when crops need to**](#)

[be watered](#) [周三, 30 8月 22:34]

Plant-based sensors that measure the thickness and electrical capacitance of leaves show great promise for telling farmers when to activate their irrigation systems, preventing both water waste and parched plants, according to researchers.

• [Methane emissions tackled with gas-guzzling bacteria](#) [周三, 30 8月 21:45]

Methane-oxidizing bacteria -- key organisms responsible for greenhouse gas mitigation -- are more flexible and resilient than previously thought, an international research has shown.

• [Conservation hindered by geographical mismatches between capacity, need](#) [周三, 30 8月 21:45]

Geographical mismatches between conservation needs and expertise may hinder global conservation goals, new research suggests.

• [Shared custody equals less stress for children](#) [周三, 30 8月 21:42]

Children who live full time with one parent are more likely to feel stressed than children in shared custody situations. The benefit holds regardless of the level of conflict between the parents or between parent and child.

• [Brain stimulation for children with learning difficulties?](#) [周三, 30 8月 00:47]

Applying a brain stimulation method, which was previously suggested to enhance mathematical learning in healthy adults, may improve the performance of children with mathematical learning difficulties, according to an exploratory study.

• [Photosynthesis discovery could help design more efficient artificial solar cells](#) [周三, 30 8月 00:44]

A natural process that occurs during photosynthesis could lead to the design of more efficient artificial solar cells, according to researchers.

• [Lively tunes boost sales in crowded stores](#) [周二, 29 8月 23:38]

If a store is crowded, people tend to buy more if the sound system is playing a fast-paced song rather than a ballad. That's what a team of researchers found in a field experiment across a chain of grocery convenience stores in Northern Europe.

• [**Mental health linked to retirement savings**](#) [周二, 29 8月 23:38]

The question of how mental health status affects decisions regarding retirement savings is becoming a pressing issue in the United States. Key factors contributing to this issue include the tenuous state of the Social Security system, greater use of defined-contribution pension plans by employers, longer lifespans, and the rise of depression and other mental health issues in older Americans.

• [**Origins of autism: Abnormalities in sensory processing at six months**](#) [周二, 29 8月 23:38]

The origins of autism remain mysterious. What areas of the brain are involved, and when do the first signs appear? New findings brings us closer to understanding the pathology of autism, and the point at which it begins to take shape in the human brain. Such knowledge will allow earlier interventions in the future and better outcomes for autistic children.

• [**Analysis identifies where commercial customers might benefit from energy storage**](#) [周二, 29 8月 23:38]

Commercial electricity customers who are subject to high demand charges may be able to reduce overall costs by using battery energy storage to manage demand, according to research.

• [**Inattentive kids show worse grades in later life**](#) [周二, 29 8月 21:50]

Researchers found that inattentiveness in childhood was linked to worse academic performance up to 10 years later in children with and without ADHD, even when they accounted for the children's intellectual ability. The results highlight the long-term effects that childhood inattention can have on academic performance, and suggest that parents and teachers should address inattentiveness in childhood.

• [**Americans' risk of needing nursing home care is higher than previously estimated**](#) [周二, 29 8月 04:41]

One worry Americans face as they grow older is the possibility of needing nursing home care and paying for the associated costs. A new study finds that the average American's lifetime risk of using a nursing home is substantially greater than previously believed, but the financial costs will be affordable for most people.

• [**Self-identifying as disabled and developing pride in disability aid overall well-being**](#) [周二, 29 8月 04:41]

Experiencing stigma, the severity of a disability and a person's age and income level help determine whether someone with an impairment considers themselves to be a person with a disability, and experiencing stigma predicts whether those individuals will ultimately develop disability pride, new research shows.

• [**Romance and affection top most popular sexual behaviors**](#) [周二, 29 8月 02:07]

Researchers have published a new US nationally representative study of sexual behavior, the first of its kind to capture a wide range of diverse sexual behaviors not previously examined in the general population.

• [**Nanoparticles pollution rises 30 percent when flex-fuel cars switch from bio to fossil**](#) [周二, 29 8月 00:45]

Use of ethanol in vehicles reduces pollution by nanoparticles, a study shows. Levels of ultrafine particulate matter in São Paulo City, Brazil, increased by up to 30 percent at times when ethanol prices rose and consumption fell.

• [**Preventing overcrowding in emergency rooms**](#) [周二, 29 8月 00:45]

A new study identifies four key strategies to reduce overcrowding in emergency rooms. The study concludes that engaged executive leadership can alleviate the problem when combined with a data-driven approach and coordination across the hospital from housekeepers to the CEO. Crowding in emergency rooms has been associated with

decreased patient satisfaction and even death.

- [**'Marrying up' is now easier for men, improves their economic well-being, study finds**](#) [周一, 28 8月 22:54]

As the number of highly educated women has increased in recent decades, the chances of 'marrying up' have increased significantly for men and decreased for women, according to a new study.

- [**Popularity outranks strategy in supply chain integration decisions**](#) [周一, 28 8月 22:27]

Conscious comparison and indirect copying increase the similarity of supply chain management practices of peer group companies, sometimes at the cost of quality and operating culture.

- [**Deforestation in Cambodia linked to higher risk of ill health in young children**](#) [周一, 28 8月 21:41]

New research findings suggest the importance of considering health impacts when assessing trade-offs in land use planning.

- [**Expectations for all-day schools are too high**](#) [周一, 28 8月 21:39]

Children in the German-speaking part of Switzerland who utilize extended education offerings in the first two years of primary school generally perform no better in school than other children, an project has found. Overall, the research shows that all-day schools do not fulfil all the expectations people place in them.

- [**After Hurricane Katrina, personal debt fell for those worst hit, but at a cost**](#) [周一, 28 8月 21:37]

After Hurricane Katrina devastated New Orleans a dozen years ago, there was a sharp and immediate drop in personal debt among residents living in city's most flooded blocks, according to a new study.

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [Mouth clicks used in human echolocation captured in unprecedented detail](#) [周五, 01 9月 02:13]

Like some bats and marine mammals, people can develop expert echolocation skills, in which they produce a clicking sound with their mouths and listen to the reflected sound waves to 'see' their surroundings. A new study provides the first in-depth analysis of the mouth clicks used in human echolocation.

- [First hints of possible water content on TRAPPIST-1 planets](#) [周四, 31 8月 23:30]

Astronomers have been trying to determine whether there might be water on the seven Earth-sized planets orbiting the nearby dwarf star TRAPPIST-1. The results suggest that the outer planets of the system might still harbor substantial amounts of water. This includes the three planets within the habitable zone of the star, lending further weight to the possibility that they may indeed be habitable.

- [How Neanderthals made the very first glue](#) [周四, 31 8月 21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

- [How certain ants snap their jaws shut in the blink of an eye](#) [周四, 31 8月 08:21]

Few victims stand a chance against the formidable mandibles of a trap-jaw ant. In conflicts between predators and prey, speed is a decided

advantage, and evolution has given these insects an edge with spring-loaded jaws that snap shut with astonishing speed. Biologists have now provided the first mechanical description of the jaws of a little-known group of trap-jaw ants.

• [**Gold nanoparticles fry cancer on glowing mice**](#) [周四, 31 8月 08:21]

A new study takes a new approach to killing cancer: Why not fry it into oblivion with vibrating gold nanoparticles?

• [**Motorized molecules drill through cells**](#) [周四, 31 8月 01:22]

Motorized molecules that target diseased cells may deliver drugs to or kill the cells by drilling into the cell membranes. Scientists have demonstrated them on cancer and other cells.

• [**Acting like a muscle, nano-sized device lifts 165 times its own weight**](#) [周四, 31 8月 01:22]

Engineers have discovered a simple, economical way to make a nano-sized device that can match the friendly neighborhood Avenger, on a much smaller scale. Their creation weighs 1.6 milligrams (about as much as five poppy seeds) and can lift 265 milligrams (the weight of about 825 poppy seeds) hundreds of times in a row.

• [**Otters learn by copying each other**](#) [周四, 31 8月 01:11]

Otters can learn how to solve puzzles by watching and copying each other, new research shows.

• [**What lit up the universe? Black holes may have punctured darkened galaxies, allowing light to escape**](#) [周三, 30 8月 23:48]

Researchers have a new explanation for how the universe changed from darkness to light. They propose that black holes within galaxies produce winds strong enough to fling out matter that punctures holes in galaxies, allowing light to escape.

• [**Understanding ancient geometric earthworks in southwestern Amazonia**](#) [周三, 30 8月 22:34]

Researchers examine pre-colonial geometric earthworks in the southwestern Amazonia from the point of view of indigenous peoples and archaeology. The study shows that the earthworks were once important ritual communication spaces.

[**Do squirrels teach bears to cross the railroad?**](#)

[**Grizzlies dig squirrel middens for grains**](#) [周三, 30 8月 22:34]

Grains have been reported to regularly trickle from hopper cars travelling via the railway through Canada's Banff and Yoho National Parks. As a result, the local red squirrels collect and bury the spilled seeds in their winter larders, which are sometimes discovered by hungry grizzly bears. Grain-conditioned bears may frequent the railway more often than usual, resulting in increased mortality by trains strikes.

[**New robot rolls with the rules of pedestrian conduct**](#) [周三, 30 8月 22:34]

Engineers have designed an autonomous robot with 'socially aware navigation,' that can keep pace with foot traffic while observing these general codes of pedestrian conduct.

[**Robot probes mystery of prehistoric sea creature's swimming style**](#) [周三, 30 8月 22:26]

A new study has shed light on the swimming style of plesiosaurs by creating a robot to mimic its movements.

[**Fossil whales' teeth shows what ferocious predators they were**](#) [周三, 30 8月 21:45]

The feeding habits of the whale -- the world's biggest animal -- have evolved to filter feeding, shows new international research. Ancient whales appear to have been ferocious predators, investigators explain.

[**Say hello to the 3-D Obama ant**](#) [周三, 30 8月 21:42]

Three new ant species named in honor of key figures in conservation -- Barack Obama, Ken Saro-Wiwa, and E.O. Wilson -- are immortalized as 3-D virtual avatars.

[**Why does rubbing a balloon on your hair make**](#)

[**it stick?**](#) [周三, 30 8月 01:53]

New research indicates that tiny holes and cracks in a material -- changes in the microstructure -- can control how the material becomes electrically charged through friction.

• [**High-tech electronics made from autumn leaves**](#)

[周二, 29 8月 23:38]

Northern China's roadsides are peppered with deciduous phoenix trees, producing an abundance of fallen leaves in autumn. These leaves are generally burned in the colder season, exacerbating the country's air pollution problem. Investigators in Shandong, China, recently discovered a new method to convert this organic waste matter into a porous carbon material that can be used to produce high-tech electronics.

• [**Galaxy 5 billion light-years away shows we live in a magnetic universe**](#) [周二, 29 8月 00:45]

A chance combination of a gravitational lens and polarized waves coming from a distant quasar gave astronomers the tool needed to make a measurement important to understanding the origin of magnetic fields in galaxies.

• [**New ancient sea reptile found in Germany, the earliest of its kind**](#) [周一, 28 8月 21:39]

A previously unrecognized 132 million-year-old fossilized sea monster from northern Germany has been identified.

• [**Largest Ichthyosaurus was pregnant mother**](#) [周一, 28 8月 21:37]

Scientists have discovered the largest Ichthyosaurus on record and found it was pregnant at the time of death.

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- [**Cognitive fatigue after TBI linked with activation of caudate**](#) [周六, 02 9月 00:51]

Researchers have further elucidated the mechanisms for cognitive fatigue, a disabling symptom that affects many individuals after traumatic brain injury (TBI).

- [**Drug may curb female infertility from cancer treatments**](#) [周六, 02 9月 00:51]

An existing drug may one day protect premenopausal women from life-altering infertility that commonly follows cancer treatments, according to a new study.

- [**Intellectual disabilities caused by protein defect**](#) [周五, 01 9月 23:36]

Intellectual disabilities are often caused by a mutation that damages a gene, preventing the associated protein from functioning properly. However, a mutation can also change the function of a gene. As a result, the gene in question acts in a completely different way. Researchers discovered this mechanism in fifteen genes playing a role in the development of intellectual disabilities. Their research results show that these changes in function play a more prominent role than previously thought.

- [**Reusable ruthenium-based catalyst could be a game-changer for the biomass industry**](#) [周五, 01 9月 22:46]

Researchers have developed a highly efficient reusable catalyst for the production of primary amines. By cutting the amount of undesired by-products, the catalyst is set to revolutionize the production of bio-based fuels, pharmaceuticals, agricultural chemicals and more.

- [**Bit data goes anti-skyrmions**](#) [周五, 01 9月 22:46]

Scientists have discovered a new kind of magnetic nano-object in a novel material that could serve as a magnetic bit with cloaking properties to make a magnetic disk drive with no moving parts -- a Racetrack Memory -- a reality in the near future.

- [**Etosis phenomenon discovered in human blood monocytes**](#) [周五, 01 9月 22:46]

The first clear demonstration of etosis in human blood monocytes, a type of immune cell, has now been discovered by scientists.

- [**Lifestyle factors may affect how long individuals live free of disability**](#) [周五, 01 9月 22:46]

New research indicates that a healthy lifestyle may help reduce the duration of an individual's disabled period near the end of life.

- [**Can corals survive climate change?**](#) [周五, 01 9月 21:39]

Scientists have issued advice that more research is urgently required to determine whether corals can acclimate and adapt to the rapid pace of climate change.

- [**Molecules move faster near sticky surfaces**](#) [周五, 01 9月 21:39]

Molecules move faster as they get closer to adhesive surfaces, but this effect is not permanent.

- [**Equatorial jet in Venusian atmosphere**](#) [周五, 01 9月 21:38]

Observations by Japan's Venus climate orbiter Akatsuki have revealed an equatorial jet in the lower to middle cloud layer of the planet's atmosphere, a finding that could be pivotal to unraveling a phenomenon

called superrotation.

- [**New light shed on photosynthesis**](#) [周五, 01 9月 21:38]

A team of scientists has taken us a step closer to unlocking the secrets of photosynthesis, and possibly to cleaner fuels. Their discovery describes the structure of a reaction center (from a heliobacterium) which preserves the characteristics of the ancestral one, and so provides new insight into the evolution of photosynthesis.

- [**Genes fueling neuroblastoma spread now identified**](#) [周五, 01 9月 06:03]

For the first time, researchers present data on how nervous system tumors, called neuroblastomas, spread. Their paper clarifies the relationship between two genes that fuel the aggressive spread of neuroblastomas.

- [**Asthma medicine halves risk of Parkinson's**](#) [周五, 01 9月 06:03]

Using data gathered from 100 million Norwegian prescriptions, researchers have found that asthma medicine can halve a patient's risk of developing Parkinson's disease.

- [**New genetic risk factor for developing autism spectrum disorder identified**](#) [周五, 01 9月 06:03]

A new systematic analysis has been applied to a cohort of 2,300 families who have a single child affected with autism. The study focused on identifying and characterizing low-lying genetic mutations that may have been missed in previous research, given these mutations are only present in a fraction of the bulk DNA of an individual.

- [**Coming soon to Montreal: The infrastructure cost of climate change**](#) [周五, 01 9月 03:13]

The climate of Montreal is changing and will continue to do so at a rapidly increasing rate and with much more spatial variability in the future, according to new research.

- [**New boarding procedures, smaller cabin size**](#)

[may limit infection on planes](#) [周五, 01 9月 03:13]

During major epidemics, cramped airplane cabins are fertile ground for the spread of infection, but new research suggests changing routine boarding protocols could be a key to reducing rampant transmission of disease.

• [Insect eyes inspire new solar cell design](#) [周五, 01 9月 03:12]

Packing tiny solar cells together, like micro-lenses in the compound eye of an insect, could help scientists overcome a major roadblock to the development of perovskite photovoltaics.

• [Discovery may be key to obesity, Diabetes Rx](#) [周五, 01 9月 03:12]

Research has demonstrated the potential of a protein to treat or prevent metabolic diseases including obesity and diabetes.

• [Measuring the cost of quality measurement](#) [周五, 01 9月 03:12]

Less than 2 decades after publication of the National Academy of Medicine's (formerly the Institute of Medicine) Crossing the Quality Chasm: A New Health System for the 21st Century, quality measurement has become routine and widespread throughout the US health care system.

• [More research needed on effects of maternal stress in wild animals](#) [周五, 01 9月 03:12]

If a human mother is stressed while pregnant, research shows her child is much more likely to have emotional, cognitive or even physiological problems, such as attention deficit, hyperactivity, anxiety, language delay, obesity, diabetes and hypertension. Conversely, the results of maternal stress on the offspring of other animals -- particularly wildlife under threat from predators -- is believed to be positive, and contributes to their survival.

• [Mouth clicks used in human echolocation captured in unprecedented detail](#) [周五, 01 9月 02:13]

Like some bats and marine mammals, people can develop expert echolocation skills, in which they produce a clicking sound with their

mouths and listen to the reflected sound waves to 'see' their surroundings. A new study provides the first in-depth analysis of the mouth clicks used in human echolocation.

• [**Study reveals ways collegiate sports venues can achieve 'zero waste'**](#) [周五, 01 9月 02:13]

A new study analyzing waste and recyclables during Mizzou's 2014 home football season demonstrates that by implementing several recommendations the team developed, such as offering better recycling receptacles and better sorting options for waste, sporting venues could be well on their way to achieving environmental benefits that exceed the standards for 'zero-waste' operations.

• [**New source for brain's development discovered**](#) [周五, 01 9月 02:13]

An unexpected source for the brain's development has been discovered by researchers, a finding that offers new insights into the building of the nervous system.

• [**Does indoor spraying help prevent dengue?**](#) [周五, 01 9月 02:13]

The prevention of dengue, the most prevalent mosquito-borne virus in the world, relies heavily on controlling mosquito populations, as the currently available dengue vaccine is only partially effective. Indoor spraying -- which involves spraying of insecticides inside houses -- has the potential to be a key part of those prevention efforts, researchers report.

• [**Drugs targeting the beta2-adrenoreceptor linked to Parkinson's disease**](#) [周五, 01 9月 02:12]

Researchers want to prevent alpha-synuclein from accumulating in the brain. To do so, the team searched for drugs that turn down alpha-synuclein production. They then tested the drugs in mice and stem cells and studied in data from the health records of millions of people living in Norway. The results of their efforts, point to a new drug development path for PD.

• [**Reconstructing life at its beginning, cell by cell**](#) [周五, 01 9月 02:12]

In a technological tour de force, scientists have created a virtual model of an early fly embryo. Its interactive interface allows researchers to explore the blueprint that underlies development at unprecedented spatial resolution and predict which cells express which genes.

- [**Nature gem within the city: What grows in the biodiversity-rich Bukit Nanas Forest Reserve**](#) [周五, 01 9月 02:05]

Being the oldest of its kind in Malaysia, Bukit Nanas Forest Reserve is a nature enclave, lying in the center of the busy capital city Kuala Lumpur. Researchers have now teamed up to publish an extensive checklist of the flora of this urban nature enclave, while making use of the innovative 'ecosystem inventory' template.

- [**Drugs found to be more effective against depression than electric current**](#) [周五, 01 9月 02:05]

Medicinal therapy was found to be more than twice as effective as low-intensity brain stimulation in treating depression, according to a study.

- [**Cross-kingdom regulation of honeybee caste development by dietary plant miRNAs**](#) [周五, 01 9月 02:05]

Honeybee larvae develop into workers but not queens, in part, because their diet of beebread/pollen is enriched in plant miRNAs. While miRNAs are generally negative regulators of gene expression in eukaryotes, they also negatively regulate larval development when honeybee larvae consume beebread/pollen and take up plant miRNAs.

- [**Pinpointing the sources of trans-pacific dust**](#) [周五, 01 9月 02:05]

Airborne dust from Asia travels across the Pacific passport-free, carrying pollution, building soil, and coloring sunsets thousands of miles from its source. Identifying that source is important for understanding atmospheric circulation, contaminant pathways, and climate. But collecting enough airborne dust to pinpoint its source is challenging. Now, a team of researchers has developed a way to match microscopic quartz grains to the desert they blew in from.

- [**Protein transport channel offers new target for**](#)

[thwarting pathogen](#) [周五, 01 9月 01:42]

A bacterium that attacks people suffering from chronic lung disease and compromised immune systems could be halted by disrupting the distribution channels the organism uses to access the nutrient-rich cytoplasm of its host cell.

• [Fossil footprints challenge established theories of human evolution](#) [周五, 01 9月 01:42]

Newly discovered human-like footprints from Crete may put the established narrative of early human evolution to the test. The footprints are approximately 5.7 million years old and were made at a time when previous research puts our ancestors in Africa -- with ape-like feet.

• [New findings on brain functional connectivity may lend insights into mental disorders](#) [周五, 01 9月 01:13]

Ongoing advances in understanding the functional connections within the brain are producing exciting insights into how the brain circuits function together to support human behavior — and may lead to new discoveries in the development and treatment of psychiatric disorders, according to a review.

• [Human bones in south Mexico: Stalagmite reveals their age as 13,000 years old](#) [周五, 01 9月 01:12]

A prehistoric human skeleton found on the Yucatán Peninsula is at least 13,000 years old and most likely dates from a glacial period at the end of the most recent ice age, the late Pleistocene. A German-Mexican team of researchers has now dated the fossil skeleton based on a stalagmite that grew on the hip bone.

• [Chemo-boosting drug discovered for leukemia](#) [周五, 01 9月 00:30]

Drugs developed to treat heart and blood vessel problems could be used in combination with chemotherapy to treat an aggressive form of adult leukemia, new research reveals.

• [Yawning: Why is it so contagious and why should it matter?](#) [周五, 01 9月 00:30]

Feeling tired? Even if we aren't tired, why do we yawn if someone else does? Experts have published research that suggests the human propensity for contagious yawning is triggered automatically by primitive reflexes in the primary motor cortex -- an area of the brain responsible for motor function. Their study is another stage in their research into the underlying biology of neuropsychiatric disorders and their search for new methods of treatment.

[Scents and social preference: Neuroscientists ID the roots of attraction](#) [周五, 01 9月 00:30]

Culminating a series of studies stretching back eight years, biologists have identified the cellular and molecular basis for social preference, known in the animal kingdom as 'imprinting.' Through in vivo experiments, the researchers found the neurological roots of kinship attraction and aversion. They also employed genetics screening to find the regulators controlling this behavior. The study carries implications for understanding social attraction and aversion in a range of animals and humans.

[What changes when you warm the Antarctic Ocean just 1 degree? Lots](#) [周五, 01 9月 00:30]

After warming a natural seabed in the Antarctic Ocean by just 1° or 2° Celsius, researchers observed massive impacts on a marine assemblage, as growth rates nearly doubled. The findings of what the researchers call the 'most realistic ocean warming experiment to date' show that the effects of future warming may far exceed expectations.

[Bacterial protein acts as aphrodisiac for choanoflagellates](#) [周五, 01 9月 00:30]

Researchers investigating how single-celled organisms evolved to become multicellular stumbled across a strange phenomenon during their experiments: Single-celled eukaryotes called choanoflagellates, which are the closest living relatives to animals, begin to sexually reproduce in response to a protein produced by bacteria. Why this happens in natural settings is still unclear, though they speculate that it could help the choanoflagellates easily mate with others from the same

species.

- [**Caching system could make data centers more energy efficient**](#) [周四, 31 8月 23:52]

Researchers have developed a new system for data center caching that uses flash memory, the kind of memory used in most smartphones.

- [**Songbird study shows how estrogen may stop infection-induced brain inflammation**](#) [周四, 31 8月 23:30]

Estrogen synthesis, a process naturally occurring in the brains of zebra finches, may also fight off neuroinflammation caused by infection that occurs elsewhere in the body, new research indicates.

- [**First hints of possible water content on TRAPPIST-1 planets**](#) [周四, 31 8月 23:30]

Astronomers have been trying to determine whether there might be water on the seven Earth-sized planets orbiting the nearby dwarf star TRAPPIST-1. The results suggest that the outer planets of the system might still harbor substantial amounts of water. This includes the three planets within the habitable zone of the star, lending further weight to the possibility that they may indeed be habitable.

- [**People become more economically conservative when angered**](#) [周四, 31 8月 23:30]

People tend to lean more economically conservative when they're angry, according to a new article. Researchers came to the conclusion after running multiple studies that included more than 1,000 participants.

- [**How reading and writing with your child boost more than just literacy**](#) [周四, 31 8月 22:21]

Children who read and write at home -- whether for assignments or just for fun -- are building long-term study and executive function skills, according to a new article

- [**Newly emerged superbug discovered**](#) [周四, 31 8月 22:15]

Scientists have discovered a newly emerged superbug, hyper-resistant

and hypervirulent *Klebsiella pneumoniae*, which may cause untreatable and fatal infections in relatively healthy individuals and will pose enormous threat to human health.

- **[Why are coyote populations difficult to control?](#)**

[周四, 31 8月 22:15]

Conventional wisdom suggests that coyote control efforts actually result in an increase in the number of coyotes due to increasing litter sizes and pregnancy rates among individuals that survive.

- **[Beta blockers have positive effect in pulmonary arterial hypertension, researchers find](#)**

[周四, 31 8月 22:14]

A common heart disease medication, beta blockers, may help treat pulmonary arterial hypertension (PAH), a debilitating lung disease, researchers have found. Caused by high blood pressure in the pulmonary arteries, PAH is a progressive disease which usually leads to right-sided heart failure and death within five to seven years of diagnosis. Right-sided heart failure is the leading cause of death in PAH patients.

- **[Antidepressants found in fish brains in Great Lakes region](#)**

[周四, 31 8月 22:14]

Human antidepressants are building up in the brains of bass, walleye and several other fish common to the Great Lakes region, scientists say.

- **[Untreated sleep apnea shown to raise metabolic and cardiovascular stress](#)**

[周四, 31 8月 22:14]

Sleep apnea, left untreated for even a few days, can increase blood sugar and fat levels, stress hormones and blood pressure, according to a new study of sleeping subjects. This research adds further support for the consistent use of continuous positive airway pressure, a machine that increases air pressure in the throat to keep the airway open during sleep.

- **[Mind wandering is common during driving](#)**

[周四, 31 8月 22:14]

Scientists have investigated mind wandering in volunteers during a driving simulation. Astonishingly, during the simulation, the volunteers reported mind wandering 70 percent of the time. The researchers could identify specific changes in brain patterns when the volunteers were

mind wandering, but need to do further work to clarify if it is dangerous during driving.

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Cognitive fatigue after TBI linked with activation of caudate: Findings underscore the role of the caudate nucleus in the mechanism of cognitive fatigue in traumatic brain injury -- ScienceDaily

Kessler Foundation researchers have authored a new article that further elucidates the mechanisms for cognitive fatigue, a disabling symptom that affects many individuals after traumatic brain injury (TBI). The article, "Cognitive fatigue in individuals with traumatic brain injury is associated with caudate activation," was published online on August 21, 2017, in *Scientific Reports*. The authors are Glenn Wylie, DPhil, Ekaterina Dobryakova, PhD, John DeLuca, PhD, Nancy Chiaravalloti, PhD, of Kessler Foundation, and K. Essad of Dartmouth College Medical School.

Individuals with neurological damage often report difficulties with cognitive fatigue, a subjective lack of mental energy that is perceived to interfere with daily

activities. Because of poor correlation between self-reports of cognitive fatigue and tests of cognitive performance, scientists are looking at more objective measures, such as correlations with neuroimaging findings. In the Kessler study, brain activation patterns were compared in 22 individuals with moderate to severe TBI and 20 healthy controls. Both groups performed tasks of working memory during functional MRI imaging of the brain; the TBI group reported more fatigue, although performance was comparable between the groups. The results showed that the experience of self-reported fatigue is associated with activation changes in the caudate nucleus of the basal ganglia.

"These results are consistent with findings in our related research in the multiple sclerosis (MS) population," said Dr. Wylie, the lead author, "which suggests that the TBI and MS populations share a mechanism for cognitive fatigue." This has important implications for the development of effective treatments. "This study points to the caudate nucleus as a likely target for clinical interventions to alleviate fatigue," explained Dr. Wylie, who is associate director of Neuroscience Research and the Rocco Ortenzio Neuroimaging Center at Kessler Foundation.

Story Source:

Materials provided by [Kessler Foundation](#). *Note: Content may be edited for style and length.*

Journal Reference:

1. G. R. Wylie, E. Dobryakova, J. DeLuca, N. Chiaravalloti, K. Essad, H. Genova. **Cognitive fatigue in individuals with traumatic brain injury is associated with caudate activation.** *Scientific Reports*, 2017; 7 (1) DOI: [10.1038/s41598-017-08846-6](https://doi.org/10.1038/s41598-017-08846-6)
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Drug may curb female infertility from cancer treatments -- ScienceDaily

An existing drug may one day protect premenopausal women from life-altering infertility that commonly follows cancer treatments, according to a new study.

Women who are treated for cancer with radiation or certain chemotherapy drugs are commonly rendered sterile. According to a 2006 study from Weill Cornell Medicine, nearly 40 percent of all female breast cancer survivors experience premature ovarian failure, in which they lose normal function of their ovaries and often become infertile.

Women are born with a lifetime reserve of oocytes, or immature eggs, but those oocytes are among the most sensitive cells in the body and may be wiped out by such cancer treatments.

The current study, published Aug. 1 in the journal *Genetics*, was led by John Schimenti, Cornell's James Law Professor of Genetics in the Departments of Biomedical Sciences and Molecular Biology and

Genetics. It builds on his 2014 research that identified a so-called checkpoint protein (CHK2) that becomes activated when oocytes are damaged by radiation.

CHK2 functions in a pathway that eliminates oocytes with DNA damage, a natural function to protect against giving birth to offspring bearing new mutations. When the researchers irradiated mice lacking the CHK2 gene, the oocytes survived, eventually repaired the DNA damage, and the mice gave birth to healthy pups.

The new study explored whether the checkpoint 2 pathway could be chemically inhibited.

"It turns out there were pre-existing CHK2 inhibitor drugs that were developed, ironically enough, for cancer treatment, but they turned out not to be very useful for treating cancer," said Schimenti, the paper's senior author. Vera Rinaldi, a graduate student in Schimenti's lab, is the paper's first author. "By giving mice the inhibitor drug, a small molecule, it essentially mimicked the knockout of the checkpoint gene."

By inhibiting the checkpoint pathway, the oocytes were not killed by radiation and remained fertile, enabling birth of normal pups.

"The one major concern," Schimenti said, "is that even though these irradiated oocytes led to the birth of healthy mouse pups, it's conceivable that they harbor mutations that will become manifested in a generation or two, because we are circumventing an evolutionarily important mechanism of genetic quality control. This needs to be investigated by genome sequencing."

When doctors recognize the need for oocyte-damaging cancer treatments, women may have their oocytes or even ovarian tissue removed and frozen, but this practice delays treatment. Also, when women run out of oocytes, women's bodies naturally undergo menopause, as their hormonal systems shift.

"That is a serious dilemma and emotional issue," Schimenti said, "when you layer a cancer diagnosis on top of the prospect of having permanent life-altering effects as a result of chemotherapy, and must face the urgent decision of delaying treatment to freeze oocytes at the risk of one's own life."

The study sets a precedent for co-administering this or related drugs and starting cancer therapy simultaneously, though such interventions would first require lengthy human trials.

"While humans and mice have different physiologies, and there is much work to be done to determine safe and effective dosages for people, it is clear that we have the proof of principle for this approach," Schimenti said.

Ewelina Bolcun-Filas, a former postdoctoral associate in Schimenti's lab and an assistant professor at The Jackson Laboratory in Bar Harbor, Maine, is the paper's corresponding author.

Story Source:

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Intellectual disabilities caused by protein defect -- ScienceDaily

Intellectual disabilities are often caused by a mutation that damages a gene, preventing the associated protein from functioning properly. However, a mutation can also change the function of a gene. As a result, the gene in question acts in a completely different way. Researchers from Radboudumc discovered this mechanism in fifteen genes playing a role in the development of intellectual disabilities. Their research results published in the *American Journal of Human Genetics* on 31 August 2017 show that these changes in function play a more prominent role than previously thought.

Genes are responsible for protein production in cells. A common cause of intellectual disabilities is a de novo mutation (i.e. a mutation present in a child, but not in its parents) damaging a gene so severely that it is no longer able to produce functional proteins. The resulting protein defect will cause illness. In a number of disease-related genes, it is shown that a de novo

mutation does not eliminate the gene, but probably alters its function. These mutations are only located on specific parts of the gene.

Change in function

In order to find out how often this mechanism is involved, researchers from Radboudumc have combined the gene mutations in Dutch patients with a large international database comprising de novo mutations in patients. This research project was led by geneticist Christian Gilissen. "With our method, we were able to detect genes in which mutations not so much eliminate as affect the gene in another way. We found fifteen genes in which mutations cluster closely together, twelve of which being associated with developmental disorders. We also found three new genes that are likely to play a role in the development of intellectual disabilities as well," according to Gilissen.

Interactions

The de novo mutations that were found only change a very small part of a protein. The function of the protein remains largely, but not entirely the same. Gilissen

says: "The mutations are more likely to affect superficial parts of the proteins. These disturb interactions with other proteins and cause problems. Although mutations eliminating genes were often thought to be the main cause of intellectual disabilities, mutations altering the function of genes are now shown to be an important factor as well. That is a surprising finding."

Clustering mutations

Why are the de novo mutations that were found specifically clustered? Gilissen says: "There can be several explanations for that. Firstly, these genes show little natural variation. If such a gene is completely eliminated, a person may not be born. Only mutations located on very specific parts of the gene are viable. Consequently, only these mutations can be found. Another explanation can be that the mutations provide growth benefits to the sperm in which they develop. In that case, only these mutations would be able to survive."

New possibilities

The three newly-discovered genes playing a role in the

development of intellectual disabilities provide new diagnostic possibilities for patients. Gillissen says: "It is important that we have discovered a mechanism that has not yet been a focus of study. We expect this mechanism to play a role in a much larger proportion of patients with intellectual disabilities."

Story Source:

[Materials](#) provided by **[Radboud University Nijmegen Medical Centre](#)**. *Note: Content may be edited for style and length.*

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Reusable ruthenium-based catalyst could be a game-changer for the biomass industry -- ScienceDaily

Known for their outstanding versatility, primary amines (derivatives of ammonia) are industrially important compounds used in the preparation of a wide range of dyes, detergents and medicines. Although many attempts have been made to improve their synthesis using catalysts containing nickel, palladium and platinum, for example, few have succeeded in reducing the formation of secondary and tertiary amines and other undesired by-products.

Now, researchers at Tokyo Institute of Technology (Tokyo Tech) have developed a highly selective catalyst consisting of ruthenium nanoparticles supported on niobium pentoxide (Ru/Nb₂O₅). In a study published in the *Journal of the American Chemical Society*, the team demonstrated that Ru/Nb₂O₅ is capable of producing primary amines from carbonyl compounds with ammonia (NH₃) and dihydrogen (H₂), with negligible formation of by-

products.

The study compared the extent to which different catalysts could convert furfural to furfurylamine in a process known as reductive amination¹. This reaction is one of the most useful methods for producing primary amines on an industrial scale. The Ru/Nb₂O₅ catalyst outperformed all other types tested -- remarkably, a yield of 99% was attained when ammonia was used in excess quantity.

Even after three recycles, the Ru/Nb₂O₅ catalyst achieved consistent results, with consecutive yields of over 90%. The superior catalytic efficiency is thought to be due to ruthenium's weak electron-donating properties on the Nb₂O₅ surface.

Michikazu Hara of Tokyo Tech's Laboratory for Materials and Structures and his co-workers then explored how effectively the new catalyst could break down biomass (in the form of glucose) into 2,5-bis(aminomethyl)furan, a monomer for aramid production. Previous experiments using a nickel-based catalyst led to a yield of around 50% from glucose-derived feedstock (5-hydroxymethylfurfural). The new catalyst used in combination with a so-called

ruthenium-xantphos complex produced a yield of 93%. With little to no by-products observed, Ru/Nb₂O₅ represents a major breakthrough in the clean, large-scale production of biomass-derived materials.

Further studies to expand on these initial findings are already underway. By pushing the boundaries of material design, the researchers say that Ru/Nb₂O₅ may accelerate the production of environmentally friendly plastics, rubber and heat-resistant aramid fibers². In future, the Ru/Nb₂O₅ catalyst may also impact the development of novel anti-cancer drugs, anti-bacterials, pesticides, agrochemicals, fertilizers, bio-oils and biofuels.

Story Source:

Materials provided by [Tokyo Institute of Technology](#).

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Bit data goes anti-skyrmions -- ScienceDaily

Today's world, rapidly changing because of "big data," is encapsulated in trillions of tiny magnetic objects -- magnetic bits -- each of which stores one bit of data in magnetic disk drives. A group of scientists from the Max Planck Institutes in Halle and Dresden have discovered a new kind of magnetic nano-object in a novel material that could serve as a magnetic bit with cloaking properties to make a magnetic disk drive with no moving parts -- a Racetrack Memory -- a reality in the near future.

Most digital data is stored in the cloud as magnetic bits within massive numbers of magnetic disk drives. Over the past several decades these magnetic bits have shrunk by many orders of magnitude, reaching limits where the boundaries of these magnetic regions can have special properties. In some special materials these boundaries -- "magnetic domain walls" -- can be described as being topological. What this means is that these walls can be thought of as having a special

magical cloak -- what is referred to by scientists as "topological protection." An important consequence is that such magnetic walls are more stable to perturbations than similar magnetic bits without topological protection that are formed in conventional magnetic materials. Thus, these "topological" magnetic objects could be especially useful for storing "1"s and "0"s, the basic elements of digital data.

One such object is a "magnetic skyrmion" which is a tiny magnetic region, perhaps tens to hundreds of atoms wide, separated from a surrounding magnetic region by a chiral domain wall. Until recently only one type of skyrmion has been found in which it is surrounded by a chiral domain wall that takes the same form in all directions. But there have been predictions of several other types of skyrmions that were not yet observed. Now in a paper published in *Nature*, scientists from Prof. Stuart Parkin's NISE department at the Max Planck Institute for Microstructure Physics in Halle, Germany, have found a second class of skyrmions, what are called "anti-skyrmions," in materials synthesized in Prof. Claudia Felser's Solid State Chemistry Department at the Max Planck Institute for CPFS, Dresden, Germany.

The scientists from Halle and Dresden have found these tiny magnetic objects in a special class of versatile magnetic compounds called Heusler compounds that Claudia Felser and her colleagues have explored extensively over the past 20 years. Of these Heusler compounds, a tiny subset have just the right crystal symmetry to allow for the possibility of forming anti-skyrmions but not skyrmions. Using a highly sensitive transmission electron microscope at the Max Planck Institute for Microstructure Physics, Halle, that was specially modified to allow for the detection of tiny magnetic moments, anti-skyrmions were created and detected over a wide range of temperatures and magnetic fields. Most importantly, anti-skyrmions, both in ordered arrays and as isolated objects, could be seen even at room temperature and in zero magnetic fields.

The special cloaking properties of skyrmions makes them of great interest for a radically new form of solid-state memory -- the Racetrack Memory -- that was proposed by Stuart Parkin a decade ago. In Racetrack Memory digital data is encoded within magnetic domain walls that are packed closely within nanoscopic magnetic wires. One of the unique features of Racetrack Memory, which is distinct from all other

memories, is that the walls are moved around the nanowires themselves using recent discoveries in spin-orbitronics. Very short pulses of current move all the domain walls backwards and forwards along the nanowires. The walls -- the magnetic bits -- can be read and written by devices incorporated directly into the nanowires themselves, thereby eliminating any mechanical parts. Topologically protected magnetic walls are very promising for Racetrack Memory.

Thus, anti-skyrmions could be coming to Racetrack Memory soon! Going even beyond anti-skyrmions the next goal is the realization of a third class of skyrmions -- antiferromagnetic skyrmions -- which are tiny magnetic objects that actually have no net magnetic moment. They are magnetically almost invisible but have unique properties that make them of great interest.

Story Source:

[Materials](#) provided by [Max Planck Institute for Chemical Physics of Solids](#). *Note: Content may be edited for style and length.*

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- [Equatorial jet in Venusian atmosphere](#) [周五, 01 9月 21:38]

Observations by Japan's Venus climate orbiter Akatsuki have revealed an equatorial jet in the lower to middle cloud layer of the planet's atmosphere, a finding that could be pivotal to unraveling a phenomenon called superrotation.

- [Mouth clicks used in human echolocation captured in unprecedented detail](#) [周五, 01 9月 02:13]

Like some bats and marine mammals, people can develop expert echolocation skills, in which they produce a clicking sound with their mouths and listen to the reflected sound waves to 'see' their surroundings. A new study provides the first in-depth analysis of the mouth clicks used in human echolocation.

- [Reconstructing life at its beginning, cell by cell](#) [周五, 01 9月 02:12]

In a technological tour de force, scientists have created a virtual model of an early fly embryo. Its interactive interface allows researchers to explore the blueprint that underlies development at unprecedented spatial resolution and predict which cells express which genes.

- [Fossil footprints challenge established theories of human evolution](#) [周五, 01 9月 01:42]

Newly discovered human-like footprints from Crete may put the established narrative of early human evolution to the test. The footprints are approximately 5.7 million years old and were made at a time when previous research puts our ancestors in Africa -- with ape-like feet.

- [Human bones in south Mexico: Stalagmite](#)

reveals their age as 13,000 years old [周五, 01 9月 01:12]

A prehistoric human skeleton found on the Yucatán Peninsula is at least 13,000 years old and most likely dates from a glacial period at the end of the most recent ice age, the late Pleistocene. A German-Mexican team of researchers has now dated the fossil skeleton based on a stalagmite that grew on the hip bone.

Yawning: Why is it so contagious and why should it matter? [周五, 01 9月 00:30]

Feeling tired? Even if we aren't tired, why do we yawn if someone else does? Experts have published research that suggests the human propensity for contagious yawning is triggered automatically by primitive reflexes in the primary motor cortex -- an area of the brain responsible for motor function. Their study is another stage in their research into the underlying biology of neuropsychiatric disorders and their search for new methods of treatment.

Scents and social preference: Neuroscientists ID the roots of attraction [周五, 01 9月 00:30]

Culminating a series of studies stretching back eight years, biologists have identified the cellular and molecular basis for social preference, known in the animal kingdom as 'imprinting.' Through in vivo experiments, the researchers found the neurological roots of kinship attraction and aversion. They also employed genetics screening to find the regulators controlling this behavior. The study carries implications for understanding social attraction and aversion in a range of animals and humans.

What changes when you warm the Antarctic Ocean just 1 degree? Lots [周五, 01 9月 00:30]

After warming a natural seabed in the Antarctic Ocean by just 1° or 2° Celsius, researchers observed massive impacts on a marine assemblage, as growth rates nearly doubled. The findings of what the researchers call the 'most realistic ocean warming experiment to date' show that the effects of future warming may far exceed expectations.

- [**First hints of possible water content on TRAPPIST-1 planets**](#) [周四, 31 8月 23:30]

Astronomers have been trying to determine whether there might be water on the seven Earth-sized planets orbiting the nearby dwarf star TRAPPIST-1. The results suggest that the outer planets of the system might still harbor substantial amounts of water. This includes the three planets within the habitable zone of the star, lending further weight to the possibility that they may indeed be habitable.

- [**How Neanderthals made the very first glue**](#) [周四, 31 8月 21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

- [**Apes' abilities misunderstood by decades of poor science**](#) [周四, 31 8月 21:14]

Hundreds of scientific studies over two decades have told us that apes are clever -- just not as clever as us. New analysis argues that what we think we know about apes' social intelligence is based on wishful thinking and flawed science.

- [**Robot learns to follow orders like Alexa**](#) [周四, 31 8月 21:14]

Computer scientists have developed an Alexa-like system that allows robots to understand a wide range of commands that require contextual knowledge about objects and their environments. They've dubbed the system 'ComText,' for 'commands in context.'

- [**New hope for reef fish living in a high CO2 world**](#) [周四, 31 8月 21:14]

New research examining the possible impacts of ocean acidification provides fresh hope for the survival of reef fish.

- [**Star-formation 'fuel tanks' found around distant galaxies**](#) [周四, 31 8月 05:25]

Astronomers have studied six distant starburst galaxies and discovered that five of them are surrounded by turbulent reservoirs of hydrogen gas,

the fuel for future star formation.

- [**Toward a smart graphene membrane to desalinate water**](#) [周四, 31 8月 05:23]

A simple, sturdy graphene-based hybrid desalination membrane can provide clean water for agriculture and possibly human consumption.

- [**Protecting the guardians**](#) [周四, 31 8月 03:55]

A guardian gene that protects against type 1 diabetes and other autoimmune diseases exerts its pancreas-shielding effects by altering the gut microbiota. Experiments in mice born with the protective gene show that exposure to antibiotics during critical windows of development fuels risk for type 1 diabetes and leads to loss of genetic protection by altering the gut microbiota. Scientists say the findings underscore the importance of avoiding antibiotic use during late pregnancy and early infancy.

- [**Bioengineering a functional vascularized lung scaffold**](#) [周四, 31 8月 02:12]

A team of researchers is the first to successfully bioengineer a functional lung with perfusable and healthy vasculature in an ex vivo rodent lung. Their new approach allows the removal of the pulmonary epithelium while maintaining the viability and function of the vascular network and the lung matrix.

- [**Gut bacteria that 'talk' to human cells may lead to new treatments**](#) [周四, 31 8月 02:12]

Scientists developed a method to genetically engineer gut bacteria to produce molecules that have the potential to treat certain disorders by altering human metabolism.

- [**Scientists recover nova first spotted 600 years ago by Korean astrologers**](#) [周四, 31 8月 01:22]

A new study pinpoints the location of a nova first spotted by Korean astrologers almost 600 years ago that now undergoes smaller-scale 'dwarf nova' eruptions. The work supports that idea that novae go

through a very long-term life cycle after erupting, fading to obscurity for thousands of years, and then building back up to become full-fledged novae once more.

- [**Monkeys with Parkinson's disease benefit from human stem cells**](#) [周四, 31 8月 01:22]

Japanese neurosurgeons report two new strategies to improve outcomes of iPS cell-based therapies for Parkinson's disease in monkey brains. The findings are a key step for patient recruitment of the first iPS cell-based therapy to treat neurodegenerative diseases.

- [**Motorized molecules drill through cells**](#) [周四, 31 8月 01:22]

Motorized molecules that target diseased cells may deliver drugs to or kill the cells by drilling into the cell membranes. Scientists have demonstrated them on cancer and other cells.

- [**Volcanic eruptions drove ancient global warming event**](#) [周四, 31 8月 01:22]

A natural global warming event that took place 56 million years ago was triggered almost entirely by volcanic eruptions that occurred as Greenland separated from Europe during the opening of the North Atlantic Ocean, according to new research.

- [**Acting like a muscle, nano-sized device lifts 165 times its own weight**](#) [周四, 31 8月 01:22]

Engineers have discovered a simple, economical way to make a nano-sized device that can match the friendly neighborhood Avenger, on a much smaller scale. Their creation weighs 1.6 milligrams (about as much as five poppy seeds) and can lift 265 milligrams (the weight of about 825 poppy seeds) hundreds of times in a row.

- [**Uncovering factors that shape sea life**](#) [周四, 31 8月 01:22]

Researchers have proposed a new conceptual model of island biogeography for marine organisms -- a theory that explores how different processes (like sea level fluctuations and geographic isolation) influence marine species diversity around islands.

• [**Otters learn by copying each other**](#) [周四, 31 8月 01:11]

Otters can learn how to solve puzzles by watching and copying each other, new research shows.

• [**What lit up the universe? Black holes may have punctured darkened galaxies, allowing light to escape**](#) [周三, 30 8月 23:48]

Researchers have a new explanation for how the universe changed from darkness to light. They propose that black holes within galaxies produce winds strong enough to fling out matter that punctures holes in galaxies, allowing light to escape.

• [**Shifting school start times could contribute \\$83 billion to US economy within a decade**](#) [周三, 30 8月 22:36]

RAND Corporation and RAND Europe have released the first-ever analysis of the economic implications of a shift in school start times in the US. The study shows that a nationwide move to 8.30 a.m. could lead to an economic gain of \$83 billion to the US economy within a decade. The gains projected through the study's economic model would be realized through the higher academic and professional performance of students, and reduced car crash rates.

• [**Patient plays saxophone while surgeons remove brain tumor**](#) [周三, 30 8月 22:36]

Music is not only a major part of Dan Fabbio's life, as a music teacher it is his livelihood. So when doctors discovered a tumor located in the part of his brain responsible for music function, he began a long journey that involved a team of physicians, scientists, and a music professor and culminated with him awake and playing a saxophone as surgeons operated on his brain.

• [**Understanding ancient geometric earthworks in southwestern Amazonia**](#) [周三, 30 8月 22:34]

Researchers examine pre-colonial geometric earthworks in the southwestern Amazonia from the point of view of indigenous peoples

and archaeology. The study shows that the earthworks were once important ritual communication spaces.

- [**New robot rolls with the rules of pedestrian conduct**](#) [周三, 30 8月 22:34]

Engineers have designed an autonomous robot with 'socially aware navigation,' that can keep pace with foot traffic while observing these general codes of pedestrian conduct.

- [**Robot probes mystery of prehistoric sea creature's swimming style**](#) [周三, 30 8月 22:26]

A new study has shed light on the swimming style of plesiosaurs by creating a robot to mimic its movements.

- [**Methane emissions tackled with gas-guzzling bacteria**](#) [周三, 30 8月 21:45]

Methane-oxidizing bacteria -- key organisms responsible for greenhouse gas mitigation -- are more flexible and resilient than previously thought, an international research has shown.

- [**Fossil whales' teeth shows what ferocious predators they were**](#) [周三, 30 8月 21:45]

The feeding habits of the whale -- the world's biggest animal -- have evolved to filter feeding, shows new international research. Ancient whales appear to have been ferocious predators, investigators explain.

- [**Century-old seal pelts reveal changes in Ross Sea ecosystem**](#) [周三, 30 8月 21:43]

Scientists sampled a pile of frozen pelts left in a hut by Antarctic explorers for Weddell seal tissue from a century ago, at the very start of human activities in Antarctica. By using sophisticated isotope analysis to compare samples from modern and century-old seals, they were able to investigate human impacts on the Antarctic ecosystem.

- [**Why does rubbing a balloon on your hair make it stick?**](#) [周三, 30 8月 01:53]

New research indicates that tiny holes and cracks in a material -- changes in the microstructure -- can control how the material becomes electrically charged through friction.

- [**Sense of smell is key factor in bird navigation, new study shows**](#) [周二, 29 8月 23:38]

How do birds navigate over long distances? This complex question has been the subject of debate and controversy among scientists for decades, with Earth's magnetic field and the bird's own sense of smell among the factors said to play a part. Now, researchers from the universities of Oxford, Barcelona and Pisa have shown in a new experiment that olfaction -- or sense of smell -- is almost certainly a key factor in long-distance oceanic navigation, eliminating previous misgivings about this hypoth...

- [**Woolly rhino neck ribs provide clues about their decline and eventual extinction**](#) [周二, 29 8月 21:10]

A study reports on the incidence of abnormal cervical (neck) vertebrae in woolly rhinos, which strongly suggests a vulnerable condition in the species. Given the considerable birth defects that are associated with this condition, the researchers argue it is very possible that developmental abnormalities contributed towards the eventual extinction of these late Pleistocene rhinos.

- [**An alternative to wolf control to save endangered caribou**](#) [周二, 29 8月 21:10]

The iconic woodland caribou across North America face increasing predation pressures from wolves. A short-term solution to caribou conservation would be to kill wolves. But a new government policy looks at reducing the invasive species moose numbers propping up the wolf population. Researchers have now evaluated the effects of this policy on the caribou population.

- [**Moderate consumption of fats, carbohydrates best for health, international study shows**](#) [周二, 29 8月 21:10]

21:10]

A diet that includes a moderate intake of fat and fruits and vegetables, and avoidance of high carbohydrates, is associated with lower risk of death, research with more than 135,000 people across five continents has shown.

• [**Complete remission of brain metastasis of difficult-to-treat tumor**](#) [周二, 29 8月 02:07]

Medical researchers report a remarkable treatment response in a patient participating in a clinical trial of a novel immune-system-based cancer therapy.

• [**Algae fortifies coral reefs in past and present**](#) [周二, 29 8月 02:07]

The Great Barrier Reef, and most other large reefs around the world, owe their bulk in large part to a type of red algae that grows on corals and strengthens them. New research has found that ancient coral reefs were also bolstered by their bond with red algae, a finding that could help scientists better understand how reefs will respond to climate change.

• [**Galaxy 5 billion light-years away shows we live in a magnetic universe**](#) [周二, 29 8月 00:45]

A chance combination of a gravitational lens and polarized waves coming from a distant quasar gave astronomers the tool needed to make a measurement important to understanding the origin of magnetic fields in galaxies.

• [**Keeping pandas off endangered list ledge**](#) [周一, 28 8月 22:54]

Things aren't all black and white for giant pandas. The beloved Chinese icons have basked in good press lately -- their extinction risk status downgraded from 'endangered' to 'vulnerable,' their good fortunes have shown to rub off on their less charismatic forest neighbors that benefit from panda-centric conservation efforts.

• [**Compounds in cocoa may help delay onset of type 2 diabetes**](#) [周一, 28 8月 22:27]

What if eating chocolate helped prevent and treat diabetes? It's crazy

enough to laugh off. But here's the thing: Researchers have discovered certain compounds found in cocoa can actually help your body release more insulin and respond to increased blood glucose better. Insulin is the hormone that manages glucose, the blood sugar that reaches unhealthy levels in diabetes.

• [**Eating triggers endorphin release in the brain**](#) [周一, 28 8月 22:27]

Researchers have revealed how eating stimulates brain's endogenous opioid system to signal pleasure and satiety.

• [**Oil and gas wells as a strong source of greenhouse gases**](#) [周一, 28 8月 22:27]

Boreholes in the North Sea could constitute a significantly more important source of methane, a strong greenhouse gas, than previously thought. Large amounts of methane are released from the sediments surrounding boreholes, probably over long periods of time.

• [**New ancient sea reptile found in Germany, the earliest of its kind**](#) [周一, 28 8月 21:39]

A previously unrecognized 132 million-year-old fossilized sea monster from northern Germany has been identified.

• [**Statins linked to lower rates of breast cancer and mortality**](#) [周一, 28 8月 21:38]

A 14 year study in more than one million people has found that women with high cholesterol have significantly lower rates of breast cancer and improved mortality. The research suggests that statins are associated with lower rates of breast cancer and subsequent mortality.

• [**Air temperature is external trigger for heart attack**](#) [周一, 28 8月 21:38]

A 16-year study in more than 280,000 patients has suggested that air temperature is an external trigger for heart attack. The average number of heart attacks per day was significantly higher during seasons with colder outdoor temperatures as compared to warmer.

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

- [**Cognitive fatigue after TBI linked with activation of caudate**](#) [周六, 02 9月 00:51]

Researchers have further elucidated the mechanisms for cognitive fatigue, a disabling symptom that affects many individuals after traumatic brain injury (TBI).

- [**Drug may curb female infertility from cancer treatments**](#) [周六, 02 9月 00:51]

An existing drug may one day protect premenopausal women from life-altering infertility that commonly follows cancer treatments, according to a new study.

- [**Intellectual disabilities caused by protein defect**](#)

[周五, 01 9月 23:36]

Intellectual disabilities are often caused by a mutation that damages a gene, preventing the associated protein from functioning properly. However, a mutation can also change the function of a gene. As a result, the gene in question acts in a completely different way. Researchers discovered this mechanism in fifteen genes playing a role in the development of intellectual disabilities. Their research results show that these changes in function play a more prominent role than previously thought.

- [**Etosis phenomenon discovered in human blood monocytes**](#) [周五, 01 9月 22:46]

The first clear demonstration of etosis in human blood monocytes, a type of immune cell, has now been discovered by scientists.

• [**Lifestyle factors may affect how long individuals live free of disability**](#) [周五, 01 9月 22:46]

New research indicates that a healthy lifestyle may help reduce the duration of an individual's disabled period near the end of life.

• [**Genes fueling neuroblastoma spread now identified**](#) [周五, 01 9月 06:03]

For the first time, researchers present data on how nervous system tumors, called neuroblastomas, spread. Their paper clarifies the relationship between two genes that fuel the aggressive spread of neuroblastomas.

• [**Asthma medicine halves risk of Parkinson's**](#) [周五, 01 9月 06:03]

Using data gathered from 100 million Norwegian prescriptions, researchers have found that asthma medicine can halve a patient's risk of developing Parkinson's disease.

• [**New genetic risk factor for developing autism spectrum disorder identified**](#) [周五, 01 9月 06:03]

A new systematic analysis has been applied to a cohort of 2,300 families who have a single child affected with autism. The study focused on identifying and characterizing low-lying genetic mutations that may have been missed in previous research, given these mutations are only present in a fraction of the bulk DNA of an individual.

• [**New boarding procedures, smaller cabin size may limit infection on planes**](#) [周五, 01 9月 03:13]

During major epidemics, cramped airplane cabins are fertile ground for the spread of infection, but new research suggests changing routine boarding protocols could be a key to reducing rampant transmission of disease.

• [**Discovery may be key to obesity, Diabetes Rx**](#) [周五, 01 9月 03:12]

Research has demonstrated the potential of a protein to treat or prevent metabolic diseases including obesity and diabetes.

• [**Measuring the cost of quality measurement**](#) [周五, 01 9月 03:12]

Less than 2 decades after publication of the National Academy of Medicine's (formerly the Institute of Medicine) Crossing the Quality Chasm: A New Health System for the 21st Century, quality measurement has become routine and widespread throughout the US health care system.

• [**Mouth clicks used in human echolocation captured in unprecedented detail**](#) [周五, 01 9月 02:13]

Like some bats and marine mammals, people can develop expert echolocation skills, in which they produce a clicking sound with their mouths and listen to the reflected sound waves to 'see' their surroundings. A new study provides the first in-depth analysis of the mouth clicks used in human echolocation.

• [**New source for brain's development discovered**](#) [周五, 01 9月 02:13]

An unexpected source for the brain's development has been discovered by researchers, a finding that offers new insights into the building of the nervous system.

• [**Does indoor spraying help prevent dengue?**](#) [周五, 01 9月 02:13]

The prevention of dengue, the most prevalent mosquito-borne virus in the world, relies heavily on controlling mosquito populations, as the currently available dengue vaccine is only partially effective. Indoor spraying -- which involves spraying of insecticides inside houses -- has the potential to be a key part of those prevention efforts, researchers report.

• [**Drugs targeting the beta2-adrenoreceptor linked to Parkinson's disease**](#) [周五, 01 9月 02:12]

Researchers want to prevent alpha-synuclein from accumulating in the brain. To do so, the team searched for drugs that turn down alpha-synuclein production. They then tested the drugs in mice and stem cells and studied in data from the health records of millions of people living in Norway. The results of their efforts, point to a new drug development

path for PD.

- [**Drugs found to be more effective against depression than electric current**](#) [周五, 01 9月 02:05]

Medicinal therapy was found to be more than twice as effective as low-intensity brain stimulation in treating depression, according to a study.

- [**New findings on brain functional connectivity may lend insights into mental disorders**](#) [周五, 01 9月 01:13]

Ongoing advances in understanding the functional connections within the brain are producing exciting insights into how the brain circuits function together to support human behavior — and may lead to new discoveries in the development and treatment of psychiatric disorders, according to a review.

- [**Chemo-boosting drug discovered for leukemia**](#) [周五, 01 9月 00:30]

Drugs developed to treat heart and blood vessel problems could be used in combination with chemotherapy to treat an aggressive form of adult leukemia, new research reveals.

- [**Yawning: Why is it so contagious and why should it matter?**](#) [周五, 01 9月 00:30]

Feeling tired? Even if we aren't tired, why do we yawn if someone else does? Experts have published research that suggests the human propensity for contagious yawning is triggered automatically by primitive reflexes in the primary motor cortex -- an area of the brain responsible for motor function. Their study is another stage in their research into the underlying biology of neuropsychiatric disorders and their search for new methods of treatment.

- [**Scents and social preference: Neuroscientists ID the roots of attraction**](#) [周五, 01 9月 00:30]

Culminating a series of studies stretching back eight years, biologists have identified the cellular and molecular basis for social preference, known in the animal kingdom as 'imprinting.' Through in vivo experiments, the researchers found the neurological roots of kinship

attraction and aversion. They also employed genetics screening to find the regulators controlling this behavior. The study carries implications for understanding social attraction and aversion in a range of animals and humans.

- [**Songbird study shows how estrogen may stop infection-induced brain inflammation**](#) [周四, 31 8月 23:30]

Estrogen synthesis, a process naturally occurring in the brains of zebra finches, may also fight off neuroinflammation caused by infection that occurs elsewhere in the body, new research indicates.

- [**People become more economically conservative when angered**](#) [周四, 31 8月 23:30]

People tend to lean more economically conservative when they're angry, according to a new article. Researchers came to the conclusion after running multiple studies that included more than 1,000 participants.

- [**How reading and writing with your child boost more than just literacy**](#) [周四, 31 8月 22:21]

Children who read and write at home -- whether for assignments or just for fun -- are building long-term study and executive function skills, according to a new article

- [**Newly emerged superbug discovered**](#) [周四, 31 8月 22:15]

Scientists have discovered a newly emerged superbug, hyper-resistant and hypervirulent *Klebsiella pneumoniae*, which may cause untreatable and fatal infections in relatively healthy individuals and will pose enormous threat to human health.

- [**Beta blockers have positive effect in pulmonary arterial hypertension, researchers find**](#) [周四, 31 8月 22:14]

A common heart disease medication, beta blockers, may help treat pulmonary arterial hypertension (PAH), a debilitating lung disease, researchers have found. Caused by high blood pressure in the pulmonary arteries, PAH is a progressive disease which usually leads to right-sided heart failure and death within five to seven years of diagnosis. Right-

sided heart failure is the leading cause of death in PAH patients.

- [**Untreated sleep apnea shown to raise metabolic and cardiovascular stress**](#) [周四, 31 8月 22:14]

Sleep apnea, left untreated for even a few days, can increase blood sugar and fat levels, stress hormones and blood pressure, according to a new study of sleeping subjects. This research adds further support for the consistent use of continuous positive airway pressure, a machine that increases air pressure in the throat to keep the airway open during sleep.

- [**Mind wandering is common during driving**](#) [周四, 31 8月 22:14]

Scientists have investigated mind wandering in volunteers during a driving simulation. Astonishingly, during the simulation, the volunteers reported mind wandering 70 percent of the time. The researchers could identify specific changes in brain patterns when the volunteers were mind wandering, but need to do further work to clarify if it is dangerous during driving.

- [**Children's sleep quality linked to mothers' insomnia**](#) [周四, 31 8月 21:33]

Children sleep more poorly if their mothers suffer from insomnia symptoms – potentially affecting their mental wellbeing and development - according to new research. Nearly 200 school kids and their parents were studied, results indicating that children whose mothers have insomnia symptoms fall asleep later, get less sleep and spend less time in deep sleep. There appeared to be no link between fathers' insomnia symptoms and children's sleep.

- [**Little known theory could hold key to sporting success**](#) [周四, 31 8月 21:33]

An established but little known psychological theory is likely to improve performances across a range of activities, including sport, according to new research.

- [**Severe stress behind self-perceived memory problems**](#) [周四, 31 8月 21:33]

Stress, fatigue, and feeling like your memory is failing you. These are the symptoms of a growing group of patients. Result – They may need help, but they are rarely entering the initial stages of dementia.

- [**New possibility of studying how Alzheimer's disease affects the brain at different ages**](#) [周四, 31 8月 21:33]

Alzheimer's disease can lead to several widely divergent symptoms and, so far, its various expressions have mainly been observed through the behavior and actions of patients. Researchers have now produced images showing the changes in the brain associated with these symptoms – a development which increases knowledge and could facilitate future diagnostics and treatment.

- [**First look at potentially deadly metabolic disorder that strikes infants**](#) [周四, 31 8月 21:32]

You may have never heard of congenital disorder of glycosylation, but parents whose children are born with forms of this rare -- and underreported -- metabolic disorder know all too well the dangers they pose, including developmental delay, failure to thrive, stroke-like symptoms, seizures and cerebellar dysfunction.

- [**Using DNA to predict schizophrenia, autism**](#) [周四, 31 8月 21:32]

A single amino acid substitution in the protein CX3CR1 may act as predictor for schizophrenia and autism, a multi-institute collaboration demonstrates.

- [**Faulty DNA repair depresses neural development**](#) [周四, 31 8月 21:32]

Researchers have discovered DNA polymerase β (Pol β) deficiency in neural stem cells affects neuronal survival and neural network in the developing brain.

- [**A philosophical mythbuster**](#) [周四, 31 8月 21:32]

Cognitive neuroscience gives us a glimpse into our brain activity; it allows us to learn more about ourselves. Or do brain scans actually not say very much about who we are? A philosopher examines four myths

about neuroscience and self-understanding.

- [**Alcohol abuse, dental conditions, mental health found to be causes of avoidable US emergency visits**](#) [周四, 31 8月 21:26]

Alcohol abuse, dental conditions, and mental health were found to be the main causes of avoidable emergency room visits in the US, a new report reveals.

- [**Love your beauty rest? You can thank these brain cells**](#) [周四, 31 8月 21:14]

Researchers report the unexpected presence of a type of neuron in the brains of mice that appears to play a central role in promoting sleep by turning 'off' wake-promoting neurons. The newly identified brain cells, located in a part of the hypothalamus called the zona incerta, they say, could offer novel drug targets to treat sleep disorders, such as insomnia and narcolepsy, caused by the dysfunction of sleep-regulating neurons.

- [**New Zealand researchers makes 'natural born killer' cell discovery**](#) [周四, 31 8月 21:14]

An unexpected role for a white blood cell called the Natural Killer (NK) cell -- a critical cell for ridding the body of infection and cancer, has been discovered. The NK cell is a 'vigilante' killer -- a white blood cell that destroys invaders and cancer cells through a process of 'identity card' checking. The researchers' new work shows that violent vigilante NK cells act as helper cells to start up the immune response.

- [**Perfect mannequins a turnoff for some consumers**](#) [周四, 31 8月 21:14]

Mannequins' long legs, tiny waistlines and perfect busts can sour some shoppers on the products they're wearing, especially consumers who don't like the look of their own bodies.

- [**Fathers of American newborns keep getting older, study finds**](#) [周四, 31 8月 21:14]

While data on the moms of newborn American children has been

abundant, equivalent data on dads hasn't -- a gap that scientists have now filled.

- [**E-cigarettes can help smokers quit, but there's a catch**](#) [周四, 31 8月 21:14]

Frequent e-cigarette use does help smokers quit -- a finding that researchers say supports the use of e-cigarettes as a cessation aid for those trying to quit cigarette smoking. But, they note, an examination of a recent national survey uncovers important clues about who's successful at quitting and why.

- [**Three policies to improve children's language development**](#) [周四, 31 8月 21:14]

Bilingual children from low-income homes are at greater risk of falling behind their peers in developing the appropriate language skills for their age group, leading to poorer academic achievement over time. A new article addresses how inequality impacts children's language development and details policies that can intervene.

- [**Good as gold**](#) [周四, 31 8月 08:21]

Few experiences invoke as much anxiety as a call from your doctor saying 'you need to come back for more tests.' Your imagination goes wild and suddenly a routine medical screening becomes a minefield of potential life-threatening diseases. It's highly likely, however, that you have fallen victim to a false positive -- a result that, despite the accuracy of the test, erroneously yields an affirmative result that points toward illness. To increase the accuracy of medical screening and reduce the i...

- [**Gold nanoparticles fry cancer on glowing mice**](#) [周四, 31 8月 08:21]

A new study takes a new approach to killing cancer: Why not fry it into oblivion with vibrating gold nanoparticles?

- [**Eating protein three times a day could make our seniors stronger**](#) [周四, 31 8月 08:21]

Loss of muscle is an inevitable consequence of aging that can lead to frailty, falls or mobility problems. Eating enough protein is one way to

remedy it, but it would seem that spreading protein equally among the three daily meals could be linked to greater mass and muscle strength in the elderly.

- [**Z-endoxifen shows promise as new treatment for common breast cancer type**](#) [周四, 31 8月 08:21]

Z-endoxifen, a potent derivative of the drug tamoxifen, could itself be a new treatment for the most common form of breast cancer in women with metastatic disease, report investigators.

- [**Virus that causes mono may increase risk of MS for multiple races**](#) [周四, 31 8月 05:21]

Like whites, Hispanic and black people who have had mononucleosis, commonly known as mono, which is caused by Epstein-Barr virus, may have an increased risk of multiple sclerosis (MS), according to a new study.

- [**Concerns regarding radioactivity in migratory seafood negated**](#) [周四, 31 8月 03:55]

New research shows negligible risk from consumption of meat from migratory marine predators following Fukushima nuclear disaster.

- [**Protecting the guardians**](#) [周四, 31 8月 03:55]

A guardian gene that protects against type 1 diabetes and other autoimmune diseases exerts its pancreas-shielding effects by altering the gut microbiota. Experiments in mice born with the protective gene show that exposure to antibiotics during critical windows of development fuels risk for type 1 diabetes and leads to loss of genetic protection by altering the gut microbiota. Scientists say the findings underscore the importance of avoiding antibiotic use during late pregnancy and early infancy.

- [**Breastfeeding reduces risk of endometriosis diagnosis**](#) [周四, 31 8月 03:55]

Women who breastfed for longer periods of time had significantly lower risk of being diagnosed with endometriosis, offering new insights into a

condition that, up until now, has had very few known, modifiable risk factors, a new study concludes.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

- [**Reusable ruthenium-based catalyst could be a game-changer for the biomass industry**](#) [周五, 01 9月 22:46]

Researchers have developed a highly efficient reusable catalyst for the production of primary amines. By cutting the amount of undesired by-products, the catalyst is set to revolutionize the production of bio-based fuels, pharmaceuticals, agricultural chemicals and more.

- [**Bit data goes anti-skyrmions**](#) [周五, 01 9月 22:46]

Scientists have discovered a new kind of magnetic nano-object in a novel material that could serve as a magnetic bit with cloaking properties to make a magnetic disk drive with no moving parts -- a Racetrack Memory -- a reality in the near future.

- [**Molecules move faster near sticky surfaces**](#) [周五, 01 9月 21:39]

Molecules move faster as they get closer to adhesive surfaces, but this effect is not permanent.

- [**Equatorial jet in Venusian atmosphere**](#) [周五, 01 9月 21:38]

Observations by Japan's Venus climate orbiter Akatsuki have revealed an equatorial jet in the lower to middle cloud layer of the planet's atmosphere, a finding that could be pivotal to unraveling a phenomenon called superrotation.

- [**Insect eyes inspire new solar cell design**](#) [周五, 01 9月 03:12]

Packing tiny solar cells together, like micro-lenses in the compound eye of an insect, could help scientists overcome a major roadblock to the development of perovskite photovoltaics.

- [**Drugs found to be more effective against depression than electric current**](#) [周五, 01 9月 02:05]

Medicinal therapy was found to be more than twice as effective as low-intensity brain stimulation in treating depression, according to a study.

- [**Caching system could make data centers more energy efficient**](#) [周四, 31 8月 23:52]

Researchers have developed a new system for data center caching that uses flash memory, the kind of memory used in most smartphones.

- [**First hints of possible water content on TRAPPIST-1 planets**](#) [周四, 31 8月 23:30]

Astronomers have been trying to determine whether there might be water on the seven Earth-sized planets orbiting the nearby dwarf star TRAPPIST-1. The results suggest that the outer planets of the system might still harbor substantial amounts of water. This includes the three planets within the habitable zone of the star, lending further weight to the possibility that they may indeed be habitable.

- [**How Neanderthals made the very first glue**](#) [周四, 31 8月 21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

- [**Improving earthquake resistance with a single crystal**](#) [周四, 31 8月 21:26]

A new heating method for certain metals could lead to improved earthquake-resistant construction materials.

- [**Mass production of biodegradable plastic**](#) [周四, 31 8月 21:14]

Introducing a simple step to the production of plant-derived, biodegradable plastic could improve its properties while overcoming obstacles to manufacturing it commercially, says new research.

- [**Turning heat energy into a viable fuel source**](#) [周四, 31 8月 21:14]

A new device could one day turn the heat generated by a wide array of electronics into a usable fuel source. The device is a multicomponent, multilayered composite material called a van der Waals Schottky diode. It converts heat into electricity up to three times more efficiently than silicon -- a semiconductor material widely used in the electronics industry.

- [**Robot learns to follow orders like Alexa**](#) [周四, 31 8月 21:14]

Computer scientists have developed an Alexa-like system that allows robots to understand a wide range of commands that require contextual knowledge about objects and their environments. They've dubbed the system 'ComText,' for 'commands in context.'

- [**Good as gold**](#) [周四, 31 8月 08:21]

Few experiences invoke as much anxiety as a call from your doctor saying 'you need to come back for more tests.' Your imagination goes wild and suddenly a routine medical screening becomes a minefield of potential life-threatening diseases. It's highly likely, however, that you have fallen victim to a false positive -- a result that, despite the accuracy of the test, erroneously yields an affirmative result that points toward illness. To increase the accuracy of medical screening and reduce the i...

- [**Gold nanoparticles fry cancer on glowing mice**](#) [周四, 31 8月 08:21]

A new study takes a new approach to killing cancer: Why not fry it into oblivion with vibrating gold nanoparticles?

- [**Star-formation 'fuel tanks' found around distant galaxies**](#) [周四, 31 8月 05:25]

Astronomers have studied six distant starburst galaxies and discovered that five of them are surrounded by turbulent reservoirs of hydrogen gas, the fuel for future star formation.

- [**Toward a smart graphene membrane to desalinate water**](#) [周四, 31 8月 05:23]

A simple, sturdy graphene-based hybrid desalination membrane can provide clean water for agriculture and possibly human consumption.

• [**New bar set for water-splitting, CO2-splitting techniques**](#) [周四, 31 8月 02:13]

Researchers have significantly boosted the efficiency of two techniques, for splitting water to create hydrogen gas and splitting carbon dioxide to create carbon monoxide. The products are valuable feedstock for clean energy and chemical manufacturing applications.

• [**Bioengineering a functional vascularized lung scaffold**](#) [周四, 31 8月 02:12]

A team of researchers is the first to successfully bioengineer a functional lung with perfusable and healthy vasculature in an ex vivo rodent lung. Their new approach allows the removal of the pulmonary epithelium while maintaining the viability and function of the vascular network and the lung matrix.

• [**Environmental chemist flashes warning light on new nanoparticle**](#) [周四, 31 8月 02:12]

Layered BP's cytotoxicity is based on the fact that it generates reactive oxygen species (ROS), scientists have found. ROS are among the most potent cell-damaging agents known. Layered BP also disrupts cell membrane integrity in a particle-size-dependent manner.

• [**Scientists recover nova first spotted 600 years ago by Korean astrologers**](#) [周四, 31 8月 01:22]

A new study pinpoints the location of a nova first spotted by Korean astrologers almost 600 years ago that now undergoes smaller-scale 'dwarf nova' eruptions. The work supports that idea that novae go through a very long-term life cycle after erupting, fading to obscurity for thousands of years, and then building back up to become full-fledged novae once more.

• [**Artificial intelligence analyzes gravitational lenses 10 million times faster**](#) [周四, 31 8月 01:22]

Researchers have for the first time shown that neural networks -- a form of artificial intelligence -- can accurately analyze the complex

distortions in spacetime known as gravitational lenses 10 million times faster than traditional methods.

- [**Motorized molecules drill through cells**](#) [周四, 31 8月 01:22]

Motorized molecules that target diseased cells may deliver drugs to or kill the cells by drilling into the cell membranes. Scientists have demonstrated them on cancer and other cells.

- [**Acting like a muscle, nano-sized device lifts 165 times its own weight**](#) [周四, 31 8月 01:22]

Engineers have discovered a simple, economical way to make a nano-sized device that can match the friendly neighborhood Avenger, on a much smaller scale. Their creation weighs 1.6 milligrams (about as much as five poppy seeds) and can lift 265 milligrams (the weight of about 825 poppy seeds) hundreds of times in a row.

- [**Dating? A magic formula to predict attraction is more elusive than ever**](#) [周四, 31 8月 01:22]

Dating websites often claim attraction between two people can be predicted from the right combination of traits and preferences, but a new study casts doubt on that assertion. The study, which used speed dating data, found a computer could predict who is desirable and how much someone would desire others -- who's hot and who's not -- but it could not unravel the mystery of unique desire for a specific person.

- [**Robotic system monitors specific neurons**](#) [周四, 31 8月 00:49]

Engineers have devised a way to automate the process of patch-clamping, using a computer algorithm that analyzes microscope images and guides a robotic arm to the target cell to record its electrical activity.

- [**'Seeing' robot learns tricky technique for studying brain cells in mammals**](#) [周四, 31 8月 00:25]

Scientists have successfully taught robots to perform a challenging brain technique only previously mastered by a handful of humans.

- [**Machine-learning earthquake prediction in lab**](#)

[shows promise](#) [周四, 31 8月 00:25]

By listening to the acoustic signal emitted by a laboratory-created earthquake, a computer science approach using machine learning can predict the time remaining before the fault fails.

• [Silicon solves problems for next-generation battery technology](#) [周三, 30 8月 23:48]

Silicon -- the second most abundant element in the earth's crust -- shows great promise in Li-ion batteries, according to new research. By replacing graphite anodes with silicon, it is possible to quadruple anode capacity.

• [What lit up the universe? Black holes may have punctured darkened galaxies, allowing light to escape](#) [周三, 30 8月 23:48]

Researchers have a new explanation for how the universe changed from darkness to light. They propose that black holes within galaxies produce winds strong enough to fling out matter that punctures holes in galaxies, allowing light to escape.

• [Stroke patient improvement with a brain-computer interface](#) [周三, 30 8月 22:35]

It is possible for stroke patients to improve motor function using special training involving connecting brain signals with a computer, research shows.

• [Leaf sensors can tell farmers when crops need to be watered](#) [周三, 30 8月 22:34]

Plant-based sensors that measure the thickness and electrical capacitance of leaves show great promise for telling farmers when to activate their irrigation systems, preventing both water waste and parched plants, according to researchers.

• [New robot rolls with the rules of pedestrian conduct](#) [周三, 30 8月 22:34]

Engineers have designed an autonomous robot with 'socially aware navigation,' that can keep pace with foot traffic while observing these general codes of pedestrian conduct.

- [**Robot probes mystery of prehistoric sea creature's swimming style**](#) [周三, 30 8月 22:26]

A new study has shed light on the swimming style of plesiosaurs by creating a robot to mimic its movements.

- [**Electricity production: When enzymes rival platinum**](#) [周三, 30 8月 22:19]

Making a biocell that is as effective as a platinum fuel cell: that's the feat that researchers have achieved. Three years after making their first prototype biocell, the researchers have just reached a new milestone and increased its performance and stability. This biocell could, in the long run, offer an alternative to fuel cells that require rare and costly metals, such as platinum.

- [**New significance of unheralded chemical reactions**](#) [周三, 30 8月 21:45]

Researchers reveal new significance to a decades-old chemical reaction theory, increasing our understanding of the interaction of gases, relevant to combustion and planetary atmospheres.

- [**New mini tool has massive implications**](#) [周三, 30 8月 21:43]

Researchers have created a miniaturized, portable version of a tool now capable of analyzing Mars' atmosphere -- and that's just one of its myriad possible uses.

- [**Making 3-D printing safer**](#) [周三, 30 8月 21:42]

Within the past decade, 3-D printers have gone from bulky, expensive curiosities to compact, more affordable consumer products. At the same time, concerns have emerged that nanoparticles released from the machines during use could affect consumers' health. Now researchers report a way to eliminate almost all nanoparticle emissions from some of these printers.

- [**Nanoparticles loaded with mRNA give disease-fighting properties to cells**](#) [周三, 30 8月 21:42]

A new biomedical tool using nanoparticles that deliver transient gene changes to targeted cells could make therapies for a variety of diseases -- including cancer, diabetes and HIV -- faster and cheaper to develop, and more customizable.

- [**Adoption of robotics into a hospital's daily operations requires broad cooperation**](#) [周三, 30 8月 21:42]

Investigators studied the implementation of a logistics robot system at the Seinäjoki Central Hospital in South Ostrobothnia. The aim was to reduce transportation costs, improve the availability of supplies and alleviate congestion on hospital hallways by running deliveries around the clock on every day of the week.

- [**Nano chip system measures light from single bacterial cell to enable chemical detection**](#) [周三, 30 8月 21:42]

Researchers have created a nanophotonic chip system using lasers and bacteria to observe fluorescence emitted from a single bacterial cell. The novel system paves the way for an efficient and portable on-chip system for diverse cell-based sensing applications, such as detecting chemicals in real-time.

- [**NASA's Lunar mission captures solar eclipse as seen from the moon**](#) [周三, 30 8月 04:45]

LRO captured an image of the Moon's shadow over a large region of the United States, centered just north of Nashville, Tennessee.

- [**Why does rubbing a balloon on your hair make it stick?**](#) [周三, 30 8月 01:53]

New research indicates that tiny holes and cracks in a material -- changes in the microstructure -- can control how the material becomes electrically charged through friction.

- [**Chemist synthesizes pure graphene**](#) [周三, 30 8月 01:53]

A chemist has patented a one-of-a-kind process for exfoliating graphene in its pure (unoxidized) form, as well as manufacturing innovative graphene nanocomposites that have potential uses in a variety of applications, including desalination of brackish water.

- [**Tiny nanopackages built out of DNA help scientists peek at how neurons work**](#) [周三, 30 8月 01:22]

Scientists have designed a way to use microscopic capsules made out of DNA to deliver a payload of tiny molecules directly into a cell. The technique gives scientists an opportunity to understand certain interactions among cells that have previously been hard to track.

- [**Scientists move graphene closer to transistor applications**](#) [周三, 30 8月 01:14]

Scientists were able to successfully manipulate the electronic structure of graphene, which may enable the fabrication of graphene transistors -- faster and more reliable than existing silicon-based transistors.

- [**Brain stimulation for children with learning difficulties?**](#) [周三, 30 8月 00:47]

Applying a brain stimulation method, which was previously suggested to enhance mathematical learning in healthy adults, may improve the performance of children with mathematical learning difficulties, according to an exploratory study.

- [**Photosynthesis discovery could help design more efficient artificial solar cells**](#) [周三, 30 8月 00:44]

A natural process that occurs during photosynthesis could lead to the design of more efficient artificial solar cells, according to researchers.

- [**Clamping down on causality by probing laser cavities**](#) [周二, 29 8月 23:39]

By monitoring the optical response of an externally probed laser cavity before and after gain clamping, researchers reveal the underlying mechanisms driving the cavity's responses.

[Scientists power past solar efficiency records](#) [周二, 29]

8月 23:39]

The high potential of silicon-based multijunction solar cells has now been demonstrated through new research.

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Environment News

Top stories featured on ScienceDaily's Plants & Animals, Earth & Climate, and Fossils & Ruins sections.

- [**Etosis phenomenon discovered in human blood monocytes**](#) [周五, 01 9月 22:46]

The first clear demonstration of etosis in human blood monocytes, a type of immune cell, has now been discovered by scientists.

- [**Can corals survive climate change?**](#) [周五, 01 9月 21:39]

Scientists have issued advice that more research is urgently required to determine whether corals can acclimate and adapt to the rapid pace of climate change.

- [**New light shed on photosynthesis**](#) [周五, 01 9月 21:38]

A team of scientists has taken us a step closer to unlocking the secrets of photosynthesis, and possibly to cleaner fuels. Their discovery describes the structure of a reaction center (from a heliobacterium) which preserves the characteristics of the ancestral one, and so provides new insight into the evolution of photosynthesis.

- [**Coming soon to Montreal: The infrastructure cost of climate change**](#) [周五, 01 9月 03:13]

The climate of Montreal is changing and will continue to do so at a rapidly increasing rate and with much more spatial variability in the future, according to new research.

- [**Insect eyes inspire new solar cell design**](#) [周五, 01 9月 03:12]

Packing tiny solar cells together, like micro-lenses in the compound eye of an insect, could help scientists overcome a major roadblock to the development of perovskite photovoltaics.

• [**More research needed on effects of maternal stress in wild animals**](#) [周五, 01 9月 03:12]

If a human mother is stressed while pregnant, research shows her child is much more likely to have emotional, cognitive or even physiological problems, such as attention deficit, hyperactivity, anxiety, language delay, obesity, diabetes and hypertension. Conversely, the results of maternal stress on the offspring of other animals -- particularly wildlife under threat from predators -- is believed to be positive, and contributes to their survival.

• [**Study reveals ways collegiate sports venues can achieve 'zero waste'**](#) [周五, 01 9月 02:13]

A new study analyzing waste and recyclables during Mizzou's 2014 home football season demonstrates that by implementing several recommendations the team developed, such as offering better recycling receptacles and better sorting options for waste, sporting venues could be well on their way to achieving environmental benefits that exceed the standards for 'zero-waste' operations.

• [**Does indoor spraying help prevent dengue?**](#) [周五, 01 9月 02:13]

The prevention of dengue, the most prevalent mosquito-borne virus in the world, relies heavily on controlling mosquito populations, as the currently available dengue vaccine is only partially effective. Indoor spraying -- which involves spraying of insecticides inside houses -- has the potential to be a key part of those prevention efforts, researchers report.

• [**Reconstructing life at its beginning, cell by cell**](#) [周五, 01 9月 02:12]

In a technological tour de force, scientists have created a virtual model of an early fly embryo. Its interactive interface allows researchers to explore the blueprint that underlies development at unprecedented spatial resolution and predict which cells express which genes.

• [**Nature gem within the city: What grows in the biodiversity-rich Bukit Nanas Forest Reserve**](#) [周五, 01 9月 02:05]

Being the oldest of its kind in Malaysia, Bukit Nanas Forest Reserve is a nature enclave, lying in the center of the busy capital city Kuala Lumpur. Researchers have now teamed up to publish an extensive checklist of the flora of this urban nature enclave, while making use of the innovative 'ecosystem inventory' template.

. [**Cross-kingdom regulation of honeybee caste development by dietary plant miRNAs**](#) [周五, 01 9月 02:05]

Honeybee larvae develop into workers but not queens, in part, because their diet of beebread/pollen is enriched in plant miRNAs. While miRNAs are generally negative regulators of gene expression in eukaryotes, they also negatively regulate larval development when honeybee larvae consume beebread/pollen and take up plant miRNAs.

. [**Pinpointing the sources of trans-pacific dust**](#) [周五, 01 9月 02:05]

Airborne dust from Asia travels across the Pacific passport-free, carrying pollution, building soil, and coloring sunsets thousands of miles from its source. Identifying that source is important for understanding atmospheric circulation, contaminant pathways, and climate. But collecting enough airborne dust to pinpoint its source is challenging. Now, a team of researchers has developed a way to match microscopic quartz grains to the desert they blew in from.

. [**Protein transport channel offers new target for thwarting pathogen**](#) [周五, 01 9月 01:42]

A bacterium that attacks people suffering from chronic lung disease and compromised immune systems could be halted by disrupting the distribution channels the organism uses to access the nutrient-rich cytoplasm of its host cell.

. [**Fossil footprints challenge established theories of human evolution**](#) [周五, 01 9月 01:42]

Newly discovered human-like footprints from Crete may put the established narrative of early human evolution to the test. The footprints are approximately 5.7 million years old and were made at a time when previous research puts our ancestors in Africa -- with ape-like feet.

- [**Human bones in south Mexico: Stalagmite reveals their age as 13,000 years old**](#) [周五, 01 9月 01:12]

A prehistoric human skeleton found on the Yucatán Peninsula is at least 13,000 years old and most likely dates from a glacial period at the end of the most recent ice age, the late Pleistocene. A German-Mexican team of researchers has now dated the fossil skeleton based on a stalagmite that grew on the hip bone.

- [**What changes when you warm the Antarctic Ocean just 1 degree? Lots**](#) [周五, 01 9月 00:30]

After warming a natural seabed in the Antarctic Ocean by just 1° or 2° Celsius, researchers observed massive impacts on a marine assemblage, as growth rates nearly doubled. The findings of what the researchers call the 'most realistic ocean warming experiment to date' show that the effects of future warming may far exceed expectations.

- [**Bacterial protein acts as aphrodisiac for choanoflagellates**](#) [周五, 01 9月 00:30]

Researchers investigating how single-celled organisms evolved to become multicellular stumbled across a strange phenomenon during their experiments: Single-celled eukaryotes called choanoflagellates, which are the closest living relatives to animals, begin to sexually reproduce in response to a protein produced by bacteria. Why this happens in natural settings is still unclear, though they speculate that it could help the choanoflagellates easily mate with others from the same species.

- [**Why are coyote populations difficult to control?**](#) [周四, 31 8月 22:15]

Conventional wisdom suggests that coyote control efforts actually result in an increase in the number of coyotes due to increasing litter sizes and pregnancy rates among individuals that survive.

- [**Antidepressants found in fish brains in Great Lakes region**](#) [周四, 31 8月 22:14]

Human antidepressants are building up in the brains of bass, walleye and

several other fish common to the Great Lakes region, scientists say.

• [**How Neanderthals made the very first glue**](#) [周四, 31 8月 21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

• [**Record-low 2016 Antarctic sea ice due to 'perfect storm' of tropical, polar conditions**](#) [周四, 31 8月 21:26]

The sudden, unexpected nosedive in Antarctic sea ice last year was due to a unique one-two punch from atmospheric conditions both in the tropical Pacific Ocean and around the South Pole.

• [**X-ray footprinting solves mystery of metal-breathing protein**](#) [周四, 31 8月 21:26]

Scientists have discovered the details of an unconventional coupling between a bacterial protein and a mineral that allows the bacterium to breathe when oxygen is not available.

• [**Apes' abilities misunderstood by decades of poor science**](#) [周四, 31 8月 21:14]

Hundreds of scientific studies over two decades have told us that apes are clever -- just not as clever as us. New analysis argues that what we think we know about apes' social intelligence is based on wishful thinking and flawed science.

• [**Mass production of biodegradable plastic**](#) [周四, 31 8月 21:14]

Introducing a simple step to the production of plant-derived, biodegradable plastic could improve its properties while overcoming obstacles to manufacturing it commercially, says new research.

• [**Forensic science techniques help discover new molecular fossils**](#) [周四, 31 8月 21:14]

Researchers believe they have found new molecular fossils of archaea using a method of analysis commonly used in forensic science.

- [**New hope for reef fish living in a high CO2 world**](#) [周四, 31 8月 21:14]

New research examining the possible impacts of ocean acidification provides fresh hope for the survival of reef fish.

- [**American pika disappears from large area of California's Sierra Nevada mountains**](#) [周四, 31 8月 08:21]

The American pika, a small mammal adapted to high altitudes and cold temperatures, has died out from a 165-square-mile span of habitat in California's northern Sierra Nevada mountains, and the cause appears to be climate change. Researchers surveyed pika habitat throughout the north Lake Tahoe area and found that pikas had disappeared from an area that stretches from near Tahoe City to Truckee, more than 10 miles away, and includes Mount Pluto.

- [**How certain ants snap their jaws shut in the blink of an eye**](#) [周四, 31 8月 08:21]

Few victims stand a chance against the formidable mandibles of a trap-jaw ant. In conflicts between predators and prey, speed is a decided advantage, and evolution has given these insects an edge with spring-loaded jaws that snap shut with astonishing speed. Biologists have now provided the first mechanical description of the jaws of a little-known group of trap-jaw ants.

- [**Profitable cooperation: Ants protect and fertilize plants**](#) [周四, 31 8月 08:21]

Biologists describe how the waste left by ants on plant leaves serves as a valuable fertilizer for the plants -- handed on a silver platter.

- [**Jordan faces likelihood of much more frequent long and severe droughts**](#) [周四, 31 8月 08:21]

Jordan is among the world's most water-poor nations, and a new, comprehensive analysis of regional drought and land-use changes in upstream Syria suggests the conditions could get significantly worse.

- [**Concerns regarding radioactivity in migratory**](#)

[seafood negated](#) [周四, 31 8月 03:55]

New research shows negligible risk from consumption of meat from migratory marine predators following Fukushima nuclear disaster.

• [Protecting the guardians](#) [周四, 31 8月 03:55]

A guardian gene that protects against type 1 diabetes and other autoimmune diseases exerts its pancreas-shielding effects by altering the gut microbiota. Experiments in mice born with the protective gene show that exposure to antibiotics during critical windows of development fuels risk for type 1 diabetes and leads to loss of genetic protection by altering the gut microbiota. Scientists say the findings underscore the importance of avoiding antibiotic use during late pregnancy and early infancy.

• [Tracking down the whale-shark highway](#) [周四, 31 8月 03:55]

Researchers recently discovered that whale sharks in the Eastern Tropical Pacific follow fronts -- the dynamic boundaries between warm and cold ocean waters.

• [Bioengineering a functional vascularized lung scaffold](#) [周四, 31 8月 02:12]

A team of researchers is the first to successfully bioengineer a functional lung with perfusable and healthy vasculature in an ex vivo rodent lung. Their new approach allows the removal of the pulmonary epithelium while maintaining the viability and function of the vascular network and the lung matrix.

• [Peptide mass fingerprinting can identify whale species based solely on their baleen](#) [周四, 31 8月 02:12]

Peptide mass fingerprinting accurately identified 10 species of whales from their baleen alone, according to a new study.

• [Gut bacteria that 'talk' to human cells may lead to new treatments](#) [周四, 31 8月 02:12]

Scientists developed a method to genetically engineer gut bacteria to produce molecules that have the potential to treat certain disorders by

altering human metabolism.

- [**Monkeys with Parkinson's disease benefit from human stem cells**](#) [周四, 31 8月 01:22]

Japanese neurosurgeons report two new strategies to improve outcomes of iPS cell-based therapies for Parkinson's disease in monkey brains. The findings are a key step for patient recruitment of the first iPS cell-based therapy to treat neurodegenerative diseases.

- [**Volcanic eruptions drove ancient global warming event**](#) [周四, 31 8月 01:22]

A natural global warming event that took place 56 million years ago was triggered almost entirely by volcanic eruptions that occurred as Greenland separated from Europe during the opening of the North Atlantic Ocean, according to new research.

- [**Uncovering factors that shape sea life**](#) [周四, 31 8月 01:22]

Researchers have proposed a new conceptual model of island biogeography for marine organisms -- a theory that explores how different processes (like sea level fluctuations and geographic isolation) influence marine species diversity around islands.

- [**A big difference between Asian and African elephants is diet**](#) [周四, 31 8月 01:22]

New research has shown that there are significant differences between the Asian and the African forest elephant -- and it isn't just about size and the shape of their ears. It is about what they eat and how they affect forest ecosystems.

- [**Otters learn by copying each other**](#) [周四, 31 8月 01:11]

Otters can learn how to solve puzzles by watching and copying each other, new research shows.

- [**Fungal spore 'death clouds' key in gypsy moth fight**](#) [周四, 31 8月 00:49]

A fungus known to decimate populations of gypsy moths creates 'death clouds' of spores that can travel more than 40 miles to potentially infect

populations of invasive moths, according to a new study.

- [**When making decisions, monkeys use different brain areas to weigh value and availability**](#) [周四, 31 8月 00:26]

Seventeenth-century mathematician Blaise Pascal first introduced the idea of expected value, which is reached by multiplying the value of something (how much it's wanted or needed) with the probability that we might be able to obtain it. Now some very 21st century research is showing for the first time in monkeys which parts of the brain are involved in the two-pronged decision-making process that determines this expected value.

- [**Hidden deep in the brain, a map that guides animals' movements**](#) [周四, 31 8月 00:26]

New research has revealed that deep in the brain, in a structure called striatum, all possible movements that an animal can do are represented in a map of neural activity. If we think of neural activity as the coordinates of this map, then similar movements have similar coordinates, being represented closer in the map, while actions that are more different have more distant coordinates and are further away.

- [**Periodic table of ecological niches could aid in predicting effects of climate change**](#) [周四, 31 8月 00:25]

A group of ecologists has started creating a periodic table of ecological niches similar to chemistry's periodic table. It will be a critical resource for scientists seeking to understand how a warming climate may be spurring changes in species around the globe.

- [**Machine-learning earthquake prediction in lab shows promise**](#) [周四, 31 8月 00:25]

By listening to the acoustic signal emitted by a laboratory-created earthquake, a computer science approach using machine learning can predict the time remaining before the fault fails.

- [**Infested fossil worms show ancient examples of symbiosis**](#) [周四, 31 8月 00:11]

One of the earliest examples of two invertebrate species living together in a symbiotic relationship has been found in 520-million-year-old fossils from China. The fossils show two species of marine worms with other, smaller worm-like animals attached to the outer surface of their body.

• [**New clue may reveal the fate of famous French explorer**](#) [周三, 30 8月 23:48]

An anthropologist may have stumbled across a clue to resolving one of the most enduring mysteries of Pacific history - the fate of famous French navigator, Jean François de Galaup, Comte de La Pérouse who disappeared in 1788.

• [**Hope for improving protection of the reticulated python**](#) [周三, 30 8月 23:48]

Trading in skins of the reticulated python is such a lucrative business that illegal exports are rising sharply and existing trade restrictions are being circumvented on a large scale. This is endangering the stability of populations. Therefore, researchers are developing genetic methods for tracking down individual origins and potential trade routes of the skins.

• [**Soybean rust develops 'rolling' epidemics as spores travel north**](#) [周三, 30 8月 23:47]

Although Midwestern soybean growers have yet to experience the brunt of soybean rust, growers in the southern United States are very familiar with the disease. Every year, the fungus slowly moves northward from its winter home in southern Florida and the Gulf Coast states, and eventually reaches Illinois soybean fields -- often just before harvest.

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- [**New boarding procedures, smaller cabin size may limit infection on planes**](#) [周五, 01 9月 03:13]

During major epidemics, cramped airplane cabins are fertile ground for the spread of infection, but new research suggests changing routine boarding protocols could be a key to reducing rampant transmission of disease.

- [**Measuring the cost of quality measurement**](#) [周五, 01 9月 03:12]

Less than 2 decades after publication of the National Academy of Medicine's (formerly the Institute of Medicine) Crossing the Quality Chasm: A New Health System for the 21st Century, quality measurement has become routine and widespread throughout the US health care system.

- [**Study reveals ways collegiate sports venues can achieve 'zero waste'**](#) [周五, 01 9月 02:13]

A new study analyzing waste and recyclables during Mizzou's 2014 home football season demonstrates that by implementing several recommendations the team developed, such as offering better recycling receptacles and better sorting options for waste, sporting venues could be well on their way to achieving environmental benefits that exceed the standards for 'zero-waste' operations.

- [**People become more economically conservative when angered**](#) [周四, 31 8月 23:30]

People tend to lean more economically conservative when they're angry,

according to a new article. Researchers came to the conclusion after running multiple studies that included more than 1,000 participants.

• [**How reading and writing with your child boost more than just literacy**](#) [周四, 31 8月 22:21]

Children who read and write at home -- whether for assignments or just for fun -- are building long-term study and executive function skills, according to a new article

• [**Three policies to improve children's language development**](#) [周四, 31 8月 21:14]

Bilingual children from low-income homes are at greater risk of falling behind their peers in developing the appropriate language skills for their age group, leading to poorer academic achievement over time. A new article addresses how inequality impacts children's language development and details policies that can intervene.

• [**Jordan faces likelihood of much more frequent long and severe droughts**](#) [周四, 31 8月 08:21]

Jordan is among the world's most water-poor nations, and a new, comprehensive analysis of regional drought and land-use changes in upstream Syria suggests the conditions could get significantly worse.

• [**Federal preemption of taxes on state and local sugar-sweetened beverages is not warranted**](#) [周四, 31 8月 00:49]

Federal and state government can alter or hinder state and local activity through a legal mechanism called preemption -- when a higher level of government blocks the action of a lower level of government. A new study evaluates whether it could be used to block taxes on sugar-sweetened beverages.

• [**Hope for improving protection of the reticulated python**](#) [周三, 30 8月 23:48]

Trading in skins of the reticulated python is such a lucrative business that illegal exports are rising sharply and existing trade restrictions are being circumvented on a large scale. This is endangering the stability of

populations. Therefore, researchers are developing genetic methods for tracking down individual origins and potential trade routes of the skins.

• **[Researchers raise health concerns about off-road vehicles and inhalation of asbestos](#)** [周三, 30 8月 23:47]

Preventing injuries may not be the only reason children shouldn't use off-road vehicles (ORVs). In a new study, public health scientists raise concerns that people who use ORVs in many regions of the country may face exposure to hazardous mineral fibers.

• **[Is changing languages effortful for bilingual speakers? Depends on the situation](#)** [周三, 30 8月 22:37]

Research on the neurobiology of bilingualism has suggested that switching languages is inherently effortful, requiring executive control to manage cognitive functions, but a new study shows this is only the case when speakers are prompted, or forced, to do so.

• **[Shifting school start times could contribute \\$83 billion to US economy within a decade](#)** [周三, 30 8月 22:36]

RAND Corporation and RAND Europe have released the first-ever analysis of the economic implications of a shift in school start times in the US. The study shows that a nationwide move to 8.30 a.m. could lead to an economic gain of \$83 billion to the US economy within a decade. The gains projected through the study's economic model would be realized through the higher academic and professional performance of students, and reduced car crash rates.

• **[Leaf sensors can tell farmers when crops need to be watered](#)** [周三, 30 8月 22:34]

Plant-based sensors that measure the thickness and electrical capacitance of leaves show great promise for telling farmers when to activate their irrigation systems, preventing both water waste and parched plants, according to researchers.

• **[Methane emissions tackled with gas-guzzling bacteria](#)** [周三, 30 8月 21:45]

Methane-oxidizing bacteria -- key organisms responsible for greenhouse gas mitigation -- are more flexible and resilient than previously thought, an international research has shown.

- [**Conservation hindered by geographical mismatches between capacity, need**](#) [周三, 30 8月 21:45]

Geographical mismatches between conservation needs and expertise may hinder global conservation goals, new research suggests.

- [**Shared custody equals less stress for children**](#) [周三, 30 8月 21:42]

Children who live full time with one parent are more likely to feel stressed than children in shared custody situations. The benefit holds regardless of the level of conflict between the parents or between parent and child.

- [**Brain stimulation for children with learning difficulties?**](#) [周三, 30 8月 00:47]

Applying a brain stimulation method, which was previously suggested to enhance mathematical learning in healthy adults, may improve the performance of children with mathematical learning difficulties, according to an exploratory study.

- [**Exclusion from school can trigger long-term psychiatric illness**](#) [周三, 30 8月 00:45]

Excluding children from school may lead to long-term psychiatric problems and psychological distress, a study of thousands of children has shown.

- [**Where's the line? Managing extreme speech on social media**](#) [周三, 30 8月 00:45]

A new study shows that while people tend to dislike extreme speech on social media, there is less support for outright censorship. Instead, people believe sites need to do a better job promoting healthy discourse online.

- [**Photosynthesis discovery could help design more**](#)

[efficient artificial solar cells](#) [周三, 30 8月 00:44]

A natural process that occurs during photosynthesis could lead to the design of more efficient artificial solar cells, according to researchers.

• [Scientists power past solar efficiency records](#) [周二, 29 8月 23:39]

The high potential of silicon-based multijunction solar cells has now been demonstrated through new research.

• [Lively tunes boost sales in crowded stores](#) [周二, 29 8月 23:38]

If a store is crowded, people tend to buy more if the sound system is playing a fast-paced song rather than a ballad. That's what a team of researchers found in a field experiment across a chain of grocery convenience stores in Northern Europe.

• [Mental health linked to retirement savings](#) [周二, 29 8月 23:38]

The question of how mental health status affects decisions regarding retirement savings is becoming a pressing issue in the United States. Key factors contributing to this issue include the tenuous state of the Social Security system, greater use of defined-contribution pension plans by employers, longer lifespans, and the rise of depression and other mental health issues in older Americans.

• [Origins of autism: Abnormalities in sensory processing at six months](#) [周二, 29 8月 23:38]

The origins of autism remain mysterious. What areas of the brain are involved, and when do the first signs appear? New findings brings us closer to understanding the pathology of autism, and the point at which it begins to take shape in the human brain. Such knowledge will allow earlier interventions in the future and better outcomes for autistic children.

• [Analysis identifies where commercial customers might benefit from energy storage](#) [周二, 29 8月 23:38]

Commercial electricity customers who are subject to high demand charges may be able to reduce overall costs by using battery energy storage to manage demand, according to research.

• **[Inattentive kids show worse grades in later life](#)** [周二, 29 8月 21:50]

Researchers found that inattentiveness in childhood was linked to worse academic performance up to 10 years later in children with and without ADHD, even when they accounted for the children's intellectual ability. The results highlight the long-term effects that childhood inattention can have on academic performance, and suggest that parents and teachers should address inattentiveness in childhood.

• **[Doping in sports: Official tests fail to pick up majority of cases](#)** [周二, 29 8月 21:09]

A new scientific study has found that doping is far more common in professional sport than the rates suggested by blood and urine tests of the athletes.

• **[Cutbacks in foreign aid for HIV treatment would produce great harm, generate few savings](#)** [周二, 29 8月 06:34]

Proposed reductions in US foreign aid would have a devastating impact on HIV treatment and prevention programs in countries receiving such aid, an international team of investigators reports.

• **[Dispersants improved air quality for responders at Deepwater Horizon](#)** [周二, 29 8月 04:41]

A recent study adds a new dimension to the controversial decision to inject large amounts of chemical dispersants immediately above the crippled oil well at the seafloor during the Deepwater Horizon disaster in 2010.

• **[Americans' risk of needing nursing home care is higher than previously estimated](#)** [周二, 29 8月 04:41]

One worry Americans face as they grow older is the possibility of needing nursing home care and paying for the associated costs. A new study finds that the average American's lifetime risk of using a nursing home is substantially greater than previously believed, but the financial costs will be affordable for most people.

- [**Self-identifying as disabled and developing pride in disability aid overall well-being**](#) [周二, 29 8月 04:41]

Experiencing stigma, the severity of a disability and a person's age and income level help determine whether someone with an impairment considers themselves to be a person with a disability, and experiencing stigma predicts whether those individuals will ultimately develop disability pride, new research shows.

- [**Romance and affection top most popular sexual behaviors**](#) [周二, 29 8月 02:07]

Researchers have published a new US nationally representative study of sexual behavior, the first of its kind to capture a wide range of diverse sexual behaviors not previously examined in the general population.

- [**Nanoparticles pollution rises 30 percent when flex-fuel cars switch from bio to fossil**](#) [周二, 29 8月 00:45]

Use of ethanol in vehicles reduces pollution by nanoparticles, a study shows. Levels of ultrafine particulate matter in São Paulo City, Brazil, increased by up to 30 percent at times when ethanol prices rose and consumption fell.

- [**Preventing overcrowding in emergency rooms**](#) [周二, 29 8月 00:45]

A new study identifies four key strategies to reduce overcrowding in emergency rooms. The study concludes that engaged executive leadership can alleviate the problem when combined with a data-driven approach and coordination across the hospital from housekeepers to the CEO. Crowding in emergency rooms has been associated with decreased patient satisfaction and even death.

- [**'Marrying up' is now easier for men, improves their economic well-being, study finds**](#) [周一, 28 8月 22:54]

As the number of highly educated women has increased in recent decades, the chances of 'marrying up' have increased significantly for men and decreased for women, according to a new study.

- [**Popularity outranks strategy in supply chain**](#)

[integration decisions](#) [周一, 28 8月 22:27]

Conscious comparison and indirect copying increase the similarity of supply chain management practices of peer group companies, sometimes at the cost of quality and operating culture.

• [Deforestation in Cambodia linked to higher risk of ill health in young children](#) [周一, 28 8月 21:41]

New research findings suggest the importance of considering health impacts when assessing trade-offs in land use planning.

• [Expectations for all-day schools are too high](#) [周一, 28 8月 21:39]

Children in the German-speaking part of Switzerland who utilize extended education offerings in the first two years of primary school generally perform no better in school than other children, an project has found. Overall, the research shows that all-day schools do not fulfil all the expectations people place in them.

• [After Hurricane Katrina, personal debt fell for those worst hit, but at a cost](#) [周一, 28 8月 21:37]

After Hurricane Katrina devastated New Orleans a dozen years ago, there was a sharp and immediate drop in personal debt among residents living in city's most flooded blocks, according to a new study.

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [**Mouth clicks used in human echolocation captured in unprecedented detail**](#) [周五, 01 9月 02:13]

Like some bats and marine mammals, people can develop expert echolocation skills, in which they produce a clicking sound with their mouths and listen to the reflected sound waves to 'see' their surroundings. A new study provides the first in-depth analysis of the mouth clicks used in human echolocation.

- [**First hints of possible water content on TRAPPIST-1 planets**](#) [周四, 31 8月 23:30]

Astronomers have been trying to determine whether there might be water on the seven Earth-sized planets orbiting the nearby dwarf star TRAPPIST-1. The results suggest that the outer planets of the system might still harbor substantial amounts of water. This includes the three planets within the habitable zone of the star, lending further weight to the possibility that they may indeed be habitable.

- [**How Neanderthals made the very first glue**](#) [周四, 31 8月 21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

- [**How certain ants snap their jaws shut in the blink of an eye**](#) [周四, 31 8月 08:21]

Few victims stand a chance against the formidable mandibles of a trap-jaw ant. In conflicts between predators and prey, speed is a decided

advantage, and evolution has given these insects an edge with spring-loaded jaws that snap shut with astonishing speed. Biologists have now provided the first mechanical description of the jaws of a little-known group of trap-jaw ants.

- [**Motorized molecules drill through cells**](#) [周四, 31 8月 01:22]

Motorized molecules that target diseased cells may deliver drugs to or kill the cells by drilling into the cell membranes. Scientists have demonstrated them on cancer and other cells.

- [**Acting like a muscle, nano-sized device lifts 165 times its own weight**](#) [周四, 31 8月 01:22]

Engineers have discovered a simple, economical way to make a nano-sized device that can match the friendly neighborhood Avenger, on a much smaller scale. Their creation weighs 1.6 milligrams (about as much as five poppy seeds) and can lift 265 milligrams (the weight of about 825 poppy seeds) hundreds of times in a row.

- [**Otters learn by copying each other**](#) [周四, 31 8月 01:11]

Otters can learn how to solve puzzles by watching and copying each other, new research shows.

- [**What lit up the universe? Black holes may have punctured darkened galaxies, allowing light to escape**](#) [周三, 30 8月 23:48]

Researchers have a new explanation for how the universe changed from darkness to light. They propose that black holes within galaxies produce winds strong enough to fling out matter that punctures holes in galaxies, allowing light to escape.

- [**Understanding ancient geometric earthworks in southwestern Amazonia**](#) [周三, 30 8月 22:34]

Researchers examine pre-colonial geometric earthworks in the southwestern Amazonia from the point of view of indigenous peoples and archaeology. The study shows that the earthworks were once important ritual communication spaces.

- [**Do squirrels teach bears to cross the railroad?**](#)

- [**Grizzlies dig squirrel middens for grains**](#) [周三, 30 8月 22:34]

Grains have been reported to regularly trickle from hopper cars travelling via the railway through Canada's Banff and Yoho National Parks. As a result, the local red squirrels collect and bury the spilled seeds in their winter larders, which are sometimes discovered by hungry grizzly bears. Grain-conditioned bears may frequent the railway more often than usual, resulting in increased mortality by trains strikes.

- [**New robot rolls with the rules of pedestrian conduct**](#) [周三, 30 8月 22:34]

Engineers have designed an autonomous robot with 'socially aware navigation,' that can keep pace with foot traffic while observing these general codes of pedestrian conduct.

- [**Robot probes mystery of prehistoric sea creature's swimming style**](#) [周三, 30 8月 22:26]

A new study has shed light on the swimming style of plesiosaurs by creating a robot to mimic its movements.

- [**Fossil whales' teeth shows what ferocious predators they were**](#) [周三, 30 8月 21:45]

The feeding habits of the whale -- the world's biggest animal -- have evolved to filter feeding, shows new international research. Ancient whales appear to have been ferocious predators, investigators explain.

- [**Say hello to the 3-D Obama ant**](#) [周三, 30 8月 21:42]

Three new ant species named in honor of key figures in conservation -- Barack Obama, Ken Saro-Wiwa, and E.O. Wilson -- are immortalized as 3-D virtual avatars.

- [**Why does rubbing a balloon on your hair make it stick?**](#) [周三, 30 8月 01:53]

New research indicates that tiny holes and cracks in a material -- changes in the microstructure -- can control how the material becomes electrically charged through friction.

• [**New species of crab with unusual outgrowths has its name written in the stars**](#) [周二, 29 8月 23:38]

A new 'star crab' has been collected from red coral beds in Taiwan and reefs in the Philippines. This astonishing creature is distinct with its carapace and chelipeds covered in pointy protrusions, which become rounder and mushroom-shaped with age to resemble star-like outgrowths and granules.

• [**High-tech electronics made from autumn leaves**](#) [周二, 29 8月 23:38]

Northern China's roadsides are peppered with deciduous phoenix trees, producing an abundance of fallen leaves in autumn. These leaves are generally burned in the colder season, exacerbating the country's air pollution problem. Investigators in Shandong, China, recently discovered a new method to convert this organic waste matter into a porous carbon material that can be used to produce high-tech electronics.

• [**Galaxy 5 billion light-years away shows we live in a magnetic universe**](#) [周二, 29 8月 00:45]

A chance combination of a gravitational lens and polarized waves coming from a distant quasar gave astronomers the tool needed to make a measurement important to understanding the origin of magnetic fields in galaxies.

• [**New ancient sea reptile found in Germany, the earliest of its kind**](#) [周一, 28 8月 21:39]

A previously unrecognized 132 million-year-old fossilized sea monster from northern Germany has been identified.

• [**Largest Ichthyosaurus was pregnant mother**](#) [周一, 28 8月 21:37]

Scientists have discovered the largest Ichthyosaurus on record and found it was pregnant at the time of death.

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ScienceDaily

周一, 04 9月 2017

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[周一, 04 9月 2017]

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Latest Science News

Breaking science news and articles on global warming, extrasolar planets, stem cells, bird flu, autism, nanotechnology, dinosaurs, evolution -- the latest discoveries in astronomy, anthropology, biology, chemistry, climate and environment, computers, engineering, health and medicine, math, physics, psychology, technology, and more -- from the world's leading universities and research organizations.

- [**Cognitive fatigue after TBI linked with activation of caudate**](#) [周六, 02 9月 00:51]

Researchers have further elucidated the mechanisms for cognitive fatigue, a disabling symptom that affects many individuals after traumatic brain injury (TBI).

- [**Drug may curb female infertility from cancer treatments**](#) [周六, 02 9月 00:51]

An existing drug may one day protect premenopausal women from life-altering infertility that commonly follows cancer treatments, according to a new study.

- [**Intellectual disabilities caused by protein defect**](#) [周五, 01 9月 23:36]

Intellectual disabilities are often caused by a mutation that damages a gene, preventing the associated protein from functioning properly. However, a mutation can also change the function of a gene. As a result, the gene in question acts in a completely different way. Researchers discovered this mechanism in fifteen genes playing a role in the development of intellectual disabilities. Their research results show that these changes in function play a more prominent role than previously thought.

- **[Reusable ruthenium-based catalyst could be a game-changer for the biomass industry](#)** [周五, 01 9月 22:46]

Researchers have developed a highly efficient reusable catalyst for the production of primary amines. By cutting the amount of undesired by-products, the catalyst is set to revolutionize the production of bio-based fuels, pharmaceuticals, agricultural chemicals and more.

- **[Bit data goes anti-skyrmions](#)** [周五, 01 9月 22:46]

Scientists have discovered a new kind of magnetic nano-object in a novel material that could serve as a magnetic bit with cloaking properties to make a magnetic disk drive with no moving parts -- a Racetrack Memory -- a reality in the near future.

- **[Etosis phenomenon discovered in human blood monocytes](#)** [周五, 01 9月 22:46]

The first clear demonstration of etosis in human blood monocytes, a type of immune cell, has now been discovered by scientists.

- **[Lifestyle factors may affect how long individuals live free of disability](#)** [周五, 01 9月 22:46]

New research indicates that a healthy lifestyle may help reduce the duration of an individual's disabled period near the end of life.

- **[Can corals survive climate change?](#)** [周五, 01 9月 21:39]

Scientists have issued advice that more research is urgently required to determine whether corals can acclimate and adapt to the rapid pace of climate change.

- **[Molecules move faster near sticky surfaces](#)** [周五, 01 9月 21:39]

Molecules move faster as they get closer to adhesive surfaces, but this effect is not permanent.

- **[Equatorial jet in Venusian atmosphere](#)** [周五, 01 9月 21:38]

Observations by Japan's Venus climate orbiter Akatsuki have revealed an equatorial jet in the lower to middle cloud layer of the planet's atmosphere, a finding that could be pivotal to unraveling a phenomenon

called superrotation.

- [**New light shed on photosynthesis**](#) [周五, 01 9月 21:38]

A team of scientists has taken us a step closer to unlocking the secrets of photosynthesis, and possibly to cleaner fuels. Their discovery describes the structure of a reaction center (from a heliobacterium) which preserves the characteristics of the ancestral one, and so provides new insight into the evolution of photosynthesis.

- [**Genes fueling neuroblastoma spread now identified**](#) [周五, 01 9月 06:03]

For the first time, researchers present data on how nervous system tumors, called neuroblastomas, spread. Their paper clarifies the relationship between two genes that fuel the aggressive spread of neuroblastomas.

- [**Asthma medicine halves risk of Parkinson's**](#) [周五, 01 9月 06:03]

Using data gathered from 100 million Norwegian prescriptions, researchers have found that asthma medicine can halve a patient's risk of developing Parkinson's disease.

- [**New genetic risk factor for developing autism spectrum disorder identified**](#) [周五, 01 9月 06:03]

A new systematic analysis has been applied to a cohort of 2,300 families who have a single child affected with autism. The study focused on identifying and characterizing low-lying genetic mutations that may have been missed in previous research, given these mutations are only present in a fraction of the bulk DNA of an individual.

- [**Coming soon to Montreal: The infrastructure cost of climate change**](#) [周五, 01 9月 03:13]

The climate of Montreal is changing and will continue to do so at a rapidly increasing rate and with much more spatial variability in the future, according to new research.

- [**New boarding procedures, smaller cabin size**](#)

[may limit infection on planes](#) [周五, 01 9月 03:13]

During major epidemics, cramped airplane cabins are fertile ground for the spread of infection, but new research suggests changing routine boarding protocols could be a key to reducing rampant transmission of disease.

• [Insect eyes inspire new solar cell design](#) [周五, 01 9月 03:12]

Packing tiny solar cells together, like micro-lenses in the compound eye of an insect, could help scientists overcome a major roadblock to the development of perovskite photovoltaics.

• [Discovery may be key to obesity, Diabetes Rx](#) [周五, 01 9月 03:12]

Research has demonstrated the potential of a protein to treat or prevent metabolic diseases including obesity and diabetes.

• [Measuring the cost of quality measurement](#) [周五, 01 9月 03:12]

Less than 2 decades after publication of the National Academy of Medicine's (formerly the Institute of Medicine) Crossing the Quality Chasm: A New Health System for the 21st Century, quality measurement has become routine and widespread throughout the US health care system.

• [More research needed on effects of maternal stress in wild animals](#) [周五, 01 9月 03:12]

If a human mother is stressed while pregnant, research shows her child is much more likely to have emotional, cognitive or even physiological problems, such as attention deficit, hyperactivity, anxiety, language delay, obesity, diabetes and hypertension. Conversely, the results of maternal stress on the offspring of other animals -- particularly wildlife under threat from predators -- is believed to be positive, and contributes to their survival.

• [Mouth clicks used in human echolocation captured in unprecedented detail](#) [周五, 01 9月 02:13]

Like some bats and marine mammals, people can develop expert echolocation skills, in which they produce a clicking sound with their

mouths and listen to the reflected sound waves to 'see' their surroundings. A new study provides the first in-depth analysis of the mouth clicks used in human echolocation.

• [**Study reveals ways collegiate sports venues can achieve 'zero waste'**](#) [周五, 01 9月 02:13]

A new study analyzing waste and recyclables during Mizzou's 2014 home football season demonstrates that by implementing several recommendations the team developed, such as offering better recycling receptacles and better sorting options for waste, sporting venues could be well on their way to achieving environmental benefits that exceed the standards for 'zero-waste' operations.

• [**New source for brain's development discovered**](#) [周五, 01 9月 02:13]

An unexpected source for the brain's development has been discovered by researchers, a finding that offers new insights into the building of the nervous system.

• [**Does indoor spraying help prevent dengue?**](#) [周五, 01 9月 02:13]

The prevention of dengue, the most prevalent mosquito-borne virus in the world, relies heavily on controlling mosquito populations, as the currently available dengue vaccine is only partially effective. Indoor spraying -- which involves spraying of insecticides inside houses -- has the potential to be a key part of those prevention efforts, researchers report.

• [**Drugs targeting the beta2-adrenoreceptor linked to Parkinson's disease**](#) [周五, 01 9月 02:12]

Researchers want to prevent alpha-synuclein from accumulating in the brain. To do so, the team searched for drugs that turn down alpha-synuclein production. They then tested the drugs in mice and stem cells and studied in data from the health records of millions of people living in Norway. The results of their efforts, point to a new drug development path for PD.

• [**Reconstructing life at its beginning, cell by cell**](#) [周五, 01 9月 02:12]

In a technological tour de force, scientists have created a virtual model of an early fly embryo. Its interactive interface allows researchers to explore the blueprint that underlies development at unprecedented spatial resolution and predict which cells express which genes.

• [**Nature gem within the city: What grows in the biodiversity-rich Bukit Nanas Forest Reserve**](#) [周五, 01 9月 02:05]

Being the oldest of its kind in Malaysia, Bukit Nanas Forest Reserve is a nature enclave, lying in the center of the busy capital city Kuala Lumpur. Researchers have now teamed up to publish an extensive checklist of the flora of this urban nature enclave, while making use of the innovative 'ecosystem inventory' template.

• [**Drugs found to be more effective against depression than electric current**](#) [周五, 01 9月 02:05]

Medicinal therapy was found to be more than twice as effective as low-intensity brain stimulation in treating depression, according to a study.

• [**Cross-kingdom regulation of honeybee caste development by dietary plant miRNAs**](#) [周五, 01 9月 02:05]

Honeybee larvae develop into workers but not queens, in part, because their diet of beebread/pollen is enriched in plant miRNAs. While miRNAs are generally negative regulators of gene expression in eukaryotes, they also negatively regulate larval development when honeybee larvae consume beebread/pollen and take up plant miRNAs.

• [**Pinpointing the sources of trans-pacific dust**](#) [周五, 01 9月 02:05]

Airborne dust from Asia travels across the Pacific passport-free, carrying pollution, building soil, and coloring sunsets thousands of miles from its source. Identifying that source is important for understanding atmospheric circulation, contaminant pathways, and climate. But collecting enough airborne dust to pinpoint its source is challenging. Now, a team of researchers has developed a way to match microscopic quartz grains to the desert they blew in from.

• [**Protein transport channel offers new target for**](#)

[thwarting pathogen](#) [周五, 01 9月 01:42]

A bacterium that attacks people suffering from chronic lung disease and compromised immune systems could be halted by disrupting the distribution channels the organism uses to access the nutrient-rich cytoplasm of its host cell.

• [Fossil footprints challenge established theories of human evolution](#) [周五, 01 9月 01:42]

Newly discovered human-like footprints from Crete may put the established narrative of early human evolution to the test. The footprints are approximately 5.7 million years old and were made at a time when previous research puts our ancestors in Africa -- with ape-like feet.

• [New findings on brain functional connectivity may lend insights into mental disorders](#) [周五, 01 9月 01:13]

Ongoing advances in understanding the functional connections within the brain are producing exciting insights into how the brain circuits function together to support human behavior — and may lead to new discoveries in the development and treatment of psychiatric disorders, according to a review.

• [Human bones in south Mexico: Stalagmite reveals their age as 13,000 years old](#) [周五, 01 9月 01:12]

A prehistoric human skeleton found on the Yucatán Peninsula is at least 13,000 years old and most likely dates from a glacial period at the end of the most recent ice age, the late Pleistocene. A German-Mexican team of researchers has now dated the fossil skeleton based on a stalagmite that grew on the hip bone.

• [Chemo-boosting drug discovered for leukemia](#) [周五, 01 9月 00:30]

Drugs developed to treat heart and blood vessel problems could be used in combination with chemotherapy to treat an aggressive form of adult leukemia, new research reveals.

• [Yawning: Why is it so contagious and why should it matter?](#) [周五, 01 9月 00:30]

Feeling tired? Even if we aren't tired, why do we yawn if someone else does? Experts have published research that suggests the human propensity for contagious yawning is triggered automatically by primitive reflexes in the primary motor cortex -- an area of the brain responsible for motor function. Their study is another stage in their research into the underlying biology of neuropsychiatric disorders and their search for new methods of treatment.

[**Scents and social preference: Neuroscientists ID the roots of attraction**](#) [周五, 01 9月 00:30]

Culminating a series of studies stretching back eight years, biologists have identified the cellular and molecular basis for social preference, known in the animal kingdom as 'imprinting.' Through in vivo experiments, the researchers found the neurological roots of kinship attraction and aversion. They also employed genetics screening to find the regulators controlling this behavior. The study carries implications for understanding social attraction and aversion in a range of animals and humans.

[**What changes when you warm the Antarctic Ocean just 1 degree? Lots**](#) [周五, 01 9月 00:30]

After warming a natural seabed in the Antarctic Ocean by just 1° or 2° Celsius, researchers observed massive impacts on a marine assemblage, as growth rates nearly doubled. The findings of what the researchers call the 'most realistic ocean warming experiment to date' show that the effects of future warming may far exceed expectations.

[**Bacterial protein acts as aphrodisiac for choanoflagellates**](#) [周五, 01 9月 00:30]

Researchers investigating how single-celled organisms evolved to become multicellular stumbled across a strange phenomenon during their experiments: Single-celled eukaryotes called choanoflagellates, which are the closest living relatives to animals, begin to sexually reproduce in response to a protein produced by bacteria. Why this happens in natural settings is still unclear, though they speculate that it could help the choanoflagellates easily mate with others from the same

species.

- [**Caching system could make data centers more energy efficient**](#) [周四, 31 8月 23:52]

Researchers have developed a new system for data center caching that uses flash memory, the kind of memory used in most smartphones.

- [**Songbird study shows how estrogen may stop infection-induced brain inflammation**](#) [周四, 31 8月 23:30]

Estrogen synthesis, a process naturally occurring in the brains of zebra finches, may also fight off neuroinflammation caused by infection that occurs elsewhere in the body, new research indicates.

- [**First hints of possible water content on TRAPPIST-1 planets**](#) [周四, 31 8月 23:30]

Astronomers have been trying to determine whether there might be water on the seven Earth-sized planets orbiting the nearby dwarf star TRAPPIST-1. The results suggest that the outer planets of the system might still harbor substantial amounts of water. This includes the three planets within the habitable zone of the star, lending further weight to the possibility that they may indeed be habitable.

- [**People become more economically conservative when angered**](#) [周四, 31 8月 23:30]

People tend to lean more economically conservative when they're angry, according to a new article. Researchers came to the conclusion after running multiple studies that included more than 1,000 participants.

- [**How reading and writing with your child boost more than just literacy**](#) [周四, 31 8月 22:21]

Children who read and write at home -- whether for assignments or just for fun -- are building long-term study and executive function skills, according to a new article

- [**Newly emerged superbug discovered**](#) [周四, 31 8月 22:15]

Scientists have discovered a newly emerged superbug, hyper-resistant

and hypervirulent *Klebsiella pneumoniae*, which may cause untreatable and fatal infections in relatively healthy individuals and will pose enormous threat to human health.

- **[Why are coyote populations difficult to control?](#)**

[周四, 31 8月 22:15]

Conventional wisdom suggests that coyote control efforts actually result in an increase in the number of coyotes due to increasing litter sizes and pregnancy rates among individuals that survive.

- **[Beta blockers have positive effect in pulmonary arterial hypertension, researchers find](#)**

[周四, 31 8月 22:14]

A common heart disease medication, beta blockers, may help treat pulmonary arterial hypertension (PAH), a debilitating lung disease, researchers have found. Caused by high blood pressure in the pulmonary arteries, PAH is a progressive disease which usually leads to right-sided heart failure and death within five to seven years of diagnosis. Right-sided heart failure is the leading cause of death in PAH patients.

- **[Antidepressants found in fish brains in Great Lakes region](#)**

[周四, 31 8月 22:14]

Human antidepressants are building up in the brains of bass, walleye and several other fish common to the Great Lakes region, scientists say.

- **[Untreated sleep apnea shown to raise metabolic and cardiovascular stress](#)**

[周四, 31 8月 22:14]

Sleep apnea, left untreated for even a few days, can increase blood sugar and fat levels, stress hormones and blood pressure, according to a new study of sleeping subjects. This research adds further support for the consistent use of continuous positive airway pressure, a machine that increases air pressure in the throat to keep the airway open during sleep.

- **[Mind wandering is common during driving](#)**

[周四, 31 8月 22:14]

Scientists have investigated mind wandering in volunteers during a driving simulation. Astonishingly, during the simulation, the volunteers reported mind wandering 70 percent of the time. The researchers could identify specific changes in brain patterns when the volunteers were

mind wandering, but need to do further work to clarify if it is dangerous during driving.

| [下一章](#) | [主菜单](#) |

Cognitive fatigue after TBI linked with activation of caudate: Findings underscore the role of the caudate nucleus in the mechanism of cognitive fatigue in traumatic brain injury -- ScienceDaily

Kessler Foundation researchers have authored a new article that further elucidates the mechanisms for cognitive fatigue, a disabling symptom that affects many individuals after traumatic brain injury (TBI). The article, "Cognitive fatigue in individuals with traumatic brain injury is associated with caudate activation," was published online on August 21, 2017, in *Scientific Reports*. The authors are Glenn Wylie, DPhil, Ekaterina Dobryakova, PhD, John DeLuca, PhD, Nancy Chiaravalloti, PhD, of Kessler Foundation, and K. Essad of Dartmouth College Medical School.

Individuals with neurological damage often report difficulties with cognitive fatigue, a subjective lack of mental energy that is perceived to interfere with daily

activities. Because of poor correlation between self-reports of cognitive fatigue and tests of cognitive performance, scientists are looking at more objective measures, such as correlations with neuroimaging findings. In the Kessler study, brain activation patterns were compared in 22 individuals with moderate to severe TBI and 20 healthy controls. Both groups performed tasks of working memory during functional MRI imaging of the brain; the TBI group reported more fatigue, although performance was comparable between the groups. The results showed that the experience of self-reported fatigue is associated with activation changes in the caudate nucleus of the basal ganglia.

"These results are consistent with findings in our related research in the multiple sclerosis (MS) population," said Dr. Wylie, the lead author, "which suggests that the TBI and MS populations share a mechanism for cognitive fatigue." This has important implications for the development of effective treatments. "This study points to the caudate nucleus as a likely target for clinical interventions to alleviate fatigue," explained Dr. Wylie, who is associate director of Neuroscience Research and the Rocco Ortenzio Neuroimaging Center at Kessler Foundation.

Story Source:

Materials provided by [Kessler Foundation](#). *Note: Content may be edited for style and length.*

Journal Reference:

1. G. R. Wylie, E. Dobryakova, J. DeLuca, N. Chiaravalloti, K. Essad, H. Genova. **Cognitive fatigue in individuals with traumatic brain injury is associated with caudate activation.** *Scientific Reports*, 2017; 7 (1) DOI: [10.1038/s41598-017-08846-6](https://doi.org/10.1038/s41598-017-08846-6)
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Drug may curb female infertility from cancer treatments -- ScienceDaily

An existing drug may one day protect premenopausal women from life-altering infertility that commonly follows cancer treatments, according to a new study.

Women who are treated for cancer with radiation or certain chemotherapy drugs are commonly rendered sterile. According to a 2006 study from Weill Cornell Medicine, nearly 40 percent of all female breast cancer survivors experience premature ovarian failure, in which they lose normal function of their ovaries and often become infertile.

Women are born with a lifetime reserve of oocytes, or immature eggs, but those oocytes are among the most sensitive cells in the body and may be wiped out by such cancer treatments.

The current study, published Aug. 1 in the journal *Genetics*, was led by John Schimenti, Cornell's James Law Professor of Genetics in the Departments of Biomedical Sciences and Molecular Biology and

Genetics. It builds on his 2014 research that identified a so-called checkpoint protein (CHK2) that becomes activated when oocytes are damaged by radiation.

CHK2 functions in a pathway that eliminates oocytes with DNA damage, a natural function to protect against giving birth to offspring bearing new mutations. When the researchers irradiated mice lacking the CHK2 gene, the oocytes survived, eventually repaired the DNA damage, and the mice gave birth to healthy pups.

The new study explored whether the checkpoint 2 pathway could be chemically inhibited.

"It turns out there were pre-existing CHK2 inhibitor drugs that were developed, ironically enough, for cancer treatment, but they turned out not to be very useful for treating cancer," said Schimenti, the paper's senior author. Vera Rinaldi, a graduate student in Schimenti's lab, is the paper's first author. "By giving mice the inhibitor drug, a small molecule, it essentially mimicked the knockout of the checkpoint gene."

By inhibiting the checkpoint pathway, the oocytes were not killed by radiation and remained fertile, enabling birth of normal pups.

"The one major concern," Schimenti said, "is that even though these irradiated oocytes led to the birth of healthy mouse pups, it's conceivable that they harbor mutations that will become manifested in a generation or two, because we are circumventing an evolutionarily important mechanism of genetic quality control. This needs to be investigated by genome sequencing."

When doctors recognize the need for oocyte-damaging cancer treatments, women may have their oocytes or even ovarian tissue removed and frozen, but this practice delays treatment. Also, when women run out of oocytes, women's bodies naturally undergo menopause, as their hormonal systems shift.

"That is a serious dilemma and emotional issue," Schimenti said, "when you layer a cancer diagnosis on top of the prospect of having permanent life-altering effects as a result of chemotherapy, and must face the urgent decision of delaying treatment to freeze oocytes at the risk of one's own life."

The study sets a precedent for co-administering this or related drugs and starting cancer therapy simultaneously, though such interventions would first require lengthy human trials.

"While humans and mice have different physiologies, and there is much work to be done to determine safe and effective dosages for people, it is clear that we have the proof of principle for this approach," Schimenti said.

Ewelina Bolcun-Filas, a former postdoctoral associate in Schimenti's lab and an assistant professor at The Jackson Laboratory in Bar Harbor, Maine, is the paper's corresponding author.

Story Source:

[Materials](#) provided by [Cornell University](#). Original written by Krishna Ramanujan. *Note: Content may be edited for style and length.*

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Intellectual disabilities caused by protein defect -- ScienceDaily

Intellectual disabilities are often caused by a mutation that damages a gene, preventing the associated protein from functioning properly. However, a mutation can also change the function of a gene. As a result, the gene in question acts in a completely different way. Researchers from Radboudumc discovered this mechanism in fifteen genes playing a role in the development of intellectual disabilities. Their research results published in the *American Journal of Human Genetics* on 31 August 2017 show that these changes in function play a more prominent role than previously thought.

Genes are responsible for protein production in cells. A common cause of intellectual disabilities is a de novo mutation (i.e. a mutation present in a child, but not in its parents) damaging a gene so severely that it is no longer able to produce functional proteins. The resulting protein defect will cause illness. In a number of disease-related genes, it is shown that a de novo

mutation does not eliminate the gene, but probably alters its function. These mutations are only located on specific parts of the gene.

Change in function

In order to find out how often this mechanism is involved, researchers from Radboudumc have combined the gene mutations in Dutch patients with a large international database comprising de novo mutations in patients. This research project was led by geneticist Christian Gilissen. "With our method, we were able to detect genes in which mutations not so much eliminate as affect the gene in another way. We found fifteen genes in which mutations cluster closely together, twelve of which being associated with developmental disorders. We also found three new genes that are likely to play a role in the development of intellectual disabilities as well," according to Gilissen.

Interactions

The de novo mutations that were found only change a very small part of a protein. The function of the protein remains largely, but not entirely the same. Gilissen

says: "The mutations are more likely to affect superficial parts of the proteins. These disturb interactions with other proteins and cause problems. Although mutations eliminating genes were often thought to be the main cause of intellectual disabilities, mutations altering the function of genes are now shown to be an important factor as well. That is a surprising finding."

Clustering mutations

Why are the de novo mutations that were found specifically clustered? Gilissen says: "There can be several explanations for that. Firstly, these genes show little natural variation. If such a gene is completely eliminated, a person may not be born. Only mutations located on very specific parts of the gene are viable. Consequently, only these mutations can be found. Another explanation can be that the mutations provide growth benefits to the sperm in which they develop. In that case, only these mutations would be able to survive."

New possibilities

The three newly-discovered genes playing a role in the

development of intellectual disabilities provide new diagnostic possibilities for patients. Gillissen says: "It is important that we have discovered a mechanism that has not yet been a focus of study. We expect this mechanism to play a role in a much larger proportion of patients with intellectual disabilities."

Story Source:

[Materials](#) provided by **[Radboud University Nijmegen Medical Centre](#)**. *Note: Content may be edited for style and length.*

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Reusable ruthenium-based catalyst could be a game-changer for the biomass industry -- ScienceDaily

Known for their outstanding versatility, primary amines (derivatives of ammonia) are industrially important compounds used in the preparation of a wide range of dyes, detergents and medicines. Although many attempts have been made to improve their synthesis using catalysts containing nickel, palladium and platinum, for example, few have succeeded in reducing the formation of secondary and tertiary amines and other undesired by-products.

Now, researchers at Tokyo Institute of Technology (Tokyo Tech) have developed a highly selective catalyst consisting of ruthenium nanoparticles supported on niobium pentoxide (Ru/Nb₂O₅). In a study published in the *Journal of the American Chemical Society*, the team demonstrated that Ru/Nb₂O₅ is capable of producing primary amines from carbonyl compounds with ammonia (NH₃) and dihydrogen (H₂), with negligible formation of by-

products.

The study compared the extent to which different catalysts could convert furfural to furfurylamine in a process known as reductive amination¹. This reaction is one of the most useful methods for producing primary amines on an industrial scale. The Ru/Nb₂O₅ catalyst outperformed all other types tested -- remarkably, a yield of 99% was attained when ammonia was used in excess quantity.

Even after three recycles, the Ru/Nb₂O₅ catalyst achieved consistent results, with consecutive yields of over 90%. The superior catalytic efficiency is thought to be due to ruthenium's weak electron-donating properties on the Nb₂O₅ surface.

Michikazu Hara of Tokyo Tech's Laboratory for Materials and Structures and his co-workers then explored how effectively the new catalyst could break down biomass (in the form of glucose) into 2,5-bis(aminomethyl)furan, a monomer for aramid production. Previous experiments using a nickel-based catalyst led to a yield of around 50% from glucose-derived feedstock (5-hydroxymethylfurfural). The new catalyst used in combination with a so-called

ruthenium-xantphos complex produced a yield of 93%. With little to no by-products observed, Ru/Nb₂O₅ represents a major breakthrough in the clean, large-scale production of biomass-derived materials.

Further studies to expand on these initial findings are already underway. By pushing the boundaries of material design, the researchers say that Ru/Nb₂O₅ may accelerate the production of environmentally friendly plastics, rubber and heat-resistant aramid fibers². In future, the Ru/Nb₂O₅ catalyst may also impact the development of novel anti-cancer drugs, anti-bacterials, pesticides, agrochemicals, fertilizers, bio-oils and biofuels.

Story Source:

Materials provided by [Tokyo Institute of Technology](#).

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Bit data goes anti-skyrmions -- ScienceDaily

Today's world, rapidly changing because of "big data," is encapsulated in trillions of tiny magnetic objects -- magnetic bits -- each of which stores one bit of data in magnetic disk drives. A group of scientists from the Max Planck Institutes in Halle and Dresden have discovered a new kind of magnetic nano-object in a novel material that could serve as a magnetic bit with cloaking properties to make a magnetic disk drive with no moving parts -- a Racetrack Memory -- a reality in the near future.

Most digital data is stored in the cloud as magnetic bits within massive numbers of magnetic disk drives. Over the past several decades these magnetic bits have shrunk by many orders of magnitude, reaching limits where the boundaries of these magnetic regions can have special properties. In some special materials these boundaries -- "magnetic domain walls" -- can be described as being topological. What this means is that these walls can be thought of as having a special

magical cloak -- what is referred to by scientists as "topological protection." An important consequence is that such magnetic walls are more stable to perturbations than similar magnetic bits without topological protection that are formed in conventional magnetic materials. Thus, these "topological" magnetic objects could be especially useful for storing "1"s and "0"s, the basic elements of digital data.

One such object is a "magnetic skyrmion" which is a tiny magnetic region, perhaps tens to hundreds of atoms wide, separated from a surrounding magnetic region by a chiral domain wall. Until recently only one type of skyrmion has been found in which it is surrounded by a chiral domain wall that takes the same form in all directions. But there have been predictions of several other types of skyrmions that were not yet observed. Now in a paper published in *Nature*, scientists from Prof. Stuart Parkin's NISE department at the Max Planck Institute for Microstructure Physics in Halle, Germany, have found a second class of skyrmions, what are called "anti-skyrmions," in materials synthesized in Prof. Claudia Felser's Solid State Chemistry Department at the Max Planck Institute for CPFS, Dresden, Germany.

The scientists from Halle and Dresden have found these tiny magnetic objects in a special class of versatile magnetic compounds called Heusler compounds that Claudia Felser and her colleagues have explored extensively over the past 20 years. Of these Heusler compounds, a tiny subset have just the right crystal symmetry to allow for the possibility of forming anti-skyrmions but not skyrmions. Using a highly sensitive transmission electron microscope at the Max Planck Institute for Microstructure Physics, Halle, that was specially modified to allow for the detection of tiny magnetic moments, anti-skyrmions were created and detected over a wide range of temperatures and magnetic fields. Most importantly, anti-skyrmions, both in ordered arrays and as isolated objects, could be seen even at room temperature and in zero magnetic fields.

The special cloaking properties of skyrmions makes them of great interest for a radically new form of solid-state memory -- the Racetrack Memory -- that was proposed by Stuart Parkin a decade ago. In Racetrack Memory digital data is encoded within magnetic domain walls that are packed closely within nanoscopic magnetic wires. One of the unique features of Racetrack Memory, which is distinct from all other

memories, is that the walls are moved around the nanowires themselves using recent discoveries in spin-orbitronics. Very short pulses of current move all the domain walls backwards and forwards along the nanowires. The walls -- the magnetic bits -- can be read and written by devices incorporated directly into the nanowires themselves, thereby eliminating any mechanical parts. Topologically protected magnetic walls are very promising for Racetrack Memory.

Thus, anti-skyrmions could be coming to Racetrack Memory soon! Going even beyond anti-skyrmions the next goal is the realization of a third class of skyrmions -- antiferromagnetic skyrmions -- which are tiny magnetic objects that actually have no net magnetic moment. They are magnetically almost invisible but have unique properties that make them of great interest.

Story Source:

[Materials](#) provided by [Max Planck Institute for Chemical Physics of Solids](#). *Note: Content may be edited for style and length.*

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- [Equatorial jet in Venusian atmosphere](#) [周五, 01 9月 21:38]

Observations by Japan's Venus climate orbiter Akatsuki have revealed an equatorial jet in the lower to middle cloud layer of the planet's atmosphere, a finding that could be pivotal to unraveling a phenomenon called superrotation.

- [Mouth clicks used in human echolocation captured in unprecedented detail](#) [周五, 01 9月 02:13]

Like some bats and marine mammals, people can develop expert echolocation skills, in which they produce a clicking sound with their mouths and listen to the reflected sound waves to 'see' their surroundings. A new study provides the first in-depth analysis of the mouth clicks used in human echolocation.

- [Reconstructing life at its beginning, cell by cell](#) [周五, 01 9月 02:12]

In a technological tour de force, scientists have created a virtual model of an early fly embryo. Its interactive interface allows researchers to explore the blueprint that underlies development at unprecedented spatial resolution and predict which cells express which genes.

- [Fossil footprints challenge established theories of human evolution](#) [周五, 01 9月 01:42]

Newly discovered human-like footprints from Crete may put the established narrative of early human evolution to the test. The footprints are approximately 5.7 million years old and were made at a time when previous research puts our ancestors in Africa -- with ape-like feet.

- [Human bones in south Mexico: Stalagmite](#)

[reveals their age as 13,000 years old](#) [周五, 01 9月 01:12]

A prehistoric human skeleton found on the Yucatán Peninsula is at least 13,000 years old and most likely dates from a glacial period at the end of the most recent ice age, the late Pleistocene. A German-Mexican team of researchers has now dated the fossil skeleton based on a stalagmite that grew on the hip bone.

[Yawning: Why is it so contagious and why should it matter?](#) [周五, 01 9月 00:30]

Feeling tired? Even if we aren't tired, why do we yawn if someone else does? Experts have published research that suggests the human propensity for contagious yawning is triggered automatically by primitive reflexes in the primary motor cortex -- an area of the brain responsible for motor function. Their study is another stage in their research into the underlying biology of neuropsychiatric disorders and their search for new methods of treatment.

[What changes when you warm the Antarctic Ocean just 1 degree? Lots](#) [周五, 01 9月 00:30]

After warming a natural seabed in the Antarctic Ocean by just 1° or 2° Celsius, researchers observed massive impacts on a marine assemblage, as growth rates nearly doubled. The findings of what the researchers call the 'most realistic ocean warming experiment to date' show that the effects of future warming may far exceed expectations.

[First hints of possible water content on TRAPPIST-1 planets](#) [周四, 31 8月 23:30]

Astronomers have been trying to determine whether there might be water on the seven Earth-sized planets orbiting the nearby dwarf star TRAPPIST-1. The results suggest that the outer planets of the system might still harbor substantial amounts of water. This includes the three planets within the habitable zone of the star, lending further weight to the possibility that they may indeed be habitable.

[How Neanderthals made the very first glue](#) [周四, 31 8月

21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

- [**Apes' abilities misunderstood by decades of poor science**](#) [周四, 31 8月 21:14]

Hundreds of scientific studies over two decades have told us that apes are clever -- just not as clever as us. New analysis argues that what we think we know about apes' social intelligence is based on wishful thinking and flawed science.

- [**Robot learns to follow orders like Alexa**](#) [周四, 31 8月 21:14]

Computer scientists have developed an Alexa-like system that allows robots to understand a wide range of commands that require contextual knowledge about objects and their environments. They've dubbed the system 'ComText,' for 'commands in context.'

- [**New hope for reef fish living in a high CO2 world**](#) [周四, 31 8月 21:14]

New research examining the possible impacts of ocean acidification provides fresh hope for the survival of reef fish.

- [**How certain ants snap their jaws shut in the blink of an eye**](#) [周四, 31 8月 08:21]

Few victims stand a chance against the formidable mandibles of a trap-jaw ant. In conflicts between predators and prey, speed is a decided advantage, and evolution has given these insects an edge with spring-loaded jaws that snap shut with astonishing speed. Biologists have now provided the first mechanical description of the jaws of a little-known group of trap-jaw ants.

- [**Star-formation 'fuel tanks' found around distant galaxies**](#) [周四, 31 8月 05:25]

Astronomers have studied six distant starburst galaxies and discovered that five of them are surrounded by turbulent reservoirs of hydrogen gas, the fuel for future star formation.

- [**Toward a smart graphene membrane to desalinate water**](#) [周四, 31 8月 05:23]

A simple, sturdy graphene-based hybrid desalination membrane can provide clean water for agriculture and possibly human consumption.

- [**Protecting the guardians**](#) [周四, 31 8月 03:55]

A guardian gene that protects against type 1 diabetes and other autoimmune diseases exerts its pancreas-shielding effects by altering the gut microbiota. Experiments in mice born with the protective gene show that exposure to antibiotics during critical windows of development fuels risk for type 1 diabetes and leads to loss of genetic protection by altering the gut microbiota. Scientists say the findings underscore the importance of avoiding antibiotic use during late pregnancy and early infancy.

- [**Bioengineering a functional vascularized lung scaffold**](#) [周四, 31 8月 02:12]

A team of researchers is the first to successfully bioengineer a functional lung with perfusable and healthy vasculature in an ex vivo rodent lung. Their new approach allows the removal of the pulmonary epithelium while maintaining the viability and function of the vascular network and the lung matrix.

- [**Gut bacteria that 'talk' to human cells may lead to new treatments**](#) [周四, 31 8月 02:12]

Scientists developed a method to genetically engineer gut bacteria to produce molecules that have the potential to treat certain disorders by altering human metabolism.

- [**Scientists recover nova first spotted 600 years ago by Korean astrologers**](#) [周四, 31 8月 01:22]

A new study pinpoints the location of a nova first spotted by Korean astrologers almost 600 years ago that now undergoes smaller-scale 'dwarf nova' eruptions. The work supports that idea that novae go through a very long-term life cycle after erupting, fading to obscurity for

thousands of years, and then building back up to become full-fledged novae once more.

- [**Monkeys with Parkinson's disease benefit from human stem cells**](#) [周四, 31 8月 01:22]

Japanese neurosurgeons report two new strategies to improve outcomes of iPS cell-based therapies for Parkinson's disease in monkey brains. The findings are a key step for patient recruitment of the first iPS cell-based therapy to treat neurodegenerative diseases.

- [**Motorized molecules drill through cells**](#) [周四, 31 8月 01:22]

Motorized molecules that target diseased cells may deliver drugs to or kill the cells by drilling into the cell membranes. Scientists have demonstrated them on cancer and other cells.

- [**Volcanic eruptions drove ancient global warming event**](#) [周四, 31 8月 01:22]

A natural global warming event that took place 56 million years ago was triggered almost entirely by volcanic eruptions that occurred as Greenland separated from Europe during the opening of the North Atlantic Ocean, according to new research.

- [**Acting like a muscle, nano-sized device lifts 165 times its own weight**](#) [周四, 31 8月 01:22]

Engineers have discovered a simple, economical way to make a nano-sized device that can match the friendly neighborhood Avenger, on a much smaller scale. Their creation weighs 1.6 milligrams (about as much as five poppy seeds) and can lift 265 milligrams (the weight of about 825 poppy seeds) hundreds of times in a row.

- [**Uncovering factors that shape sea life**](#) [周四, 31 8月 01:22]

Researchers have proposed a new conceptual model of island biogeography for marine organisms -- a theory that explores how different processes (like sea level fluctuations and geographic isolation) influence marine species diversity around islands.

- [**Otters learn by copying each other**](#) [周四, 31 8月 01:11]

Otters can learn how to solve puzzles by watching and copying each other, new research shows.

- [**What lit up the universe? Black holes may have punctured darkened galaxies, allowing light to escape**](#) [周三, 30 8月 23:48]

Researchers have a new explanation for how the universe changed from darkness to light. They propose that black holes within galaxies produce winds strong enough to fling out matter that punctures holes in galaxies, allowing light to escape.

- [**Shifting school start times could contribute \\$83 billion to US economy within a decade**](#) [周三, 30 8月 22:36]

RAND Corporation and RAND Europe have released the first-ever analysis of the economic implications of a shift in school start times in the US. The study shows that a nationwide move to 8.30 a.m. could lead to an economic gain of \$83 billion to the US economy within a decade. The gains projected through the study's economic model would be realized through the higher academic and professional performance of students, and reduced car crash rates.

- [**Patient plays saxophone while surgeons remove brain tumor**](#) [周三, 30 8月 22:36]

Music is not only a major part of Dan Fabbio's life, as a music teacher it is his livelihood. So when doctors discovered a tumor located in the part of his brain responsible for music function, he began a long journey that involved a team of physicians, scientists, and a music professor and culminated with him awake and playing a saxophone as surgeons operated on his brain.

- [**Understanding ancient geometric earthworks in southwestern Amazonia**](#) [周三, 30 8月 22:34]

Researchers examine pre-colonial geometric earthworks in the southwestern Amazonia from the point of view of indigenous peoples and archaeology. The study shows that the earthworks were once

important ritual communication spaces.

- [**New robot rolls with the rules of pedestrian conduct**](#) [周三, 30 8月 22:34]

Engineers have designed an autonomous robot with 'socially aware navigation,' that can keep pace with foot traffic while observing these general codes of pedestrian conduct.

- [**Robot probes mystery of prehistoric sea creature's swimming style**](#) [周三, 30 8月 22:26]

A new study has shed light on the swimming style of plesiosaurs by creating a robot to mimic its movements.

- [**Methane emissions tackled with gas-guzzling bacteria**](#) [周三, 30 8月 21:45]

Methane-oxidizing bacteria -- key organisms responsible for greenhouse gas mitigation -- are more flexible and resilient than previously thought, an international research has shown.

- [**Fossil whales' teeth shows what ferocious predators they were**](#) [周三, 30 8月 21:45]

The feeding habits of the whale -- the world's biggest animal -- have evolved to filter feeding, shows new international research. Ancient whales appear to have been ferocious predators, investigators explain.

- [**Century-old seal pelts reveal changes in Ross Sea ecosystem**](#) [周三, 30 8月 21:43]

Scientists sampled a pile of frozen pelts left in a hut by Antarctic explorers for Weddell seal tissue from a century ago, at the very start of human activities in Antarctica. By using sophisticated isotope analysis to compare samples from modern and century-old seals, they were able to investigate human impacts on the Antarctic ecosystem.

- [**Why does rubbing a balloon on your hair make it stick?**](#) [周三, 30 8月 01:53]

New research indicates that tiny holes and cracks in a material --

changes in the microstructure -- can control how the material becomes electrically charged through friction.

- [**Sense of smell is key factor in bird navigation, new study shows**](#) [周二, 29 8月 23:38]

How do birds navigate over long distances? This complex question has been the subject of debate and controversy among scientists for decades, with Earth's magnetic field and the bird's own sense of smell among the factors said to play a part. Now, researchers from the universities of Oxford, Barcelona and Pisa have shown in a new experiment that olfaction -- or sense of smell -- is almost certainly a key factor in long-distance oceanic navigation, eliminating previous misgivings about this hypoth...

- [**Woolly rhino neck ribs provide clues about their decline and eventual extinction**](#) [周二, 29 8月 21:10]

A study reports on the incidence of abnormal cervical (neck) vertebrae in woolly rhinos, which strongly suggests a vulnerable condition in the species. Given the considerable birth defects that are associated with this condition, the researchers argue it is very possible that developmental abnormalities contributed towards the eventual extinction of these late Pleistocene rhinos.

- [**An alternative to wolf control to save endangered caribou**](#) [周二, 29 8月 21:10]

The iconic woodland caribou across North America face increasing predation pressures from wolves. A short-term solution to caribou conservation would be to kill wolves. But a new government policy looks at reducing the invasive species moose numbers propping up the wolf population. Researchers have now evaluated the effects of this policy on the caribou population.

- [**Moderate consumption of fats, carbohydrates best for health, international study shows**](#) [周二, 29 8月 21:10]

A diet that includes a moderate intake of fat and fruits and vegetables,

and avoidance of high carbohydrates, is associated with lower risk of death, research with more than 135,000 people across five continents has shown.

- [**Complete remission of brain metastasis of difficult-to-treat tumor**](#) [周二, 29 8月 02:07]

Medical researchers report a remarkable treatment response in a patient participating in a clinical trial of a novel immune-system-based cancer therapy.

- [**Algae fortifies coral reefs in past and present**](#) [周二, 29 8月 02:07]

The Great Barrier Reef, and most other large reefs around the world, owe their bulk in large part to a type of red algae that grows on corals and strengthens them. New research has found that ancient coral reefs were also bolstered by their bond with red algae, a finding that could help scientists better understand how reefs will respond to climate change.

- [**Galaxy 5 billion light-years away shows we live in a magnetic universe**](#) [周二, 29 8月 00:45]

A chance combination of a gravitational lens and polarized waves coming from a distant quasar gave astronomers the tool needed to make a measurement important to understanding the origin of magnetic fields in galaxies.

- [**Keeping pandas off endangered list ledge**](#) [周一, 28 8月 22:54]

Things aren't all black and white for giant pandas. The beloved Chinese icons have basked in good press lately -- their extinction risk status downgraded from 'endangered' to 'vulnerable,' their good fortunes have shown to rub off on their less charismatic forest neighbors that benefit from panda-centric conservation efforts.

- [**Compounds in cocoa may help delay onset of type 2 diabetes**](#) [周一, 28 8月 22:27]

What if eating chocolate helped prevent and treat diabetes? It's crazy enough to laugh off. But here's the thing: Researchers have discovered

certain compounds found in cocoa can actually help your body release more insulin and respond to increased blood glucose better. Insulin is the hormone that manages glucose, the blood sugar that reaches unhealthy levels in diabetes.

- [**Eating triggers endorphin release in the brain**](#) [周一, 28 8月 22:27]

Researchers have revealed how eating stimulates brain's endogenous opioid system to signal pleasure and satiety.

- [**Oil and gas wells as a strong source of greenhouse gases**](#) [周一, 28 8月 22:27]

Boreholes in the North Sea could constitute a significantly more important source of methane, a strong greenhouse gas, than previously thought. Large amounts of methane are released from the sediments surrounding boreholes, probably over long periods of time.

- [**New ancient sea reptile found in Germany, the earliest of its kind**](#) [周一, 28 8月 21:39]

A previously unrecognized 132 million-year-old fossilized sea monster from northern Germany has been identified.

- [**Statins linked to lower rates of breast cancer and mortality**](#) [周一, 28 8月 21:38]

A 14 year study in more than one million people has found that women with high cholesterol have significantly lower rates of breast cancer and improved mortality. The research suggests that statins are associated with lower rates of breast cancer and subsequent mortality.

- [**Air temperature is external trigger for heart attack**](#) [周一, 28 8月 21:38]

A 16-year study in more than 280,000 patients has suggested that air temperature is an external trigger for heart attack. The average number of heart attacks per day was significantly higher during seasons with colder outdoor temperatures as compared to warmer.

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

- [**Cognitive fatigue after TBI linked with activation of caudate**](#) [周六, 02 9月 00:51]

Researchers have further elucidated the mechanisms for cognitive fatigue, a disabling symptom that affects many individuals after traumatic brain injury (TBI).

- [**Drug may curb female infertility from cancer treatments**](#) [周六, 02 9月 00:51]

An existing drug may one day protect premenopausal women from life-altering infertility that commonly follows cancer treatments, according to a new study.

- [**Intellectual disabilities caused by protein defect**](#)

[周五, 01 9月 23:36]

Intellectual disabilities are often caused by a mutation that damages a gene, preventing the associated protein from functioning properly. However, a mutation can also change the function of a gene. As a result, the gene in question acts in a completely different way. Researchers discovered this mechanism in fifteen genes playing a role in the development of intellectual disabilities. Their research results show that these changes in function play a more prominent role than previously thought.

- [**Etosis phenomenon discovered in human blood monocytes**](#) [周五, 01 9月 22:46]

The first clear demonstration of etosis in human blood monocytes, a type of immune cell, has now been discovered by scientists.

• [**Lifestyle factors may affect how long individuals live free of disability**](#) [周五, 01 9月 22:46]

New research indicates that a healthy lifestyle may help reduce the duration of an individual's disabled period near the end of life.

• [**Genes fueling neuroblastoma spread now identified**](#) [周五, 01 9月 06:03]

For the first time, researchers present data on how nervous system tumors, called neuroblastomas, spread. Their paper clarifies the relationship between two genes that fuel the aggressive spread of neuroblastomas.

• [**Asthma medicine halves risk of Parkinson's**](#) [周五, 01 9月 06:03]

Using data gathered from 100 million Norwegian prescriptions, researchers have found that asthma medicine can halve a patient's risk of developing Parkinson's disease.

• [**New genetic risk factor for developing autism spectrum disorder identified**](#) [周五, 01 9月 06:03]

A new systematic analysis has been applied to a cohort of 2,300 families who have a single child affected with autism. The study focused on identifying and characterizing low-lying genetic mutations that may have been missed in previous research, given these mutations are only present in a fraction of the bulk DNA of an individual.

• [**New boarding procedures, smaller cabin size may limit infection on planes**](#) [周五, 01 9月 03:13]

During major epidemics, cramped airplane cabins are fertile ground for the spread of infection, but new research suggests changing routine boarding protocols could be a key to reducing rampant transmission of disease.

• [**Discovery may be key to obesity, Diabetes Rx**](#) [周五, 01 9月 03:12]

Research has demonstrated the potential of a protein to treat or prevent metabolic diseases including obesity and diabetes.

• [**Measuring the cost of quality measurement**](#) [周五, 01 9月 03:12]

Less than 2 decades after publication of the National Academy of Medicine's (formerly the Institute of Medicine) Crossing the Quality Chasm: A New Health System for the 21st Century, quality measurement has become routine and widespread throughout the US health care system.

• [**Mouth clicks used in human echolocation captured in unprecedented detail**](#) [周五, 01 9月 02:13]

Like some bats and marine mammals, people can develop expert echolocation skills, in which they produce a clicking sound with their mouths and listen to the reflected sound waves to 'see' their surroundings. A new study provides the first in-depth analysis of the mouth clicks used in human echolocation.

• [**New source for brain's development discovered**](#) [周五, 01 9月 02:13]

An unexpected source for the brain's development has been discovered by researchers, a finding that offers new insights into the building of the nervous system.

• [**Does indoor spraying help prevent dengue?**](#) [周五, 01 9月 02:13]

The prevention of dengue, the most prevalent mosquito-borne virus in the world, relies heavily on controlling mosquito populations, as the currently available dengue vaccine is only partially effective. Indoor spraying -- which involves spraying of insecticides inside houses -- has the potential to be a key part of those prevention efforts, researchers report.

• [**Drugs targeting the beta2-adrenoreceptor linked to Parkinson's disease**](#) [周五, 01 9月 02:12]

Researchers want to prevent alpha-synuclein from accumulating in the brain. To do so, the team searched for drugs that turn down alpha-synuclein production. They then tested the drugs in mice and stem cells and studied in data from the health records of millions of people living in Norway. The results of their efforts, point to a new drug development

path for PD.

- [**Drugs found to be more effective against depression than electric current**](#) [周五, 01 9月 02:05]

Medicinal therapy was found to be more than twice as effective as low-intensity brain stimulation in treating depression, according to a study.

- [**New findings on brain functional connectivity may lend insights into mental disorders**](#) [周五, 01 9月 01:13]

Ongoing advances in understanding the functional connections within the brain are producing exciting insights into how the brain circuits function together to support human behavior — and may lead to new discoveries in the development and treatment of psychiatric disorders, according to a review.

- [**Chemo-boosting drug discovered for leukemia**](#) [周五, 01 9月 00:30]

Drugs developed to treat heart and blood vessel problems could be used in combination with chemotherapy to treat an aggressive form of adult leukemia, new research reveals.

- [**Yawning: Why is it so contagious and why should it matter?**](#) [周五, 01 9月 00:30]

Feeling tired? Even if we aren't tired, why do we yawn if someone else does? Experts have published research that suggests the human propensity for contagious yawning is triggered automatically by primitive reflexes in the primary motor cortex -- an area of the brain responsible for motor function. Their study is another stage in their research into the underlying biology of neuropsychiatric disorders and their search for new methods of treatment.

- [**Scents and social preference: Neuroscientists ID the roots of attraction**](#) [周五, 01 9月 00:30]

Culminating a series of studies stretching back eight years, biologists have identified the cellular and molecular basis for social preference, known in the animal kingdom as 'imprinting.' Through in vivo experiments, the researchers found the neurological roots of kinship

attraction and aversion. They also employed genetics screening to find the regulators controlling this behavior. The study carries implications for understanding social attraction and aversion in a range of animals and humans.

- [**Songbird study shows how estrogen may stop infection-induced brain inflammation**](#) [周四, 31 8月 23:30]

Estrogen synthesis, a process naturally occurring in the brains of zebra finches, may also fight off neuroinflammation caused by infection that occurs elsewhere in the body, new research indicates.

- [**People become more economically conservative when angered**](#) [周四, 31 8月 23:30]

People tend to lean more economically conservative when they're angry, according to a new article. Researchers came to the conclusion after running multiple studies that included more than 1,000 participants.

- [**How reading and writing with your child boost more than just literacy**](#) [周四, 31 8月 22:21]

Children who read and write at home -- whether for assignments or just for fun -- are building long-term study and executive function skills, according to a new article

- [**Newly emerged superbug discovered**](#) [周四, 31 8月 22:15]

Scientists have discovered a newly emerged superbug, hyper-resistant and hypervirulent *Klebsiella pneumoniae*, which may cause untreatable and fatal infections in relatively healthy individuals and will pose enormous threat to human health.

- [**Beta blockers have positive effect in pulmonary arterial hypertension, researchers find**](#) [周四, 31 8月 22:14]

A common heart disease medication, beta blockers, may help treat pulmonary arterial hypertension (PAH), a debilitating lung disease, researchers have found. Caused by high blood pressure in the pulmonary arteries, PAH is a progressive disease which usually leads to right-sided heart failure and death within five to seven years of diagnosis. Right-

sided heart failure is the leading cause of death in PAH patients.

- [**Untreated sleep apnea shown to raise metabolic and cardiovascular stress**](#) [周四, 31 8月 22:14]

Sleep apnea, left untreated for even a few days, can increase blood sugar and fat levels, stress hormones and blood pressure, according to a new study of sleeping subjects. This research adds further support for the consistent use of continuous positive airway pressure, a machine that increases air pressure in the throat to keep the airway open during sleep.

- [**Mind wandering is common during driving**](#) [周四, 31 8月 22:14]

Scientists have investigated mind wandering in volunteers during a driving simulation. Astonishingly, during the simulation, the volunteers reported mind wandering 70 percent of the time. The researchers could identify specific changes in brain patterns when the volunteers were mind wandering, but need to do further work to clarify if it is dangerous during driving.

- [**Children's sleep quality linked to mothers' insomnia**](#) [周四, 31 8月 21:33]

Children sleep more poorly if their mothers suffer from insomnia symptoms – potentially affecting their mental wellbeing and development - according to new research. Nearly 200 school kids and their parents were studied, results indicating that children whose mothers have insomnia symptoms fall asleep later, get less sleep and spend less time in deep sleep. There appeared to be no link between fathers' insomnia symptoms and children's sleep.

- [**Little known theory could hold key to sporting success**](#) [周四, 31 8月 21:33]

An established but little known psychological theory is likely to improve performances across a range of activities, including sport, according to new research.

- [**Severe stress behind self-perceived memory problems**](#) [周四, 31 8月 21:33]

Stress, fatigue, and feeling like your memory is failing you. These are the symptoms of a growing group of patients. Result – They may need help, but they are rarely entering the initial stages of dementia.

- [**New possibility of studying how Alzheimer's disease affects the brain at different ages**](#) [周四, 31 8月 21:33]

Alzheimer's disease can lead to several widely divergent symptoms and, so far, its various expressions have mainly been observed through the behavior and actions of patients. Researchers have now produced images showing the changes in the brain associated with these symptoms – a development which increases knowledge and could facilitate future diagnostics and treatment.

- [**First look at potentially deadly metabolic disorder that strikes infants**](#) [周四, 31 8月 21:32]

You may have never heard of congenital disorder of glycosylation, but parents whose children are born with forms of this rare -- and underreported -- metabolic disorder know all too well the dangers they pose, including developmental delay, failure to thrive, stroke-like symptoms, seizures and cerebellar dysfunction.

- [**Using DNA to predict schizophrenia, autism**](#) [周四, 31 8月 21:32]

A single amino acid substitution in the protein CX3CR1 may act as predictor for schizophrenia and autism, a multi-institute collaboration demonstrates.

- [**Faulty DNA repair depresses neural development**](#) [周四, 31 8月 21:32]

Researchers have discovered DNA polymerase β (Pol β) deficiency in neural stem cells affects neuronal survival and neural network in the developing brain.

- [**A philosophical mythbuster**](#) [周四, 31 8月 21:32]

Cognitive neuroscience gives us a glimpse into our brain activity; it allows us to learn more about ourselves. Or do brain scans actually not say very much about who we are? A philosopher examines four myths

about neuroscience and self-understanding.

- [**Alcohol abuse, dental conditions, mental health found to be causes of avoidable US emergency visits**](#) [周四, 31 8月 21:26]

Alcohol abuse, dental conditions, and mental health were found to be the main causes of avoidable emergency room visits in the US, a new report reveals.

- [**Love your beauty rest? You can thank these brain cells**](#) [周四, 31 8月 21:14]

Researchers report the unexpected presence of a type of neuron in the brains of mice that appears to play a central role in promoting sleep by turning 'off' wake-promoting neurons. The newly identified brain cells, located in a part of the hypothalamus called the zona incerta, they say, could offer novel drug targets to treat sleep disorders, such as insomnia and narcolepsy, caused by the dysfunction of sleep-regulating neurons.

- [**New Zealand researchers makes 'natural born killer' cell discovery**](#) [周四, 31 8月 21:14]

An unexpected role for a white blood cell called the Natural Killer (NK) cell -- a critical cell for ridding the body of infection and cancer, has been discovered. The NK cell is a 'vigilante' killer -- a white blood cell that destroys invaders and cancer cells through a process of 'identity card' checking. The researchers' new work shows that violent vigilante NK cells act as helper cells to start up the immune response.

- [**Perfect mannequins a turnoff for some consumers**](#) [周四, 31 8月 21:14]

Mannequins' long legs, tiny waistlines and perfect busts can sour some shoppers on the products they're wearing, especially consumers who don't like the look of their own bodies.

- [**Fathers of American newborns keep getting older, study finds**](#) [周四, 31 8月 21:14]

While data on the moms of newborn American children has been

abundant, equivalent data on dads hasn't -- a gap that scientists have now filled.

- [**E-cigarettes can help smokers quit, but there's a catch**](#) [周四, 31 8月 21:14]

Frequent e-cigarette use does help smokers quit -- a finding that researchers say supports the use of e-cigarettes as a cessation aid for those trying to quit cigarette smoking. But, they note, an examination of a recent national survey uncovers important clues about who's successful at quitting and why.

- [**Three policies to improve children's language development**](#) [周四, 31 8月 21:14]

Bilingual children from low-income homes are at greater risk of falling behind their peers in developing the appropriate language skills for their age group, leading to poorer academic achievement over time. A new article addresses how inequality impacts children's language development and details policies that can intervene.

- [**Good as gold**](#) [周四, 31 8月 08:21]

Few experiences invoke as much anxiety as a call from your doctor saying 'you need to come back for more tests.' Your imagination goes wild and suddenly a routine medical screening becomes a minefield of potential life-threatening diseases. It's highly likely, however, that you have fallen victim to a false positive -- a result that, despite the accuracy of the test, erroneously yields an affirmative result that points toward illness. To increase the accuracy of medical screening and reduce the i...

- [**Gold nanoparticles fry cancer on glowing mice**](#) [周四, 31 8月 08:21]

A new study takes a new approach to killing cancer: Why not fry it into oblivion with vibrating gold nanoparticles?

- [**Eating protein three times a day could make our seniors stronger**](#) [周四, 31 8月 08:21]

Loss of muscle is an inevitable consequence of aging that can lead to frailty, falls or mobility problems. Eating enough protein is one way to

remedy it, but it would seem that spreading protein equally among the three daily meals could be linked to greater mass and muscle strength in the elderly.

- [**Z-endoxifen shows promise as new treatment for common breast cancer type**](#) [周四, 31 8月 08:21]

Z-endoxifen, a potent derivative of the drug tamoxifen, could itself be a new treatment for the most common form of breast cancer in women with metastatic disease, report investigators.

- [**Virus that causes mono may increase risk of MS for multiple races**](#) [周四, 31 8月 05:21]

Like whites, Hispanic and black people who have had mononucleosis, commonly known as mono, which is caused by Epstein-Barr virus, may have an increased risk of multiple sclerosis (MS), according to a new study.

- [**Concerns regarding radioactivity in migratory seafood negated**](#) [周四, 31 8月 03:55]

New research shows negligible risk from consumption of meat from migratory marine predators following Fukushima nuclear disaster.

- [**Protecting the guardians**](#) [周四, 31 8月 03:55]

A guardian gene that protects against type 1 diabetes and other autoimmune diseases exerts its pancreas-shielding effects by altering the gut microbiota. Experiments in mice born with the protective gene show that exposure to antibiotics during critical windows of development fuels risk for type 1 diabetes and leads to loss of genetic protection by altering the gut microbiota. Scientists say the findings underscore the importance of avoiding antibiotic use during late pregnancy and early infancy.

- [**Breastfeeding reduces risk of endometriosis diagnosis**](#) [周四, 31 8月 03:55]

Women who breastfed for longer periods of time had significantly lower risk of being diagnosed with endometriosis, offering new insights into a

condition that, up until now, has had very few known, modifiable risk factors, a new study concludes.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

- [**Reusable ruthenium-based catalyst could be a game-changer for the biomass industry**](#) [周五, 01 9月 22:46]

Researchers have developed a highly efficient reusable catalyst for the production of primary amines. By cutting the amount of undesired by-products, the catalyst is set to revolutionize the production of bio-based fuels, pharmaceuticals, agricultural chemicals and more.

- [**Bit data goes anti-skyrmions**](#) [周五, 01 9月 22:46]

Scientists have discovered a new kind of magnetic nano-object in a novel material that could serve as a magnetic bit with cloaking properties to make a magnetic disk drive with no moving parts -- a Racetrack Memory -- a reality in the near future.

- [**Molecules move faster near sticky surfaces**](#) [周五, 01 9月 21:39]

Molecules move faster as they get closer to adhesive surfaces, but this effect is not permanent.

- [**Equatorial jet in Venusian atmosphere**](#) [周五, 01 9月 21:38]

Observations by Japan's Venus climate orbiter Akatsuki have revealed an equatorial jet in the lower to middle cloud layer of the planet's atmosphere, a finding that could be pivotal to unraveling a phenomenon called superrotation.

- [**Insect eyes inspire new solar cell design**](#) [周五, 01 9月 03:12]

Packing tiny solar cells together, like micro-lenses in the compound eye of an insect, could help scientists overcome a major roadblock to the development of perovskite photovoltaics.

- [**Drugs found to be more effective against depression than electric current**](#) [周五, 01 9月 02:05]

Medicinal therapy was found to be more than twice as effective as low-intensity brain stimulation in treating depression, according to a study.

- [**Caching system could make data centers more energy efficient**](#) [周四, 31 8月 23:52]

Researchers have developed a new system for data center caching that uses flash memory, the kind of memory used in most smartphones.

- [**First hints of possible water content on TRAPPIST-1 planets**](#) [周四, 31 8月 23:30]

Astronomers have been trying to determine whether there might be water on the seven Earth-sized planets orbiting the nearby dwarf star TRAPPIST-1. The results suggest that the outer planets of the system might still harbor substantial amounts of water. This includes the three planets within the habitable zone of the star, lending further weight to the possibility that they may indeed be habitable.

- [**How Neanderthals made the very first glue**](#) [周四, 31 8月 21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

- [**Improving earthquake resistance with a single crystal**](#) [周四, 31 8月 21:26]

A new heating method for certain metals could lead to improved earthquake-resistant construction materials.

- [**Mass production of biodegradable plastic**](#) [周四, 31 8月 21:14]

Introducing a simple step to the production of plant-derived, biodegradable plastic could improve its properties while overcoming obstacles to manufacturing it commercially, says new research.

- [**Turning heat energy into a viable fuel source**](#) [周四, 31 8月 21:14]

A new device could one day turn the heat generated by a wide array of electronics into a usable fuel source. The device is a multicomponent, multilayered composite material called a van der Waals Schottky diode. It converts heat into electricity up to three times more efficiently than silicon -- a semiconductor material widely used in the electronics industry.

- [**Robot learns to follow orders like Alexa**](#) [周四, 31 8月 21:14]

Computer scientists have developed an Alexa-like system that allows robots to understand a wide range of commands that require contextual knowledge about objects and their environments. They've dubbed the system 'ComText,' for 'commands in context.'

- [**Good as gold**](#) [周四, 31 8月 08:21]

Few experiences invoke as much anxiety as a call from your doctor saying 'you need to come back for more tests.' Your imagination goes wild and suddenly a routine medical screening becomes a minefield of potential life-threatening diseases. It's highly likely, however, that you have fallen victim to a false positive -- a result that, despite the accuracy of the test, erroneously yields an affirmative result that points toward illness. To increase the accuracy of medical screening and reduce the i...

- [**Gold nanoparticles fry cancer on glowing mice**](#) [周四, 31 8月 08:21]

A new study takes a new approach to killing cancer: Why not fry it into oblivion with vibrating gold nanoparticles?

- [**Star-formation 'fuel tanks' found around distant galaxies**](#) [周四, 31 8月 05:25]

Astronomers have studied six distant starburst galaxies and discovered that five of them are surrounded by turbulent reservoirs of hydrogen gas, the fuel for future star formation.

- [**Toward a smart graphene membrane to desalinate water**](#) [周四, 31 8月 05:23]

A simple, sturdy graphene-based hybrid desalination membrane can provide clean water for agriculture and possibly human consumption.

• [**New bar set for water-splitting, CO2-splitting techniques**](#) [周四, 31 8月 02:13]

Researchers have significantly boosted the efficiency of two techniques, for splitting water to create hydrogen gas and splitting carbon dioxide to create carbon monoxide. The products are valuable feedstock for clean energy and chemical manufacturing applications.

• [**Bioengineering a functional vascularized lung scaffold**](#) [周四, 31 8月 02:12]

A team of researchers is the first to successfully bioengineer a functional lung with perfusable and healthy vasculature in an ex vivo rodent lung. Their new approach allows the removal of the pulmonary epithelium while maintaining the viability and function of the vascular network and the lung matrix.

• [**Environmental chemist flashes warning light on new nanoparticle**](#) [周四, 31 8月 02:12]

Layered BP's cytotoxicity is based on the fact that it generates reactive oxygen species (ROS), scientists have found. ROS are among the most potent cell-damaging agents known. Layered BP also disrupts cell membrane integrity in a particle-size-dependent manner.

• [**Scientists recover nova first spotted 600 years ago by Korean astrologers**](#) [周四, 31 8月 01:22]

A new study pinpoints the location of a nova first spotted by Korean astrologers almost 600 years ago that now undergoes smaller-scale 'dwarf nova' eruptions. The work supports that idea that novae go through a very long-term life cycle after erupting, fading to obscurity for thousands of years, and then building back up to become full-fledged novae once more.

• [**Artificial intelligence analyzes gravitational lenses 10 million times faster**](#) [周四, 31 8月 01:22]

Researchers have for the first time shown that neural networks -- a form of artificial intelligence -- can accurately analyze the complex

distortions in spacetime known as gravitational lenses 10 million times faster than traditional methods.

- [**Motorized molecules drill through cells**](#) [周四, 31 8月 01:22]

Motorized molecules that target diseased cells may deliver drugs to or kill the cells by drilling into the cell membranes. Scientists have demonstrated them on cancer and other cells.

- [**Acting like a muscle, nano-sized device lifts 165 times its own weight**](#) [周四, 31 8月 01:22]

Engineers have discovered a simple, economical way to make a nano-sized device that can match the friendly neighborhood Avenger, on a much smaller scale. Their creation weighs 1.6 milligrams (about as much as five poppy seeds) and can lift 265 milligrams (the weight of about 825 poppy seeds) hundreds of times in a row.

- [**Dating? A magic formula to predict attraction is more elusive than ever**](#) [周四, 31 8月 01:22]

Dating websites often claim attraction between two people can be predicted from the right combination of traits and preferences, but a new study casts doubt on that assertion. The study, which used speed dating data, found a computer could predict who is desirable and how much someone would desire others -- who's hot and who's not -- but it could not unravel the mystery of unique desire for a specific person.

- [**Robotic system monitors specific neurons**](#) [周四, 31 8月 00:49]

Engineers have devised a way to automate the process of patch-clamping, using a computer algorithm that analyzes microscope images and guides a robotic arm to the target cell to record its electrical activity.

- [**'Seeing' robot learns tricky technique for studying brain cells in mammals**](#) [周四, 31 8月 00:25]

Scientists have successfully taught robots to perform a challenging brain technique only previously mastered by a handful of humans.

- [**Machine-learning earthquake prediction in lab**](#)

[shows promise](#) [周四, 31 8月 00:25]

By listening to the acoustic signal emitted by a laboratory-created earthquake, a computer science approach using machine learning can predict the time remaining before the fault fails.

• [Silicon solves problems for next-generation battery technology](#) [周三, 30 8月 23:48]

Silicon -- the second most abundant element in the earth's crust -- shows great promise in Li-ion batteries, according to new research. By replacing graphite anodes with silicon, it is possible to quadruple anode capacity.

• [What lit up the universe? Black holes may have punctured darkened galaxies, allowing light to escape](#) [周三, 30 8月 23:48]

Researchers have a new explanation for how the universe changed from darkness to light. They propose that black holes within galaxies produce winds strong enough to fling out matter that punctures holes in galaxies, allowing light to escape.

• [Stroke patient improvement with a brain-computer interface](#) [周三, 30 8月 22:35]

It is possible for stroke patients to improve motor function using special training involving connecting brain signals with a computer, research shows.

• [Leaf sensors can tell farmers when crops need to be watered](#) [周三, 30 8月 22:34]

Plant-based sensors that measure the thickness and electrical capacitance of leaves show great promise for telling farmers when to activate their irrigation systems, preventing both water waste and parched plants, according to researchers.

• [New robot rolls with the rules of pedestrian conduct](#) [周三, 30 8月 22:34]

Engineers have designed an autonomous robot with 'socially aware navigation,' that can keep pace with foot traffic while observing these general codes of pedestrian conduct.

- [**Robot probes mystery of prehistoric sea creature's swimming style**](#) [周三, 30 8月 22:26]

A new study has shed light on the swimming style of plesiosaurs by creating a robot to mimic its movements.

- [**Electricity production: When enzymes rival platinum**](#) [周三, 30 8月 22:19]

Making a biocell that is as effective as a platinum fuel cell: that's the feat that researchers have achieved. Three years after making their first prototype biocell, the researchers have just reached a new milestone and increased its performance and stability. This biocell could, in the long run, offer an alternative to fuel cells that require rare and costly metals, such as platinum.

- [**New significance of unheralded chemical reactions**](#) [周三, 30 8月 21:45]

Researchers reveal new significance to a decades-old chemical reaction theory, increasing our understanding of the interaction of gases, relevant to combustion and planetary atmospheres.

- [**New mini tool has massive implications**](#) [周三, 30 8月 21:43]

Researchers have created a miniaturized, portable version of a tool now capable of analyzing Mars' atmosphere -- and that's just one of its myriad possible uses.

- [**Making 3-D printing safer**](#) [周三, 30 8月 21:42]

Within the past decade, 3-D printers have gone from bulky, expensive curiosities to compact, more affordable consumer products. At the same time, concerns have emerged that nanoparticles released from the machines during use could affect consumers' health. Now researchers report a way to eliminate almost all nanoparticle emissions from some of these printers.

- [**Nanoparticles loaded with mRNA give disease-fighting properties to cells**](#) [周三, 30 8月 21:42]

A new biomedical tool using nanoparticles that deliver transient gene changes to targeted cells could make therapies for a variety of diseases -- including cancer, diabetes and HIV -- faster and cheaper to develop, and more customizable.

- [**Adoption of robotics into a hospital's daily operations requires broad cooperation**](#) [周三, 30 8月 21:42]

Investigators studied the implementation of a logistics robot system at the Seinäjoki Central Hospital in South Ostrobothnia. The aim was to reduce transportation costs, improve the availability of supplies and alleviate congestion on hospital hallways by running deliveries around the clock on every day of the week.

- [**Nano chip system measures light from single bacterial cell to enable chemical detection**](#) [周三, 30 8月 21:42]

Researchers have created a nanophotonic chip system using lasers and bacteria to observe fluorescence emitted from a single bacterial cell. The novel system paves the way for an efficient and portable on-chip system for diverse cell-based sensing applications, such as detecting chemicals in real-time.

- [**NASA's Lunar mission captures solar eclipse as seen from the moon**](#) [周三, 30 8月 04:45]

LRO captured an image of the Moon's shadow over a large region of the United States, centered just north of Nashville, Tennessee.

- [**Why does rubbing a balloon on your hair make it stick?**](#) [周三, 30 8月 01:53]

New research indicates that tiny holes and cracks in a material -- changes in the microstructure -- can control how the material becomes electrically charged through friction.

- [**Chemist synthesizes pure graphene**](#) [周三, 30 8月 01:53]

A chemist has patented a one-of-a-kind process for exfoliating graphene in its pure (unoxidized) form, as well as manufacturing innovative graphene nanocomposites that have potential uses in a variety of applications, including desalination of brackish water.

- [**Tiny nanopackages built out of DNA help scientists peek at how neurons work**](#) [周三, 30 8月 01:22]

Scientists have designed a way to use microscopic capsules made out of DNA to deliver a payload of tiny molecules directly into a cell. The technique gives scientists an opportunity to understand certain interactions among cells that have previously been hard to track.

- [**Scientists move graphene closer to transistor applications**](#) [周三, 30 8月 01:14]

Scientists were able to successfully manipulate the electronic structure of graphene, which may enable the fabrication of graphene transistors -- faster and more reliable than existing silicon-based transistors.

- [**Brain stimulation for children with learning difficulties?**](#) [周三, 30 8月 00:47]

Applying a brain stimulation method, which was previously suggested to enhance mathematical learning in healthy adults, may improve the performance of children with mathematical learning difficulties, according to an exploratory study.

- [**Photosynthesis discovery could help design more efficient artificial solar cells**](#) [周三, 30 8月 00:44]

A natural process that occurs during photosynthesis could lead to the design of more efficient artificial solar cells, according to researchers.

- [**Clamping down on causality by probing laser cavities**](#) [周二, 29 8月 23:39]

By monitoring the optical response of an externally probed laser cavity before and after gain clamping, researchers reveal the underlying mechanisms driving the cavity's responses.

[Scientists power past solar efficiency records](#) [周二, 29]

8月 23:39]

The high potential of silicon-based multijunction solar cells has now been demonstrated through new research.

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Environment News

Top stories featured on ScienceDaily's Plants & Animals, Earth & Climate, and Fossils & Ruins sections.

- [**Etosis phenomenon discovered in human blood monocytes**](#) [周五, 01 9月 22:46]

The first clear demonstration of etosis in human blood monocytes, a type of immune cell, has now been discovered by scientists.

- [**Can corals survive climate change?**](#) [周五, 01 9月 21:39]

Scientists have issued advice that more research is urgently required to determine whether corals can acclimate and adapt to the rapid pace of climate change.

- [**New light shed on photosynthesis**](#) [周五, 01 9月 21:38]

A team of scientists has taken us a step closer to unlocking the secrets of photosynthesis, and possibly to cleaner fuels. Their discovery describes the structure of a reaction center (from a heliobacterium) which preserves the characteristics of the ancestral one, and so provides new insight into the evolution of photosynthesis.

- [**Coming soon to Montreal: The infrastructure cost of climate change**](#) [周五, 01 9月 03:13]

The climate of Montreal is changing and will continue to do so at a rapidly increasing rate and with much more spatial variability in the future, according to new research.

- [**Insect eyes inspire new solar cell design**](#) [周五, 01 9月 03:12]

Packing tiny solar cells together, like micro-lenses in the compound eye of an insect, could help scientists overcome a major roadblock to the development of perovskite photovoltaics.

• [**More research needed on effects of maternal stress in wild animals**](#) [周五, 01 9月 03:12]

If a human mother is stressed while pregnant, research shows her child is much more likely to have emotional, cognitive or even physiological problems, such as attention deficit, hyperactivity, anxiety, language delay, obesity, diabetes and hypertension. Conversely, the results of maternal stress on the offspring of other animals -- particularly wildlife under threat from predators -- is believed to be positive, and contributes to their survival.

• [**Study reveals ways collegiate sports venues can achieve 'zero waste'**](#) [周五, 01 9月 02:13]

A new study analyzing waste and recyclables during Mizzou's 2014 home football season demonstrates that by implementing several recommendations the team developed, such as offering better recycling receptacles and better sorting options for waste, sporting venues could be well on their way to achieving environmental benefits that exceed the standards for 'zero-waste' operations.

• [**Does indoor spraying help prevent dengue?**](#) [周五, 01 9月 02:13]

The prevention of dengue, the most prevalent mosquito-borne virus in the world, relies heavily on controlling mosquito populations, as the currently available dengue vaccine is only partially effective. Indoor spraying -- which involves spraying of insecticides inside houses -- has the potential to be a key part of those prevention efforts, researchers report.

• [**Reconstructing life at its beginning, cell by cell**](#) [周五, 01 9月 02:12]

In a technological tour de force, scientists have created a virtual model of an early fly embryo. Its interactive interface allows researchers to explore the blueprint that underlies development at unprecedented spatial resolution and predict which cells express which genes.

• [**Nature gem within the city: What grows in the biodiversity-rich Bukit Nanas Forest Reserve**](#) [周五, 01 9月 02:05]

Being the oldest of its kind in Malaysia, Bukit Nanas Forest Reserve is a nature enclave, lying in the center of the busy capital city Kuala Lumpur. Researchers have now teamed up to publish an extensive checklist of the flora of this urban nature enclave, while making use of the innovative 'ecosystem inventory' template.

. [**Cross-kingdom regulation of honeybee caste development by dietary plant miRNAs**](#) [周五, 01 9月 02:05]

Honeybee larvae develop into workers but not queens, in part, because their diet of beebread/pollen is enriched in plant miRNAs. While miRNAs are generally negative regulators of gene expression in eukaryotes, they also negatively regulate larval development when honeybee larvae consume beebread/pollen and take up plant miRNAs.

. [**Pinpointing the sources of trans-pacific dust**](#) [周五, 01 9月 02:05]

Airborne dust from Asia travels across the Pacific passport-free, carrying pollution, building soil, and coloring sunsets thousands of miles from its source. Identifying that source is important for understanding atmospheric circulation, contaminant pathways, and climate. But collecting enough airborne dust to pinpoint its source is challenging. Now, a team of researchers has developed a way to match microscopic quartz grains to the desert they blew in from.

. [**Protein transport channel offers new target for thwarting pathogen**](#) [周五, 01 9月 01:42]

A bacterium that attacks people suffering from chronic lung disease and compromised immune systems could be halted by disrupting the distribution channels the organism uses to access the nutrient-rich cytoplasm of its host cell.

. [**Fossil footprints challenge established theories of human evolution**](#) [周五, 01 9月 01:42]

Newly discovered human-like footprints from Crete may put the established narrative of early human evolution to the test. The footprints are approximately 5.7 million years old and were made at a time when previous research puts our ancestors in Africa -- with ape-like feet.

- **[Human bones in south Mexico: Stalagmite reveals their age as 13,000 years old](#)** [周五, 01 9月 01:12]

A prehistoric human skeleton found on the Yucatán Peninsula is at least 13,000 years old and most likely dates from a glacial period at the end of the most recent ice age, the late Pleistocene. A German-Mexican team of researchers has now dated the fossil skeleton based on a stalagmite that grew on the hip bone.

- **[What changes when you warm the Antarctic Ocean just 1 degree? Lots](#)** [周五, 01 9月 00:30]

After warming a natural seabed in the Antarctic Ocean by just 1° or 2° Celsius, researchers observed massive impacts on a marine assemblage, as growth rates nearly doubled. The findings of what the researchers call the 'most realistic ocean warming experiment to date' show that the effects of future warming may far exceed expectations.

- **[Bacterial protein acts as aphrodisiac for choanoflagellates](#)** [周五, 01 9月 00:30]

Researchers investigating how single-celled organisms evolved to become multicellular stumbled across a strange phenomenon during their experiments: Single-celled eukaryotes called choanoflagellates, which are the closest living relatives to animals, begin to sexually reproduce in response to a protein produced by bacteria. Why this happens in natural settings is still unclear, though they speculate that it could help the choanoflagellates easily mate with others from the same species.

- **[Why are coyote populations difficult to control?](#)** [周四, 31 8月 22:15]

Conventional wisdom suggests that coyote control efforts actually result in an increase in the number of coyotes due to increasing litter sizes and pregnancy rates among individuals that survive.

- **[Antidepressants found in fish brains in Great Lakes region](#)** [周四, 31 8月 22:14]

Human antidepressants are building up in the brains of bass, walleye and

several other fish common to the Great Lakes region, scientists say.

• [**How Neanderthals made the very first glue**](#) [周四, 31 8月 21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

• [**Record-low 2016 Antarctic sea ice due to 'perfect storm' of tropical, polar conditions**](#) [周四, 31 8月 21:26]

The sudden, unexpected nosedive in Antarctic sea ice last year was due to a unique one-two punch from atmospheric conditions both in the tropical Pacific Ocean and around the South Pole.

• [**X-ray footprinting solves mystery of metal-breathing protein**](#) [周四, 31 8月 21:26]

Scientists have discovered the details of an unconventional coupling between a bacterial protein and a mineral that allows the bacterium to breathe when oxygen is not available.

• [**Apes' abilities misunderstood by decades of poor science**](#) [周四, 31 8月 21:14]

Hundreds of scientific studies over two decades have told us that apes are clever -- just not as clever as us. New analysis argues that what we think we know about apes' social intelligence is based on wishful thinking and flawed science.

• [**Mass production of biodegradable plastic**](#) [周四, 31 8月 21:14]

Introducing a simple step to the production of plant-derived, biodegradable plastic could improve its properties while overcoming obstacles to manufacturing it commercially, says new research.

• [**Forensic science techniques help discover new molecular fossils**](#) [周四, 31 8月 21:14]

Researchers believe they have found new molecular fossils of archaea using a method of analysis commonly used in forensic science.

- [**New hope for reef fish living in a high CO2 world**](#) [周四, 31 8月 21:14]

New research examining the possible impacts of ocean acidification provides fresh hope for the survival of reef fish.

- [**American pika disappears from large area of California's Sierra Nevada mountains**](#) [周四, 31 8月 08:21]

The American pika, a small mammal adapted to high altitudes and cold temperatures, has died out from a 165-square-mile span of habitat in California's northern Sierra Nevada mountains, and the cause appears to be climate change. Researchers surveyed pika habitat throughout the north Lake Tahoe area and found that pikas had disappeared from an area that stretches from near Tahoe City to Truckee, more than 10 miles away, and includes Mount Pluto.

- [**How certain ants snap their jaws shut in the blink of an eye**](#) [周四, 31 8月 08:21]

Few victims stand a chance against the formidable mandibles of a trap-jaw ant. In conflicts between predators and prey, speed is a decided advantage, and evolution has given these insects an edge with spring-loaded jaws that snap shut with astonishing speed. Biologists have now provided the first mechanical description of the jaws of a little-known group of trap-jaw ants.

- [**Profitable cooperation: Ants protect and fertilize plants**](#) [周四, 31 8月 08:21]

Biologists describe how the waste left by ants on plant leaves serves as a valuable fertilizer for the plants -- handed on a silver platter.

- [**Jordan faces likelihood of much more frequent long and severe droughts**](#) [周四, 31 8月 08:21]

Jordan is among the world's most water-poor nations, and a new, comprehensive analysis of regional drought and land-use changes in upstream Syria suggests the conditions could get significantly worse.

- [**Concerns regarding radioactivity in migratory**](#)

[seafood negated](#) [周四, 31 8月 03:55]

New research shows negligible risk from consumption of meat from migratory marine predators following Fukushima nuclear disaster.

• [Protecting the guardians](#) [周四, 31 8月 03:55]

A guardian gene that protects against type 1 diabetes and other autoimmune diseases exerts its pancreas-shielding effects by altering the gut microbiota. Experiments in mice born with the protective gene show that exposure to antibiotics during critical windows of development fuels risk for type 1 diabetes and leads to loss of genetic protection by altering the gut microbiota. Scientists say the findings underscore the importance of avoiding antibiotic use during late pregnancy and early infancy.

• [Tracking down the whale-shark highway](#) [周四, 31 8月 03:55]

Researchers recently discovered that whale sharks in the Eastern Tropical Pacific follow fronts -- the dynamic boundaries between warm and cold ocean waters.

• [Bioengineering a functional vascularized lung scaffold](#) [周四, 31 8月 02:12]

A team of researchers is the first to successfully bioengineer a functional lung with perfusable and healthy vasculature in an ex vivo rodent lung. Their new approach allows the removal of the pulmonary epithelium while maintaining the viability and function of the vascular network and the lung matrix.

• [Peptide mass fingerprinting can identify whale species based solely on their baleen](#) [周四, 31 8月 02:12]

Peptide mass fingerprinting accurately identified 10 species of whales from their baleen alone, according to a new study.

• [Gut bacteria that 'talk' to human cells may lead to new treatments](#) [周四, 31 8月 02:12]

Scientists developed a method to genetically engineer gut bacteria to produce molecules that have the potential to treat certain disorders by

altering human metabolism.

- [**Monkeys with Parkinson's disease benefit from human stem cells**](#) [周四, 31 8月 01:22]

Japanese neurosurgeons report two new strategies to improve outcomes of iPS cell-based therapies for Parkinson's disease in monkey brains. The findings are a key step for patient recruitment of the first iPS cell-based therapy to treat neurodegenerative diseases.

- [**Volcanic eruptions drove ancient global warming event**](#) [周四, 31 8月 01:22]

A natural global warming event that took place 56 million years ago was triggered almost entirely by volcanic eruptions that occurred as Greenland separated from Europe during the opening of the North Atlantic Ocean, according to new research.

- [**Uncovering factors that shape sea life**](#) [周四, 31 8月 01:22]

Researchers have proposed a new conceptual model of island biogeography for marine organisms -- a theory that explores how different processes (like sea level fluctuations and geographic isolation) influence marine species diversity around islands.

- [**A big difference between Asian and African elephants is diet**](#) [周四, 31 8月 01:22]

New research has shown that there are significant differences between the Asian and the African forest elephant -- and it isn't just about size and the shape of their ears. It is about what they eat and how they affect forest ecosystems.

- [**Otters learn by copying each other**](#) [周四, 31 8月 01:11]

Otters can learn how to solve puzzles by watching and copying each other, new research shows.

- [**Fungal spore 'death clouds' key in gypsy moth fight**](#) [周四, 31 8月 00:49]

A fungus known to decimate populations of gypsy moths creates 'death clouds' of spores that can travel more than 40 miles to potentially infect

populations of invasive moths, according to a new study.

- [**When making decisions, monkeys use different brain areas to weigh value and availability**](#) [周四, 31 8月 00:26]

Seventeenth-century mathematician Blaise Pascal first introduced the idea of expected value, which is reached by multiplying the value of something (how much it's wanted or needed) with the probability that we might be able to obtain it. Now some very 21st century research is showing for the first time in monkeys which parts of the brain are involved in the two-pronged decision-making process that determines this expected value.

- [**Hidden deep in the brain, a map that guides animals' movements**](#) [周四, 31 8月 00:26]

New research has revealed that deep in the brain, in a structure called striatum, all possible movements that an animal can do are represented in a map of neural activity. If we think of neural activity as the coordinates of this map, then similar movements have similar coordinates, being represented closer in the map, while actions that are more different have more distant coordinates and are further away.

- [**Periodic table of ecological niches could aid in predicting effects of climate change**](#) [周四, 31 8月 00:25]

A group of ecologists has started creating a periodic table of ecological niches similar to chemistry's periodic table. It will be a critical resource for scientists seeking to understand how a warming climate may be spurring changes in species around the globe.

- [**Machine-learning earthquake prediction in lab shows promise**](#) [周四, 31 8月 00:25]

By listening to the acoustic signal emitted by a laboratory-created earthquake, a computer science approach using machine learning can predict the time remaining before the fault fails.

- [**Infested fossil worms show ancient examples of symbiosis**](#) [周四, 31 8月 00:11]

One of the earliest examples of two invertebrate species living together in a symbiotic relationship has been found in 520-million-year-old fossils from China. The fossils show two species of marine worms with other, smaller worm-like animals attached to the outer surface of their body.

• [New clue may reveal the fate of famous French explorer](#) [周三, 30 8月 23:48]

An anthropologist may have stumbled across a clue to resolving one of the most enduring mysteries of Pacific history - the fate of famous French navigator, Jean François de Galaup, Comte de La Pérouse who disappeared in 1788.

• [Hope for improving protection of the reticulated python](#) [周三, 30 8月 23:48]

Trading in skins of the reticulated python is such a lucrative business that illegal exports are rising sharply and existing trade restrictions are being circumvented on a large scale. This is endangering the stability of populations. Therefore, researchers are developing genetic methods for tracking down individual origins and potential trade routes of the skins.

• [Soybean rust develops 'rolling' epidemics as spores travel north](#) [周三, 30 8月 23:47]

Although Midwestern soybean growers have yet to experience the brunt of soybean rust, growers in the southern United States are very familiar with the disease. Every year, the fungus slowly moves northward from its winter home in southern Florida and the Gulf Coast states, and eventually reaches Illinois soybean fields -- often just before harvest.

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- [**New boarding procedures, smaller cabin size may limit infection on planes**](#) [周五, 01 9月 03:13]

During major epidemics, cramped airplane cabins are fertile ground for the spread of infection, but new research suggests changing routine boarding protocols could be a key to reducing rampant transmission of disease.

- [**Measuring the cost of quality measurement**](#) [周五, 01 9月 03:12]

Less than 2 decades after publication of the National Academy of Medicine's (formerly the Institute of Medicine) Crossing the Quality Chasm: A New Health System for the 21st Century, quality measurement has become routine and widespread throughout the US health care system.

- [**Study reveals ways collegiate sports venues can achieve 'zero waste'**](#) [周五, 01 9月 02:13]

A new study analyzing waste and recyclables during Mizzou's 2014 home football season demonstrates that by implementing several recommendations the team developed, such as offering better recycling receptacles and better sorting options for waste, sporting venues could be well on their way to achieving environmental benefits that exceed the standards for 'zero-waste' operations.

- [**People become more economically conservative when angered**](#) [周四, 31 8月 23:30]

People tend to lean more economically conservative when they're angry,

according to a new article. Researchers came to the conclusion after running multiple studies that included more than 1,000 participants.

• [**How reading and writing with your child boost more than just literacy**](#) [周四, 31 8月 22:21]

Children who read and write at home -- whether for assignments or just for fun -- are building long-term study and executive function skills, according to a new article

• [**Three policies to improve children's language development**](#) [周四, 31 8月 21:14]

Bilingual children from low-income homes are at greater risk of falling behind their peers in developing the appropriate language skills for their age group, leading to poorer academic achievement over time. A new article addresses how inequality impacts children's language development and details policies that can intervene.

• [**Jordan faces likelihood of much more frequent long and severe droughts**](#) [周四, 31 8月 08:21]

Jordan is among the world's most water-poor nations, and a new, comprehensive analysis of regional drought and land-use changes in upstream Syria suggests the conditions could get significantly worse.

• [**Federal preemption of taxes on state and local sugar-sweetened beverages is not warranted**](#) [周四, 31 8月 00:49]

Federal and state government can alter or hinder state and local activity through a legal mechanism called preemption -- when a higher level of government blocks the action of a lower level of government. A new study evaluates whether it could be used to block taxes on sugar-sweetened beverages.

• [**Hope for improving protection of the reticulated python**](#) [周三, 30 8月 23:48]

Trading in skins of the reticulated python is such a lucrative business that illegal exports are rising sharply and existing trade restrictions are being circumvented on a large scale. This is endangering the stability of

populations. Therefore, researchers are developing genetic methods for tracking down individual origins and potential trade routes of the skins.

- **[Researchers raise health concerns about off-road vehicles and inhalation of asbestos](#)** [周三, 30 8月 23:47]

Preventing injuries may not be the only reason children shouldn't use off-road vehicles (ORVs). In a new study, public health scientists raise concerns that people who use ORVs in many regions of the country may face exposure to hazardous mineral fibers.

- **[Is changing languages effortful for bilingual speakers? Depends on the situation](#)** [周三, 30 8月 22:37]

Research on the neurobiology of bilingualism has suggested that switching languages is inherently effortful, requiring executive control to manage cognitive functions, but a new study shows this is only the case when speakers are prompted, or forced, to do so.

- **[Shifting school start times could contribute \\$83 billion to US economy within a decade](#)** [周三, 30 8月 22:36]

RAND Corporation and RAND Europe have released the first-ever analysis of the economic implications of a shift in school start times in the US. The study shows that a nationwide move to 8.30 a.m. could lead to an economic gain of \$83 billion to the US economy within a decade. The gains projected through the study's economic model would be realized through the higher academic and professional performance of students, and reduced car crash rates.

- **[Leaf sensors can tell farmers when crops need to be watered](#)** [周三, 30 8月 22:34]

Plant-based sensors that measure the thickness and electrical capacitance of leaves show great promise for telling farmers when to activate their irrigation systems, preventing both water waste and parched plants, according to researchers.

- **[Methane emissions tackled with gas-guzzling bacteria](#)** [周三, 30 8月 21:45]

Methane-oxidizing bacteria -- key organisms responsible for greenhouse gas mitigation -- are more flexible and resilient than previously thought, an international research has shown.

- **[Conservation hindered by geographical mismatches between capacity, need](#)** [周三, 30 8月 21:45]

Geographical mismatches between conservation needs and expertise may hinder global conservation goals, new research suggests.

- **[Shared custody equals less stress for children](#)** [周三, 30 8月 21:42]

Children who live full time with one parent are more likely to feel stressed than children in shared custody situations. The benefit holds regardless of the level of conflict between the parents or between parent and child.

- **[Brain stimulation for children with learning difficulties?](#)** [周三, 30 8月 00:47]

Applying a brain stimulation method, which was previously suggested to enhance mathematical learning in healthy adults, may improve the performance of children with mathematical learning difficulties, according to an exploratory study.

- **[Exclusion from school can trigger long-term psychiatric illness](#)** [周三, 30 8月 00:45]

Excluding children from school may lead to long-term psychiatric problems and psychological distress, a study of thousands of children has shown.

- **[Where's the line? Managing extreme speech on social media](#)** [周三, 30 8月 00:45]

A new study shows that while people tend to dislike extreme speech on social media, there is less support for outright censorship. Instead, people believe sites need to do a better job promoting healthy discourse online.

- **[Photosynthesis discovery could help design more](#)**

[efficient artificial solar cells](#) [周三, 30 8月 00:44]

A natural process that occurs during photosynthesis could lead to the design of more efficient artificial solar cells, according to researchers.

• [Scientists power past solar efficiency records](#) [周二, 29 8月 23:39]

The high potential of silicon-based multijunction solar cells has now been demonstrated through new research.

• [Lively tunes boost sales in crowded stores](#) [周二, 29 8月 23:38]

If a store is crowded, people tend to buy more if the sound system is playing a fast-paced song rather than a ballad. That's what a team of researchers found in a field experiment across a chain of grocery convenience stores in Northern Europe.

• [Mental health linked to retirement savings](#) [周二, 29 8月 23:38]

The question of how mental health status affects decisions regarding retirement savings is becoming a pressing issue in the United States. Key factors contributing to this issue include the tenuous state of the Social Security system, greater use of defined-contribution pension plans by employers, longer lifespans, and the rise of depression and other mental health issues in older Americans.

• [Origins of autism: Abnormalities in sensory processing at six months](#) [周二, 29 8月 23:38]

The origins of autism remain mysterious. What areas of the brain are involved, and when do the first signs appear? New findings brings us closer to understanding the pathology of autism, and the point at which it begins to take shape in the human brain. Such knowledge will allow earlier interventions in the future and better outcomes for autistic children.

• [Analysis identifies where commercial customers might benefit from energy storage](#) [周二, 29 8月 23:38]

Commercial electricity customers who are subject to high demand charges may be able to reduce overall costs by using battery energy storage to manage demand, according to research.

• [**Inattentive kids show worse grades in later life**](#) [周二, 29 8月 21:50]

Researchers found that inattentiveness in childhood was linked to worse academic performance up to 10 years later in children with and without ADHD, even when they accounted for the children's intellectual ability. The results highlight the long-term effects that childhood inattention can have on academic performance, and suggest that parents and teachers should address inattentiveness in childhood.

• [**Doping in sports: Official tests fail to pick up majority of cases**](#) [周二, 29 8月 21:09]

A new scientific study has found that doping is far more common in professional sport than the rates suggested by blood and urine tests of the athletes.

• [**Cutbacks in foreign aid for HIV treatment would produce great harm, generate few savings**](#) [周二, 29 8月 06:34]

Proposed reductions in US foreign aid would have a devastating impact on HIV treatment and prevention programs in countries receiving such aid, an international team of investigators reports.

• [**Dispersants improved air quality for responders at Deepwater Horizon**](#) [周二, 29 8月 04:41]

A recent study adds a new dimension to the controversial decision to inject large amounts of chemical dispersants immediately above the crippled oil well at the seafloor during the Deepwater Horizon disaster in 2010.

• [**Americans' risk of needing nursing home care is higher than previously estimated**](#) [周二, 29 8月 04:41]

One worry Americans face as they grow older is the possibility of needing nursing home care and paying for the associated costs. A new study finds that the average American's lifetime risk of using a nursing home is substantially greater than previously believed, but the financial costs will be affordable for most people.

- [**Self-identifying as disabled and developing pride in disability aid overall well-being**](#) [周二, 29 8月 04:41]

Experiencing stigma, the severity of a disability and a person's age and income level help determine whether someone with an impairment considers themselves to be a person with a disability, and experiencing stigma predicts whether those individuals will ultimately develop disability pride, new research shows.

- [**Romance and affection top most popular sexual behaviors**](#) [周二, 29 8月 02:07]

Researchers have published a new US nationally representative study of sexual behavior, the first of its kind to capture a wide range of diverse sexual behaviors not previously examined in the general population.

- [**Nanoparticles pollution rises 30 percent when flex-fuel cars switch from bio to fossil**](#) [周二, 29 8月 00:45]

Use of ethanol in vehicles reduces pollution by nanoparticles, a study shows. Levels of ultrafine particulate matter in São Paulo City, Brazil, increased by up to 30 percent at times when ethanol prices rose and consumption fell.

- [**Preventing overcrowding in emergency rooms**](#) [周二, 29 8月 00:45]

A new study identifies four key strategies to reduce overcrowding in emergency rooms. The study concludes that engaged executive leadership can alleviate the problem when combined with a data-driven approach and coordination across the hospital from housekeepers to the CEO. Crowding in emergency rooms has been associated with decreased patient satisfaction and even death.

- [**'Marrying up' is now easier for men, improves their economic well-being, study finds**](#) [周一, 28 8月 22:54]

As the number of highly educated women has increased in recent decades, the chances of 'marrying up' have increased significantly for men and decreased for women, according to a new study.

- [**Popularity outranks strategy in supply chain**](#)

[integration decisions](#) [周一, 28 8月 22:27]

Conscious comparison and indirect copying increase the similarity of supply chain management practices of peer group companies, sometimes at the cost of quality and operating culture.

[Deforestation in Cambodia linked to higher risk of ill health in young children](#) [周一, 28 8月 21:41]

New research findings suggest the importance of considering health impacts when assessing trade-offs in land use planning.

[Expectations for all-day schools are too high](#) [周一, 28 8月 21:39]

Children in the German-speaking part of Switzerland who utilize extended education offerings in the first two years of primary school generally perform no better in school than other children, an project has found. Overall, the research shows that all-day schools do not fulfil all the expectations people place in them.

[After Hurricane Katrina, personal debt fell for those worst hit, but at a cost](#) [周一, 28 8月 21:37]

After Hurricane Katrina devastated New Orleans a dozen years ago, there was a sharp and immediate drop in personal debt among residents living in city's most flooded blocks, according to a new study.

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [Mouth clicks used in human echolocation captured in unprecedented detail](#) [周五, 01 9月 02:13]

Like some bats and marine mammals, people can develop expert echolocation skills, in which they produce a clicking sound with their mouths and listen to the reflected sound waves to 'see' their surroundings. A new study provides the first in-depth analysis of the mouth clicks used in human echolocation.

- [First hints of possible water content on TRAPPIST-1 planets](#) [周四, 31 8月 23:30]

Astronomers have been trying to determine whether there might be water on the seven Earth-sized planets orbiting the nearby dwarf star TRAPPIST-1. The results suggest that the outer planets of the system might still harbor substantial amounts of water. This includes the three planets within the habitable zone of the star, lending further weight to the possibility that they may indeed be habitable.

- [How Neanderthals made the very first glue](#) [周四, 31 8月 21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

- [How certain ants snap their jaws shut in the blink of an eye](#) [周四, 31 8月 08:21]

Few victims stand a chance against the formidable mandibles of a trap-jaw ant. In conflicts between predators and prey, speed is a decided

advantage, and evolution has given these insects an edge with spring-loaded jaws that snap shut with astonishing speed. Biologists have now provided the first mechanical description of the jaws of a little-known group of trap-jaw ants.

• [**Gold nanoparticles fry cancer on glowing mice**](#) [周四, 31 8月 08:21]

A new study takes a new approach to killing cancer: Why not fry it into oblivion with vibrating gold nanoparticles?

• [**Motorized molecules drill through cells**](#) [周四, 31 8月 01:22]

Motorized molecules that target diseased cells may deliver drugs to or kill the cells by drilling into the cell membranes. Scientists have demonstrated them on cancer and other cells.

• [**Acting like a muscle, nano-sized device lifts 165 times its own weight**](#) [周四, 31 8月 01:22]

Engineers have discovered a simple, economical way to make a nano-sized device that can match the friendly neighborhood Avenger, on a much smaller scale. Their creation weighs 1.6 milligrams (about as much as five poppy seeds) and can lift 265 milligrams (the weight of about 825 poppy seeds) hundreds of times in a row.

• [**Otters learn by copying each other**](#) [周四, 31 8月 01:11]

Otters can learn how to solve puzzles by watching and copying each other, new research shows.

• [**What lit up the universe? Black holes may have punctured darkened galaxies, allowing light to escape**](#) [周三, 30 8月 23:48]

Researchers have a new explanation for how the universe changed from darkness to light. They propose that black holes within galaxies produce winds strong enough to fling out matter that punctures holes in galaxies, allowing light to escape.

• [**Understanding ancient geometric earthworks in southwestern Amazonia**](#) [周三, 30 8月 22:34]

Researchers examine pre-colonial geometric earthworks in the southwestern Amazonia from the point of view of indigenous peoples and archaeology. The study shows that the earthworks were once important ritual communication spaces.

• [**New robot rolls with the rules of pedestrian conduct**](#) [周三, 30 8月 22:34]

Engineers have designed an autonomous robot with 'socially aware navigation,' that can keep pace with foot traffic while observing these general codes of pedestrian conduct.

• [**Robot probes mystery of prehistoric sea creature's swimming style**](#) [周三, 30 8月 22:26]

A new study has shed light on the swimming style of plesiosaurs by creating a robot to mimic its movements.

• [**Fossil whales' teeth shows what ferocious predators they were**](#) [周三, 30 8月 21:45]

The feeding habits of the whale -- the world's biggest animal -- have evolved to filter feeding, shows new international research. Ancient whales appear to have been ferocious predators, investigators explain.

• [**Say hello to the 3-D Obama ant**](#) [周三, 30 8月 21:42]

Three new ant species named in honor of key figures in conservation -- Barack Obama, Ken Saro-Wiwa, and E.O. Wilson -- are immortalized as 3-D virtual avatars.

• [**Why does rubbing a balloon on your hair make it stick?**](#) [周三, 30 8月 01:53]

New research indicates that tiny holes and cracks in a material -- changes in the microstructure -- can control how the material becomes electrically charged through friction.

• [**New species of crab with unusual outgrowths has its name written in the stars**](#) [周二, 29 8月 23:38]

A new 'star crab' has been collected from red coral beds in Taiwan and

reefs in the Philippines. This astonishing creature is distinct with its carapace and chelipeds covered in pointy protrusions, which become rounder and mushroom-shaped with age to resemble star-like outgrowths and granules.

• [High-tech electronics made from autumn leaves](#)

[周二, 29 8月 23:38]

Northern China's roadsides are peppered with deciduous phoenix trees, producing an abundance of fallen leaves in autumn. These leaves are generally burned in the colder season, exacerbating the country's air pollution problem. Investigators in Shandong, China, recently discovered a new method to convert this organic waste matter into a porous carbon material that can be used to produce high-tech electronics.

• [Galaxy 5 billion light-years away shows we live in a magnetic universe](#)

[周二, 29 8月 00:45]

A chance combination of a gravitational lens and polarized waves coming from a distant quasar gave astronomers the tool needed to make a measurement important to understanding the origin of magnetic fields in galaxies.

• [New ancient sea reptile found in Germany, the earliest of its kind](#)

[周一, 28 8月 21:39]

A previously unrecognized 132 million-year-old fossilized sea monster from northern Germany has been identified.

• [Largest Ichthyosaurus was pregnant mother](#)

[周一, 28 8月 21:37]

Scientists have discovered the largest Ichthyosaurus on record and found it was pregnant at the time of death.

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- [**Scientists discover brain area which can be targeted for treatment in patients with schizophrenia who 'hear voices'**](#) [周二, 05 9月 06:17]

For the first time, scientists have precisely identified and targeted an area of the brain which is involved in 'hearing voices,' experienced by many patients with schizophrenia. They have been able to show in a controlled trial that targeting this area with magnetic pulses can improve the condition in some patients.

- [**Diverse landscapes are more productive and adapt better to climate change**](#) [周二, 05 9月 04:56]

Ecosystems with high biodiversity are more productive and stable towards annual fluctuations in environmental conditions than those with a low diversity of species. They also adapt better to climate-driven environmental changes. These are the key findings environmental scientists made in a study of about 450 landscapes harboring 2,200 plants and animal species.

- [**Schizophrenia, memory deficits: Solving the mystery behind a most stubborn symptom**](#) [周二, 05 9月 00:04]

Disruptions to the brain's internal GPS result in some of the severe

memory deficits seen in schizophrenia. The new study in mouse models of the disorder marks the first time that schizophrenia's effects have been observed with such precision and clarity. The findings offer a promising entry point for attacking a near-universal and debilitating symptom of schizophrenia, memory deficits, which has thus far withstood all forms of treatment.

- [**Face value: Brain's ability to recognize faces is shaped through repeated exposure, study suggests**](#) [周二, 05 9月 00:04]

Scientists have long deemed the ability to recognize faces innate for people and other primates -- something our brains just know how to do immediately from birth. However, the findings of a new study cast doubt on this longstanding view.

- [**Mysterious protein-folding molecule could trigger metabolic disorders**](#) [周二, 05 9月 00:04]

A molecule with few known functions can trigger the cell's response to unfolded proteins and perpetuate metabolic disease, report researchers.

- [**Superfly flight simulator helps unravel navigation in the brain**](#) [周二, 05 9月 00:04]

Researchers have identified two independent pathways in the fly brain that are integrated to allow successful navigation during flight. The study combined a flight simulator designed for flies with imaging of active neurons to show that landmark locations are processed separately in the fly brain from self-motion.

- [**New fluorescent dyes could advance biological imaging**](#) [周二, 05 9月 00:04]

Scientists have developed a new method for fine-tuning the structure of rhodamine dyes, and can now create a colorful palette of fluorescent molecules.

- [**More 'losers' than 'winners' predicted for Southern Ocean seafloor animals**](#) [周二, 05 9月 00:04]

A new study of the marine invertebrates living in the seas around Antarctica reveals there will be more 'losers' than 'winners' over the next century as the Antarctic seafloor warms.

• [**Team gathers unprecedented data on atmosphere's organic chemistry**](#) [周二, 05 9月 00:04]

Teams of scientists have carried out the most detailed, extended observations of atmospheric chemistry ever attempted in one place, in patch of ponderosa pine forest in Colorado, and found previously unmeasured compounds.

• [**Study in early stage breast cancer shows that even small tumors can be aggressive**](#) [周一, 04 9月 21:38]

Even small tumors can be aggressive, according to a study in patients with early stage breast cancer. Researchers found that nearly one in four small tumors were aggressive and patients benefited from chemotherapy. Aggressive tumors could be identified by a 70-gene signature.

• [**Financial stress is associated with migraine, if you have specific circadian gene variants**](#) [周一, 04 9月 21:38]

People with a specific variation in the CLOCK gene have more migraines under financial stress. This work shows the effect of the genetics of circadian rhythms on migraine.

• [**Indigenous storytelling is a new asset for biocultural conservation**](#) [周一, 04 9月 21:36]

Some of the areas hosting most of the world's biodiversity are those inhabited by indigenous peoples. In the same way that biodiversity is being eroded, so is the world's cultural diversity. As a result, there have been several calls to promote biocultural conservation approaches that sustain both biodiversity and indigenous cultures.

• [**Stellar corpse sheds light on origin of cosmic rays**](#) [周一, 04 9月 21:34]

New research revealed that the entire zoo of electromagnetic radiation

streaming from the Crab nebula -- one of the most iconic objects in the sky -- has its origin in one population of electrons and must be produced in a different way than scientists have traditionally thought. The results have implications for our understanding of how cosmic rays attain their incredible energies.

• [Multi-mechanism approach to treating neonatal hypoxic ischemia](#) [周一, 04 9月 21:34]

Male sex is a risk factor for worse outcome following neonatal insult, including hypoxic ischemia. While N-acetylcysteine and hypothermia promote functional improvement in female rodents, similar improvement in males requires the addition of vitamin D, report investigators. Multi-mechanism approaches are needed to treat neonatal hypoxic ischemia, and those approaches appear to be different depending on sex.

• [Is ADHD really a sleep problem?](#) [周一, 04 9月 21:34]

Around 75 percent of children and adults with attention deficit hyperactivity disorder (ADHD) also have sleep problems, but until now these have been thought to be separate issues. Now a in a pulling together of the latest research, Scientists are proposing of a new theory which says that much of ADHD may in fact be a problem associated with lack of regular circadian sleep.

• [Pilot study shows that neurofeedback may help treatment-resistant depression](#) [周一, 04 9月 21:34]

A small pilot study has indicated that neurofeedback -- where patients concentrate on modifying their own brainwave patterns -- has potential to treat many of the 100 million people worldwide who suffer from treatment-resistant depression (TRD). This is the first time that neurofeedback has been shown to improve both individual symptoms and overall recovery in TRD.

• [Alterations in blood-based miRNA in veterans affected with combat-related PTSD](#) [周一, 04 9月 21:34]

A small pilot study shows that Individuals affected with PTSD (post-

traumatic stress disorder) demonstrate changes in microRNA (miRNA) molecules associated with gene regulation. A controlled study, involving military personnel on deployment to a combat zone in Afghanistan, provided evidence for the role of blood-based miRNAs as candidate biomarkers for symptoms of PTSD.

- [**Heavy alcohol use alters brain functioning differently in young men and women**](#) [周一, 04 9月 21:34]

Scientists have found that brain functions in young men and women are changed by long-term alcohol use, but that these changes are significantly different in men and women. This indicates not only that young people might be at increased risk of long-term harm from alcohol use, but also that the risks are probably different in men and in women, with men possibly more at risk.

- [**Reindeer grazing protects tundra plant diversity in a warming climate**](#) [周一, 04 9月 21:34]

Climate warming reduces the number of plant species in the tundra, but plant-eating animals, such as reindeer and voles, can turn this negative effect into something positive.

- [**Physicists propose new theories of black holes from the very early universe**](#) [周六, 02 9月 01:55]

'Primordial black holes,' believed to have formed shortly after the Big Bang, might explain how heavy elements such as gold, platinum and uranium came to be, physicists report.

- [**Bacteria act as aphrodisiac for the closest relatives of animals**](#) [周六, 02 9月 01:55]

Choanoflagellates are a ubiquitous but enigmatic one-celled ocean organism that may give clues to the origin of multicellularity in animals. New research has turned up a surprising kink in the organism's sex life: swarming and mating are triggered by a marine bacterium common in their environment. Researchers traced this response to a protein secreted by the bacteria. The choanos seem to be eavesdropping on bacteria to determine their life history.

• [**Cleanliness is next to sexiness for golden-collared manakins in Panama**](#) [周六, 02 9月 01:55]

Juvenile male Golden-collared Manakins on extra testosterone cleaned up their display area before performing for females, according to research at the Smithsonian Tropical Research Institute (STRI) in Panama published in Animal Behavior. Female manakins got more aggressive when given testosterone.

• [**Cognitive fatigue after TBI linked with activation of caudate**](#) [周六, 02 9月 00:51]

Researchers have further elucidated the mechanisms for cognitive fatigue, a disabling symptom that affects many individuals after traumatic brain injury (TBI).

• [**Earthworms at the root of sugar maple decline**](#) [周六, 02 9月 00:51]

Non-native worms are eating up the forest floor, causing sugar maples to die back and perhaps harming other forest dwellers, a new study suggests.

• [**Drug may curb female infertility from cancer treatments**](#) [周六, 02 9月 00:51]

An existing drug may one day protect premenopausal women from life-altering infertility that commonly follows cancer treatments, according to a new study.

• [**Intellectual disabilities caused by protein defect**](#) [周五, 01 9月 23:36]

Intellectual disabilities are often caused by a mutation that damages a gene, preventing the associated protein from functioning properly. However, a mutation can also change the function of a gene. As a result, the gene in question acts in a completely different way. Researchers discovered this mechanism in fifteen genes playing a role in the development of intellectual disabilities. Their research results show that these changes in function play a more prominent role than previously thought.

• [**Reusable ruthenium-based catalyst could be a**](#)

[game-changer for the biomass industry](#) [周五, 01 9月 22:46]

Researchers have developed a highly efficient reusable catalyst for the production of primary amines. By cutting the amount of undesired by-products, the catalyst is set to revolutionize the production of bio-based fuels, pharmaceuticals, agricultural chemicals and more.

• [Bit data goes anti-skyrmions](#) [周五, 01 9月 22:46]

Scientists have discovered a new kind of magnetic nano-object in a novel material that could serve as a magnetic bit with cloaking properties to make a magnetic disk drive with no moving parts -- a Racetrack Memory -- a reality in the near future.

• [Etosis phenomenon discovered in human blood monocytes](#) [周五, 01 9月 22:46]

The first clear demonstration of etosis in human blood monocytes, a type of immune cell, has now been discovered by scientists.

• [Molecules move faster near sticky surfaces](#) [周五, 01 9月 21:39]

Molecules move faster as they get closer to adhesive surfaces, but this effect is not permanent.

• [Virus hijacks cell's transportation system](#) [周五, 01 9月 21:39]

A deadly tick-borne virus uses the host neuron's transportation system to move their RNA, resulting in the local reproduction of the virus and severe neurological symptoms.

• [Equatorial jet in Venusian atmosphere](#) [周五, 01 9月 21:38]

Observations by Japan's Venus climate orbiter Akatsuki have revealed an equatorial jet in the lower to middle cloud layer of the planet's atmosphere, a finding that could be pivotal to unraveling a phenomenon called superrotation.

• [Breastfeeding may help prevent children's asthma exacerbations later in life](#) [周五, 01 9月 21:38]

An analysis of children with asthma, those who had been breastfed had a 45 percent lower risk of asthma exacerbations later in life compared

with children who had not been breastfed.

• [**New light shed on photosynthesis**](#) [周五, 01 9月 21:38]

A team of scientists has taken us a step closer to unlocking the secrets of photosynthesis, and possibly to cleaner fuels. Their discovery describes the structure of a reaction center (from a heliobacterium) which preserves the characteristics of the ancestral one, and so provides new insight into the evolution of photosynthesis.

• [**Nature imagery calms prisoners**](#) [周五, 01 9月 21:38]

Sweeping shots of majestic landscapes. Glaciers, forests and waterfalls. New research shows that these images, shown to people deprived of access to nature, can reduce tension, help defuse anger and make some of the harshest environments, like a solitary confinement cellblock in a maximum-security prison, a little easier to bear.

• [**Adipose tissue may affect cancer development in multiple ways**](#) [周五, 01 9月 21:38]

Adipose tissue, or fat, may influence the development of cancer in diverse ways, depending on the type of fat and the location in the body.

• [**The 'reality' of accent change**](#) [周五, 01 9月 21:38]

A new study of how accents change over differing periods of time demonstrates the limited impact of intense social interactions in isolated environments, and surprisingly large differences among people in how susceptible their accents are to change.

• [**Fungal infections reduce frogs' tolerance of heat**](#) [周五, 01 9月 06:05]

Fungal diseases are increasing in animals, which might have serious consequences for wildlife living in a hotter world, said a scientist. A new study shows that fungal infections reduced the heat tolerance of frogs by up to 4 degrees Celsius.

• [**Panama's native tree species excel in infertile tropical soils**](#) [周五, 01 9月 06:03]

Scientists confirm that native tree species performed very well in field trials and would be preferable to teak in the poor soils of the Panama

Canal watershed.

- [**Genes fueling neuroblastoma spread now identified**](#) [周五, 01 9月 06:03]

For the first time, researchers present data on how nervous system tumors, called neuroblastomas, spread. Their paper clarifies the relationship between two genes that fuel the aggressive spread of neuroblastomas.

- [**Asthma medicine halves risk of Parkinson's**](#) [周五, 01 9月 06:03]

Using data gathered from 100 million Norwegian prescriptions, researchers have found that asthma medicine can halve a patient's risk of developing Parkinson's disease.

- [**New genetic risk factor for developing autism spectrum disorder identified**](#) [周五, 01 9月 06:03]

A new systematic analysis has been applied to a cohort of 2,300 families who have a single child affected with autism. The study focused on identifying and characterizing low-lying genetic mutations that may have been missed in previous research, given these mutations are only present in a fraction of the bulk DNA of an individual.

- [**Method speeds up time to analyze complex microscopic images**](#) [周五, 01 9月 03:13]

Researchers who typically required a week of effort to dissect cryo-electron tomography images of the 3-D structure of a single cell will now be able to do it in about an hour thanks to a new automated method.

- [**Coming soon to Montreal: The infrastructure cost of climate change**](#) [周五, 01 9月 03:13]

The climate of Montreal is changing and will continue to do so at a rapidly increasing rate and with much more spatial variability in the future, according to new research.

- [**New boarding procedures, smaller cabin size may limit infection on planes**](#) [周五, 01 9月 03:13]

During major epidemics, cramped airplane cabins are fertile ground for the spread of infection, but new research suggests changing routine boarding protocols could be a key to reducing rampant transmission of disease.

• [**Insect eyes inspire new solar cell design**](#) [周五, 01 9月 03:12]

Packing tiny solar cells together, like micro-lenses in the compound eye of an insect, could help scientists overcome a major roadblock to the development of perovskite photovoltaics.

• [**Discovery may be key to obesity, Diabetes Rx**](#) [周五, 01 9月 03:12]

Research has demonstrated the potential of a protein to treat or prevent metabolic diseases including obesity and diabetes.

• [**Measuring the cost of quality measurement**](#) [周五, 01 9月 03:12]

Less than 2 decades after publication of the National Academy of Medicine's (formerly the Institute of Medicine) Crossing the Quality Chasm: A New Health System for the 21st Century, quality measurement has become routine and widespread throughout the US health care system.

Scientists discover brain area which can be targeted for treatment in patients with schizophrenia who 'hear voices' -- ScienceDaily

For the first time, scientists have precisely identified and targeted an area of the brain which is involved in "hearing voices," experienced by many patients with schizophrenia. They have been able to show in a controlled trial that targeting this area with magnetic pulses can improve the condition in some patients. This early clinical work is presented at the ECNP conference in Paris on Tuesday 5th September, with later publication in *Schizophrenia Bulletin**.

"This is the first controlled trial to precisely determine an anatomically defined brain area where high frequency magnetic pulses can improve the hearing of voices," said lead researcher, Professor Sonia Dollfus (University of Caen, CHU, France).

Schizophrenia is a serious long-term mental health problem. People with schizophrenia experience a range

of symptoms, which may include delusions, muddled thoughts and hallucinations. One of the best-known is hearing voices, also known as Auditory Verbal Hallucination (AVH), which around 70% of people with schizophrenia experience at some point. These voices, may be 'heard' as having a variety of different characteristics, for example as internal or external, friendly or threatening, they may be continuously present or present only occasionally, and so on.

Transcranial Magnetic Stimulation (TMS) has been suggested as a possible way of treating the hearing of voices in schizophrenia. TMS uses magnetic pulses to the brain, and has been shown to be effective in several psychiatric conditions. However, there is a lack of controlled trials to show that TMS works effectively with AVH sufferers.

The French research team worked with 26 patients who received active TMS treatment, and 33 as a control group, who received sham (placebo) treatment. The researchers interviewed the patients using a standard protocol -- the Auditory Hallucinations Rating Scale -- which revealed most of the characteristic features of the voices which they were hearing. The treated patients received a series of 20 Hz high-frequency

magnetic pulses over 2 sessions a day for 2 days. Using magnetic resonance imaging (MRI), the pulses were targeted at a specific brain area in the temporal lobe, which is associated with language (the exact area is the crossing of the projection of the ascending branch of the left lateral sulcus and the left superior temporal sulcus)

After 2 weeks, the patients were re-evaluated. The researchers found that 34.6% of the patients being treated by TMS showed a significant response, whereas only 9.1% of patients in the sham group responded ('significant response' was defined as a more than 30% decrease in the Total Auditory Hallucinations Rating Scale score).

Professor Sonia Dollfus said: "Auditory Verbal Hallucinations, or "hearing voices" can be a disturbing symptom of schizophrenia, both for patients and for those close to sufferers. This is the first controlled trial to show an improvement in these patients by targeting a specific area of the brain and using high frequency TMS. This means two things; firstly it seems that we now can say with some certainty that we have found a specific anatomical area of the brain associated with auditory verbal hallucinations in schizophrenia.

Secondly, we have shown that treatment with high frequency TMS makes a difference to at least some sufferers, although there is a long way to go before we will know if TMS is the best route to treat these patients in the long-term."

Commenting, Professor Andreas Meyer-Lindenberg, Central Institute of Mental Health, Mannheim and member of the ECNP executive board, said: "This work builds on previous studies that have shown a critical role of excessive activity of subregions of the temporal lobe in the generation of voice hallucinations in schizophrenia. To move this into treatment, controlled trial such as the one by Dollfus and coworkers are important. While response rates were moderate, TMS is a welcome addition to the therapeutic repertoire especially for patients who do not respond to medication."

*This work has been accepted in the peer-reviewed journal Schizophrenia Bulletin: The Journal of Psychoses and Related Disorders. The exact publication date has still to be determined.

Story Source:

Materials provided by [European College of Neuropsychopharmacology](#). *Note: Content may be edited for style and length.*

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| [Section menu](#) | [主菜单](#) |

Diverse landscapes are more productive and adapt better to climate change -- ScienceDaily

Ecosystems with high biodiversity are more productive and stable towards annual fluctuations in environmental conditions than those with a low diversity of species. They also adapt better to climate-driven environmental changes. These are the key findings environmental scientists at the University of Zurich made in a study of about 450 landscapes harbouring 2,200 plants and animal species.

The dramatic, worldwide loss of biodiversity is one of today's greatest environmental problems. The loss of species diversity affects important ecosystems on which humans depend. Previous research predominantly addressed short-term effects of biodiversity in small experimental plots planted with few randomly selected plant species. These studies have shown that species-poor plant assemblages function less well and produce less biomass than species rich systems.

Extensive study with about 2,200 species in 450 landscapes

Researchers participating in the University Research Priority Programme "Global Change and Biodiversity" of the University of Zurich now demonstrate similar positive effects of biodiversity in real-world ecosystems in which mechanisms different from the ones in artificial experimental plots are at play. Using 450 different 1-km² landscapes that spanned the entire area of Switzerland, they investigated the role of the diversity of plant, bird and butterfly species for the production of biomass, which was estimated from satellite data.

Biodiversity is important for the functioning of complex, natural ecosystems

"Our results show that biodiversity plays an essential role for the functioning of extensive natural landscapes that consist of different ecosystem types such as forests, meadows or urban areas," study leader Pascal Niklaus from Department of Evolutionary Biology and Environmental Studies says. The analyses showed that landscapes with a greater biodiversity were more productive and that their productivity showed a lower

year-to-year variation.

Biodiversity promoted the adaptation of landscapes

The satellite data analysed by the scientists revealed that the annual growing period increased in length throughout the last 16 years, an effect that can be explained by climate warming. The prolongation in growing season was considerably larger in more biodiverse landscapes. These relations were robust and remained important even when a range of other drivers such as temperature, rainfall, solar irradiation, topography, of the specific composition of the landscapes were considered. "This indicates that landscapes with high biodiversity can adapt better and faster to changing environmental conditions," Niklaus concludes.

Story Source:

Materials provided by **University of Zurich**. *Note: Content may be edited for style and length.*

| [Section menu](#) | [主菜单](#) |

Schizophrenia, memory deficits: Solving the mystery behind a most stubborn symptom: Biological origins of a core symptom of schizophrenia, new study in mice reveals -- ScienceDaily

A team of Columbia scientists has found that disruptions to the brain's center for spatial navigation -- its internal GPS -- result in some of the severe memory deficits seen in schizophrenia. The new study in mouse models of the disorder marks the first time that schizophrenia's effects have been observed in the behavior of living animals -- and at the level of individual brain cells -- with such high-resolution, precision and clarity. The findings offer a promising entry point for attacking a near-universal and debilitating symptom of schizophrenia, memory deficits, which has thus far withstood all forms of treatment.

The results of this study were published in *Nature*

Neuroscience.

"An almost intractably complex disorder, schizophrenia is nearly impossible to fully treat -- in large part because it acts as two disorders in one," said Joseph Gogos, MD, PhD, a principal investigator at Columbia's Mortimer B. Zuckerman Mind Brain Behavior Institute and the paper's co-senior author.

"On one hand, you have paranoia, hallucinations and delusions; while on the other you have severe memory deficits. Antipsychotic drugs, which treat the first class of symptoms, are entirely ineffective when dealing with the second. The reasons for this are simple: we do not yet understand what happens in the brains of schizophrenia patients.

Cracking schizophrenia's code must therefore start with deciphering its biological origins, says Dr. Gogos, who is also professor of physiology, cellular biophysics and neuroscience at Columbia University Medical Center (CUMC). This has led to a recent focus on the memory impairments that are so common among schizophrenia patients. In this new study, Dr. Gogos teamed up with Attila Losonczy, MD, PhD, a fellow Zuckerman Institute principal investigator, to investigate episodic memory, which is severely impaired in cases of

schizophrenia.

"Episodic memory is the brain's repository of information about the past; a way of traveling backwards to recall a specific moment in time," said Dr. Losonczy, who was also a senior author. "This type of memory is critical for learning about and functioning in everyday life."

For this study, the team focused on a brain region called CA1, located in the hippocampus, which plays a role in both navigation and in episodic memory. Physical alterations to CA1 have been previously reported among schizophrenia patients. CA1 is home to place cells, which collectively form internal maps in the brain critical for navigating one's present surroundings. The CA1 place cells also encode the spatial aspects of episodic memories, such as where you were when you last saw your best friend, or the place your parents always kept the holiday decorations.

"Recent advances in imaging technologies now give us the power to watch the activity of hundreds of place cells in the CA1 in real time while an animal forms and recalls memories," said Dr. Losonczy, who is also an associate professor of neuroscience at CUMC. "We

developed experiments to record CA1 activity in mice that were genetically modified to mimic schizophrenia, and compared them to normal, healthy mice."

The researchers placed both groups of animals on a treadmill under a high-resolution, two-photon microscope, where they were exposed to a variety of sights, sounds and smells (including a water reward placed at unmarked locations on the treadmill). These experiments were designed to test the animals' ability to navigate a new environment, remember how to navigate a familiar one and adapt quickly when that environment was altered.

The two groups of mice showed striking differences in behavior and in cell activity. While both groups could successfully navigate a new environment, the schizophrenia-like mice had more trouble remembering familiar environments from day to day, as well as adapting when aspects of that environment changed. By simultaneously tracking the animals' place cells via the two-photon microscope, the team spotted the difference.

"When the healthy mice approached something familiar, such as water, their place cells fired with

increasing intensity, and then quieted down as the animals moved away," explained Dr. Losonczy. "And when we moved the location of the water, and gave the animals a chance to relearn where it was, the activity of their place cells reflected the new location."

But the brains of the schizophrenia-like mice were different. Their place cells did not shift when the water reward was moved. The brain cells' lack of adaptability, the scientists argue, could reflect a key and more general mechanism of memory deficits in schizophrenia. It could also represent a new target for drug intervention.

"These studies are helping to build an understanding of a disorder that has remained a biological mystery," said Dr. Gogos. "By pinpointing schizophrenia's many causes, we are opening up multiple points of intervention to slow, halt and even prevent the disorder -- which stands to dramatically improve the lives of patients and their families."

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Face value: Brain's ability to recognize faces is shaped through repeated exposure, study suggests -- ScienceDaily

Scientists have long deemed the ability to recognize faces innate for people and other primates -- something our brains just know how to do immediately from birth.

However, the findings of a new Harvard Medical School study published Sept. 4 in the journal *Nature Neuroscience* cast doubt on this longstanding view.

Working with macaques temporarily deprived of seeing faces while growing up, a Harvard Medical School team led by neurobiologists Margaret Livingstone, Michael Arcaro, and Peter Schade has found that regions of the brain that are key to facial recognition form only through experience and are absent in primates who don't encounter faces while growing up.

The finding, the researchers say, sheds light on a range

of neuro-developmental conditions, including those in which people can't distinguish between different faces or autism, marked by aversion to looking at faces.

Most importantly, however, the study underscores the critical formative role of early experiences on normal sensory and cognitive development, the scientists say.

Livingstone, the Takeda Professor of Neurobiology at Harvard Medical School, explains that macaques -- a close evolutionary relative to humans, and a model system for studying human brain development -- form clusters of neurons responsible for recognizing faces in an area of the brain called the superior temporal sulcus by 200 days of age. The relative location of these brain regions, or patches, are similar across primate species.

That knowledge, combined with the fact that infants seem to preferentially track faces early in development, led to the longstanding belief that facial recognition must be inborn, she said. However, both humans and primates also develop areas in the brain that respond to visual stimuli they haven't encountered for as long during evolution, including buildings and text. The latter observation puts a serious wrench in the theory that facial recognition is inborn.

To better understand the basis for facial recognition, Livingstone, along with postdoctoral fellow Arcaro and research assistant Schade, raised two groups of macaques. The first one, the control group, had a typical upbringing, spending time in early infancy with their mothers and then with other juvenile macaques, as well as with human handlers. The other group grew up raised by humans who bottle-fed them, played with and cuddled them -- all while the humans wore welding masks. For the first year of their lives, the macaques never saw a face -- human or otherwise. At the end of the trial, all macaques were put in social groups with fellow macaques and allowed to see both human and primate faces.

When both groups of macaques were 200 days old, the researchers used functional MRI to look at brain images measuring the presence of facial recognition patches and other specialized areas, such as those responsible for recognizing hands, objects, scenes and bodies.

The macaques who had typical upbringing had consistent "recognition" areas in their brains for each of these categories. Those who'd grown up never seeing faces had developed areas of the brain

associated with all categories except faces.

Next, the researchers showed both groups images of humans or primates. As expected, the control group preferentially gazed at the faces in those images. In contrast, the macaques raised without facial exposure looked preferentially at the hands. The hand domain in their brains, Livingstone said, was disproportionately large compared to the other domains.

The findings suggest that sensory deprivation has a selective effect on the way the brain wires itself. The brain seems to become very good at recognizing things that an individual sees often, Livingstone said, and poor at recognizing things that it never or rarely sees.

"What you look at is what you end up 'installing' in the brain's machinery to be able to recognize," she added.

Normal development of these brain regions could be key to explaining a wide variety of disorders, the researchers said. One such disorder is developmental prosopagnosia -- a condition in which people are born with the inability to recognize familiar faces, even their own, due to the failure of the brain's facial recognition machinery to develop properly. Likewise, Livingstone

said, some of the social deficits that develop in people with autism spectrum disorders may be a side effect stemming from the lack of experiences that involve looking at faces, which children with these disorders tend to avoid. The findings suggest that interventions to encourage early exposure to faces may assuage the social deficits that stem from lack of such experiences during early development, the team said.

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| [Section menu](#) | [主菜单](#) |

Mysterious protein-folding molecule could trigger metabolic disorders -- ScienceDaily

The cell's response to unfolded or misfolded proteins could be a cause, rather than a consequence, of metabolic disorders, report researchers at the Medical University of South Carolina (MUSC) in an article published online ahead of print on September 4, 2017 by *Nature Structural & Molecular Biology*. The researchers identified a little-known molecule as the trigger for this response.

There are links between protein-folding problems at the cellular level and a range of metabolic disorders, though it is unclear if those problems are causes or manifestations of such disorders. This study provides evidence that problems with protein folding contribute to certain metabolic disorders, according to Zihai Li, M.D., Ph.D., chair of the Department of Microbiology and Immunology at the MUSC Hollings Cancer Center and principal investigator on the project. Feng Hong, M.D., Ph.D., in the Department of Microbiology and

Immunology, is lead author on the paper.

"The unfolded protein response in the cell plays important roles in aging and in many diseases, such as cancer, diabetes and neurodegenerative disease," says Li. "Our study has uncovered a novel mechanism that triggers this response."

When improperly folded molecules are encountered in cells, the unfolded protein response (UPR) is activated within the endoplasmic reticulum (ER). The ER is in charge of molecular quality control, making sure proteins, lipids and other molecules are folded properly before the cell attempts to use them for metabolic processes. Here, a master protein called grp78 is in contact with three main signaling hubs that make up the control center of the UPR. When an unfolded or misfolded protein is encountered by grp78, it breaks contact with those sensors and activates the UPR. The UPR then refolds or disposes of such molecules before they are shipped to the parts of the cell that need them.

There is a wrinkle in the UPR, however. When too many unfolded proteins build up, the UPR senses that the cell has become overstressed and activates programs to recycle the cell. Yet if a number of cells

experience such stress and are similarly retired, whole organs can suffer. This appears to be where the CNPY2 molecule exerts influence during the development of metabolic problems, according to experiments performed by Li and his group.

CNPY2 has been known for some time to reside within the ER, but its function there has remained a mystery. To start, mice without CNPY2 were generated to see how they would grow. Although the rodents were slightly smaller, they were otherwise normal. Important differences appeared, however, when they were fed small amounts of tunicamycin, a known inducer of the UPR. Control mice exhibited signs of liver stress and activation of PERK, one of the three main UPR sensors, while the livers of knockout mice remained stress-free. This was the first sign that CNPY2 could be involved in metabolic stress in the liver.

To test this idea more directly, the researchers fed mice a high-fat diet for several weeks. Those that lacked CNPY2 were again protected, this time from the development of hepatic steatosis, an early sign of non-alcoholic fatty liver disease that develops in people who consume a diet high in fat.

Next the researchers looked at the molecular basis of these observations. If their hypothesis was correct, they would confirm that CNPY2 was required for the development of liver problems as a result of a diet high in fat. At the molecular level, this would mean that CNPY2 interacts directly with one of the UPR sensors, which the researchers suggested would be PERK.

The investigators examined mouse cells with and without CNPY2 and isolated the PERK protein, and its downstream signaling molecule, CHOP, within them. This interestingly named PERK-CHOP pathway, which is a major enabler of liver stress when the UPR is induced, was not activated in cells without CNPY2. When they added CNPY2 back to those cells, suddenly the pathway was restored. Protein isolation experiments confirmed their hypothesis that CNPY2 and PERK interacted closely when the UPR was again induced by the drug tunicamycin.

In addition, the master protein grp78 that regulates all three main UPR sensors interacted with CNPY2 under normal conditions. But when the UPR drug was added, grp78 left CNPY2 able to interact closely with PERK, which finally activated the PERK-CHOP pathway. Last, they found that the PERK-CHOP pathway, when

activated by free CNPY2, further increased levels of CNPY2 in the liver. In other words, CNPY2 was able to further reinforce itself once activated.

Taken together, the team's experiments showed that CNPY2 powerfully sustains cellular stress when the unfolded protein response becomes active, providing a link between the UPR and the development of metabolic problems in the liver.

This opens an opportunity, according to Hong "This novel finding has raised the possibility of developing new treatments for metabolic diseases by targeting CNPY2," says Hong.

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All Top News

Top science stories featured on ScienceDaily's home page.

· [**Face value: Brain's ability to recognize faces is shaped through repeated exposure, study suggests**](#) [周二, 05 9月 00:04]

Scientists have long deemed the ability to recognize faces innate for people and other primates -- something our brains just know how to do immediately from birth. However, the findings of a new study cast doubt on this longstanding view.

· [**More 'losers' than 'winners' predicted for Southern Ocean seafloor animals**](#) [周二, 05 9月 00:04]

A new study of the marine invertebrates living in the seas around Antarctica reveals there will be more 'losers' than 'winners' over the next century as the Antarctic seafloor warms.

· [**Stellar corpse sheds light on origin of cosmic rays**](#) [周一, 04 9月 21:34]

New research revealed that the entire zoo of electromagnetic radiation streaming from the Crab nebula -- one of the most iconic objects in the sky -- has its origin in one population of electrons and must be produced in a different way than scientists have traditionally thought. The results have implications for our understanding of how cosmic rays attain their incredible energies.

· [**Physicists propose new theories of black holes from the very early universe**](#) [周六, 02 9月 01:55]

'Primordial black holes,' believed to have formed shortly after the Big Bang, might explain how heavy elements such as gold, platinum and

uranium came to be, physicists report.

- [**Equatorial jet in Venusan atmosphere**](#) [周五, 01 9月 21:38]

Observations by Japan's Venus climate orbiter Akatsuki have revealed an equatorial jet in the lower to middle cloud layer of the planet's atmosphere, a finding that could be pivotal to unraveling a phenomenon called superrotation.

- [**Mouth clicks used in human echolocation captured in unprecedented detail**](#) [周五, 01 9月 02:13]

Like some bats and marine mammals, people can develop expert echolocation skills, in which they produce a clicking sound with their mouths and listen to the reflected sound waves to 'see' their surroundings. A new study provides the first in-depth analysis of the mouth clicks used in human echolocation.

- [**Reconstructing life at its beginning, cell by cell**](#) [周五, 01 9月 02:12]

In a technological tour de force, scientists have created a virtual model of an early fly embryo. Its interactive interface allows researchers to explore the blueprint that underlies development at unprecedented spatial resolution and predict which cells express which genes.

- [**Fossil footprints challenge established theories of human evolution**](#) [周五, 01 9月 01:42]

Newly discovered human-like footprints from Crete may put the established narrative of early human evolution to the test. The footprints are approximately 5.7 million years old and were made at a time when previous research puts our ancestors in Africa -- with ape-like feet.

- [**Human bones in south Mexico: Stalagmite reveals their age as 13,000 years old**](#) [周五, 01 9月 01:12]

A prehistoric human skeleton found on the Yucatán Peninsula is at least 13,000 years old and most likely dates from a glacial period at the end of the most recent ice age, the late Pleistocene. A German-Mexican team of researchers has now dated the fossil skeleton based on a stalagmite that grew on the hip bone.

[**Yawning: Why is it so contagious and why should it matter?**](#) [周五, 01 9月 00:30]

Feeling tired? Even if we aren't tired, why do we yawn if someone else does? Experts have published research that suggests the human propensity for contagious yawning is triggered automatically by primitive reflexes in the primary motor cortex -- an area of the brain responsible for motor function. Their study is another stage in their research into the underlying biology of neuropsychiatric disorders and their search for new methods of treatment.

[**Scents and social preference: Neuroscientists ID the roots of attraction**](#) [周五, 01 9月 00:30]

Culminating a series of studies stretching back eight years, biologists have identified the cellular and molecular basis for social preference, known in the animal kingdom as 'imprinting.' Through in vivo experiments, the researchers found the neurological roots of kinship attraction and aversion. They also employed genetics screening to find the regulators controlling this behavior. The study carries implications for understanding social attraction and aversion in a range of animals and humans.

[**What changes when you warm the Antarctic Ocean just 1 degree? Lots**](#) [周五, 01 9月 00:30]

After warming a natural seabed in the Antarctic Ocean by just 1° or 2° Celsius, researchers observed massive impacts on a marine assemblage, as growth rates nearly doubled. The findings of what the researchers call the 'most realistic ocean warming experiment to date' show that the effects of future warming may far exceed expectations.

[**First hints of possible water content on TRAPPIST-1 planets**](#) [周四, 31 8月 23:30]

Astronomers have been trying to determine whether there might be water on the seven Earth-sized planets orbiting the nearby dwarf star TRAPPIST-1. The results suggest that the outer planets of the system might still harbor substantial amounts of water. This includes the three

planets within the habitable zone of the star, lending further weight to the possibility that they may indeed be habitable.

- [**How Neanderthals made the very first glue**](#) [周四, 31 8月 21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

- [**Apes' abilities misunderstood by decades of poor science**](#) [周四, 31 8月 21:14]

Hundreds of scientific studies over two decades have told us that apes are clever -- just not as clever as us. New analysis argues that what we think we know about apes' social intelligence is based on wishful thinking and flawed science.

- [**Robot learns to follow orders like Alexa**](#) [周四, 31 8月 21:14]

Computer scientists have developed an Alexa-like system that allows robots to understand a wide range of commands that require contextual knowledge about objects and their environments. They've dubbed the system 'ComText,' for 'commands in context.'

- [**New hope for reef fish living in a high CO2 world**](#) [周四, 31 8月 21:14]

New research examining the possible impacts of ocean acidification provides fresh hope for the survival of reef fish.

- [**How certain ants snap their jaws shut in the blink of an eye**](#) [周四, 31 8月 08:21]

Few victims stand a chance against the formidable mandibles of a trap-jaw ant. In conflicts between predators and prey, speed is a decided advantage, and evolution has given these insects an edge with spring-loaded jaws that snap shut with astonishing speed. Biologists have now provided the first mechanical description of the jaws of a little-known group of trap-jaw ants.

- [**Star-formation 'fuel tanks' found around distant**](#)

[**galaxies**](#) [周四, 31 8月 05:25]

Astronomers have studied six distant starburst galaxies and discovered that five of them are surrounded by turbulent reservoirs of hydrogen gas, the fuel for future star formation.

• [**Toward a smart graphene membrane to desalinate water**](#) [周四, 31 8月 05:23]

A simple, sturdy graphene-based hybrid desalination membrane can provide clean water for agriculture and possibly human consumption.

• [**Protecting the guardians**](#) [周四, 31 8月 03:55]

A guardian gene that protects against type 1 diabetes and other autoimmune diseases exerts its pancreas-shielding effects by altering the gut microbiota. Experiments in mice born with the protective gene show that exposure to antibiotics during critical windows of development fuels risk for type 1 diabetes and leads to loss of genetic protection by altering the gut microbiota. Scientists say the findings underscore the importance of avoiding antibiotic use during late pregnancy and early infancy.

• [**Bioengineering a functional vascularized lung scaffold**](#) [周四, 31 8月 02:12]

A team of researchers is the first to successfully bioengineer a functional lung with perfusable and healthy vasculature in an ex vivo rodent lung. Their new approach allows the removal of the pulmonary epithelium while maintaining the viability and function of the vascular network and the lung matrix.

• [**Gut bacteria that 'talk' to human cells may lead to new treatments**](#) [周四, 31 8月 02:12]

Scientists developed a method to genetically engineer gut bacteria to produce molecules that have the potential to treat certain disorders by altering human metabolism.

• [**Shaking up the fish family tree: 'Living fossil' not as old as we thought**](#) [周四, 31 8月 01:22]

Polypterids are weird and puzzling African fish that have perplexed biologists since they were discovered during Napoleon's expedition to Egypt in the late 1700s.

- [**Scientists recover nova first spotted 600 years ago by Korean astrologers**](#) [周四, 31 8月 01:22]

A new study pinpoints the location of a nova first spotted by Korean astrologers almost 600 years ago that now undergoes smaller-scale 'dwarf nova' eruptions. The work supports that idea that novae go through a very long-term life cycle after erupting, fading to obscurity for thousands of years, and then building back up to become full-fledged novae once more.

- [**Monkeys with Parkinson's disease benefit from human stem cells**](#) [周四, 31 8月 01:22]

Japanese neurosurgeons report two new strategies to improve outcomes of iPS cell-based therapies for Parkinson's disease in monkey brains. The findings are a key step for patient recruitment of the first iPS cell-based therapy to treat neurodegenerative diseases.

- [**Motorized molecules drill through cells**](#) [周四, 31 8月 01:22]

Motorized molecules that target diseased cells may deliver drugs to or kill the cells by drilling into the cell membranes. Scientists have demonstrated them on cancer and other cells.

- [**Acting like a muscle, nano-sized device lifts 165 times its own weight**](#) [周四, 31 8月 01:22]

Engineers have discovered a simple, economical way to make a nano-sized device that can match the friendly neighborhood Avenger, on a much smaller scale. Their creation weighs 1.6 milligrams (about as much as five poppy seeds) and can lift 265 milligrams (the weight of about 825 poppy seeds) hundreds of times in a row.

- [**Uncovering factors that shape sea life**](#) [周四, 31 8月 01:22]

Researchers have proposed a new conceptual model of island biogeography for marine organisms -- a theory that explores how different processes (like sea level fluctuations and geographic isolation)

influence marine species diversity around islands.

• [**Otters learn by copying each other**](#) [周四, 31 8月 01:11]

Otters can learn how to solve puzzles by watching and copying each other, new research shows.

• [**What lit up the universe? Black holes may have punctured darkened galaxies, allowing light to escape**](#) [周三, 30 8月 23:48]

Researchers have a new explanation for how the universe changed from darkness to light. They propose that black holes within galaxies produce winds strong enough to fling out matter that punctures holes in galaxies, allowing light to escape.

• [**Shifting school start times could contribute \\$83 billion to US economy within a decade**](#) [周三, 30 8月 22:36]

RAND Corporation and RAND Europe have released the first-ever analysis of the economic implications of a shift in school start times in the US. The study shows that a nationwide move to 8.30 a.m. could lead to an economic gain of \$83 billion to the US economy within a decade. The gains projected through the study's economic model would be realized through the higher academic and professional performance of students, and reduced car crash rates.

• [**Patient plays saxophone while surgeons remove brain tumor**](#) [周三, 30 8月 22:36]

Music is not only a major part of Dan Fabbio's life, as a music teacher it is his livelihood. So when doctors discovered a tumor located in the part of his brain responsible for music function, he began a long journey that involved a team of physicians, scientists, and a music professor and culminated with him awake and playing a saxophone as surgeons operated on his brain.

• [**Understanding ancient geometric earthworks in southwestern Amazonia**](#) [周三, 30 8月 22:34]

Researchers examine pre-colonial geometric earthworks in the

southwestern Amazonia from the point of view of indigenous peoples and archaeology. The study shows that the earthworks were once important ritual communication spaces.

- [**New robot rolls with the rules of pedestrian conduct**](#) [周三, 30 8月 22:34]

Engineers have designed an autonomous robot with 'socially aware navigation,' that can keep pace with foot traffic while observing these general codes of pedestrian conduct.

- [**Robot probes mystery of prehistoric sea creature's swimming style**](#) [周三, 30 8月 22:26]

A new study has shed light on the swimming style of plesiosaurs by creating a robot to mimic its movements.

- [**Methane emissions tackled with gas-guzzling bacteria**](#) [周三, 30 8月 21:45]

Methane-oxidizing bacteria -- key organisms responsible for greenhouse gas mitigation -- are more flexible and resilient than previously thought, an international research has shown.

- [**Fossil whales' teeth shows what ferocious predators they were**](#) [周三, 30 8月 21:45]

The feeding habits of the whale -- the world's biggest animal -- have evolved to filter feeding, shows new international research. Ancient whales appear to have been ferocious predators, investigators explain.

- [**Century-old seal pelts reveal changes in Ross Sea ecosystem**](#) [周三, 30 8月 21:43]

Scientists sampled a pile of frozen pelts left in a hut by Antarctic explorers for Weddell seal tissue from a century ago, at the very start of human activities in Antarctica. By using sophisticated isotope analysis to compare samples from modern and century-old seals, they were able to investigate human impacts on the Antarctic ecosystem.

- [**Why does rubbing a balloon on your hair make**](#)

it stick? [周三, 30 8月 01:53]

New research indicates that tiny holes and cracks in a material -- changes in the microstructure -- can control how the material becomes electrically charged through friction.

Sense of smell is key factor in bird navigation, new study shows [周二, 29 8月 23:38]

How do birds navigate over long distances? This complex question has been the subject of debate and controversy among scientists for decades, with Earth's magnetic field and the bird's own sense of smell among the factors said to play a part. Now, researchers from the universities of Oxford, Barcelona and Pisa have shown in a new experiment that olfaction -- or sense of smell -- is almost certainly a key factor in long-distance oceanic navigation, eliminating previous misgivings about this hypoth...

Woolly rhino neck ribs provide clues about their decline and eventual extinction [周二, 29 8月 21:10]

A study reports on the incidence of abnormal cervical (neck) vertebrae in woolly rhinos, which strongly suggests a vulnerable condition in the species. Given the considerable birth defects that are associated with this condition, the researchers argue it is very possible that developmental abnormalities contributed towards the eventual extinction of these late Pleistocene rhinos.

An alternative to wolf control to save endangered caribou [周二, 29 8月 21:10]

The iconic woodland caribou across North America face increasing predation pressures from wolves. A short-term solution to caribou conservation would be to kill wolves. But a new government policy looks at reducing the invasive species moose numbers propping up the wolf population. Researchers have now evaluated the effects of this policy on the caribou population.

Moderate consumption of fats, carbohydrates

[best for health, international study shows](#) [周二, 29 8月

21:10]

A diet that includes a moderate intake of fat and fruits and vegetables, and avoidance of high carbohydrates, is associated with lower risk of death, research with more than 135,000 people across five continents has shown.

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

- [**Scientists discover brain area which can be targeted for treatment in patients with schizophrenia who 'hear voices'**](#) [周二, 05 9月 06:17]

For the first time, scientists have precisely identified and targeted an area of the brain which is involved in 'hearing voices,' experienced by many patients with schizophrenia. They have been able to show in a controlled trial that targeting this area with magnetic pulses can improve the condition in some patients.

- [**Schizophrenia, memory deficits: Solving the mystery behind a most stubborn symptom**](#) [周二, 05 9月 00:04]

Disruptions to the brain's internal GPS result in some of the severe memory deficits seen in schizophrenia. The new study in mouse models of the disorder marks the first time that schizophrenia's effects have been observed with such precision and clarity. The findings offer a promising entry point for attacking a near-universal and debilitating symptom of schizophrenia, memory deficits, which has thus far withstood all forms of treatment.

- [**Face value: Brain's ability to recognize faces is shaped through repeated exposure, study suggests**](#) [周二, 05 9月 00:04]

Scientists have long deemed the ability to recognize faces innate for people and other primates -- something our brains just know how to do immediately from birth. However, the findings of a new study cast doubt

on this longstanding view.

- [**Mysterious protein-folding molecule could trigger metabolic disorders**](#) [周二, 05 9月 00:04]

A molecule with few known functions can trigger the cell's response to unfolded proteins and perpetuate metabolic disease, report researchers.

- [**Superfly flight simulator helps unravel navigation in the brain**](#) [周二, 05 9月 00:04]

Researchers have identified two independent pathways in the fly brain that are integrated to allow successful navigation during flight. The study combined a flight simulator designed for flies with imaging of active neurons to show that landmark locations are processed separately in the fly brain from self-motion.

- [**New fluorescent dyes could advance biological imaging**](#) [周二, 05 9月 00:04]

Scientists have developed a new method for fine-tuning the structure of rhodamine dyes, and can now create a colorful palette of fluorescent molecules.

- [**Study in early stage breast cancer shows that even small tumors can be aggressive**](#) [周一, 04 9月 21:38]

Even small tumors can be aggressive, according to a study in patients with early stage breast cancer. Researchers found that nearly one in four small tumors were aggressive and patients benefited from chemotherapy. Aggressive tumors could be identified by a 70-gene signature.

- [**Financial stress is associated with migraine, if you have specific circadian gene variants**](#) [周一, 04 9月 21:38]

People with a specific variation in the CLOCK gene have more migraines under financial stress. This work shows the effect of the genetics of circadian rhythms on migraine.

- [**Indigenous storytelling is a new asset for**](#)

[biocultural conservation](#) [周一, 04 9月 21:36]

Some of the areas hosting most of the world's biodiversity are those inhabited by indigenous peoples. In the same way that biodiversity is being eroded, so is the world's cultural diversity. As a result, there have been several calls to promote biocultural conservation approaches that sustain both biodiversity and indigenous cultures.

[Multi-mechanism approach to treating neonatal hypoxic ischemia](#) [周一, 04 9月 21:34]

Male sex is a risk factor for worse outcome following neonatal insult, including hypoxic ischemia. While N-acetylcysteine and hypothermia promote functional improvement in female rodents, similar improvement in males requires the addition of vitamin D, report investigators. Multi-mechanism approaches are needed to treat neonatal hypoxic ischemia, and those approaches appear to be different depending on sex.

[Is ADHD really a sleep problem?](#) [周一, 04 9月 21:34]

Around 75 percent of children and adults with attention deficit hyperactivity disorder (ADHD) also have sleep problems, but until now these have been thought to be separate issues. Now a in a pulling together of the latest research, Scientists are proposing of a new theory which says that much of ADHD may in fact be a problem associated with lack of regular circadian sleep.

[Pilot study shows that neurofeedback may help treatment-resistant depression](#) [周一, 04 9月 21:34]

A small pilot study has indicated that neurofeedback -- where patients concentrate on modifying their own brainwave patterns -- has potential to treat many of the 100 million people worldwide who suffer from treatment-resistant depression (TRD). This is the first time that neurofeedback has been shown to improve both individual symptoms and overall recovery in TRD.

[Alterations in blood-based miRNA in veterans affected with combat-related PTSD](#) [周一, 04 9月 21:34]

A small pilot study shows that Individuals affected with PTSD (post-traumatic stress disorder) demonstrate changes in microRNA (miRNA) molecules associated with gene regulation. A controlled study, involving military personnel on deployment to a combat zone in Afghanistan, provided evidence for the role of blood-based miRNAs as candidate biomarkers for symptoms of PTSD.

• [**Heavy alcohol use alters brain functioning differently in young men and women**](#) [周一, 04 9月 21:34]

Scientists have found that brain functions in young men and women are changed by long-term alcohol use, but that these changes are significantly different in men and women. This indicates not only that young people might be at increased risk of long-term harm from alcohol use, but also that the risks are probably different in men and in women, with men possibly more at risk.

• [**Cleanliness is next to sexiness for golden-collared manakins in Panama**](#) [周六, 02 9月 01:55]

Juvenile male Golden-collared Manakins on extra testosterone cleaned up their display area before performing for females, according to research at the Smithsonian Tropical Research Institute (STRI) in Panama published in *Animal Behavior*. Female manakins got more aggressive when given testosterone.

• [**Cognitive fatigue after TBI linked with activation of caudate**](#) [周六, 02 9月 00:51]

Researchers have further elucidated the mechanisms for cognitive fatigue, a disabling symptom that affects many individuals after traumatic brain injury (TBI).

• [**Drug may curb female infertility from cancer treatments**](#) [周六, 02 9月 00:51]

An existing drug may one day protect premenopausal women from life-altering infertility that commonly follows cancer treatments, according to a new study.

[Intellectual disabilities caused by protein defect](#)

[周五, 01 9月 23:36]

Intellectual disabilities are often caused by a mutation that damages a gene, preventing the associated protein from functioning properly. However, a mutation can also change the function of a gene. As a result, the gene in question acts in a completely different way. Researchers discovered this mechanism in fifteen genes playing a role in the development of intellectual disabilities. Their research results show that these changes in function play a more prominent role than previously thought.

[Etosis phenomenon discovered in human blood monocytes](#)

[周五, 01 9月 22:46]

The first clear demonstration of etosis in human blood monocytes, a type of immune cell, has now been discovered by scientists.

[Lifestyle factors may affect how long individuals live free of disability](#)

[周五, 01 9月 22:46]

New research indicates that a healthy lifestyle may help reduce the duration of an individual's disabled period near the end of life.

[Virus hijacks cell's transportation system](#)

[周五, 01 9月 21:39]

A deadly tick-borne virus uses the host neuron's transportation system to move their RNA, resulting in the local reproduction of the virus and severe neurological symptoms.

[Breastfeeding may help prevent children's asthma exacerbations later in life](#)

[周五, 01 9月 21:38]

An analysis of children with asthma, those who had been breastfed had a 45 percent lower risk of asthma exacerbations later in life compared with children who had not been breastfed.

[Nature imagery calms prisoners](#)

[周五, 01 9月 21:38]

Sweeping shots of majestic landscapes. Glaciers, forests and waterfalls. New research shows that these images, shown to people deprived of access to nature, can reduce tension, help defuse anger and make some of the harshest environments, like a solitary confinement cellblock in a

maximum-security prison, a little easier to bear.

- [**Adipose tissue may affect cancer development in multiple ways**](#) [周五, 01 9月 21:38]

Adipose tissue, or fat, may influence the development of cancer in diverse ways, depending on the type of fat and the location in the body.

- [**The 'reality' of accent change**](#) [周五, 01 9月 21:38]

A new study of how accents change over differing periods of time demonstrates the limited impact of intense social interactions in isolated environments, and surprisingly large differences among people in how susceptible their accents are to change.

- [**Genes fueling neuroblastoma spread now identified**](#) [周五, 01 9月 06:03]

For the first time, researchers present data on how nervous system tumors, called neuroblastomas, spread. Their paper clarifies the relationship between two genes that fuel the aggressive spread of neuroblastomas.

- [**Asthma medicine halves risk of Parkinson's**](#) [周五, 01 9月 06:03]

Using data gathered from 100 million Norwegian prescriptions, researchers have found that asthma medicine can halve a patient's risk of developing Parkinson's disease.

- [**New genetic risk factor for developing autism spectrum disorder identified**](#) [周五, 01 9月 06:03]

A new systematic analysis has been applied to a cohort of 2,300 families who have a single child affected with autism. The study focused on identifying and characterizing low-lying genetic mutations that may have been missed in previous research, given these mutations are only present in a fraction of the bulk DNA of an individual.

- [**New boarding procedures, smaller cabin size may limit infection on planes**](#) [周五, 01 9月 03:13]

During major epidemics, cramped airplane cabins are fertile ground for

the spread of infection, but new research suggests changing routine boarding protocols could be a key to reducing rampant transmission of disease.

• [**Discovery may be key to obesity, Diabetes Rx**](#) [周五, 01 9月 03:12]

Research has demonstrated the potential of a protein to treat or prevent metabolic diseases including obesity and diabetes.

• [**Measuring the cost of quality measurement**](#) [周五, 01 9月 03:12]

Less than 2 decades after publication of the National Academy of Medicine's (formerly the Institute of Medicine) Crossing the Quality Chasm: A New Health System for the 21st Century, quality measurement has become routine and widespread throughout the US health care system.

• [**Mouth clicks used in human echolocation captured in unprecedented detail**](#) [周五, 01 9月 02:13]

Like some bats and marine mammals, people can develop expert echolocation skills, in which they produce a clicking sound with their mouths and listen to the reflected sound waves to 'see' their surroundings. A new study provides the first in-depth analysis of the mouth clicks used in human echolocation.

• [**New source for brain's development discovered**](#) [周五, 01 9月 02:13]

An unexpected source for the brain's development has been discovered by researchers, a finding that offers new insights into the building of the nervous system.

• [**Does indoor spraying help prevent dengue?**](#) [周五, 01 9月 02:13]

The prevention of dengue, the most prevalent mosquito-borne virus in the world, relies heavily on controlling mosquito populations, as the currently available dengue vaccine is only partially effective. Indoor spraying -- which involves spraying of insecticides inside houses -- has the potential to be a key part of those prevention efforts, researchers report.

• [**Drugs targeting the beta2-adrenoreceptor linked to Parkinson's disease**](#) [周五, 01 9月 02:12]

Researchers want to prevent alpha-synuclein from accumulating in the brain. To do so, the team searched for drugs that turn down alpha-synuclein production. They then tested the drugs in mice and stem cells and studied in data from the health records of millions of people living in Norway. The results of their efforts, point to a new drug development path for PD.

• [**Drugs found to be more effective against depression than electric current**](#) [周五, 01 9月 02:05]

Medicinal therapy was found to be more than twice as effective as low-intensity brain stimulation in treating depression, according to a study.

• [**BCG jab may protect against TB for nearly twice as long as previously thought**](#) [周五, 01 9月 01:42]

The world's only licensed tuberculosis (TB) vaccine could offer protection against the disease for nearly twice as long as previously thought, according to new research.

• [**New findings on brain functional connectivity may lend insights into mental disorders**](#) [周五, 01 9月 01:13]

Ongoing advances in understanding the functional connections within the brain are producing exciting insights into how the brain circuits function together to support human behavior — and may lead to new discoveries in the development and treatment of psychiatric disorders, according to a review.

• [**Chemo-boosting drug discovered for leukemia**](#) [周五, 01 9月 00:30]

Drugs developed to treat heart and blood vessel problems could be used in combination with chemotherapy to treat an aggressive form of adult leukemia, new research reveals.

• [**Yawning: Why is it so contagious and why should it matter?**](#) [周五, 01 9月 00:30]

Feeling tired? Even if we aren't tired, why do we yawn if someone else does? Experts have published research that suggests the human propensity for contagious yawning is triggered automatically by primitive reflexes in the primary motor cortex -- an area of the brain responsible for motor function. Their study is another stage in their research into the underlying biology of neuropsychiatric disorders and their search for new methods of treatment.

[**Scents and social preference: Neuroscientists ID the roots of attraction**](#) [周五, 01 9月 00:30]

Culminating a series of studies stretching back eight years, biologists have identified the cellular and molecular basis for social preference, known in the animal kingdom as 'imprinting.' Through in vivo experiments, the researchers found the neurological roots of kinship attraction and aversion. They also employed genetics screening to find the regulators controlling this behavior. The study carries implications for understanding social attraction and aversion in a range of animals and humans.

[**Songbird study shows how estrogen may stop infection-induced brain inflammation**](#) [周四, 31 8月 23:30]

Estrogen synthesis, a process naturally occurring in the brains of zebra finches, may also fight off neuroinflammation caused by infection that occurs elsewhere in the body, new research indicates.

[**People become more economically conservative when angered**](#) [周四, 31 8月 23:30]

People tend to lean more economically conservative when they're angry, according to a new article. Researchers came to the conclusion after running multiple studies that included more than 1,000 participants.

[**How reading and writing with your child boost more than just literacy**](#) [周四, 31 8月 22:21]

Children who read and write at home -- whether for assignments or just for fun -- are building long-term study and executive function skills, according to a new article

• [**Newly emerged superbug discovered**](#) [周四, 31 8月 22:15]

Scientists have discovered a newly emerged superbug, hyper-resistant and hypervirulent *Klebsiella pneumoniae*, which may cause untreatable and fatal infections in relatively healthy individuals and will pose enormous threat to human health.

• [**Beta blockers have positive effect in pulmonary arterial hypertension, researchers find**](#) [周四, 31 8月 22:14]

A common heart disease medication, beta blockers, may help treat pulmonary arterial hypertension (PAH), a debilitating lung disease, researchers have found. Caused by high blood pressure in the pulmonary arteries, PAH is a progressive disease which usually leads to right-sided heart failure and death within five to seven years of diagnosis. Right-sided heart failure is the leading cause of death in PAH patients.

• [**Untreated sleep apnea shown to raise metabolic and cardiovascular stress**](#) [周四, 31 8月 22:14]

Sleep apnea, left untreated for even a few days, can increase blood sugar and fat levels, stress hormones and blood pressure, according to a new study of sleeping subjects. This research adds further support for the consistent use of continuous positive airway pressure, a machine that increases air pressure in the throat to keep the airway open during sleep.

• [**Mind wandering is common during driving**](#) [周四, 31 8月 22:14]

Scientists have investigated mind wandering in volunteers during a driving simulation. Astonishingly, during the simulation, the volunteers reported mind wandering 70 percent of the time. The researchers could identify specific changes in brain patterns when the volunteers were mind wandering, but need to do further work to clarify if it is dangerous during driving.

• [**Children's sleep quality linked to mothers' insomnia**](#) [周四, 31 8月 21:33]

Children sleep more poorly if their mothers suffer from insomnia symptoms – potentially affecting their mental wellbeing and

development - according to new research. Nearly 200 school kids and their parents were studied, results indicating that children whose mothers have insomnia symptoms fall asleep later, get less sleep and spend less time in deep sleep. There appeared to be no link between fathers' insomnia symptoms and children's sleep.

[Little known theory could hold key to sporting success](#) [周四, 31 8月 21:33]

An established but little known psychological theory is likely to improve performances across a range of activities, including sport, according to new research.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

- [**New fluorescent dyes could advance biological imaging**](#) [周二, 05 9月 00:04]

Scientists have developed a new method for fine-tuning the structure of rhodamine dyes, and can now create a colorful palette of fluorescent molecules.

- [**Stellar corpse sheds light on origin of cosmic rays**](#) [周一, 04 9月 21:34]

New research revealed that the entire zoo of electromagnetic radiation streaming from the Crab nebula -- one of the most iconic objects in the sky -- has its origin in one population of electrons and must be produced in a different way than scientists have traditionally thought. The results have implications for our understanding of how cosmic rays attain their incredible energies.

- [**Physicists propose new theories of black holes from the very early universe**](#) [周六, 02 9月 01:55]

'Primordial black holes,' believed to have formed shortly after the Big Bang, might explain how heavy elements such as gold, platinum and uranium came to be, physicists report.

- [**Reusable ruthenium-based catalyst could be a game-changer for the biomass industry**](#) [周五, 01 9月 22:46]

Researchers have developed a highly efficient reusable catalyst for the production of primary amines. By cutting the amount of undesired by-products, the catalyst is set to revolutionize the production of bio-based

fuels, pharmaceuticals, agricultural chemicals and more.

- [**Bit data goes anti-skyrmions**](#) [周五, 01 9月 22:46]

Scientists have discovered a new kind of magnetic nano-object in a novel material that could serve as a magnetic bit with cloaking properties to make a magnetic disk drive with no moving parts -- a Racetrack Memory -- a reality in the near future.

- [**Molecules move faster near sticky surfaces**](#) [周五, 01 9月 21:39]

Molecules move faster as they get closer to adhesive surfaces, but this effect is not permanent.

- [**Equatorial jet in Venusian atmosphere**](#) [周五, 01 9月 21:38]

Observations by Japan's Venus climate orbiter Akatsuki have revealed an equatorial jet in the lower to middle cloud layer of the planet's atmosphere, a finding that could be pivotal to unraveling a phenomenon called superrotation.

- [**Method speeds up time to analyze complex microscopic images**](#) [周五, 01 9月 03:13]

Researchers who typically required a week of effort to dissect cryo-electron tomography images of the 3-D structure of a single cell will now be able to do it in about an hour thanks to a new automated method.

- [**Insect eyes inspire new solar cell design**](#) [周五, 01 9月 03:12]

Packing tiny solar cells together, like micro-lenses in the compound eye of an insect, could help scientists overcome a major roadblock to the development of perovskite photovoltaics.

- [**Drugs found to be more effective against depression than electric current**](#) [周五, 01 9月 02:05]

Medicinal therapy was found to be more than twice as effective as low-intensity brain stimulation in treating depression, according to a study.

- [**Caching system could make data centers more energy efficient**](#) [周四, 31 8月 23:52]

Researchers have developed a new system for data center caching that

uses flash memory, the kind of memory used in most smartphones.

- [**First hints of possible water content on TRAPPIST-1 planets**](#) [周四, 31 8月 23:30]

Astronomers have been trying to determine whether there might be water on the seven Earth-sized planets orbiting the nearby dwarf star TRAPPIST-1. The results suggest that the outer planets of the system might still harbor substantial amounts of water. This includes the three planets within the habitable zone of the star, lending further weight to the possibility that they may indeed be habitable.

- [**Aerospace test goes green with alternative to explosives**](#) [周四, 31 8月 22:14]

Scientists have successfully demonstrated a new, more environmentally friendly method to test a rocket part to ensure its avionics can withstand the shock from stage separation during flight.

- [**How Neanderthals made the very first glue**](#) [周四, 31 8月 21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

- [**Improving earthquake resistance with a single crystal**](#) [周四, 31 8月 21:26]

A new heating method for certain metals could lead to improved earthquake-resistant construction materials.

- [**Mass production of biodegradable plastic**](#) [周四, 31 8月 21:14]

Introducing a simple step to the production of plant-derived, biodegradable plastic could improve its properties while overcoming obstacles to manufacturing it commercially, says new research.

- [**Turning heat energy into a viable fuel source**](#) [周四, 31 8月 21:14]

A new device could one day turn the heat generated by a wide array of electronics into a usable fuel source. The device is a multicomponent, multilayered composite material called a van der Waals Schottky diode.

It converts heat into electricity up to three times more efficiently than silicon -- a semiconductor material widely used in the electronics industry.

- [**Robot learns to follow orders like Alexa**](#) [周四, 31 8月 21:14]

Computer scientists have developed an Alexa-like system that allows robots to understand a wide range of commands that require contextual knowledge about objects and their environments. They've dubbed the system 'ComText,' for 'commands in context.'

- [**Good as gold**](#) [周四, 31 8月 08:21]

Few experiences invoke as much anxiety as a call from your doctor saying 'you need to come back for more tests.' Your imagination goes wild and suddenly a routine medical screening becomes a minefield of potential life-threatening diseases. It's highly likely, however, that you have fallen victim to a false positive -- a result that, despite the accuracy of the test, erroneously yields an affirmative result that points toward illness. To increase the accuracy of medical screening and reduce the i...

- [**Gold nanoparticles fry cancer on glowing mice**](#) [周四, 31 8月 08:21]

A new study takes a new approach to killing cancer: Why not fry it into oblivion with vibrating gold nanoparticles?

- [**Star-formation 'fuel tanks' found around distant galaxies**](#) [周四, 31 8月 05:25]

Astronomers have studied six distant starburst galaxies and discovered that five of them are surrounded by turbulent reservoirs of hydrogen gas, the fuel for future star formation.

- [**Toward a smart graphene membrane to desalinate water**](#) [周四, 31 8月 05:23]

A simple, sturdy graphene-based hybrid desalination membrane can provide clean water for agriculture and possibly human consumption.

- [**New bar set for water-splitting, CO2-splitting techniques**](#) [周四, 31 8月 02:13]

Researchers have significantly boosted the efficiency of two techniques,

for splitting water to create hydrogen gas and splitting carbon dioxide to create carbon monoxide. The products are valuable feedstock for clean energy and chemical manufacturing applications.

- [**Bioengineering a functional vascularized lung scaffold**](#) [周四, 31 8月 02:12]

A team of researchers is the first to successfully bioengineer a functional lung with perfusable and healthy vasculature in an ex vivo rodent lung. Their new approach allows the removal of the pulmonary epithelium while maintaining the viability and function of the vascular network and the lung matrix.

- [**Environmental chemist flashes warning light on new nanoparticle**](#) [周四, 31 8月 02:12]

Layered BP's cytotoxicity is based on the fact that it generates reactive oxygen species (ROS), scientists have found. ROS are among the most potent cell-damaging agents known. Layered BP also disrupts cell membrane integrity in a particle-size-dependent manner.

- [**Scientists recover nova first spotted 600 years ago by Korean astrologers**](#) [周四, 31 8月 01:22]

A new study pinpoints the location of a nova first spotted by Korean astrologers almost 600 years ago that now undergoes smaller-scale 'dwarf nova' eruptions. The work supports that idea that novae go through a very long-term life cycle after erupting, fading to obscurity for thousands of years, and then building back up to become full-fledged novae once more.

- [**Artificial intelligence analyzes gravitational lenses 10 million times faster**](#) [周四, 31 8月 01:22]

Researchers have for the first time shown that neural networks -- a form of artificial intelligence -- can accurately analyze the complex distortions in spacetime known as gravitational lenses 10 million times faster than traditional methods.

- [**Motorized molecules drill through cells**](#) [周四, 31 8月 01:22]

Motorized molecules that target diseased cells may deliver drugs to or kill the cells by drilling into the cell membranes. Scientists have demonstrated them on cancer and other cells.

- [**Acting like a muscle, nano-sized device lifts 165 times its own weight**](#) [周四, 31 8月 01:22]

Engineers have discovered a simple, economical way to make a nano-sized device that can match the friendly neighborhood Avenger, on a much smaller scale. Their creation weighs 1.6 milligrams (about as much as five poppy seeds) and can lift 265 milligrams (the weight of about 825 poppy seeds) hundreds of times in a row.

- [**Dating? A magic formula to predict attraction is more elusive than ever**](#) [周四, 31 8月 01:22]

Dating websites often claim attraction between two people can be predicted from the right combination of traits and preferences, but a new study casts doubt on that assertion. The study, which used speed dating data, found a computer could predict who is desirable and how much someone would desire others -- who's hot and who's not -- but it could not unravel the mystery of unique desire for a specific person.

- [**Robotic system monitors specific neurons**](#) [周四, 31 8月 00:49]

Engineers have devised a way to automate the process of patch-clamping, using a computer algorithm that analyzes microscope images and guides a robotic arm to the target cell to record its electrical activity.

- [**'Seeing' robot learns tricky technique for studying brain cells in mammals**](#) [周四, 31 8月 00:25]

Scientists have successfully taught robots to perform a challenging brain technique only previously mastered by a handful of humans.

- [**Machine-learning earthquake prediction in lab shows promise**](#) [周四, 31 8月 00:25]

By listening to the acoustic signal emitted by a laboratory-created earthquake, a computer science approach using machine learning can predict the time remaining before the fault fails.

- [**Silicon solves problems for next-generation battery technology**](#) [周三, 30 8月 23:48]

Silicon -- the second most abundant element in the earth's crust -- shows great promise in Li-ion batteries, according to new research. By replacing graphite anodes with silicon, it is possible to quadruple anode capacity.

- [**What lit up the universe? Black holes may have punctured darkened galaxies, allowing light to escape**](#) [周三, 30 8月 23:48]

Researchers have a new explanation for how the universe changed from darkness to light. They propose that black holes within galaxies produce winds strong enough to fling out matter that punctures holes in galaxies, allowing light to escape.

- [**Stroke patient improvement with a brain-computer interface**](#) [周三, 30 8月 22:35]

It is possible for stroke patients to improve motor function using special training involving connecting brain signals with a computer, research shows.

- [**Leaf sensors can tell farmers when crops need to be watered**](#) [周三, 30 8月 22:34]

Plant-based sensors that measure the thickness and electrical capacitance of leaves show great promise for telling farmers when to activate their irrigation systems, preventing both water waste and parched plants, according to researchers.

- [**New robot rolls with the rules of pedestrian conduct**](#) [周三, 30 8月 22:34]

Engineers have designed an autonomous robot with 'socially aware navigation,' that can keep pace with foot traffic while observing these general codes of pedestrian conduct.

- [**Robot probes mystery of prehistoric sea**](#)

[creature's swimming style](#) [周三, 30 8月 22:26]

A new study has shed light on the swimming style of plesiosaurs by creating a robot to mimic its movements.

• [Electricity production: When enzymes rival platinum](#) [周三, 30 8月 22:19]

Making a biocell that is as effective as a platinum fuel cell: that's the feat that researchers have achieved. Three years after making their first prototype biocell, the researchers have just reached a new milestone and increased its performance and stability. This biocell could, in the long run, offer an alternative to fuel cells that require rare and costly metals, such as platinum.

• [Integrated quantum optical circuits soon a reality](#) [周三, 30 8月 21:49]

A research group in quantum nano photonics has developed a new method that represents a significant step toward enabling optical quantum information processing on a chip.

• [New significance of unheralded chemical reactions](#) [周三, 30 8月 21:45]

Researchers reveal new significance to a decades-old chemical reaction theory, increasing our understanding of the interaction of gases, relevant to combustion and planetary atmospheres.

• [New mini tool has massive implications](#) [周三, 30 8月 21:43]

Researchers have created a miniaturized, portable version of a tool now capable of analyzing Mars' atmosphere -- and that's just one of its myriad possible uses.

• [Making 3-D printing safer](#) [周三, 30 8月 21:42]

Within the past decade, 3-D printers have gone from bulky, expensive curiosities to compact, more affordable consumer products. At the same time, concerns have emerged that nanoparticles released from the machines during use could affect consumers' health. Now researchers report a way to eliminate almost all nanoparticle emissions from some of

these printers.

- [**Nanoparticles loaded with mRNA give disease-fighting properties to cells**](#) [周三, 30 8月 21:42]

A new biomedical tool using nanoparticles that deliver transient gene changes to targeted cells could make therapies for a variety of diseases -- including cancer, diabetes and HIV -- faster and cheaper to develop, and more customizable.

- [**Adoption of robotics into a hospital's daily operations requires broad cooperation**](#) [周三, 30 8月 21:42]

Investigators studied the implementation of a logistics robot system at the Seinäjoki Central Hospital in South Ostrobothnia. The aim was to reduce transportation costs, improve the availability of supplies and alleviate congestion on hospital hallways by running deliveries around the clock on every day of the week.

- [**Nano chip system measures light from single bacterial cell to enable chemical detection**](#) [周三, 30 8月 21:42]

Researchers have created a nanophotonic chip system using lasers and bacteria to observe fluorescence emitted from a single bacterial cell. The novel system paves the way for an efficient and portable on-chip system for diverse cell-based sensing applications, such as detecting chemicals in real-time.

- [**NASA's Lunar mission captures solar eclipse as seen from the moon**](#) [周三, 30 8月 04:45]

LRO captured an image of the Moon's shadow over a large region of the United States, centered just north of Nashville, Tennessee.

- [**Why does rubbing a balloon on your hair make it stick?**](#) [周三, 30 8月 01:53]

New research indicates that tiny holes and cracks in a material -- changes in the microstructure -- can control how the material becomes electrically charged through friction.

[Chemist synthesizes pure graphene](#) [周三, 30 8月 01:53]

A chemist has patented a one-of-a-kind process for exfoliating graphene in its pure (unoxidized) form, as well as manufacturing innovative graphene nanocomposites that have potential uses in a variety of applications, including desalination of brackish water.

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Environment News

Top stories featured on ScienceDaily's Plants & Animals, Earth & Climate, and Fossils & Ruins sections.

- [**Diverse landscapes are more productive and adapt better to climate change**](#) [周二, 05 9月 04:56]

Ecosystems with high biodiversity are more productive and stable towards annual fluctuations in environmental conditions than those with a low diversity of species. They also adapt better to climate-driven environmental changes. These are the key findings environmental scientists made in a study of about 450 landscapes harboring 2,200 plants and animal species.

- [**More 'losers' than 'winners' predicted for Southern Ocean seafloor animals**](#) [周二, 05 9月 00:04]

A new study of the marine invertebrates living in the seas around Antarctica reveals there will be more 'losers' than 'winners' over the next century as the Antarctic seafloor warms.

- [**Team gathers unprecedented data on atmosphere's organic chemistry**](#) [周二, 05 9月 00:04]

Teams of scientists have carried out the most detailed, extended observations of atmospheric chemistry ever attempted in one place, in patch of ponderosa pine forest in Colorado, and found previously unmeasured compounds.

- [**Indigenous storytelling is a new asset for biocultural conservation**](#) [周一, 04 9月 21:36]

Some of the areas hosting most of the world's biodiversity are those inhabited by indigenous peoples. In the same way that biodiversity is

being eroded, so is the world's cultural diversity. As a result, there have been several calls to promote biocultural conservation approaches that sustain both biodiversity and indigenous cultures.

- [**Reindeer grazing protects tundra plant diversity in a warming climate**](#) [周一, 04 9月 21:34]

Climate warming reduces the number of plant species in the tundra, but plant-eating animals, such as reindeer and voles, can turn this negative effect into something positive.

- [**Bacteria act as aphrodisiac for the closest relatives of animals**](#) [周六, 02 9月 01:55]

Choanoflagellates are a ubiquitous but enigmatic one-celled ocean organism that may give clues to the origin of multicellularity in animals. New research has turned up a surprising kink in the organism's sex life: swarming and mating are triggered by a marine bacterium common in their environment. Researchers traced this response to a protein secreted by the bacteria. The choanos seem to be eavesdropping on bacteria to determine their life history.

- [**Earthworms at the root of sugar maple decline**](#) [周六, 02 9月 00:51]

Non-native worms are eating up the forest floor, causing sugar maples to die back and perhaps harming other forest dwellers, a new study suggests.

- [**Etosis phenomenon discovered in human blood monocytes**](#) [周五, 01 9月 22:46]

The first clear demonstration of etosis in human blood monocytes, a type of immune cell, has now been discovered by scientists.

- [**Can corals survive climate change?**](#) [周五, 01 9月 21:39]

Scientists have issued advice that more research is urgently required to determine whether corals can acclimate and adapt to the rapid pace of climate change.

- [**Virus hijacks cell's transportation system**](#) [周五, 01 9月 21:39]

A deadly tick-borne virus uses the host neuron's transportation system to move their RNA, resulting in the local reproduction of the virus and severe neurological symptoms.

• [**New light shed on photosynthesis**](#) [周五, 01 9月 21:38]

A team of scientists has taken us a step closer to unlocking the secrets of photosynthesis, and possibly to cleaner fuels. Their discovery describes the structure of a reaction center (from a heliobacterium) which preserves the characteristics of the ancestral one, and so provides new insight into the evolution of photosynthesis.

• [**Nature imagery calms prisoners**](#) [周五, 01 9月 21:38]

Sweeping shots of majestic landscapes. Glaciers, forests and waterfalls. New research shows that these images, shown to people deprived of access to nature, can reduce tension, help defuse anger and make some of the harshest environments, like a solitary confinement cellblock in a maximum-security prison, a little easier to bear.

• [**Fungal infections reduce frogs' tolerance of heat**](#)

[周五, 01 9月 06:05]

Fungal diseases are increasing in animals, which might have serious consequences for wildlife living in a hotter world, said a scientist. A new study shows that fungal infections reduced the heat tolerance of frogs by up to 4 degrees Celsius.

• [**Panama's native tree species excel in infertile tropical soils**](#) [周五, 01 9月 06:03]

Scientists confirm that native tree species performed very well in field trials and would be preferable to teak in the poor soils of the Panama Canal watershed.

• [**Coming soon to Montreal: The infrastructure cost of climate change**](#) [周五, 01 9月 03:13]

The climate of Montreal is changing and will continue to do so at a rapidly increasing rate and with much more spatial variability in the future, according to new research.

• [**Insect eyes inspire new solar cell design**](#) [周五, 01 9月 03:12]

Packing tiny solar cells together, like micro-lenses in the compound eye of an insect, could help scientists overcome a major roadblock to the development of perovskite photovoltaics.

[**More research needed on effects of maternal stress in wild animals**](#) [周五, 01 9月 03:12]

If a human mother is stressed while pregnant, research shows her child is much more likely to have emotional, cognitive or even physiological problems, such as attention deficit, hyperactivity, anxiety, language delay, obesity, diabetes and hypertension. Conversely, the results of maternal stress on the offspring of other animals -- particularly wildlife under threat from predators -- is believed to be positive, and contributes to their survival.

[**Study reveals ways collegiate sports venues can achieve 'zero waste'**](#) [周五, 01 9月 02:13]

A new study analyzing waste and recyclables during Mizzou's 2014 home football season demonstrates that by implementing several recommendations the team developed, such as offering better recycling receptacles and better sorting options for waste, sporting venues could be well on their way to achieving environmental benefits that exceed the standards for 'zero-waste' operations.

[**Does indoor spraying help prevent dengue?**](#) [周五, 01 9月 02:13]

The prevention of dengue, the most prevalent mosquito-borne virus in the world, relies heavily on controlling mosquito populations, as the currently available dengue vaccine is only partially effective. Indoor spraying -- which involves spraying of insecticides inside houses -- has the potential to be a key part of those prevention efforts, researchers report.

[**Reconstructing life at its beginning, cell by cell**](#) [周五, 01 9月 02:12]

In a technological tour de force, scientists have created a virtual model of an early fly embryo. Its interactive interface allows researchers to explore the blueprint that underlies development at unprecedented spatial resolution and predict which cells express which genes.

• [**Nature gem within the city: What grows in the biodiversity-rich Bukit Nanas Forest Reserve**](#) [周五, 01 9月 02:05]

Being the oldest of its kind in Malaysia, Bukit Nanas Forest Reserve is a nature enclave, lying in the center of the busy capital city Kuala Lumpur. Researchers have now teamed up to publish an extensive checklist of the flora of this urban nature enclave, while making use of the innovative 'ecosystem inventory' template.

• [**Cross-kingdom regulation of honeybee caste development by dietary plant miRNAs**](#) [周五, 01 9月 02:05]

Honeybee larvae develop into workers but not queens, in part, because their diet of beebread/pollen is enriched in plant miRNAs. While miRNAs are generally negative regulators of gene expression in eukaryotes, they also negatively regulate larval development when honeybee larvae consume beebread/pollen and take up plant miRNAs.

• [**Pinpointing the sources of trans-pacific dust**](#) [周五, 01 9月 02:05]

Airborne dust from Asia travels across the Pacific passport-free, carrying pollution, building soil, and coloring sunsets thousands of miles from its source. Identifying that source is important for understanding atmospheric circulation, contaminant pathways, and climate. But collecting enough airborne dust to pinpoint its source is challenging. Now, a team of researchers has developed a way to match microscopic quartz grains to the desert they blew in from.

• [**Protein transport channel offers new target for thwarting pathogen**](#) [周五, 01 9月 01:42]

A bacterium that attacks people suffering from chronic lung disease and compromised immune systems could be halted by disrupting the distribution channels the organism uses to access the nutrient-rich cytoplasm of its host cell.

• [**Fossil footprints challenge established theories of human evolution**](#) [周五, 01 9月 01:42]

Newly discovered human-like footprints from Crete may put the

established narrative of early human evolution to the test. The footprints are approximately 5.7 million years old and were made at a time when previous research puts our ancestors in Africa -- with ape-like feet.

- [**Human bones in south Mexico: Stalagmite reveals their age as 13,000 years old**](#) [周五, 01 9月 01:12]

A prehistoric human skeleton found on the Yucatán Peninsula is at least 13,000 years old and most likely dates from a glacial period at the end of the most recent ice age, the late Pleistocene. A German-Mexican team of researchers has now dated the fossil skeleton based on a stalagmite that grew on the hip bone.

- [**What changes when you warm the Antarctic Ocean just 1 degree? Lots**](#) [周五, 01 9月 00:30]

After warming a natural seabed in the Antarctic Ocean by just 1° or 2° Celsius, researchers observed massive impacts on a marine assemblage, as growth rates nearly doubled. The findings of what the researchers call the 'most realistic ocean warming experiment to date' show that the effects of future warming may far exceed expectations.

- [**Bacterial protein acts as aphrodisiac for choanoflagellates**](#) [周五, 01 9月 00:30]

Researchers investigating how single-celled organisms evolved to become multicellular stumbled across a strange phenomenon during their experiments: Single-celled eukaryotes called choanoflagellates, which are the closest living relatives to animals, begin to sexually reproduce in response to a protein produced by bacteria. Why this happens in natural settings is still unclear, though they speculate that it could help the choanoflagellates easily mate with others from the same species.

- [**New molecules, innovation, value**](#) [周四, 31 8月 23:30]

Scientists are proposing a new model for creating, applying and commercializing chemicals made from corn stalks, wood chips and other sources of biomass.

- [**Why are coyote populations difficult to control?**](#)

[周四, 31 8月 22:15]

Conventional wisdom suggests that coyote control efforts actually result in an increase in the number of coyotes due to increasing litter sizes and pregnancy rates among individuals that survive.

- [**Antidepressants found in fish brains in Great Lakes region**](#) [周四, 31 8月 22:14]

Human antidepressants are building up in the brains of bass, walleye and several other fish common to the Great Lakes region, scientists say.

- [**How Neanderthals made the very first glue**](#) [周四, 31 8月 21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

- [**Record-low 2016 Antarctic sea ice due to 'perfect storm' of tropical, polar conditions**](#) [周四, 31 8月 21:26]

The sudden, unexpected nosedive in Antarctic sea ice last year was due to a unique one-two punch from atmospheric conditions both in the tropical Pacific Ocean and around the South Pole.

- [**X-ray footprinting solves mystery of metal-breathing protein**](#) [周四, 31 8月 21:26]

Scientists have discovered the details of an unconventional coupling between a bacterial protein and a mineral that allows the bacterium to breathe when oxygen is not available.

- [**Apes' abilities misunderstood by decades of poor science**](#) [周四, 31 8月 21:14]

Hundreds of scientific studies over two decades have told us that apes are clever -- just not as clever as us. New analysis argues that what we think we know about apes' social intelligence is based on wishful thinking and flawed science.

- [**Mass production of biodegradable plastic**](#) [周四, 31 8月 21:14]

Introducing a simple step to the production of plant-derived,

biodegradable plastic could improve its properties while overcoming obstacles to manufacturing it commercially, says new research.

• [**Forensic science techniques help discover new molecular fossils**](#) [周四, 31 8月 21:14]

Researchers believe they have found new molecular fossils of archaea using a method of analysis commonly used in forensic science.

• [**New hope for reef fish living in a high CO2 world**](#) [周四, 31 8月 21:14]

New research examining the possible impacts of ocean acidification provides fresh hope for the survival of reef fish.

• [**How certain ants snap their jaws shut in the blink of an eye**](#) [周四, 31 8月 08:21]

Few victims stand a chance against the formidable mandibles of a trap-jaw ant. In conflicts between predators and prey, speed is a decided advantage, and evolution has given these insects an edge with spring-loaded jaws that snap shut with astonishing speed. Biologists have now provided the first mechanical description of the jaws of a little-known group of trap-jaw ants.

• [**Profitable cooperation: Ants protect and fertilize plants**](#) [周四, 31 8月 08:21]

Biologists describe how the waste left by ants on plant leaves serves as a valuable fertilizer for the plants -- handed on a silver platter.

• [**Jordan faces likelihood of much more frequent long and severe droughts**](#) [周四, 31 8月 08:21]

Jordan is among the world's most water-poor nations, and a new, comprehensive analysis of regional drought and land-use changes in upstream Syria suggests the conditions could get significantly worse.

• [**Concerns regarding radioactivity in migratory seafood negated**](#) [周四, 31 8月 03:55]

New research shows negligible risk from consumption of meat from

migratory marine predators following Fukushima nuclear disaster.

• [**Protecting the guardians**](#) [周四, 31 8月 03:55]

A guardian gene that protects against type 1 diabetes and other autoimmune diseases exerts its pancreas-shielding effects by altering the gut microbiota. Experiments in mice born with the protective gene show that exposure to antibiotics during critical windows of development fuels risk for type 1 diabetes and leads to loss of genetic protection by altering the gut microbiota. Scientists say the findings underscore the importance of avoiding antibiotic use during late pregnancy and early infancy.

• [**Tracking down the whale-shark highway**](#) [周四, 31 8月 03:55]

Researchers recently discovered that whale sharks in the Eastern Tropical Pacific follow fronts -- the dynamic boundaries between warm and cold ocean waters.

• [**Bioengineering a functional vascularized lung scaffold**](#) [周四, 31 8月 02:12]

A team of researchers is the first to successfully bioengineer a functional lung with perfusable and healthy vasculature in an ex vivo rodent lung. Their new approach allows the removal of the pulmonary epithelium while maintaining the viability and function of the vascular network and the lung matrix.

• [**Peptide mass fingerprinting can identify whale species based solely on their baleen**](#) [周四, 31 8月 02:12]

Peptide mass fingerprinting accurately identified 10 species of whales from their baleen alone, according to a new study.

• [**Gut bacteria that 'talk' to human cells may lead to new treatments**](#) [周四, 31 8月 02:12]

Scientists developed a method to genetically engineer gut bacteria to produce molecules that have the potential to treat certain disorders by altering human metabolism.

• [**Shaking up the fish family tree: 'Living fossil'**](#)

not as old as we thought [周四, 31 8月 01:22]

Polypterids are weird and puzzling African fish that have perplexed biologists since they were discovered during Napoleon's expedition to Egypt in the late 1700s.

Monkeys with Parkinson's disease benefit from human stem cells [周四, 31 8月 01:22]

Japanese neurosurgeons report two new strategies to improve outcomes of iPS cell-based therapies for Parkinson's disease in monkey brains. The findings are a key step for patient recruitment of the first iPS cell-based therapy to treat neurodegenerative diseases.

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- . [Nature imagery calms prisoners](#) [周五, 01 9月 21:38]
Sweeping shots of majestic landscapes. Glaciers, forests and waterfalls. New research shows that these images, shown to people deprived of access to nature, can reduce tension, help defuse anger and make some of the harshest environments, like a solitary confinement cellblock in a maximum-security prison, a little easier to bear.
- . [New boarding procedures, smaller cabin size may limit infection on planes](#) [周五, 01 9月 03:13]
During major epidemics, cramped airplane cabins are fertile ground for the spread of infection, but new research suggests changing routine boarding protocols could be a key to reducing rampant transmission of disease.
- . [Measuring the cost of quality measurement](#) [周五, 01 9月 03:12]
Less than 2 decades after publication of the National Academy of Medicine's (formerly the Institute of Medicine) Crossing the Quality Chasm: A New Health System for the 21st Century, quality measurement has become routine and widespread throughout the US health care system.
- . [Study reveals ways collegiate sports venues can achieve 'zero waste'](#) [周五, 01 9月 02:13]
A new study analyzing waste and recyclables during Mizzou's 2014 home football season demonstrates that by implementing several recommendations the team developed, such as offering better recycling receptacles and better sorting options for waste, sporting venues could

be well on their way to achieving environmental benefits that exceed the standards for 'zero-waste' operations.

- **[People become more economically conservative when angered](#)** [周四, 31 8月 23:30]

People tend to lean more economically conservative when they're angry, according to a new article. Researchers came to the conclusion after running multiple studies that included more than 1,000 participants.

- **[How reading and writing with your child boost more than just literacy](#)** [周四, 31 8月 22:21]

Children who read and write at home -- whether for assignments or just for fun -- are building long-term study and executive function skills, according to a new article

- **[Three policies to improve children's language development](#)** [周四, 31 8月 21:14]

Bilingual children from low-income homes are at greater risk of falling behind their peers in developing the appropriate language skills for their age group, leading to poorer academic achievement over time. A new article addresses how inequality impacts children's language development and details policies that can intervene.

- **[Jordan faces likelihood of much more frequent long and severe droughts](#)** [周四, 31 8月 08:21]

Jordan is among the world's most water-poor nations, and a new, comprehensive analysis of regional drought and land-use changes in upstream Syria suggests the conditions could get significantly worse.

- **[Federal preemption of taxes on state and local sugar-sweetened beverages is not warranted](#)** [周四, 31 8月 00:49]

Federal and state government can alter or hinder state and local activity through a legal mechanism called preemption -- when a higher level of government blocks the action of a lower level of government. A new study evaluates whether it could be used to block taxes on sugar-sweetened beverages.

- **[Hope for improving protection of the reticulated python](#)** [周三, 30 8月 23:48]

Trading in skins of the reticulated python is such a lucrative business that illegal exports are rising sharply and existing trade restrictions are being circumvented on a large scale. This is endangering the stability of populations. Therefore, researchers are developing genetic methods for tracking down individual origins and potential trade routes of the skins.

- **[Researchers raise health concerns about off-road vehicles and inhalation of asbestos](#)** [周三, 30 8月 23:47]

Preventing injuries may not be the only reason children shouldn't use off-road vehicles (ORVs). In a new study, public health scientists raise concerns that people who use ORVs in many regions of the country may face exposure to hazardous mineral fibers.

- **[Is changing languages effortful for bilingual speakers? Depends on the situation](#)** [周三, 30 8月 22:37]

Research on the neurobiology of bilingualism has suggested that switching languages is inherently effortful, requiring executive control to manage cognitive functions, but a new study shows this is only the case when speakers are prompted, or forced, to do so.

- **[Shifting school start times could contribute \\$83 billion to US economy within a decade](#)** [周三, 30 8月 22:36]

RAND Corporation and RAND Europe have released the first-ever analysis of the economic implications of a shift in school start times in the US. The study shows that a nationwide move to 8.30 a.m. could lead to an economic gain of \$83 billion to the US economy within a decade. The gains projected through the study's economic model would be realized through the higher academic and professional performance of students, and reduced car crash rates.

- **[Leaf sensors can tell farmers when crops need to be watered](#)** [周三, 30 8月 22:34]

Plant-based sensors that measure the thickness and electrical capacitance

of leaves show great promise for telling farmers when to activate their irrigation systems, preventing both water waste and parched plants, according to researchers.

- [**Methane emissions tackled with gas-guzzling bacteria**](#) [周三, 30 8月 21:45]

Methane-oxidizing bacteria -- key organisms responsible for greenhouse gas mitigation -- are more flexible and resilient than previously thought, an international research has shown.

- [**Conservation hindered by geographical mismatches between capacity, need**](#) [周三, 30 8月 21:45]

Geographical mismatches between conservation needs and expertise may hinder global conservation goals, new research suggests.

- [**Shared custody equals less stress for children**](#) [周三, 30 8月 21:42]

Children who live full time with one parent are more likely to feel stressed than children in shared custody situations. The benefit holds regardless of the level of conflict between the parents or between parent and child.

- [**Brain stimulation for children with learning difficulties?**](#) [周三, 30 8月 00:47]

Applying a brain stimulation method, which was previously suggested to enhance mathematical learning in healthy adults, may improve the performance of children with mathematical learning difficulties, according to an exploratory study.

- [**Exclusion from school can trigger long-term psychiatric illness**](#) [周三, 30 8月 00:45]

Excluding children from school may lead to long-term psychiatric problems and psychological distress, a study of thousands of children has shown.

- [**Where's the line? Managing extreme speech on social media**](#) [周三, 30 8月 00:45]

A new study shows that while people tend to dislike extreme speech on social media, there is less support for outright censorship. Instead, people believe sites need to do a better job promoting healthy discourse online.

- [**Photosynthesis discovery could help design more efficient artificial solar cells**](#) [周三, 30 8月 00:44]

A natural process that occurs during photosynthesis could lead to the design of more efficient artificial solar cells, according to researchers.

- [**Scientists power past solar efficiency records**](#) [周二, 29 8月 23:39]

The high potential of silicon-based multijunction solar cells has now been demonstrated through new research.

- [**Lively tunes boost sales in crowded stores**](#) [周二, 29 8月 23:38]

If a store is crowded, people tend to buy more if the sound system is playing a fast-paced song rather than a ballad. That's what a team of researchers found in a field experiment across a chain of grocery convenience stores in Northern Europe.

- [**Mental health linked to retirement savings**](#) [周二, 29 8月 23:38]

The question of how mental health status affects decisions regarding retirement savings is becoming a pressing issue in the United States. Key factors contributing to this issue include the tenuous state of the Social Security system, greater use of defined-contribution pension plans by employers, longer lifespans, and the rise of depression and other mental health issues in older Americans.

- [**Origins of autism: Abnormalities in sensory processing at six months**](#) [周二, 29 8月 23:38]

The origins of autism remain mysterious. What areas of the brain are involved, and when do the first signs appear? New findings brings us closer to understanding the pathology of autism, and the point at which it begins to take shape in the human brain. Such knowledge will allow earlier interventions in the future and better outcomes for autistic children.

- [**Analysis identifies where commercial customers might benefit from energy storage**](#) [周二, 29 8月 23:38]

Commercial electricity customers who are subject to high demand charges may be able to reduce overall costs by using battery energy storage to manage demand, according to research.

- [**Inattentive kids show worse grades in later life**](#) [周二, 29 8月 21:50]

Researchers found that inattentiveness in childhood was linked to worse academic performance up to 10 years later in children with and without ADHD, even when they accounted for the children's intellectual ability. The results highlight the long-term effects that childhood inattention can have on academic performance, and suggest that parents and teachers should address inattentiveness in childhood.

- [**Doping in sports: Official tests fail to pick up majority of cases**](#) [周二, 29 8月 21:09]

A new scientific study has found that doping is far more common in professional sport than the rates suggested by blood and urine tests of the athletes.

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [**Bacteria act as aphrodisiac for the closest relatives of animals**](#) [周六, 02 9月 01:55]

Choanoflagellates are a ubiquitous but enigmatic one-celled ocean organism that may give clues to the origin of multicellularity in animals. New research has turned up a surprising kink in the organism's sex life: swarming and mating are triggered by a marine bacterium common in their environment. Researchers traced this response to a protein secreted by the bacteria. The choanos seem to be eavesdropping on bacteria to determine their life history.

- [**Mouth clicks used in human echolocation captured in unprecedented detail**](#) [周五, 01 9月 02:13]

Like some bats and marine mammals, people can develop expert echolocation skills, in which they produce a clicking sound with their mouths and listen to the reflected sound waves to 'see' their surroundings. A new study provides the first in-depth analysis of the mouth clicks used in human echolocation.

- [**First hints of possible water content on TRAPPIST-1 planets**](#) [周四, 31 8月 23:30]

Astronomers have been trying to determine whether there might be water on the seven Earth-sized planets orbiting the nearby dwarf star TRAPPIST-1. The results suggest that the outer planets of the system might still harbor substantial amounts of water. This includes the three planets within the habitable zone of the star, lending further weight to the possibility that they may indeed be habitable.

• [**How Neanderthals made the very first glue**](#) [周四, 31 8月 21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

• [**How certain ants snap their jaws shut in the blink of an eye**](#) [周四, 31 8月 08:21]

Few victims stand a chance against the formidable mandibles of a trap-jaw ant. In conflicts between predators and prey, speed is a decided advantage, and evolution has given these insects an edge with spring-loaded jaws that snap shut with astonishing speed. Biologists have now provided the first mechanical description of the jaws of a little-known group of trap-jaw ants.

• [**Gold nanoparticles fry cancer on glowing mice**](#) [周四, 31 8月 08:21]

A new study takes a new approach to killing cancer: Why not fry it into oblivion with vibrating gold nanoparticles?

• [**Acting like a muscle, nano-sized device lifts 165 times its own weight**](#) [周四, 31 8月 01:22]

Engineers have discovered a simple, economical way to make a nano-sized device that can match the friendly neighborhood Avenger, on a much smaller scale. Their creation weighs 1.6 milligrams (about as much as five poppy seeds) and can lift 265 milligrams (the weight of about 825 poppy seeds) hundreds of times in a row.

• [**Otters learn by copying each other**](#) [周四, 31 8月 01:11]

Otters can learn how to solve puzzles by watching and copying each other, new research shows.

• [**What lit up the universe? Black holes may have punctured darkened galaxies, allowing light to escape**](#) [周三, 30 8月 23:48]

Researchers have a new explanation for how the universe changed from darkness to light. They propose that black holes within galaxies produce

winds strong enough to fling out matter that punctures holes in galaxies, allowing light to escape.

- [**Understanding ancient geometric earthworks in southwestern Amazonia**](#) [周三, 30 8月 22:34]

Researchers examine pre-colonial geometric earthworks in the southwestern Amazonia from the point of view of indigenous peoples and archaeology. The study shows that the earthworks were once important ritual communication spaces.

- [**Do squirrels teach bears to cross the railroad?**](#)

- [**Grizzlies dig squirrel middens for grains**](#) [周三, 30 8月 22:34]

Grains have been reported to regularly trickle from hopper cars travelling via the railway through Canada's Banff and Yoho National Parks. As a result, the local red squirrels collect and bury the spilled seeds in their winter larders, which are sometimes discovered by hungry grizzly bears. Grain-conditioned bears may frequent the railway more often than usual, resulting in increased mortality by trains strikes.

- [**New robot rolls with the rules of pedestrian conduct**](#) [周三, 30 8月 22:34]

Engineers have designed an autonomous robot with 'socially aware navigation,' that can keep pace with foot traffic while observing these general codes of pedestrian conduct.

- [**Robot probes mystery of prehistoric sea creature's swimming style**](#) [周三, 30 8月 22:26]

A new study has shed light on the swimming style of plesiosaurs by creating a robot to mimic its movements.

- [**Fossil whales' teeth shows what ferocious predators they were**](#) [周三, 30 8月 21:45]

The feeding habits of the whale -- the world's biggest animal -- have evolved to filter feeding, shows new international research. Ancient whales appear to have been ferocious predators, investigators explain.

• [Say hello to the 3-D Obama ant](#) [周三, 30 8月 21:42]

Three new ant species named in honor of key figures in conservation -- Barack Obama, Ken Saro-Wiwa, and E.O. Wilson -- are immortalized as 3-D virtual avatars.

• [Why does rubbing a balloon on your hair make it stick?](#) [周三, 30 8月 01:53]

New research indicates that tiny holes and cracks in a material -- changes in the microstructure -- can control how the material becomes electrically charged through friction.

• [New species of crab with unusual outgrowths has its name written in the stars](#) [周二, 29 8月 23:38]

A new 'star crab' has been collected from red coral beds in Taiwan and reefs in the Philippines. This astonishing creature is distinct with its carapace and chelipeds covered in pointy protrusions, which become rounder and mushroom-shaped with age to resemble star-like outgrowths and granules.

• [High-tech electronics made from autumn leaves](#) [周二, 29 8月 23:38]

Northern China's roadsides are peppered with deciduous phoenix trees, producing an abundance of fallen leaves in autumn. These leaves are generally burned in the colder season, exacerbating the country's air pollution problem. Investigators in Shandong, China, recently discovered a new method to convert this organic waste matter into a porous carbon material that can be used to produce high-tech electronics.

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周三, 06 9月 2017

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[周三, 06 9月 2017]

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- [**Humans still evolving, large-scale study of genetic data shows**](#) [周三, 06 9月 02:55]

In a study analyzing the genomes of 210,000 people in the United States and Britain, researchers have found that the genetic variants linked to Alzheimer's disease and heavy smoking are less frequent in people with longer lifespans, suggesting that natural selection is weeding out these unfavorable variants in both populations.

- [**Mobile phone use while pregnant not linked to child neurodevelopment problems, study suggests**](#) [周三, 06 9月 02:55]

Mobile phone use during pregnancy is unlikely to have any adverse effects on child neurodevelopment, according to new research. These findings provide further evidence that exposure to radio frequency electromagnetic fields associated with maternal use of mobile phones during pregnancy is not linked to neurodevelopment in children.

- [**Research shows how DNA molecules cross nanopores**](#) [周三, 06 9月 02:55]

Research sheds new light on the understanding of the measurement of polymer properties in diverse chemical industries such as plastics manufacturing and food processing, and the design of biosensors.

• [**Swings in dad's testosterone affects the family -- for better or worse -- after baby arrives**](#) [周三, 06 9月 02:55]

Testosterone levels are a key factor in a family's health and happiness after a newborn arrives. Researchers have found that a drop can signal postpartum depression in dad, and a spike may be a sign of aggression.

• [**Aeroices: Newly discovered ultralow-density ice**](#) [周三, 06 9月 02:55]

Relatively little is known about the effects of extreme negative pressure on water molecules. Exploring a significant region of negative pressure through molecular dynamic simulations, researchers have now theoretically discovered a new family of ice phases. Called aeroices, these ices have the lowest density of all known ice crystals.

• [**New, ultra-rare gene mutations implicated in eating disorders**](#) [周三, 06 9月 01:45]

A combination of whole exome sequencing, machine learning, and network analysis, has identified new, ultra-rare gene mutations within specific biological pathways that may contribute to eating disorders, according to a study.

• [**Eating meat linked to higher risk of diabetes**](#) [周三, 06 9月 01:45]

Higher intake of red meat and poultry is associated with significantly increased risk of developing diabetes, which is partially attributed to their higher content of heme iron in these meats, new research shows.

• [**Could switchgrass help China's air quality?**](#) [周三, 06 9月 01:45]

Researchers have proposed an idea that could improve China's air quality, but they're not atmospheric scientists. They're agronomists.

• [**Test of cervical mucus may reveal pregnant women's risk of going into labor too early**](#) [周三, 06 9月 01:45]

A new approach to evaluating the risk of preterm birth has been proposed by analyzing the properties of cervical mucus. The researchers found that cervical mucus from women who delivered their babies early, before 37 weeks, was very different from that of women who delivered

later.

- [**More durable, less expensive fuel cells**](#) [周三, 06 9月 01:44]

A new technology has been created that could make fuel cells cheaper and more durable. Hydrogen-powered fuel cells are a green alternative to internal combustion engines because they produce power through electrochemical reactions, leaving no pollution behind. Platinum is the most common catalyst in the type of fuel cells used in vehicles, but it's expensive. The UD team used a novel method to come up with a less expensive catalyst.

- [**Boosting a lipid fuel makes mice less sensitive to the cold**](#) [周三, 06 9月 00:57]

Humans, like other animals, become more sensitive to cold with age. Now, scientists report that delivering a single dose of a nutritional supplement called L-carnitine to older mice restores a youthful ability to adapt to the cold. After treatment, they tolerate chilly conditions that would ordinarily trigger hypothermia. The supplement works by boosting levels of a newly discovered fuel source for brown fat, or “good fat”.

- [**Contagious yawning more closely associated with perceptual sensitivity than empathy**](#) [周三, 06 9月 00:33]

Contrary to common belief that the yawning contagion is associated with empathy, it is in fact, more likely that perceptual sensitivity is to blame, research suggests.

- [**Building a morphogen gradient by simple diffusion in a growing plant leaf**](#) [周三, 06 9月 00:33]

The research team has shown that a transcriptional co-activator ANGUSTIFOLIA3 (AN3) forms a signaling gradient along the leaf proximal-to-distal axis to determine cell-proliferation domain.

- [**Human-made reefs: A compelling diving alternative**](#) [周三, 06 9月 00:33]

Researchers have examined diving habits and behavior around Eilat's

natural and artificial reefs. According to study, the average diver density at the artificial reef was higher than at the two nearby natural knolls, and the Tamar reef effectively diverts divers from natural knolls. Secondly, the study found that regarding attitudes toward natural versus artificial reefs, divers consider the artificial reefs more appropriate for training, but they feel less relaxed around them.

• [Discovery of boron on Mars adds to evidence for habitability](#) [周三, 06 9月 00:32]

The discovery of boron on Mars gives scientists more clues about whether life could have ever existed on the planet, according to a new paper.

• ['Extreme' telescopes find the second-fastest-spinning pulsar](#) [周三, 06 9月 00:32]

By following up on mysterious high-energy sources mapped by NASA's Fermi Gamma-ray Space Telescope, a Netherlands-based radio telescope has discovered a new pulsar, the second fastest-spinning known.

• [Genome of threatened northern spotted owl assembled](#) [周二, 05 9月 23:14]

A charismatic owl iconic to Pacific Coast forests is no longer ruling the roost, and scientists now have another tool for understanding its decline. Researchers have assembled the California Academy of Sciences' first-ever animal genome after sequencing the DNA of the northern spotted owl (*Strix occidentalis caurina*). Academy scientists and collaborators extensively mapped the bird's genetic material to better understand how this threatened forest dweller is interacting with non-native owls invad...

• [Cannot sleep due to stress? Here is the cure](#) [周二, 05 9月 23:13]

Everyone empirically knows that stressful events certainly affect sound sleep. Scientists have found that the active component rich in sugarcane and other natural products may ameliorate stress and help having sound sleep.

- [**The sniff test of self-recognition confirmed: Dogs have self-awareness**](#) [周二, 05 9月 23:13]

A new research study used a sniff-test to evaluate the ability of dogs to recognize themselves. The experiment confirms the hypothesis of dogs' self-cognition proposed last year.

- [**When not to eat your kids**](#) [周二, 05 9月 23:07]

Even though it is known to be a cannibal, the mangrove rivulus or killifish of the Americas will never eat one of its own embryos, even if it is hungry. This slender amphibious fish can recognize its own kin, even if these are still in the embryonic stage, according to new research.

- [**Prenatal lack of omega-3 and omega-6 fatty acids linked to schizophrenic symptoms in mice**](#) [周二, 05 9月 22:44]

Researchers have discovered a process through which changes in nutrition during early mouse pregnancy lead to offspring that develop schizophrenic-like symptoms as adults. The study shows how deprivation of two polyunsaturated fatty acids during early gestation can have long lasting effects on offspring through specific epigenetic changes in gene expression.

- [**'Bee' informed: Public interest exceeds understanding in bee conservation**](#) [周二, 05 9月 22:44]

Many people have heard bee populations are declining due to such threats as colony collapse disorder, pesticides and habitat loss. And many understand bees are critical to plant pollination. Yet, according to a study, few are aware of the wide diversity of bees and other pollinators beyond such species as honeybees. Because conservation efforts require substantial public support, outreach is needed to help people understand bee declines and how to protect pollinators.

- [**Gene related to brain damage in pre-term infants identified**](#) [周二, 05 9月 22:44]

A gene has been identified by researchers that is thought to be associated with the types of brain damage that can be caused by pre-

term birth.

- [**Life in the fast lane: How plants avoid traffic**](#)

- [**jams**](#) [周二, 05 9月 22:43]

Scientists have discovered how plants ingeniously avoid internal traffic jams.

- [**Discovery of dynamic seasonal changes in color perception**](#) [周二, 05 9月 21:38]

In many areas, the environment fluctuates greatly depending on the season, and animals living in those areas must adapt to the changing environment. A research group has found that color perception of Medaka, a small fish inhabiting rice fields and streams, varies greatly according to seasonal changes.

- [**Hop, skip, run, leap: Unpredictability boosts survival for bipedal desert rodents**](#) [周二, 05 9月 21:36]

Sometimes it pays to be unpredictable. A new study shows that when bipedal desert rodents called jerboas are being chased, sudden changes in direction, gait and speed help them elude hungry predators and likely give them a competitive edge over their quadrupedal neighbors.

- [**Zika virus kills brain cancer stem cells**](#) [周二, 05 9月 21:36]

While Zika virus causes devastating damage to the brains of developing fetuses, it one day may be an effective treatment for glioblastoma, a deadly form of brain cancer. New research shows that the virus kills brain cancer stem cells, the kind of cancer cells most resistant to standard treatments.

- [**Link found between cognitive fatigue and effort and reward**](#) [周二, 05 9月 21:36]

Injury and disease of the brain increase the likelihood of cognitive fatigue, which can be disabling. Researchers are studying the mechanisms of cognitive fatigue, toward the goal of developing effective interventions.

- [**Was the primordial soup a hearty pre-protein**](#)

[**stew?**](#) [周二, 05 9月 21:36]

How proteins evolved billions of years ago, when Earth was devoid of life, has stumped many a scientist. A little do-si-do between amino acids and their chemical lookalikes may have done the trick. Evolutionary chemists tried it and got results by the boatload.

• [**PSA screening significantly reduces the risk for death from prostate cancer**](#) [周二, 05 9月 06:17]

After differences in implementation and settings were accounted for, two important prostate cancer screening trials provide compatible evidence that screening reduces prostate cancer mortality.

• [**Scientists discover brain area which can be targeted for treatment in patients with schizophrenia who 'hear voices'**](#) [周二, 05 9月 06:17]

For the first time, scientists have precisely identified and targeted an area of the brain which is involved in 'hearing voices,' experienced by many patients with schizophrenia. They have been able to show in a controlled trial that targeting this area with magnetic pulses can improve the condition in some patients.

• [**Diverse landscapes are more productive and adapt better to climate change**](#) [周二, 05 9月 04:56]

Ecosystems with high biodiversity are more productive and stable towards annual fluctuations in environmental conditions than those with a low diversity of species. They also adapt better to climate-driven environmental changes. These are the key findings environmental scientists made in a study of about 450 landscapes harboring 2,200 plants and animal species.

• [**Epileptic brain activity in widely used lab mice**](#) [周二, 05 9月 01:19]

Multiple laboratories have observed unusual neural activity resembling epilepsy in some lines of genetically modified mice widely used in neuroscience research. The authors caution that this activity is easy to miss and presents potential challenges for using these animals to study

the healthy brain.

- [**Schizophrenia, memory deficits: Solving the mystery behind a most stubborn symptom**](#) [周二, 05 9月 00:04]

Disruptions to the brain's internal GPS result in some of the severe memory deficits seen in schizophrenia. The new study in mouse models of the disorder marks the first time that schizophrenia's effects have been observed with such precision and clarity. The findings offer a promising entry point for attacking a near-universal and debilitating symptom of schizophrenia, memory deficits, which has thus far withstood all forms of treatment.

- [**Face value: Brain's ability to recognize faces is shaped through repeated exposure, study suggests**](#) [周二, 05 9月 00:04]

Scientists have long deemed the ability to recognize faces innate for people and other primates -- something our brains just know how to do immediately from birth. However, the findings of a new study cast doubt on this longstanding view.

- [**Mysterious protein-folding molecule could trigger metabolic disorders**](#) [周二, 05 9月 00:04]

A molecule with few known functions can trigger the cell's response to unfolded proteins and perpetuate metabolic disease, report researchers.

- [**Superfly flight simulator helps unravel navigation in the brain**](#) [周二, 05 9月 00:04]

Researchers have identified two independent pathways in the fly brain that are integrated to allow successful navigation during flight. The study combined a flight simulator designed for flies with imaging of active neurons to show that landmark locations are processed separately in the fly brain from self-motion.

- [**New fluorescent dyes could advance biological imaging**](#) [周二, 05 9月 00:04]

Scientists have developed a new method for fine-tuning the structure of rhodamine dyes, and can now create a colorful palette of fluorescent molecules.

- [**Diabetes and heart disease linked by genes, reveals study**](#) [周二, 05 9月 00:04]

In a large analysis of genetic data, a team has first looked into what causes type 2 diabetes (T2D) and second clarified how T2D and coronary heart disease (CHD) -- the two diseases that are the leading cause of global morbidity and mortality, are linked.

- [**More 'losers' than 'winners' predicted for Southern Ocean seafloor animals**](#) [周二, 05 9月 00:04]

A new study of the marine invertebrates living in the seas around Antarctica reveals there will be more 'losers' than 'winners' over the next century as the Antarctic seafloor warms.

- [**Team gathers unprecedented data on atmosphere's organic chemistry**](#) [周二, 05 9月 00:04]

Teams of scientists have carried out the most detailed, extended observations of atmospheric chemistry ever attempted in one place, in patch of ponderosa pine forest in Colorado, and found previously unmeasured compounds.

- [**Study in early stage breast cancer shows that even small tumors can be aggressive**](#) [周一, 04 9月 21:38]

Even small tumors can be aggressive, according to a study in patients with early stage breast cancer. Researchers found that nearly one in four small tumors were aggressive and patients benefited from chemotherapy. Aggressive tumors could be identified by a 70-gene signature.

- [**Financial stress is associated with migraine, if you have specific circadian gene variants**](#) [周一, 04 9月 21:38]

People with a specific variation in the CLOCK gene have more migraines under financial stress. This work shows the effect of the

genetics of circadian rhythms on migraine.

- **[Rethinking serotonin could lead to a shift in psychiatric care](#)** [周一, 04 9月 21:37]

A better understanding of how a key chemical messenger acts in the brain could lead to a radical shift in psychiatric care, according to a new research paper.

- **[Equation reveals the characteristics of quantum chaos](#)** [周一, 04 9月 21:37]

Researchers have now succeeded in formulating a mathematical result that provides an exact answer to the question of how chaos actually behaves. The researchers have analyzed chaotic states at the atomic level.

- **[Exercising during pregnancy is good for mother, baby, research confirms](#)** [周一, 04 9月 21:36]

Researchers have clarified doubts over the physical activity recommended during pregnancy. Their work highlights how exercise should be taken not only by healthy, previously active women, but that it is also a good time to adopt a healthy lifestyle. There are clear advantages for both the mother and baby.

- **[The point of release is the key: Identification of a key molecule for the neurotransmitter release in synapses](#)** [周一, 04 9月 21:36]

The contact areas between nerve cells are called synapses. What happens there lies at the heart of communication between nerve cells. Communication starts with the release of chemical messengers known as neurotransmitters at these synapses. Neurotransmitter-containing synaptic vesicles are involved in this release process, and these vesicles fuse with the cell membrane. This fusion occurs at a specific location within the synapse rather than just anywhere at random. Scientists have succeeded in i...

- **[Like a revolving door: How shuttling proteins](#)**

[operate nuclear pores](#) [周一, 04 9月 21:36]

Nuclear pore complexes are tiny channels where the exchange of substances between the cell nucleus and the cytoplasm takes place. Scientists report on startling new research that might overturn established models of nuclear transport regulation. Their study reveals how shuttling proteins known as importins control the function of nuclear pores – as opposed to the view that nuclear pores control the shuttling of importins.

• [Indigenous storytelling is a new asset for biocultural conservation](#) [周一, 04 9月 21:36]

Some of the areas hosting most of the world's biodiversity are those inhabited by indigenous peoples. In the same way that biodiversity is being eroded, so is the world's cultural diversity. As a result, there have been several calls to promote biocultural conservation approaches that sustain both biodiversity and indigenous cultures.

• [Stellar corpse sheds light on origin of cosmic rays](#) [周一, 04 9月 21:34]

New research revealed that the entire zoo of electromagnetic radiation streaming from the Crab nebula -- one of the most iconic objects in the sky -- has its origin in one population of electrons and must be produced in a different way than scientists have traditionally thought. The results have implications for our understanding of how cosmic rays attain their incredible energies.

Humans still evolving, large-scale study of genetic data shows: Researchers find a drop in some harmful genetic mutations in longer-lived people -- ScienceDaily

In a study analyzing the genomes of 210,000 people in the United States and Britain, researchers at Columbia University find that the genetic variants linked to Alzheimer's disease and heavy smoking are less frequent in people with longer lifespans, suggesting that natural selection is weeding out these unfavorable variants in both populations.

Researchers further find that sets of genetic mutations that predispose people to heart disease, high cholesterol, obesity, and asthma, also appear less often in people who lived longer and whose genes are therefore more likely to be passed down and spread through the population. The results are published in the Sept. 5 issue of *PLOS Biology*.

"It's a subtle signal, but we find genetic evidence that

natural selection is happening in modern human populations," said study coauthor Joseph Pickrell, an evolutionary geneticist at Columbia and New York Genome Center.

New favorable traits evolve when genetic mutations arise that offer a survival edge. As the survivors of each generation pass on those beneficial mutations, the mutations and their adaptive traits become more common in the general population. Though it may take millions of years for complex traits to evolve, say allowing humans to walk on two legs, evolution itself happens with each generation as adaptive mutations become more frequent in the population.

The genomic revolution has allowed biologists to see the natural selection process in action by making the genetic blueprint of hundreds of thousands of people available for comparison. By tracking the relative rise and fall of specific mutations across generations of people, researchers can infer which traits are spreading or dwindling.

The researchers analyzed the genomes of 60,000 people of European ancestry genotyped by Kaiser Permanente in California, and 150,000 people in

Britain genotyped through the U.K. Biobank. To compensate for the relative lack of old people in the Biobank, the researchers used the participants' parents' age at death as a proxy as they looked for the influence of specific mutations on survival.

Two population-level mutation shifts stood out. In women over 70, researchers saw a drop in the frequency of the ApoE4 gene linked to Alzheimer's, consistent with earlier research showing that women with one or two copies of the gene tend to die well before those without it. Researchers saw a similar drop, starting in middle age, in the frequency of a mutation in the CHRNA3 gene associated with heavy smoking in men.

The researchers were surprised to find just two common mutations across the entire human genome that heavily influence survival. The high power of their analysis should have detected other variants had they existed, they said. This suggests that selection has purged similar variants from the population, even those that act later in life like the ApoE4 and CHRNA3 genes.

"It may be that men who don't carry these harmful

mutations can have more children, or that men and women who live longer can help with their grandchildren, improving their chance of survival," said study coauthor Molly Przeworski, an evolutionary biologist at Columbia.

Most traits are determined by dozens to hundreds of mutations, and even in a large sample like this one, their effect on survival can be hard to see, researchers said. To get around this, they examined sets of mutations associated with 42 common traits, from height to BMI, or body mass index, and for each individual in the study, determined what value of the trait they would predict based on their genetics, and whether it influenced survival.

They found that a predisposition for high cholesterol and LDL "bad" cholesterol, high body mass index or BMI, and heart disease was linked to shorter life spans. To a lesser extent, a predisposition for asthma was also linked to earlier death.

They also found that those genetically predisposed to delayed puberty and child-bearing lived longer -- a one-year puberty delay lowered the death rate by 3 to 4 percent in both men and women; a one-year

childbearing delay lowered the death rate by 6 percent in women.

Researchers take the results as evidence that genetic variants that influence fertility are evolving in some U.S. and Britain populations. But they caution that environment plays a role, too, so that traits that are desirable now may not be in other populations or in the future.

"The environment is constantly changing," said the study's lead author, Hakhamenesh Mostafavi, a graduate student at Columbia. "A trait associated with a longer lifespan in one population today may no longer be helpful several generations from now or even in other modern day populations."

The study may be the first to take a direct look at how the human genome is evolving in a period as short as one or two generations. As more people agree to have their genomes sequenced and studied, researchers hope that information about how long they lived, and the number of kids and grandkids they had, can reveal further clues about how the human species is currently evolving.

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Mobile phone use while pregnant not linked to child neurodevelopment problems, study suggests -- ScienceDaily

Mobile phone use during pregnancy is unlikely to have any adverse effects on child neurodevelopment, according to new research published in the open access journal *BMC Public Health*. These findings provide further evidence that exposure to radio frequency electromagnetic fields associated with maternal use of mobile phones during pregnancy is not linked to neurodevelopment in children.

Dr Eleni Papadopoulou, lead author from the Norwegian Institute of Public Health, said: "The concern for harm to the fetus caused by radio frequency electromagnetic fields, such as those emitted by mobile phones, is mainly driven by reports from experimental animal studies with inconsistent results. Even though this is an observational study, our findings do not support the hypothesis of adverse effects on child's language, communication and motor

skills due to the use of mobile phone during pregnancy."

The researchers analysed data from a large Norwegian population-based pregnancy cohort study called MoBa, which involves a range of data collected from mothers and children during and after pregnancy. Data used in this study included 45,389 mother-child pairs for whom self-reported questionnaire data was available on maternal mobile phone use and neurodevelopment follow ups of the children at ages 3 and 5.

Professor Jan Alexander, senior author from the Norwegian Institute of Public Health, said: "Our investigation revealed for the first time that maternal mobile phone use may actually have a positive impact. More specifically, mobile phone use in pregnancy was associated with lower risk of the child having low language and motor skills at 3 years of age. Although we adjusted for important socio-demographic characteristics as well as maternal personality and psychological factors, we think this protective effect is more likely to be explained by factors not measured in this study having an impact on the mobile phone use and child's neurodevelopment, rather than the maternal mobile phone use in itself."

The researchers found that children born to mobile phone users had a 27% lower risk of having lower sentence complexity, 14% lower risk of incomplete grammar and 31% lower risk of having moderate language delay at age 3, compared to children of mothers who reported no mobile phone use. They also found that children born to mobile phone users had an 18% lower risk of low motor skills at age 3, compared to children born to non-users of mobile phones. The beneficial effects remained even after adjusting for relevant confounders and were also relative to the level of reported mobile phone use by the mother.

Professor Alexander said: "Our large study provides evidence that pregnant women's use of cell phone is not associated with risk of harming neurodevelopment of the fetus. The beneficial effects we report should be interpreted with caution due to the limitations common in observational studies, but our findings should at least alleviate any concern mothers have about using their mobile phone while pregnant."

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Research shows how DNA molecules cross nanopores: Study could inform biosensors, manufacturing, and more -- ScienceDaily

Research presented in a new paper co-authored by Northwestern University associate professor of mechanical engineering Sandip Ghosal sheds new light on how polymers cross tiny pores ten thousand times smaller than a human hair.

These findings could propel a deeper understanding of the biophysics of living cells, the measurement of polymer properties in diverse chemical industries such as plastics manufacturing and food processing, and the design of biosensors.

In the paper published Aug. 30 in *Nature Communications*, Ghosal and his co-authors present data showing how the speed of DNA changes as it enters or exits a nanopore. Surprisingly, the experiment showed that DNA molecules move faster as they enter a nanopore (forward translocation) and slower when

they exit (backward translocation).

What's happening with the DNA, Ghosal explains, is something familiar to mechanical engineers: a concept called "buckling," studied by great scientific minds like Leonhard Euler and Daniel Bernoulli more than two centuries ago, but rarely studied at the molecular level.

Ghosal and his collaborators concluded that DNA molecules buckle under the influence of compressive forces when entering the nanopore, but are pulled straight by tensile forces when moving in the opposite direction. The resulting difference in the geometric configuration results in greater hydrodynamic drag on the molecule in the latter case.

The study was motivated by a desire to understand, in detail, the mechanics of a DNA molecule's passage through a nanopore, a subject of rich scientific curiosity and conjecture.

"We wanted to know what is happening to the DNA and why," says Ghosal, who also holds a courtesy appointment in the Department of Engineering Sciences and Applied Mathematics.

Rather than simply determining the DNA's average speed of translocation, Ghosal's U.K.-based collaborators -- Ulrich F. Keyser, Maria Ricci, Kaikai Chen from the University of Cambridge, and Nicholas A.W. Bell, now of the University of Oxford -designed an innovative experiment to reveal the actual variation of the DNA's speed by inserting markers along the DNA molecule. This "DNA ruler" allowed the researchers to measure the speed of translocation at each instant. To then collect large amounts of data within a relatively short time period, the researchers repeatedly flipped the voltage across the pore, sending the DNA in and out of the nanopore in a "ping-pong" mode.

The group's work builds on the "resistive pulse" technique introduced nearly 20 years ago for detecting and characterizing single molecules. That idea has since been applied to a variety of research, including the search for an ultra-fast method of DNA sequencing and the effort to rapidly measure the mechanical properties of cells.

Ghosal describes his team's work as a potential "first step in extending the resistive pulse method to determining the mechanical characteristics of

polymers."

Though Ghosal admits the work itself is purely curiosity-driven research designed to probe what more can be done with the resistive pulse technique, the findings could nevertheless have real-world applications in any area where the measurement of polymer properties is important.

"Each polymer has a characteristic load at which it will buckle and, therefore, the difference between the forward and backward translocation times provide a way of gauging the bending rigidity of polymers," Ghosal said. "It is incredibly exciting that we can now observe this," Ghosal says.

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Swings in dad's testosterone affects the family -- for better or worse -- after baby arrives -- ScienceDaily

Postpartum depression is often associated with mothers, but a new study shows that fathers face a higher risk of experiencing it themselves if their testosterone levels drop nine months after their children are born.

The same study revealed that a father's low testosterone may also affect his partner -- but in an unexpectedly positive way. Women whose partners had lower levels of testosterone postpartum reported fewer symptoms of depression themselves nine and 15 months after birth.

High testosterone levels had the opposite effect. Fathers whose levels spiked faced a greater risk of experiencing stress due to parenting and a greater risk of acting hostile- such as showing emotional, verbal or physical aggression -- toward their partners.

The study was published in the journal *Hormones and*

Behavior on Sept. 1. The findings support prior studies that show men have biological responses to fatherhood, said Darby Saxbe, the study's lead author and an assistant professor of psychology at USC Dornsife College of Letters, Arts and Sciences.

"We often think of motherhood as biologically driven because many mothers have biological connections to their babies through breastfeeding and pregnancy." Saxbe said. "We don't usually think of fatherhood in the same biological terms. We are still figuring out the biology of what makes dads tick.

"We know that fathers contribute a lot to child-rearing and that on the whole, kids do better if they are raised in households with a father present," she added. "So, it is important to figure out how to support fathers and what factors explain why some fathers are very involved in raising their children while some are absent."

Saxbe worked with a team of researchers from USC, University of California at Los Angeles and Northwestern University.

A snapshot of paternal postpartum depression

For the study, the researchers examined data from 149 couples in the Community Child Health Research Network. The study by the National Institute for Child Health and Human Development involves sites across the country, but the data for this study came from Lake County, Illinois, north of Chicago.

Mothers in the study were 18 to 40 years old; African-American, white or Latina; and low-income. They were recruited when they gave birth to their first, second or third child. Mothers could invite the baby's father to participate in the study as well. Of the fathers who participated and provided testosterone data, 95 percent were living with the mothers.

Interviewers visited couples three times in the first two years after birth: around two months after the child was born, about nine months after birth and about 15 months after birth.

At the nine-month visit, researchers gave the fathers saliva sample kits. Dads took samples three times a day -- morning, midday and evening -- to monitor their testosterone levels.

Participants responded to questions about depressive

symptoms based on a widely-used measure, the Edinburgh Postnatal Depression. They also reported on their relationship satisfaction, parenting stress and whether they were experiencing any intimate partner aggression. Higher scores on those measures signaled greater depression, more stress, more dissatisfaction and greater aggression.

Relatively few participants -- fathers and mothers -- were identified as clinically depressed, which is typical of a community sample that reflects the general population. Instead of using clinical diagnoses, the researchers looked at the number of depressive symptoms endorsed by each participant.

Men's testosterone levels were linked with both their own and their partners' depressive symptoms -- but in opposing directions for men and for women.

For example, lower testosterone was associated with more symptoms in dads, but fewer symptoms in moms. The link between their partners' testosterone levels and their own depression was mediated by relationship satisfaction. If they were paired with lower-testosterone partners, women reported greater satisfaction with their relationship, which in turn helped reduce their

depressive symptoms.

"It may be that the fathers with lower testosterone were spending more time caring for the baby or that they had hormone profiles that were more synced up with mothers," she said. "For mothers, we know that social support buffers the risk of postpartum depression."

Fathers with higher testosterone levels reported more parenting stress, and their partners reported more relationship aggression .

To measure parenting stress, parents were asked how strongly they related to a set of 36 items from the Parenting Stress Index-Short Form. They responded to statements such as "I feel trapped by my responsibilities as a parent" and "My child makes more demands on me than most children." A high number of "yes" responses signaled stress.

Relationship satisfaction questions were based on another widely-used tool, the Dyadic Adjustment Scale. Parents responded to 32 items inquiring about their relationship satisfaction, including areas of disagreement or their degree of closeness and affection. Higher scores signaled greater dissatisfaction.

Mothers also answered questions from another scientific questionnaire, the HITS (Hurts, Insults, and Threats Scale), reporting whether they had experienced any physical hurt, insult, threats and screaming over the past year. They also were asked if their partners restricted activities such as spending money, visiting family or friends or going places that they needed to go.

"Those are risk factors that can contribute to depression over the long term," Saxbe said.

Treating fathers with postpartum depression

Although doctors may try to address postpartum depression in fathers by providing testosterone supplements, Saxbe said that the study's findings indicate a boost could worsen the family's stress.

"One take-away from this study is that supplementing is not a good idea for treating fathers with postpartum depression," she said. "Low testosterone during the postpartum period may be a normal and natural adaptation to parenthood."

She said studies have shown that physical fitness and

adequate sleep can improve both mood and help balance hormone levels.

In addition, both mothers and fathers should be aware of the signs of postpartum depression and be willing to seek support and care, Saxbe said. Talk therapy can help dads -- or moms -- gain insight into their emotions and find better strategies for managing their moods.

"We tend to think of postpartum depression as a mom thing," Saxbe said. "It's not. It's a real condition that might be linked to hormones and biology."

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Aeroices: Newly discovered ultralow-density ice: Researchers from Japan have discovered a new form of ice crystal from theoretical modeling of its formation under negative pressure -- ScienceDaily

Water has many ice phases that form under different pressure and temperature conditions. The effects of positive pressure have been explored extensively, with the results somewhat predictable: As the pressure increases, so does the density of the ice.

Much less is known, however, about the effects of extreme negative pressure on water molecules. Exploring a significant region of negative pressure through molecular dynamic simulations, researchers have now theoretically discovered a new family of ice phases. Called aeroices, these ices have the lowest density of all known ice crystals. The researchers, from Okayama University in Japan, report their findings this week in *The Journal of Chemical Physics*, from AIP

Publishing.

"Our research, which surveys an entire negative-pressure region for the first time, provides a significant stepping stone in exploring this vast and intricate territory on the phase diagram," said Masakazu Matsumoto, associate professor at the Research Institute for Interdisciplinary Science at Okayama University and a co-author of the paper. "Ices with lower density than normal ice are also found to be manifold [of many kinds]."

The discovery is expected to accelerate the understanding of the fundamental properties and behavior of water in nanotubes and other nanopores, as well as in biomolecules.

Seventeen ice phases have been found experimentally, each one numbered in the order of its discovery. Only two ices have lower density than normal ice.

In 2014, a research team discovered an ice phase that forms under negative pressure: ice XVI. The molecules of the ice form a zeolite structure, a 3-D crystalline cage, in which guest molecules or atoms are trapped inside. The guest molecules (neon particles in this

case) were removed, resulting in a stable, ultralow density ice at high negative pressures. Using a similar technique, another group of researchers discovered ice XVII in 2016.

The researchers at Okayama University mapped out all the possible ice phases that might still be left to explore in the negative pressure region. Knowing that the structure of silica (SiO_2) and ice are common, they retrieved 200 silica zeolites from the Zeolite Database, which is administered through the International Zeolite Association. More than 300 structures were evaluated overall.

The researchers rearranged the atoms in the SiO_2 structure, removing the two oxygen atoms and replacing the silicon atom in each molecule with one oxygen atom. Then, the hydrogen atoms were added so that the structure obeyed the ice rule.

In the density range that is only around half that of liquid water ($\sim 0.5 \text{ g/cm}^3$), the researchers showed that the newly discovered ice phase is more stable than any zeolite ice investigated so far. The researchers simulated even less dense ice structures -- between 0 and 0.5 grams per cubic centimeter -- by adding

polyhedral building blocks to the zeolitic frameworks to make the structure sparser while satisfying the structural rule for ice.

"These new structures are the aeroices," said Matsumoto, "and they can be more stable than any zeolitic ice at certain thermodynamic conditions under negative pressure."

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All Top News

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- [**Humans still evolving, large-scale study of genetic data shows**](#) [周三, 06 9月 02:55]

In a study analyzing the genomes of 210,000 people in the United States and Britain, researchers have found that the genetic variants linked to Alzheimer's disease and heavy smoking are less frequent in people with longer lifespans, suggesting that natural selection is weeding out these unfavorable variants in both populations.

- [**Contagious yawning more closely associated with perceptual sensitivity than empathy**](#) [周三, 06 9月 00:33]

Contrary to common belief that the yawning contagion is associated with empathy, it is in fact, more likely that perceptual sensitivity is to blame, research suggests.

- [**Discovery of boron on Mars adds to evidence for habitability**](#) [周三, 06 9月 00:32]

The discovery of boron on Mars gives scientists more clues about whether life could have ever existed on the planet, according to a new paper.

- [**'Extreme' telescopes find the second-fastest-spinning pulsar**](#) [周三, 06 9月 00:32]

By following up on mysterious high-energy sources mapped by NASA's Fermi Gamma-ray Space Telescope, a Netherlands-based radio telescope has discovered a new pulsar, the second fastest-spinning known.

- [**The sniff test of self-recognition confirmed: Dogs**](#)

[have self-awareness](#) [周二, 05 9月 23:13]

A new research study used a sniff-test to evaluate the ability of dogs to recognize themselves. The experiment confirms the hypothesis of dogs' self-cognition proposed last year.

• [Zika virus kills brain cancer stem cells](#) [周二, 05 9月 21:36]

While Zika virus causes devastating damage to the brains of developing fetuses, it one day may be an effective treatment for glioblastoma, a deadly form of brain cancer. New research shows that the virus kills brain cancer stem cells, the kind of cancer cells most resistant to standard treatments.

• [Was the primordial soup a hearty pre-protein stew?](#) [周二, 05 9月 21:36]

How proteins evolved billions of years ago, when Earth was devoid of life, has stumped many a scientist. A little do-si-do between amino acids and their chemical lookalikes may have done the trick. Evolutionary chemists tried it and got results by the boatload.

• [Face value: Brain's ability to recognize faces is shaped through repeated exposure, study suggests](#) [周二, 05 9月 00:04]

Scientists have long deemed the ability to recognize faces innate for people and other primates -- something our brains just know how to do immediately from birth. However, the findings of a new study cast doubt on this longstanding view.

• [More 'losers' than 'winners' predicted for Southern Ocean seafloor animals](#) [周二, 05 9月 00:04]

A new study of the marine invertebrates living in the seas around Antarctica reveals there will be more 'losers' than 'winners' over the next century as the Antarctic seafloor warms.

• [Stellar corpse sheds light on origin of cosmic rays](#) [周一, 04 9月 21:34]

New research revealed that the entire zoo of electromagnetic radiation

streaming from the Crab nebula -- one of the most iconic objects in the sky -- has its origin in one population of electrons and must be produced in a different way than scientists have traditionally thought. The results have implications for our understanding of how cosmic rays attain their incredible energies.

- [**Physicists propose new theories of black holes from the very early universe**](#) [周六, 02 9月 01:55]

'Primordial black holes,' believed to have formed shortly after the Big Bang, might explain how heavy elements such as gold, platinum and uranium came to be, physicists report.

- [**Metallurgy likely has more than one birthplace**](#) [周五, 01 9月 23:36]

When and where did humans invent metal smelting? Scientists have found the answer to this long-debated question in the history of technology. Metallurgy does not have a single origin but probably arose at various locations at about the same time. The experts reached this conclusion after re-examining the 8,500-year-old copper slag and analysing the chemical composition of other copper artefacts from the Stone Age settlement of Çatalhöyük in the Near East.

- [**Equatorial jet in Venusian atmosphere**](#) [周五, 01 9月 21:38]

Observations by Japan's Venus climate orbiter Akatsuki have revealed an equatorial jet in the lower to middle cloud layer of the planet's atmosphere, a finding that could be pivotal to unraveling a phenomenon called superrotation.

- [**Paleontologist aids in new discovery 33 years after finding fossil**](#) [周五, 01 9月 06:05]

The fossilized plesiosaur Sankar Chatterjee found in 1984 is giving scientists a new understanding of convergent evolution between reptiles and mammals.

- [**Mouth clicks used in human echolocation captured in unprecedented detail**](#) [周五, 01 9月 02:13]

Like some bats and marine mammals, people can develop expert

echolocation skills, in which they produce a clicking sound with their mouths and listen to the reflected sound waves to 'see' their surroundings. A new study provides the first in-depth analysis of the mouth clicks used in human echolocation.

• [Reconstructing life at its beginning, cell by cell](#) [周五, 01 9月 02:12]

In a technological tour de force, scientists have created a virtual model of an early fly embryo. Its interactive interface allows researchers to explore the blueprint that underlies development at unprecedented spatial resolution and predict which cells express which genes.

• [Fossil footprints challenge established theories of human evolution](#) [周五, 01 9月 01:42]

Newly discovered human-like footprints from Crete may put the established narrative of early human evolution to the test. The footprints are approximately 5.7 million years old and were made at a time when previous research puts our ancestors in Africa -- with ape-like feet.

• [Human bones in south Mexico: Stalagmite reveals their age as 13,000 years old](#) [周五, 01 9月 01:12]

A prehistoric human skeleton found on the Yucatán Peninsula is at least 13,000 years old and most likely dates from a glacial period at the end of the most recent ice age, the late Pleistocene. A German-Mexican team of researchers has now dated the fossil skeleton based on a stalagmite that grew on the hip bone.

• [Yawning: Why is it so contagious and why should it matter?](#) [周五, 01 9月 00:30]

Feeling tired? Even if we aren't tired, why do we yawn if someone else does? Experts have published research that suggests the human propensity for contagious yawning is triggered automatically by primitive reflexes in the primary motor cortex -- an area of the brain responsible for motor function. Their study is another stage in their research into the underlying biology of neuropsychiatric disorders and their search for new methods of treatment.

- [**Scents and social preference: Neuroscientists ID the roots of attraction**](#) [周五, 01 9月 00:30]

Culminating a series of studies stretching back eight years, biologists have identified the cellular and molecular basis for social preference, known in the animal kingdom as 'imprinting.' Through in vivo experiments, the researchers found the neurological roots of kinship attraction and aversion. They also employed genetics screening to find the regulators controlling this behavior. The study carries implications for understanding social attraction and aversion in a range of animals and humans.

- [**What changes when you warm the Antarctic Ocean just 1 degree? Lots**](#) [周五, 01 9月 00:30]

After warming a natural seabed in the Antarctic Ocean by just 1° or 2° Celsius, researchers observed massive impacts on a marine assemblage, as growth rates nearly doubled. The findings of what the researchers call the 'most realistic ocean warming experiment to date' show that the effects of future warming may far exceed expectations.

- [**First hints of possible water content on TRAPPIST-1 planets**](#) [周四, 31 8月 23:30]

Astronomers have been trying to determine whether there might be water on the seven Earth-sized planets orbiting the nearby dwarf star TRAPPIST-1. The results suggest that the outer planets of the system might still harbor substantial amounts of water. This includes the three planets within the habitable zone of the star, lending further weight to the possibility that they may indeed be habitable.

- [**How Neanderthals made the very first glue**](#) [周四, 31 8月 21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

- [**Apes' abilities misunderstood by decades of poor science**](#) [周四, 31 8月 21:14]

Hundreds of scientific studies over two decades have told us that apes are clever -- just not as clever as us. New analysis argues that what we think we know about apes' social intelligence is based on wishful thinking and flawed science.

• [**Robot learns to follow orders like Alexa**](#) [周四, 31 8月 21:14]

Computer scientists have developed an Alexa-like system that allows robots to understand a wide range of commands that require contextual knowledge about objects and their environments. They've dubbed the system 'ComText,' for 'commands in context.'

• [**New hope for reef fish living in a high CO2 world**](#) [周四, 31 8月 21:14]

New research examining the possible impacts of ocean acidification provides fresh hope for the survival of reef fish.

• [**How certain ants snap their jaws shut in the blink of an eye**](#) [周四, 31 8月 08:21]

Few victims stand a chance against the formidable mandibles of a trap-jaw ant. In conflicts between predators and prey, speed is a decided advantage, and evolution has given these insects an edge with spring-loaded jaws that snap shut with astonishing speed. Biologists have now provided the first mechanical description of the jaws of a little-known group of trap-jaw ants.

• [**Star-formation 'fuel tanks' found around distant galaxies**](#) [周四, 31 8月 05:25]

Astronomers have studied six distant starburst galaxies and discovered that five of them are surrounded by turbulent reservoirs of hydrogen gas, the fuel for future star formation.

• [**Toward a smart graphene membrane to desalinate water**](#) [周四, 31 8月 05:23]

A simple, sturdy graphene-based hybrid desalination membrane can provide clean water for agriculture and possibly human consumption.

• [**Protecting the guardians**](#) [周四, 31 8月 03:55]

A guardian gene that protects against type 1 diabetes and other autoimmune diseases exerts its pancreas-shielding effects by altering the gut microbiota. Experiments in mice born with the protective gene show that exposure to antibiotics during critical windows of development fuels risk for type 1 diabetes and leads to loss of genetic protection by altering the gut microbiota. Scientists say the findings underscore the importance of avoiding antibiotic use during late pregnancy and early infancy.

• [Bioengineering a functional vascularized lung scaffold](#) [周四, 31 8月 02:12]

A team of researchers is the first to successfully bioengineer a functional lung with perfusable and healthy vasculature in an ex vivo rodent lung. Their new approach allows the removal of the pulmonary epithelium while maintaining the viability and function of the vascular network and the lung matrix.

• [Gut bacteria that 'talk' to human cells may lead to new treatments](#) [周四, 31 8月 02:12]

Scientists developed a method to genetically engineer gut bacteria to produce molecules that have the potential to treat certain disorders by altering human metabolism.

• [Shaking up the fish family tree: 'Living fossil' not as old as we thought](#) [周四, 31 8月 01:22]

Polypterids are weird and puzzling African fish that have perplexed biologists since they were discovered during Napoleon's expedition to Egypt in the late 1700s.

• [Scientists recover nova first spotted 600 years ago by Korean astrologers](#) [周四, 31 8月 01:22]

A new study pinpoints the location of a nova first spotted by Korean astrologers almost 600 years ago that now undergoes smaller-scale 'dwarf nova' eruptions. The work supports that idea that novae go through a very long-term life cycle after erupting, fading to obscurity for thousands of years, and then building back up to become full-fledged

novae once more.

- [**Monkeys with Parkinson's disease benefit from human stem cells**](#) [周四, 31 8月 01:22]

Japanese neurosurgeons report two new strategies to improve outcomes of iPS cell-based therapies for Parkinson's disease in monkey brains. The findings are a key step for patient recruitment of the first iPS cell-based therapy to treat neurodegenerative diseases.

- [**Motorized molecules drill through cells**](#) [周四, 31 8月 01:22]

Motorized molecules that target diseased cells may deliver drugs to or kill the cells by drilling into the cell membranes. Scientists have demonstrated them on cancer and other cells.

- [**Volcanic eruptions drove ancient global warming event**](#) [周四, 31 8月 01:22]

A natural global warming event that took place 56 million years ago was triggered almost entirely by volcanic eruptions that occurred as Greenland separated from Europe during the opening of the North Atlantic Ocean, according to new research.

- [**Acting like a muscle, nano-sized device lifts 165 times its own weight**](#) [周四, 31 8月 01:22]

Engineers have discovered a simple, economical way to make a nano-sized device that can match the friendly neighborhood Avenger, on a much smaller scale. Their creation weighs 1.6 milligrams (about as much as five poppy seeds) and can lift 265 milligrams (the weight of about 825 poppy seeds) hundreds of times in a row.

- [**Uncovering factors that shape sea life**](#) [周四, 31 8月 01:22]

Researchers have proposed a new conceptual model of island biogeography for marine organisms -- a theory that explores how different processes (like sea level fluctuations and geographic isolation) influence marine species diversity around islands.

- [**Otters learn by copying each other**](#) [周四, 31 8月 01:11]

Otters can learn how to solve puzzles by watching and copying each

other, new research shows.

- [**What lit up the universe? Black holes may have punctured darkened galaxies, allowing light to escape**](#) [周三, 30 8月 23:48]

Researchers have a new explanation for how the universe changed from darkness to light. They propose that black holes within galaxies produce winds strong enough to fling out matter that punctures holes in galaxies, allowing light to escape.

- [**Shifting school start times could contribute \\$83 billion to US economy within a decade**](#) [周三, 30 8月 22:36]

RAND Corporation and RAND Europe have released the first-ever analysis of the economic implications of a shift in school start times in the US. The study shows that a nationwide move to 8.30 a.m. could lead to an economic gain of \$83 billion to the US economy within a decade. The gains projected through the study's economic model would be realized through the higher academic and professional performance of students, and reduced car crash rates.

- [**Patient plays saxophone while surgeons remove brain tumor**](#) [周三, 30 8月 22:36]

Music is not only a major part of Dan Fabbio's life, as a music teacher it is his livelihood. So when doctors discovered a tumor located in the part of his brain responsible for music function, he began a long journey that involved a team of physicians, scientists, and a music professor and culminated with him awake and playing a saxophone as surgeons operated on his brain.

- [**Understanding ancient geometric earthworks in southwestern Amazonia**](#) [周三, 30 8月 22:34]

Researchers examine pre-colonial geometric earthworks in the southwestern Amazonia from the point of view of indigenous peoples and archaeology. The study shows that the earthworks were once important ritual communication spaces.

· [**New robot rolls with the rules of pedestrian conduct**](#) [周三, 30 8月 22:34]

Engineers have designed an autonomous robot with 'socially aware navigation,' that can keep pace with foot traffic while observing these general codes of pedestrian conduct.

· [**Robot probes mystery of prehistoric sea creature's swimming style**](#) [周三, 30 8月 22:26]

A new study has shed light on the swimming style of plesiosaurs by creating a robot to mimic its movements.

· [**Methane emissions tackled with gas-guzzling bacteria**](#) [周三, 30 8月 21:45]

Methane-oxidizing bacteria -- key organisms responsible for greenhouse gas mitigation -- are more flexible and resilient than previously thought, an international research has shown.

· [**Fossil whales' teeth shows what ferocious predators they were**](#) [周三, 30 8月 21:45]

The feeding habits of the whale -- the world's biggest animal -- have evolved to filter feeding, shows new international research. Ancient whales appear to have been ferocious predators, investigators explain.

· [**Century-old seal pelts reveal changes in Ross Sea ecosystem**](#) [周三, 30 8月 21:43]

Scientists sampled a pile of frozen pelts left in a hut by Antarctic explorers for Weddell seal tissue from a century ago, at the very start of human activities in Antarctica. By using sophisticated isotope analysis to compare samples from modern and century-old seals, they were able to investigate human impacts on the Antarctic ecosystem.

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

- [**Humans still evolving, large-scale study of genetic data shows**](#) [周三, 06 9月 02:55]

In a study analyzing the genomes of 210,000 people in the United States and Britain, researchers have found that the genetic variants linked to Alzheimer's disease and heavy smoking are less frequent in people with longer lifespans, suggesting that natural selection is weeding out these unfavorable variants in both populations.

- [**Mobile phone use while pregnant not linked to child neurodevelopment problems, study suggests**](#) [周三, 06 9月 02:55]

Mobile phone use during pregnancy is unlikely to have any adverse effects on child neurodevelopment, according to new research. These findings provide further evidence that exposure to radio frequency electromagnetic fields associated with maternal use of mobile phones during pregnancy is not linked to neurodevelopment in children.

- [**Research shows how DNA molecules cross nanopores**](#) [周三, 06 9月 02:55]

Research sheds new light on the understanding of the measurement of polymer properties in diverse chemical industries such as plastics manufacturing and food processing, and the design of biosensors.

- [**Swings in dad's testosterone affects the family -- for better or worse -- after baby arrives**](#) [周三, 06 9月 02:55]

Testosterone levels are a key factor in a family's health and happiness

after a newborn arrives. Researchers have found that a drop can signal postpartum depression in dad, and a spike may be a sign of aggression.

• [**New, ultra-rare gene mutations implicated in eating disorders**](#) [周三, 06 9月 01:45]

A combination of whole exome sequencing, machine learning, and network analysis, has identified new, ultra-rare gene mutations within specific biological pathways that may contribute to eating disorders, according to a study.

• [**Eating meat linked to higher risk of diabetes**](#) [周三, 06 9月 01:45]

Higher intake of red meat and poultry is associated with significantly increased risk of developing diabetes, which is partially attributed to their higher content of heme iron in these meats, new research shows.

• [**Test of cervical mucus may reveal pregnant women's risk of going into labor too early**](#) [周三, 06 9月 01:45]

A new approach to evaluating the risk of preterm birth has been proposed by analyzing the properties of cervical mucus. The researchers found that cervical mucus from women who delivered their babies early, before 37 weeks, was very different from that of women who delivered later.

• [**Boosting a lipid fuel makes mice less sensitive to the cold**](#) [周三, 06 9月 00:57]

Humans, like other animals, become more sensitive to cold with age. Now, scientists report that delivering a single dose of a nutritional supplement called L-carnitine to older mice restores a youthful ability to adapt to the cold. After treatment, they tolerate chilly conditions that would ordinarily trigger hypothermia. The supplement works by boosting levels of a newly discovered fuel source for brown fat, or “good fat”.

• [**Contagious yawning more closely associated with perceptual sensitivity than empathy**](#) [周三, 06 9月 00:33]

Contrary to common belief that the yawning contagion is associated

with empathy, it is in fact, more likely that perceptual sensitivity is to blame, research suggests.

• [**Cannot sleep due to stress? Here is the cure**](#) [周二, 05 9月 23:13]

Everyone empirically knows that stressful events certainly affect sound sleep. Scientists have found that the active component rich in sugarcane and other natural products may ameliorate stress and help having sound sleep.

• [**Prenatal lack of omega-3 and omega-6 fatty acids linked to schizophrenic symptoms in mice**](#) [周二, 05 9月 22:44]

Researchers have discovered a process through which changes in nutrition during early mouse pregnancy lead to offspring that develop schizophrenic-like symptoms as adults. The study shows how deprivation of two polyunsaturated fatty acids during early gestation can have long lasting effects on offspring through specific epigenetic changes in gene expression.

• [**Gene related to brain damage in pre-term infants identified**](#) [周二, 05 9月 22:44]

A gene has been identified by researchers that is thought to be associated with the types of brain damage that can be caused by pre-term birth.

• [**Zika virus kills brain cancer stem cells**](#) [周二, 05 9月 21:36]

While Zika virus causes devastating damage to the brains of developing fetuses, it one day may be an effective treatment for glioblastoma, a deadly form of brain cancer. New research shows that the virus kills brain cancer stem cells, the kind of cancer cells most resistant to standard treatments.

• [**Link found between cognitive fatigue and effort and reward**](#) [周二, 05 9月 21:36]

Injury and disease of the brain increase the likelihood of cognitive fatigue, which can be disabling. Researchers are studying the mechanisms of cognitive fatigue, toward the goal of developing

effective interventions.

- [**PSA screening significantly reduces the risk for death from prostate cancer**](#) [周二, 05 9月 06:17]

After differences in implementation and settings were accounted for, two important prostate cancer screening trials provide compatible evidence that screening reduces prostate cancer mortality.

- [**Scientists discover brain area which can be targeted for treatment in patients with schizophrenia who 'hear voices'**](#) [周二, 05 9月 06:17]

For the first time, scientists have precisely identified and targeted an area of the brain which is involved in 'hearing voices,' experienced by many patients with schizophrenia. They have been able to show in a controlled trial that targeting this area with magnetic pulses can improve the condition in some patients.

- [**Epileptic brain activity in widely used lab mice**](#) [周二, 05 9月 01:19]

Multiple laboratories have observed unusual neural activity resembling epilepsy in some lines of genetically modified mice widely used in neuroscience research. The authors caution that this activity is easy to miss and presents potential challenges for using these animals to study the healthy brain.

- [**Schizophrenia, memory deficits: Solving the mystery behind a most stubborn symptom**](#) [周二, 05 9月 00:04]

Disruptions to the brain's internal GPS result in some of the severe memory deficits seen in schizophrenia. The new study in mouse models of the disorder marks the first time that schizophrenia's effects have been observed with such precision and clarity. The findings offer a promising entry point for attacking a near-universal and debilitating symptom of schizophrenia, memory deficits, which has thus far withstood all forms of treatment.

- [**Face value: Brain's ability to recognize faces is**](#)

[shaped through repeated exposure, study suggests](#) [周二, 05 9月 00:04]

Scientists have long deemed the ability to recognize faces innate for people and other primates -- something our brains just know how to do immediately from birth. However, the findings of a new study cast doubt on this longstanding view.

· [Mysterious protein-folding molecule could trigger metabolic disorders](#) [周二, 05 9月 00:04]

A molecule with few known functions can trigger the cell's response to unfolded proteins and perpetuate metabolic disease, report researchers.

· [Superfly flight simulator helps unravel navigation in the brain](#) [周二, 05 9月 00:04]

Researchers have identified two independent pathways in the fly brain that are integrated to allow successful navigation during flight. The study combined a flight simulator designed for flies with imaging of active neurons to show that landmark locations are processed separately in the fly brain from self-motion.

· [New fluorescent dyes could advance biological imaging](#) [周二, 05 9月 00:04]

Scientists have developed a new method for fine-tuning the structure of rhodamine dyes, and can now create a colorful palette of fluorescent molecules.

· [Diabetes and heart disease linked by genes, reveals study](#) [周二, 05 9月 00:04]

In a large analysis of genetic data, a team has first looked into what causes type 2 diabetes (T2D) and second clarified how T2D and coronary heart disease (CHD) -- the two diseases that are the leading cause of global morbidity and mortality, are linked.

· [Study in early stage breast cancer shows that even small tumors can be aggressive](#) [周一, 04 9月 21:38]

Even small tumors can be aggressive, according to a study in patients with early stage breast cancer. Researchers found that nearly one in four small tumors were aggressive and patients benefited from chemotherapy. Aggressive tumors could be identified by a 70-gene signature.

• [**Financial stress is associated with migraine, if you have specific circadian gene variants**](#) [周一, 04 9月 21:38]

People with a specific variation in the CLOCK gene have more migraines under financial stress. This work shows the effect of the genetics of circadian rhythms on migraine.

• [**Rethinking serotonin could lead to a shift in psychiatric care**](#) [周一, 04 9月 21:37]

A better understanding of how a key chemical messenger acts in the brain could lead to a radical shift in psychiatric care, according to a new research paper.

• [**Exercising during pregnancy is good for mother, baby, research confirms**](#) [周一, 04 9月 21:36]

Researchers have clarified doubts over the physical activity recommended during pregnancy. Their work highlights how exercise should be taken not only by healthy, previously active women, but that it is also a good time to adopt a healthy lifestyle. There are clear advantages for both the mother and baby.

• [**The point of release is the key: Identification of a key molecule for the neurotransmitter release in synapses**](#) [周一, 04 9月 21:36]

The contact areas between nerve cells are called synapses. What happens there lies at the heart of communication between nerve cells. Communication starts with the release of chemical messengers known as neurotransmitters at these synapses. Neurotransmitter-containing synaptic vesicles are involved in this release process, and these vesicles fuse with the cell membrane. This fusion occurs at a specific location

within the synapse rather than just anywhere at random. Scientists have succeeded in i...

- **[Indigenous storytelling is a new asset for biocultural conservation](#)** [周一, 04 9月 21:36]

Some of the areas hosting most of the world's biodiversity are those inhabited by indigenous peoples. In the same way that biodiversity is being eroded, so is the world's cultural diversity. As a result, there have been several calls to promote biocultural conservation approaches that sustain both biodiversity and indigenous cultures.

- **[Multi-mechanism approach to treating neonatal hypoxic ischemia](#)** [周一, 04 9月 21:34]

Male sex is a risk factor for worse outcome following neonatal insult, including hypoxic ischemia. While N-acetylcysteine and hypothermia promote functional improvement in female rodents, similar improvement in males requires the addition of vitamin D, report investigators. Multi-mechanism approaches are needed to treat neonatal hypoxic ischemia, and those approaches appear to be different depending on sex.

- **[Is ADHD really a sleep problem?](#)** [周一, 04 9月 21:34]

Around 75 percent of children and adults with attention deficit hyperactivity disorder (ADHD) also have sleep problems, but until now these have been thought to be separate issues. Now a in a pulling together of the latest research, Scientists are proposing of a new theory which says that much of ADHD may in fact be a problem associated with lack of regular circadian sleep.

- **[Pilot study shows that neurofeedback may help treatment-resistant depression](#)** [周一, 04 9月 21:34]

A small pilot study has indicated that neurofeedback -- where patients concentrate on modifying their own brainwave patterns -- has potential to treat many of the 100 million people worldwide who suffer from treatment-resistant depression (TRD). This is the first time that neurofeedback has been shown to improve both individual symptoms

and overall recovery in TRD.

- [**Alterations in blood-based miRNA in veterans affected with combat-related PTSD**](#) [周一, 04 9月 21:34]

A small pilot study shows that Individuals affected with PTSD (post-traumatic stress disorder) demonstrate changes in microRNA (miRNA) molecules associated with gene regulation. A controlled study, involving military personnel on deployment to a combat zone in Afghanistan, provided evidence for the role of blood-based miRNAs as candidate biomarkers for symptoms of PTSD.

- [**Heavy alcohol use alters brain functioning differently in young men and women**](#) [周一, 04 9月 21:34]

Scientists have found that brain functions in young men and women are changed by long-term alcohol use, but that these changes are significantly different in men and women. This indicates not only that young people might be at increased risk of long-term harm from alcohol use, but also that the risks are probably different in men and in women, with men possibly more at risk.

- [**Researchers review the clinical potential of senolytic drugs on aging**](#) [周一, 04 9月 21:34]

Researchers are moving closer to realizing the clinical potential of drugs that have previously been shown to support healthy aging in animals. Aging experts say that, if proven to be effective and safe in humans, these drugs could be 'transformative' by preventing or delaying chronic conditions as a group instead of one at a time.

- [**Cleanliness is next to sexiness for golden-collared manakins in Panama**](#) [周六, 02 9月 01:55]

Juvenile male Golden-collared Manakins on extra testosterone cleaned up their display area before performing for females, according to research at the Smithsonian Tropical Research Institute (STRI) in Panama published in Animal Behavior. Female manakins got more aggressive when given testosterone.

• [**Cognitive fatigue after TBI linked with activation of caudate**](#) [周六, 02 9月 00:51]

Researchers have further elucidated the mechanisms for cognitive fatigue, a disabling symptom that affects many individuals after traumatic brain injury (TBI).

• [**Drug may curb female infertility from cancer treatments**](#) [周六, 02 9月 00:51]

An existing drug may one day protect premenopausal women from life-altering infertility that commonly follows cancer treatments, according to a new study.

• [**Intellectual disabilities caused by protein defect**](#)

[周五, 01 9月 23:36]

Intellectual disabilities are often caused by a mutation that damages a gene, preventing the associated protein from functioning properly. However, a mutation can also change the function of a gene. As a result, the gene in question acts in a completely different way. Researchers discovered this mechanism in fifteen genes playing a role in the development of intellectual disabilities. Their research results show that these changes in function play a more prominent role than previously thought.

• [**Etosis phenomenon discovered in human blood monocytes**](#) [周五, 01 9月 22:46]

The first clear demonstration of etosis in human blood monocytes, a type of immune cell, has now been discovered by scientists.

• [**Lifestyle factors may affect how long individuals live free of disability**](#) [周五, 01 9月 22:46]

New research indicates that a healthy lifestyle may help reduce the duration of an individual's disabled period near the end of life.

• [**Vaccines save 20 million lives, \\$350 billion in poor countries since 2001**](#) [周五, 01 9月 22:10]

Vaccination efforts made in the world's poorest countries since 2001

will have prevented 20 million deaths and saved \$350 billion in health-care costs by 2020, according to a new study.

- **[Virus hijacks cell's transportation system](#)** [周五, 01 9月 21:39]

A deadly tick-borne virus uses the host neuron's transportation system to move their RNA, resulting in the local reproduction of the virus and severe neurological symptoms.

- **[Breastfeeding may help prevent children's asthma exacerbations later in life](#)** [周五, 01 9月 21:38]

An analysis of children with asthma, those who had been breastfed had a 45 percent lower risk of asthma exacerbations later in life compared with children who had not been breastfed.

- **[Nature imagery calms prisoners](#)** [周五, 01 9月 21:38]

Sweeping shots of majestic landscapes. Glaciers, forests and waterfalls. New research shows that these images, shown to people deprived of access to nature, can reduce tension, help defuse anger and make some of the harshest environments, like a solitary confinement cellblock in a maximum-security prison, a little easier to bear.

- **[Adipose tissue may affect cancer development in multiple ways](#)** [周五, 01 9月 21:38]

Adipose tissue, or fat, may influence the development of cancer in diverse ways, depending on the type of fat and the location in the body.

- **[The 'reality' of accent change](#)** [周五, 01 9月 21:38]

A new study of how accents change over differing periods of time demonstrates the limited impact of intense social interactions in isolated environments, and surprisingly large differences among people in how susceptible their accents are to change.

- **[Genes fueling neuroblastoma spread now identified](#)** [周五, 01 9月 06:03]

For the first time, researchers present data on how nervous system tumors, called neuroblastomas, spread. Their paper clarifies the relationship between two genes that fuel the aggressive spread of

neuroblastomas.

• [**Asthma medicine halves risk of Parkinson's**](#) [周五, 01 9

月 06:03]

Using data gathered from 100 million Norwegian prescriptions, researchers have found that asthma medicine can halve a patient's risk of developing Parkinson's disease.

• [**New genetic risk factor for developing autism spectrum disorder identified**](#) [周五, 01 9月 06:03]

A new systematic analysis has been applied to a cohort of 2,300 families who have a single child affected with autism. The study focused on identifying and characterizing low-lying genetic mutations that may have been missed in previous research, given these mutations are only present in a fraction of the bulk DNA of an individual.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

- [**Mobile phone use while pregnant not linked to child neurodevelopment problems, study suggests**](#) [周三, 06 9月 02:55]

Mobile phone use during pregnancy is unlikely to have any adverse effects on child neurodevelopment, according to new research. These findings provide further evidence that exposure to radio frequency electromagnetic fields associated with maternal use of mobile phones during pregnancy is not linked to neurodevelopment in children.

- [**Research shows how DNA molecules cross nanopores**](#) [周三, 06 9月 02:55]

Research sheds new light on the understanding of the measurement of polymer properties in diverse chemical industries such as plastics manufacturing and food processing, and the design of biosensors.

- [**Aeroices: Newly discovered ultralow-density ice**](#) [周三, 06 9月 02:55]

Relatively little is known about the effects of extreme negative pressure on water molecules. Exploring a significant region of negative pressure through molecular dynamic simulations, researchers have now theoretically discovered a new family of ice phases. Called aeroices, these ices have the lowest density of all known ice crystals.

- [**More durable, less expensive fuel cells**](#) [周三, 06 9月 01:44]

A new technology has been created that could make fuel cells cheaper and more durable. Hydrogen-powered fuel cells are a green alternative to internal combustion engines because they produce power through

electrochemical reactions, leaving no pollution behind. Platinum is the most common catalyst in the type of fuel cells used in vehicles, but it's expensive. The UD team used a novel method to come up with a less expensive catalyst.

- [**Discovery of boron on Mars adds to evidence for habitability**](#) [周三, 06 9月 00:32]

The discovery of boron on Mars gives scientists more clues about whether life could have ever existed on the planet, according to a new paper.

- [**'Extreme' telescopes find the second-fastest-spinning pulsar**](#) [周三, 06 9月 00:32]

By following up on mysterious high-energy sources mapped by NASA's Fermi Gamma-ray Space Telescope, a Netherlands-based radio telescope has discovered a new pulsar, the second fastest-spinning known.

- [**Was the primordial soup a hearty pre-protein stew?**](#) [周二, 05 9月 21:36]

How proteins evolved billions of years ago, when Earth was devoid of life, has stumped many a scientist. A little do-si-do between amino acids and their chemical lookalikes may have done the trick. Evolutionary chemists tried it and got results by the boatload.

- [**New fluorescent dyes could advance biological imaging**](#) [周二, 05 9月 00:04]

Scientists have developed a new method for fine-tuning the structure of rhodamine dyes, and can now create a colorful palette of fluorescent molecules.

- [**Equation reveals the characteristics of quantum chaos**](#) [周一, 04 9月 21:37]

Researchers have now succeeded in formulating a mathematical result that provides an exact answer to the question of how chaos actually behaves. The researchers have analyzed chaotic states at the atomic

level.

- [**Like a revolving door: How shuttling proteins operate nuclear pores**](#) [周一, 04 9月 21:36]

Nuclear pore complexes are tiny channels where the exchange of substances between the cell nucleus and the cytoplasm takes place. Scientists report on startling new research that might overturn established models of nuclear transport regulation. Their study reveals how shuttling proteins known as importins control the function of nuclear pores – as opposed to the view that nuclear pores control the shuttling of importins.

- [**Stellar corpse sheds light on origin of cosmic rays**](#) [周一, 04 9月 21:34]

New research revealed that the entire zoo of electromagnetic radiation streaming from the Crab nebula -- one of the most iconic objects in the sky -- has its origin in one population of electrons and must be produced in a different way than scientists have traditionally thought. The results have implications for our understanding of how cosmic rays attain their incredible energies.

- [**Algorithm unlocks smartwatches that learn your every move**](#) [周一, 04 9月 21:34]

Scientists have invented a new algorithm that enables smartwatches to detect and record your every move, without being told beforehand what to look for.

- [**Physicists propose new theories of black holes from the very early universe**](#) [周六, 02 9月 01:55]

'Primordial black holes,' believed to have formed shortly after the Big Bang, might explain how heavy elements such as gold, platinum and uranium came to be, physicists report.

- [**Reusable ruthenium-based catalyst could be a game-changer for the biomass industry**](#) [周五, 01 9月 22:46]

Researchers have developed a highly efficient reusable catalyst for the

production of primary amines. By cutting the amount of undesired by-products, the catalyst is set to revolutionize the production of bio-based fuels, pharmaceuticals, agricultural chemicals and more.

- [**Bit data goes anti-skyrmions**](#) [周五, 01 9月 22:46]

Scientists have discovered a new kind of magnetic nano-object in a novel material that could serve as a magnetic bit with cloaking properties to make a magnetic disk drive with no moving parts -- a Racetrack Memory -- a reality in the near future.

- [**Astronomer's study finds 10 times fewer house-sized near earth objects in solar system**](#) [周五, 01 9月 22:09]

The surprising results of an astronomer's new study find that there are 3.5 million house-sized meteoroids whose orbits bring them close enough to Earth to pose potential impact hazards -- ten times fewer than previously thought.

- [**Molecules move faster near sticky surfaces**](#) [周五, 01 9月 21:39]

Molecules move faster as they get closer to adhesive surfaces, but this effect is not permanent.

- [**Equatorial jet in Venusian atmosphere**](#) [周五, 01 9月 21:38]

Observations by Japan's Venus climate orbiter Akatsuki have revealed an equatorial jet in the lower to middle cloud layer of the planet's atmosphere, a finding that could be pivotal to unraveling a phenomenon called superrotation.

- [**Method speeds up time to analyze complex microscopic images**](#) [周五, 01 9月 03:13]

Researchers who typically required a week of effort to dissect cryo-electron tomography images of the 3-D structure of a single cell will now be able to do it in about an hour thanks to a new automated method.

- [**Insect eyes inspire new solar cell design**](#) [周五, 01 9月 03:12]

Packing tiny solar cells together, like micro-lenses in the compound eye of an insect, could help scientists overcome a major roadblock to the development of perovskite photovoltaics.

- [**Drugs found to be more effective against depression than electric current**](#) [周五, 01 9月 02:05]

Medicinal therapy was found to be more than twice as effective as low-intensity brain stimulation in treating depression, according to a study.

- [**Caching system could make data centers more energy efficient**](#) [周四, 31 8月 23:52]

Researchers have developed a new system for data center caching that uses flash memory, the kind of memory used in most smartphones.

- [**First hints of possible water content on TRAPPIST-1 planets**](#) [周四, 31 8月 23:30]

Astronomers have been trying to determine whether there might be water on the seven Earth-sized planets orbiting the nearby dwarf star TRAPPIST-1. The results suggest that the outer planets of the system might still harbor substantial amounts of water. This includes the three planets within the habitable zone of the star, lending further weight to the possibility that they may indeed be habitable.

- [**Aerospace test goes green with alternative to explosives**](#) [周四, 31 8月 22:14]

Scientists have successfully demonstrated a new, more environmentally friendly method to test a rocket part to ensure its avionics can withstand the shock from stage separation during flight.

- [**How Neanderthals made the very first glue**](#) [周四, 31 8月 21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

- [**Improving earthquake resistance with a single crystal**](#) [周四, 31 8月 21:26]

A new heating method for certain metals could lead to improved earthquake-resistant construction materials.

- [**Mass production of biodegradable plastic**](#) [周四, 31 8月

21:14]

Introducing a simple step to the production of plant-derived, biodegradable plastic could improve its properties while overcoming obstacles to manufacturing it commercially, says new research.

• [Turning heat energy into a viable fuel source](#) [周四, 31 8月 21:14]

8月 21:14]

A new device could one day turn the heat generated by a wide array of electronics into a usable fuel source. The device is a multicomponent, multilayered composite material called a van der Waals Schottky diode. It converts heat into electricity up to three times more efficiently than silicon -- a semiconductor material widely used in the electronics industry.

• [Robot learns to follow orders like Alexa](#) [周四, 31 8月 21:14]

Computer scientists have developed an Alexa-like system that allows robots to understand a wide range of commands that require contextual knowledge about objects and their environments. They've dubbed the system 'ComText,' for 'commands in context.'

• [Good as gold](#) [周四, 31 8月 08:21]

Few experiences invoke as much anxiety as a call from your doctor saying 'you need to come back for more tests.' Your imagination goes wild and suddenly a routine medical screening becomes a minefield of potential life-threatening diseases. It's highly likely, however, that you have fallen victim to a false positive -- a result that, despite the accuracy of the test, erroneously yields an affirmative result that points toward illness. To increase the accuracy of medical screening and reduce the i...

• [Gold nanoparticles fry cancer on glowing mice](#) [周四, 31 8月 08:21]

四, 31 8月 08:21]

A new study takes a new approach to killing cancer: Why not fry it into oblivion with vibrating gold nanoparticles?

• [Star-formation 'fuel tanks' found around distant galaxies](#) [周四, 31 8月 05:25]

Astronomers have studied six distant starburst galaxies and discovered that five of them are surrounded by turbulent reservoirs of hydrogen gas, the fuel for future star formation.

- [**Toward a smart graphene membrane to desalinate water**](#) [周四, 31 8月 05:23]

A simple, sturdy graphene-based hybrid desalination membrane can provide clean water for agriculture and possibly human consumption.

- [**New bar set for water-splitting, CO2-splitting techniques**](#) [周四, 31 8月 02:13]

Researchers have significantly boosted the efficiency of two techniques, for splitting water to create hydrogen gas and splitting carbon dioxide to create carbon monoxide. The products are valuable feedstock for clean energy and chemical manufacturing applications.

- [**Bioengineering a functional vascularized lung scaffold**](#) [周四, 31 8月 02:12]

A team of researchers is the first to successfully bioengineer a functional lung with perfusable and healthy vasculature in an ex vivo rodent lung. Their new approach allows the removal of the pulmonary epithelium while maintaining the viability and function of the vascular network and the lung matrix.

- [**Environmental chemist flashes warning light on new nanoparticle**](#) [周四, 31 8月 02:12]

Layered BP's cytotoxicity is based on the fact that it generates reactive oxygen species (ROS), scientists have found. ROS are among the most potent cell-damaging agents known. Layered BP also disrupts cell membrane integrity in a particle-size-dependent manner.

- [**Scientists recover nova first spotted 600 years ago by Korean astrologers**](#) [周四, 31 8月 01:22]

A new study pinpoints the location of a nova first spotted by Korean astrologers almost 600 years ago that now undergoes smaller-scale 'dwarf nova' eruptions. The work supports that idea that novae go through a very long-term life cycle after erupting, fading to obscurity for thousands of years, and then building back up to become full-fledged novae once more.

• [**Artificial intelligence analyzes gravitational lenses 10 million times faster**](#) [周四, 31 8月 01:22]

Researchers have for the first time shown that neural networks -- a form of artificial intelligence -- can accurately analyze the complex distortions in spacetime known as gravitational lenses 10 million times faster than traditional methods.

• [**Motorized molecules drill through cells**](#) [周四, 31 8月 01:22]

Motorized molecules that target diseased cells may deliver drugs to or kill the cells by drilling into the cell membranes. Scientists have demonstrated them on cancer and other cells.

• [**Acting like a muscle, nano-sized device lifts 165 times its own weight**](#) [周四, 31 8月 01:22]

Engineers have discovered a simple, economical way to make a nano-sized device that can match the friendly neighborhood Avenger, on a much smaller scale. Their creation weighs 1.6 milligrams (about as much as five poppy seeds) and can lift 265 milligrams (the weight of about 825 poppy seeds) hundreds of times in a row.

• [**Dating? A magic formula to predict attraction is more elusive than ever**](#) [周四, 31 8月 01:22]

Dating websites often claim attraction between two people can be predicted from the right combination of traits and preferences, but a new study casts doubt on that assertion. The study, which used speed dating data, found a computer could predict who is desirable and how much someone would desire others -- who's hot and who's not -- but it could not unravel the mystery of unique desire for a specific person.

• [**Robotic system monitors specific neurons**](#) [周四, 31 8月 00:49]

Engineers have devised a way to automate the process of patch-clamping, using a computer algorithm that analyzes microscope images and guides a robotic arm to the target cell to record its electrical activity.

• [**'Seeing' robot learns tricky technique for studying brain cells in mammals**](#) [周四, 31 8月 00:25]

Scientists have successfully taught robots to perform a challenging brain technique only previously mastered by a handful of humans.

- [**Machine-learning earthquake prediction in lab shows promise**](#) [周四, 31 8月 00:25]

By listening to the acoustic signal emitted by a laboratory-created earthquake, a computer science approach using machine learning can predict the time remaining before the fault fails.

- [**Silicon solves problems for next-generation battery technology**](#) [周三, 30 8月 23:48]

Silicon -- the second most abundant element in the earth's crust -- shows great promise in Li-ion batteries, according to new research. By replacing graphite anodes with silicon, it is possible to quadruple anode capacity.

- [**What lit up the universe? Black holes may have punctured darkened galaxies, allowing light to escape**](#) [周三, 30 8月 23:48]

Researchers have a new explanation for how the universe changed from darkness to light. They propose that black holes within galaxies produce winds strong enough to fling out matter that punctures holes in galaxies, allowing light to escape.

- [**Stroke patient improvement with a brain-computer interface**](#) [周三, 30 8月 22:35]

It is possible for stroke patients to improve motor function using special training involving connecting brain signals with a computer, research shows.

- [**Leaf sensors can tell farmers when crops need to be watered**](#) [周三, 30 8月 22:34]

Plant-based sensors that measure the thickness and electrical capacitance of leaves show great promise for telling farmers when to activate their irrigation systems, preventing both water waste and parched plants, according to researchers.

- [**New robot rolls with the rules of pedestrian conduct**](#) [周三, 30 8月 22:34]

Engineers have designed an autonomous robot with 'socially aware navigation,' that can keep pace with foot traffic while observing these general codes of pedestrian conduct.

- [**Robot probes mystery of prehistoric sea creature's swimming style**](#) [周三, 30 8月 22:26]

A new study has shed light on the swimming style of plesiosaurs by creating a robot to mimic its movements.

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Environment News

Top stories featured on ScienceDaily's Plants & Animals, Earth & Climate, and Fossils & Ruins sections.

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- [**Eating meat linked to higher risk of diabetes**](#) [周三, 06 9月 01:45]

Higher intake of red meat and poultry is associated with significantly increased risk of developing diabetes, which is partially attributed to their higher content of heme iron in these meats, new research shows.

- [**Could switchgrass help China's air quality?**](#) [周三, 06 9月 01:45]

Researchers have proposed an idea that could improve China's air quality, but they're not atmospheric scientists. They're agronomists.

- [**Building a morphogen gradient by simple diffusion in a growing plant leaf**](#) [周三, 06 9月 00:33]

The research team has shown that a transcriptional co-activator ANGUSTIFOLIA3 (AN3) forms a signaling gradient along the leaf

proximal-to-distal axis to determine cell-proliferation domain.

• [**Human-made reefs: A compelling diving alternative**](#) [周三, 06 9月 00:33]

Researchers have examined diving habits and behavior around Eilat's natural and artificial reefs. According to study, the average diver density at the artificial reef was higher than at the two nearby natural knolls, and the Tamar reef effectively diverts divers from natural knolls. Secondly, the study found that regarding attitudes toward natural versus artificial reefs, divers consider the artificial reefs more appropriate for training, but they feel less relaxed around them.

• [**Genome of threatened northern spotted owl assembled**](#) [周二, 05 9月 23:14]

A charismatic owl iconic to Pacific Coast forests is no longer ruling the roost, and scientists now have another tool for understanding its decline. Researchers have assembled the California Academy of Sciences' first-ever animal genome after sequencing the DNA of the northern spotted owl (*Strix occidentalis caurina*). Academy scientists and collaborators extensively mapped the bird's genetic material to better understand how this threatened forest dweller is interacting with non-native owls invad...

• [**Cannot sleep due to stress? Here is the cure**](#) [周二, 05 9月 23:13]

Everyone empirically knows that stressful events certainly affect sound sleep. Scientists have found that the active component rich in sugarcane and other natural products may ameliorate stress and help having sound sleep.

• [**The sniff test of self-recognition confirmed: Dogs have self-awareness**](#) [周二, 05 9月 23:13]

A new research study used a sniff-test to evaluate the ability of dogs to recognize themselves. The experiment confirms the hypothesis of dogs' self-cognition proposed last year.

• [**When not to eat your kids**](#) [周二, 05 9月 23:07]

Even though it is known to be a cannibal, the mangrove rivulus or killifish of the Americas will never eat one of its own embryos, even if it is hungry. This slender amphibious fish can recognize its own kin, even if these are still in the embryonic stage, according to new research.

- [**'Bee' informed: Public interest exceeds understanding in bee conservation**](#) [周二, 05 9月 22:44]

Many people have heard bee populations are declining due to such threats as colony collapse disorder, pesticides and habitat loss. And many understand bees are critical to plant pollination. Yet, according to a study, few are aware of the wide diversity of bees and other pollinators beyond such species as honeybees. Because conservation efforts require substantial public support, outreach is needed to help people understand bee declines and how to protect pollinators.

- [**Life in the fast lane: How plants avoid traffic jams**](#) [周二, 05 9月 22:43]

Scientists have discovered how plants ingeniously avoid internal traffic jams.

- [**Discovery of dynamic seasonal changes in color perception**](#) [周二, 05 9月 21:38]

In many areas, the environment fluctuates greatly depending on the season, and animals living in those areas must adapt to the changing environment. A research group has found that color perception of Medaka, a small fish inhabiting rice fields and streams, varies greatly according to seasonal changes.

- [**Hop, skip, run, leap: Unpredictability boosts survival for bipedal desert rodents**](#) [周二, 05 9月 21:36]

Sometimes it pays to be unpredictable. A new study shows that when bipedal desert rodents called jerboas are being chased, sudden changes in direction, gait and speed help them elude hungry predators and likely give them a competitive edge over their quadrupedal neighbors.

- [**Was the primordial soup a hearty pre-protein**](#)

[stew?](#) [周二, 05 9月 21:36]

How proteins evolved billions of years ago, when Earth was devoid of life, has stumped many a scientist. A little do-si-do between amino acids and their chemical lookalikes may have done the trick. Evolutionary chemists tried it and got results by the boatload.

• [Diverse landscapes are more productive and adapt better to climate change](#) [周二, 05 9月 04:56]

Ecosystems with high biodiversity are more productive and stable towards annual fluctuations in environmental conditions than those with a low diversity of species. They also adapt better to climate-driven environmental changes. These are the key findings environmental scientists made in a study of about 450 landscapes harboring 2,200 plants and animal species.

• [More 'losers' than 'winners' predicted for Southern Ocean seafloor animals](#) [周二, 05 9月 00:04]

A new study of the marine invertebrates living in the seas around Antarctica reveals there will be more 'losers' than 'winners' over the next century as the Antarctic seafloor warms.

• [Team gathers unprecedented data on atmosphere's organic chemistry](#) [周二, 05 9月 00:04]

Teams of scientists have carried out the most detailed, extended observations of atmospheric chemistry ever attempted in one place, in patch of ponderosa pine forest in Colorado, and found previously unmeasured compounds.

• [Like a revolving door: How shuttling proteins operate nuclear pores](#) [周一, 04 9月 21:36]

Nuclear pore complexes are tiny channels where the exchange of substances between the cell nucleus and the cytoplasm takes place. Scientists report on startling new research that might overturn established models of nuclear transport regulation. Their study reveals how shuttling proteins known as importins control the function of

nuclear pores – as opposed to the view that nuclear pores control the shuttling of importins.

- [**Indigenous storytelling is a new asset for biocultural conservation**](#) [周一, 04 9月 21:36]

Some of the areas hosting most of the world's biodiversity are those inhabited by indigenous peoples. In the same way that biodiversity is being eroded, so is the world's cultural diversity. As a result, there have been several calls to promote biocultural conservation approaches that sustain both biodiversity and indigenous cultures.

- [**Reindeer grazing protects tundra plant diversity in a warming climate**](#) [周一, 04 9月 21:34]

Climate warming reduces the number of plant species in the tundra, but plant-eating animals, such as reindeer and voles, can turn this negative effect into something positive.

- [**Bacteria act as aphrodisiac for the closest relatives of animals**](#) [周六, 02 9月 01:55]

Choanoflagellates are a ubiquitous but enigmatic one-celled ocean organism that may give clues to the origin of multicellularity in animals. New research has turned up a surprising kink in the organism's sex life: swarming and mating are triggered by a marine bacterium common in their environment. Researchers traced this response to a protein secreted by the bacteria. The choanos seem to be eavesdropping on bacteria to determine their life history.

- [**Earthworms at the root of sugar maple decline**](#) [周六, 02 9月 00:51]

Non-native worms are eating up the forest floor, causing sugar maples to die back and perhaps harming other forest dwellers, a new study suggests.

- [**Metallurgy likely has more than one birthplace**](#) [周五, 01 9月 23:36]

When and where did humans invent metal smelting? Scientists have found the answer to this long-debated question in the history of technology. Metallurgy does not have a single origin but probably arose

at various locations at about the same time. The experts reached this conclusion after re-examining the 8,500-year-old copper slag and analysing the chemical composition of other copper artefacts from the Stone Age settlement of Çatalhöyük in the Near East.

• [**Etosis phenomenon discovered in human blood monocytes**](#) [周五, 01 9月 22:46]

The first clear demonstration of etosis in human blood monocytes, a type of immune cell, has now been discovered by scientists.

• [**Can corals survive climate change?**](#) [周五, 01 9月 21:39]

Scientists have issued advice that more research is urgently required to determine whether corals can acclimate and adapt to the rapid pace of climate change.

• [**Virus hijacks cell's transportation system**](#) [周五, 01 9月 21:39]

A deadly tick-borne virus uses the host neuron's transportation system to move their RNA, resulting in the local reproduction of the virus and severe neurological symptoms.

• [**New light shed on photosynthesis**](#) [周五, 01 9月 21:38]

A team of scientists has taken us a step closer to unlocking the secrets of photosynthesis, and possibly to cleaner fuels. Their discovery describes the structure of a reaction center (from a heliobacterium) which preserves the characteristics of the ancestral one, and so provides new insight into the evolution of photosynthesis.

• [**Nature imagery calms prisoners**](#) [周五, 01 9月 21:38]

Sweeping shots of majestic landscapes. Glaciers, forests and waterfalls. New research shows that these images, shown to people deprived of access to nature, can reduce tension, help defuse anger and make some of the harshest environments, like a solitary confinement cellblock in a maximum-security prison, a little easier to bear.

• [**Paleontologist aids in new discovery 33 years after finding fossil**](#) [周五, 01 9月 06:05]

The fossilized plesiosaur Sankar Chatterjee found in 1984 is giving

scientists a new understanding of convergent evolution between reptiles and mammals.

- [**Fungal infections reduce frogs' tolerance of heat**](#)

[周五, 01 9月 06:05]

Fungal diseases are increasing in animals, which might have serious consequences for wildlife living in a hotter world, said a scientist. A new study shows that fungal infections reduced the heat tolerance of frogs by up to 4 degrees Celsius.

- [**Panama's native tree species excel in infertile tropical soils**](#)

[周五, 01 9月 06:03]

Scientists confirm that native tree species performed very well in field trials and would be preferable to teak in the poor soils of the Panama Canal watershed.

- [**Coming soon to Montreal: The infrastructure cost of climate change**](#)

[周五, 01 9月 03:13]

The climate of Montreal is changing and will continue to do so at a rapidly increasing rate and with much more spatial variability in the future, according to new research.

- [**Insect eyes inspire new solar cell design**](#)

[周五, 01 9月 03:12]

Packing tiny solar cells together, like micro-lenses in the compound eye of an insect, could help scientists overcome a major roadblock to the development of perovskite photovoltaics.

- [**More research needed on effects of maternal stress in wild animals**](#)

[周五, 01 9月 03:12]

If a human mother is stressed while pregnant, research shows her child is much more likely to have emotional, cognitive or even physiological problems, such as attention deficit, hyperactivity, anxiety, language delay, obesity, diabetes and hypertension. Conversely, the results of maternal stress on the offspring of other animals -- particularly wildlife under threat from predators -- is believed to be positive, and contributes to their survival.

- [**Study reveals ways collegiate sports venues can**](#)

[achieve 'zero waste'](#) [周五, 01 9月 02:13]

A new study analyzing waste and recyclables during Mizzou's 2014 home football season demonstrates that by implementing several recommendations the team developed, such as offering better recycling receptacles and better sorting options for waste, sporting venues could be well on their way to achieving environmental benefits that exceed the standards for 'zero-waste' operations.

. [Does indoor spraying help prevent dengue?](#) [周五, 01 9月 02:13]

The prevention of dengue, the most prevalent mosquito-borne virus in the world, relies heavily on controlling mosquito populations, as the currently available dengue vaccine is only partially effective. Indoor spraying -- which involves spraying of insecticides inside houses -- has the potential to be a key part of those prevention efforts, researchers report.

. [Reconstructing life at its beginning, cell by cell](#) [周五, 01 9月 02:12]

In a technological tour de force, scientists have created a virtual model of an early fly embryo. Its interactive interface allows researchers to explore the blueprint that underlies development at unprecedented spatial resolution and predict which cells express which genes.

. [Nature gem within the city: What grows in the biodiversity-rich Bukit Nanas Forest Reserve](#) [周五, 01 9月 02:05]

Being the oldest of its kind in Malaysia, Bukit Nanas Forest Reserve is a nature enclave, lying in the center of the busy capital city Kuala Lumpur. Researchers have now teamed up to publish an extensive checklist of the flora of this urban nature enclave, while making use of the innovative 'ecosystem inventory' template.

. [Cross-kingdom regulation of honeybee caste development by dietary plant miRNAs](#) [周五, 01 9月 02:05]

Honeybee larvae develop into workers but not queens, in part, because their diet of beebread/pollen is enriched in plant miRNAs. While miRNAs are generally negative regulators of gene expression in

eukaryotes, they also negatively regulate larval development when honeybee larvae consume beebread/pollen and take up plant miRNAs.

• [**Pinpointing the sources of trans-pacific dust**](#) [周五, 01 9月 02:05]

Airborne dust from Asia travels across the Pacific passport-free, carrying pollution, building soil, and coloring sunsets thousands of miles from its source. Identifying that source is important for understanding atmospheric circulation, contaminant pathways, and climate. But collecting enough airborne dust to pinpoint its source is challenging. Now, a team of researchers has developed a way to match microscopic quartz grains to the desert they blew in from.

• [**Protein transport channel offers new target for thwarting pathogen**](#) [周五, 01 9月 01:42]

A bacterium that attacks people suffering from chronic lung disease and compromised immune systems could be halted by disrupting the distribution channels the organism uses to access the nutrient-rich cytoplasm of its host cell.

• [**Fossil footprints challenge established theories of human evolution**](#) [周五, 01 9月 01:42]

Newly discovered human-like footprints from Crete may put the established narrative of early human evolution to the test. The footprints are approximately 5.7 million years old and were made at a time when previous research puts our ancestors in Africa -- with ape-like feet.

• [**Human bones in south Mexico: Stalagmite reveals their age as 13,000 years old**](#) [周五, 01 9月 01:12]

A prehistoric human skeleton found on the Yucatán Peninsula is at least 13,000 years old and most likely dates from a glacial period at the end of the most recent ice age, the late Pleistocene. A German-Mexican team of researchers has now dated the fossil skeleton based on a stalagmite that grew on the hip bone.

• [**What changes when you warm the Antarctic Ocean just 1 degree? Lots**](#) [周五, 01 9月 00:30]

After warming a natural seabed in the Antarctic Ocean by just 1° or 2° Celsius, researchers observed massive impacts on a marine assemblage, as growth rates nearly doubled. The findings of what the researchers call the 'most realistic ocean warming experiment to date' show that the effects of future warming may far exceed expectations.

• [**Bacterial protein acts as aphrodisiac for choanoflagellates**](#) [周五, 01 9月 00:30]

Researchers investigating how single-celled organisms evolved to become multicellular stumbled across a strange phenomenon during their experiments: Single-celled eukaryotes called choanoflagellates, which are the closest living relatives to animals, begin to sexually reproduce in response to a protein produced by bacteria. Why this happens in natural settings is still unclear, though they speculate that it could help the choanoflagellates easily mate with others from the same species.

• [**New molecules, innovation, value**](#) [周四, 31 8月 23:30]

Scientists are proposing a new model for creating, applying and commercializing chemicals made from corn stalks, wood chips and other sources of biomass.

• [**Why are coyote populations difficult to control?**](#) [周四, 31 8月 22:15]

Conventional wisdom suggests that coyote control efforts actually result in an increase in the number of coyotes due to increasing litter sizes and pregnancy rates among individuals that survive.

• [**Antidepressants found in fish brains in Great Lakes region**](#) [周四, 31 8月 22:14]

Human antidepressants are building up in the brains of bass, walleye and several other fish common to the Great Lakes region, scientists say.

• [**How Neanderthals made the very first glue**](#) [周四, 31 8月 21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- [**PSA screening significantly reduces the risk for death from prostate cancer**](#) [周二, 05 9月 06:17]

After differences in implementation and settings were accounted for, two important prostate cancer screening trials provide compatible evidence that screening reduces prostate cancer mortality.

- [**Vaccines save 20 million lives, \\$350 billion in poor countries since 2001**](#) [周五, 01 9月 22:10]

Vaccination efforts made in the world's poorest countries since 2001 will have prevented 20 million deaths and saved \$350 billion in health-care costs by 2020, according to a new study.

- [**Nature imagery calms prisoners**](#) [周五, 01 9月 21:38]

Sweeping shots of majestic landscapes. Glaciers, forests and waterfalls. New research shows that these images, shown to people deprived of access to nature, can reduce tension, help defuse anger and make some of the harshest environments, like a solitary confinement cellblock in a maximum-security prison, a little easier to bear.

- [**New boarding procedures, smaller cabin size may limit infection on planes**](#) [周五, 01 9月 03:13]

During major epidemics, cramped airplane cabins are fertile ground for the spread of infection, but new research suggests changing routine boarding protocols could be a key to reducing rampant transmission of disease.

- [**Measuring the cost of quality measurement**](#) [周五, 01 9月

03:12]

Less than 2 decades after publication of the National Academy of Medicine's (formerly the Institute of Medicine) Crossing the Quality Chasm: A New Health System for the 21st Century, quality measurement has become routine and widespread throughout the US health care system.

• [**Study reveals ways collegiate sports venues can achieve 'zero waste'**](#) [周五, 01 9月 02:13]

A new study analyzing waste and recyclables during Mizzou's 2014 home football season demonstrates that by implementing several recommendations the team developed, such as offering better recycling receptacles and better sorting options for waste, sporting venues could be well on their way to achieving environmental benefits that exceed the standards for 'zero-waste' operations.

• [**People become more economically conservative when angered**](#) [周四, 31 8月 23:30]

People tend to lean more economically conservative when they're angry, according to a new article. Researchers came to the conclusion after running multiple studies that included more than 1,000 participants.

• [**How reading and writing with your child boost more than just literacy**](#) [周四, 31 8月 22:21]

Children who read and write at home -- whether for assignments or just for fun -- are building long-term study and executive function skills, according to a new article

• [**Three policies to improve children's language development**](#) [周四, 31 8月 21:14]

Bilingual children from low-income homes are at greater risk of falling behind their peers in developing the appropriate language skills for their age group, leading to poorer academic achievement over time. A new article addresses how inequality impacts children's language development and details policies that can intervene.

• [**Jordan faces likelihood of much more frequent**](#)

[long and severe droughts](#) [周四, 31 8月 08:21]

Jordan is among the world's most water-poor nations, and a new, comprehensive analysis of regional drought and land-use changes in upstream Syria suggests the conditions could get significantly worse.

[Federal preemption of taxes on state and local sugar-sweetened beverages is not warranted](#) [周四, 31 8月 00:49]

Federal and state government can alter or hinder state and local activity through a legal mechanism called preemption -- when a higher level of government blocks the action of a lower level of government. A new study evaluates whether it could be used to block taxes on sugar-sweetened beverages.

[Hope for improving protection of the reticulated python](#) [周三, 30 8月 23:48]

Trading in skins of the reticulated python is such a lucrative business that illegal exports are rising sharply and existing trade restrictions are being circumvented on a large scale. This is endangering the stability of populations. Therefore, researchers are developing genetic methods for tracking down individual origins and potential trade routes of the skins.

[Researchers raise health concerns about off-road vehicles and inhalation of asbestos](#) [周三, 30 8月 23:47]

Preventing injuries may not be the only reason children shouldn't use off-road vehicles (ORVs). In a new study, public health scientists raise concerns that people who use ORVs in many regions of the country may face exposure to hazardous mineral fibers.

[Is changing languages effortful for bilingual speakers? Depends on the situation](#) [周三, 30 8月 22:37]

Research on the neurobiology of bilingualism has suggested that switching languages is inherently effortful, requiring executive control to manage cognitive functions, but a new study shows this is only the case when speakers are prompted, or forced, to do so.

[Shifting school start times could contribute \\$83](#)

[billion to US economy within a decade](#) [周三, 30 8月 22:36]

RAND Corporation and RAND Europe have released the first-ever analysis of the economic implications of a shift in school start times in the US. The study shows that a nationwide move to 8.30 a.m. could lead to an economic gain of \$83 billion to the US economy within a decade. The gains projected through the study's economic model would be realized through the higher academic and professional performance of students, and reduced car crash rates.

• [Leaf sensors can tell farmers when crops need to be watered](#) [周三, 30 8月 22:34]

Plant-based sensors that measure the thickness and electrical capacitance of leaves show great promise for telling farmers when to activate their irrigation systems, preventing both water waste and parched plants, according to researchers.

• [Methane emissions tackled with gas-guzzling bacteria](#) [周三, 30 8月 21:45]

Methane-oxidizing bacteria -- key organisms responsible for greenhouse gas mitigation -- are more flexible and resilient than previously thought, an international research has shown.

• [Conservation hindered by geographical mismatches between capacity, need](#) [周三, 30 8月 21:45]

Geographical mismatches between conservation needs and expertise may hinder global conservation goals, new research suggests.

• [Shared custody equals less stress for children](#) [周三, 30 8月 21:42]

Children who live full time with one parent are more likely to feel stressed than children in shared custody situations. The benefit holds regardless of the level of conflict between the parents or between parent and child.

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [**Bacteria act as aphrodisiac for the closest relatives of animals**](#) [周六, 02 9月 01:55]

Choanoflagellates are a ubiquitous but enigmatic one-celled ocean organism that may give clues to the origin of multicellularity in animals. New research has turned up a surprising kink in the organism's sex life: swarming and mating are triggered by a marine bacterium common in their environment. Researchers traced this response to a protein secreted by the bacteria. The choanos seem to be eavesdropping on bacteria to determine their life history.

- [**Mouth clicks used in human echolocation captured in unprecedented detail**](#) [周五, 01 9月 02:13]

Like some bats and marine mammals, people can develop expert echolocation skills, in which they produce a clicking sound with their mouths and listen to the reflected sound waves to 'see' their surroundings. A new study provides the first in-depth analysis of the mouth clicks used in human echolocation.

- [**First hints of possible water content on TRAPPIST-1 planets**](#) [周四, 31 8月 23:30]

Astronomers have been trying to determine whether there might be water on the seven Earth-sized planets orbiting the nearby dwarf star TRAPPIST-1. The results suggest that the outer planets of the system might still harbor substantial amounts of water. This includes the three planets within the habitable zone of the star, lending further weight to the possibility that they may indeed be habitable.

• [**How Neanderthals made the very first glue**](#) [周四, 31 8月 21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

• [**How certain ants snap their jaws shut in the blink of an eye**](#) [周四, 31 8月 08:21]

Few victims stand a chance against the formidable mandibles of a trap-jaw ant. In conflicts between predators and prey, speed is a decided advantage, and evolution has given these insects an edge with spring-loaded jaws that snap shut with astonishing speed. Biologists have now provided the first mechanical description of the jaws of a little-known group of trap-jaw ants.

• [**Gold nanoparticles fry cancer on glowing mice**](#) [周四, 31 8月 08:21]

A new study takes a new approach to killing cancer: Why not fry it into oblivion with vibrating gold nanoparticles?

• [**Motorized molecules drill through cells**](#) [周四, 31 8月 01:22]

Motorized molecules that target diseased cells may deliver drugs to or kill the cells by drilling into the cell membranes. Scientists have demonstrated them on cancer and other cells.

• [**Acting like a muscle, nano-sized device lifts 165 times its own weight**](#) [周四, 31 8月 01:22]

Engineers have discovered a simple, economical way to make a nano-sized device that can match the friendly neighborhood Avenger, on a much smaller scale. Their creation weighs 1.6 milligrams (about as much as five poppy seeds) and can lift 265 milligrams (the weight of about 825 poppy seeds) hundreds of times in a row.

• [**Otters learn by copying each other**](#) [周四, 31 8月 01:11]

Otters can learn how to solve puzzles by watching and copying each other, new research shows.

• [**What lit up the universe? Black holes may have**](#)

punctured darkened galaxies, allowing light to escape [周三, 30 8月 23:48]

Researchers have a new explanation for how the universe changed from darkness to light. They propose that black holes within galaxies produce winds strong enough to fling out matter that punctures holes in galaxies, allowing light to escape.

Understanding ancient geometric earthworks in southwestern Amazonia [周三, 30 8月 22:34]

Researchers examine pre-colonial geometric earthworks in the southwestern Amazonia from the point of view of indigenous peoples and archaeology. The study shows that the earthworks were once important ritual communication spaces.

Do squirrels teach bears to cross the railroad?

Grizzlies dig squirrel middens for grains [周三, 30 8月 22:34]

Grains have been reported to regularly trickle from hopper cars travelling via the railway through Canada's Banff and Yoho National Parks. As a result, the local red squirrels collect and bury the spilled seeds in their winter larders, which are sometimes discovered by hungry grizzly bears. Grain-conditioned bears may frequent the railway more often than usual, resulting in increased mortality by train strikes.

New robot rolls with the rules of pedestrian conduct [周三, 30 8月 22:34]

Engineers have designed an autonomous robot with 'socially aware navigation,' that can keep pace with foot traffic while observing these general codes of pedestrian conduct.

Robot probes mystery of prehistoric sea creature's swimming style [周三, 30 8月 22:26]

A new study has shed light on the swimming style of plesiosaurs by creating a robot to mimic its movements.

Fossil whales' teeth shows what ferocious

[predators they were](#) [周三, 30 8月 21:45]

The feeding habits of the whale -- the world's biggest animal -- have evolved to filter feeding, shows new international research. Ancient whales appear to have been ferocious predators, investigators explain.

. [Say hello to the 3-D Obama ant](#) [周三, 30 8月 21:42]

Three new ant species named in honor of key figures in conservation -- Barack Obama, Ken Saro-Wiwa, and E.O. Wilson -- are immortalized as 3-D virtual avatars.

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ScienceDaily

周四, 07 9月 2017

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- [**'Vampires' may have been real people with this blood disorder**](#) [周四, 07 9月 02:49]

A newly discovered genetic mutation triggers erythropoietic protoporphyria (EPP). This discovery illuminates a novel biological mechanism potentially responsible for stories of 'vampires' and identifies a potential therapeutic target for treating EPP.

- [**Sleep may help eyewitnesses from choosing innocent suspects**](#) [周四, 07 9月 02:49]

Sleep may influence an eyewitness's ability to correctly pick a guilty person out of a police lineup, indicates a new study.

- [**Improved vaccine that protects against nine types of HPV is highly effective**](#) [周四, 07 9月 02:32]

Cervical cancer is the second most common cause of cancer-related death worldwide, with almost 300,000 deaths occurring each year. More than 80 percent of these deaths occur in developing nations. The advent of human papillomavirus (HPV) vaccines has significantly reduced the number of those who develop and die from cervical cancer.

- [**Concussions in women: Rates, symptoms and recovery are different than men**](#) [周四, 07 9月 02:32]

Females tend to report more symptoms -- and more severe ones -- and may also take longer to recover from brain injuries than their male counterparts.

- [**Synthetic version of popular anticoagulant poised for clinical trials**](#) [周四, 07 9月 02:32]

A synthetic version of low molecular weight heparin is poised for clinical trials and development as a drug for patients with clotting disorders, and those undergoing procedures such as kidney dialysis, heart bypass surgery, stent implantation, and knee and hip replacement.

- [**How retractions significantly hurt scientists**](#) [周三, 06 9月 23:46]

Life scientists who have published papers that are retracted by journals subsequently suffer a 10 percent drop in citations of their remaining work, compared to similar but unaffected scientists, according to a new study.

- [**Blindness study shows how gene causes middle-age sight loss**](#) [周三, 06 9月 22:37]

Chemical changes in the eye that can lead to blindness have been identified by scientists, report investigators.

- [**Substance in coffee delays onset of diabetes in laboratory mice**](#) [周三, 06 9月 22:37]

Substances in coffee have been identified that could help quash the risk of developing type 2 diabetes. But few of these have been tested in animals. Now, scientists report that one of these previously untested compounds appears to improve cell function and insulin sensitivity in laboratory mice. The finding could spur the development of new drugs to treat or even prevent the disease.

- [**New strategy for vaccinating pregnant mothers against malaria holds promise for protecting infants**](#) [周三, 06 9月 22:37]

A mother and infant in Malawi have the same repertoire of antibodies to *Plasmodium falciparum*, the malaria parasite. That suggests that

boosting the mother's immune response to malaria, as via vaccination, will result in better protection for the infant.

- [**Supercharging silicon batteries**](#) [周三, 06 9月 22:36]

Scientists have designed a novel silicon-based anode to provide lithium batteries with increased power and better stability.

- [**Quantum tech has its sights set on human biochemistry**](#) [周三, 06 9月 22:36]

Scientists have developed a new tool for imaging life at the nanoscale that will provide new insights into the role of transition metal ions such as copper in neurodegenerative diseases.

- [**Cloud formation suppressed by biogenic organic emissions**](#) [周三, 06 9月 22:36]

Evidence has been found that near-ground biogenic emissions of organics suppress cloud formation in cool-temperate forests in autumn, providing clues to how global warming will affect cloud formation and the overall climate.

- [**Colon of patients with IBS reacts differently to bacteria**](#) [周三, 06 9月 22:36]

The intestinal barrier of patients with the gastrointestinal disease IBS allows bacteria to pass more freely than in healthy people, according to a study. The study is the first to investigate IBS using living bacteria.

- [**Unraveling a major cause of sea ice retreat in the Arctic Ocean**](#) [周三, 06 9月 22:36]

Quantitative analysis has evidenced the acceleration system of melting ice: dark water surfaces absorb more heat than white ice surfaces, thus melting ice and making more water surfaces in the Arctic Ocean.

- [**Green light for ultra-fine display colors**](#) [周三, 06 9月 22:36]

Chemical engineers have succeeded in generating ultra-pure green light for the first time. The new light-emitting diode will pave the way for visibly improved color quality in a new generation of ultra-high definition displays for TVs and smartphones.

- [**Accretion-powered pulsar reveals unique timing glitch**](#) [周三, 06 9月 22:36]

The discovery of the largest timing irregularity yet observed in a pulsar is the first confirmation that pulsars in binary systems exhibit the strange phenomenon known as a 'glitch.'

- [**Gut microbiota of larvae has an impact on mosquito's ability to transmit human pathogens**](#) [周三, 06 9月 22:36]

Researchers have demonstrated that differential bacterial exposure during the development of mosquito larvae (*Aedes aegypti*) can have carry-over effects on adult traits related to an insect's ability to be a successful vector of arboviruses. This study represents an important step toward a more comprehensive understanding of how the environment shapes the risk of vector-borne disease.

- [**Protein that extends life of yeast cells**](#) [周三, 06 9月 22:35]

To understand and control aging is the aspiration of many scientists. Researchers have now discovered that the protein Gcn4 decreases protein synthesis and extends the life of yeast cells. Understanding how individual genes affect lifespan opens new ways to control the aging process and the occurrence of aging-related diseases.

- [**Bacteria responsible for legionellosis modulates the host cell metabolism to its advantage**](#) [周三, 06 9月 22:35]

The bacterial pathogen *Legionella pneumophila* has developed a specific strategy to target the host cell mitochondria, the organelles in charge of cellular bioenergetics, scientists have shown. New work provides precious information on how a pathogen manipulates the cellular metabolism to replicate intracellularly, and proposes a new concept of protection of host cells from *Legionella*-induced mitochondrial changes in order to fight infection.

- [**New tool for characterizing quantum simulators**](#) [周三, 06 9月 22:35]

Physicists are developing quantum simulators, to help solve problems that are beyond the reach of conventional computers. However, they

first need new tools to ensure that the simulators work properly. Researchers have now implemented a new technique in the laboratory that can be used to efficiently characterize the complex states of quantum simulators. The technique could become a new standard tool for characterizing quantum simulators.

[Keychain detector could catch food allergens before it's too late](#) [周三, 06 9月 22:35]

For kids and adults with food allergies, a restaurant outing can be a fraught experience. Even when care is taken, freshly prepared or packaged meals can accidentally become cross-contaminated with an offending food and trigger a reaction. Now researchers report the development of a new portable allergen-detection system -- including a keychain analyzer -- that could help prevent trips to the emergency room.

[Art courses could help medical students become better clinical observers](#) [周三, 06 9月 22:35]

In an effort to explore ways to improve clinical observation skills among medical students, researchers found significant improvement in observational recognition skills among students who took an art observation course and demonstrated that art training could help teach medical students to become better clinical observers.

[Research dog helps scientists save endangered carnivores](#) [周三, 06 9月 22:35]

Scat-sniffing research dogs are helping scientists map out a plan to save reclusive jaguars, pumas, bush dogs and other endangered carnivores in the increasingly fragmented forests of northeastern Argentina, according to a new study.

[Will mallards hybridize their cousins out of existence?](#) [周三, 06 9月 22:35]

Mallards -- the familiar ducks of city parks -- are one of a group of closely related species, many of which are far less common. Interbreeding can threaten the genetic distinctiveness of those other

species and cause concern for their conservation. A new study investigates hybridization between mallards and mottled ducks, a species adapted for life in coastal marshes, and finds that while hybridization rates are currently low, human activity could cause them to rise in the future.

[**Parkinson's severity assessed through drawing**](#) [周三, 06 9月 22:35]

Researchers asked volunteers to draw a spiral on a sheet of paper. By analyzing how long it took them to draw the spiral and how hard they pressed on the paper with the pen, the team could not only tell which volunteers had Parkinson's disease, they could also tell how severe it was. Doctors could use the automated system in their surgery to easily diagnose the disease or keep track of the progress of existing patients.

[**Flip-flop qubits: Radical new quantum computing design invented**](#) [周三, 06 9月 22:35]

Engineers have invented a radical new architecture for quantum computing, based on novel 'flip-flop qubits,' that promises to make the large-scale manufacture of quantum chips dramatically cheaper -- and easier -- than thought possible. The new chip design allows for a silicon quantum processor that can be scaled up without the precise placement of atoms required in other approaches.

[**Clever cockatoos bend hooks into straight wire to fish for food**](#) [周三, 06 9月 08:29]

Bending of a hook into wire to fish for the handle of a basket by crow Betty 15 years ago stunned the scientific world. Cognitive biologists studied tool making in an Indonesian cockatoo. Other than crows, cockatoos are not using tools in the wild. The birds manufactured hook tools out of straight wire without ever having seen or used a hook tool before.

[**Something to sneeze about: Democratic voting in African wild dog packs**](#) [周三, 06 9月 08:29]

Scientists studying African wild dogs in Botswana have found members of this endangered species use sneezes to vote on when the pack will

move off and start hunting.

- [**Newly-discovered semiconductor dynamics may help improve energy efficiency**](#) [周三, 06 9月 08:29]

Researchers examining the flow of electricity through semiconductors have uncovered another reason these materials seem to lose their ability to carry a charge as they become more densely 'doped.'

- [**Superhuman 'night' vision during the total eclipse?**](#) [周三, 06 9月 04:40]

It was dark as night during the recent total solar eclipse, yet people and objects were easier to see than on a typical moonless night. Scientists have discovered a possible biological explanation -- the presence (or absence) of a protein in the retina known as a GABA receptor.

- [**Humans still evolving, large-scale study of genetic data shows**](#) [周三, 06 9月 02:55]

In a study analyzing the genomes of 210,000 people in the United States and Britain, researchers have found that the genetic variants linked to Alzheimer's disease and heavy smoking are less frequent in people with longer lifespans, suggesting that natural selection is weeding out these unfavorable variants in both populations.

- [**Mobile phone use while pregnant not linked to child neurodevelopment problems, study suggests**](#) [周三, 06 9月 02:55]

Mobile phone use during pregnancy is unlikely to have any adverse effects on child neurodevelopment, according to new research. These findings provide further evidence that exposure to radio frequency electromagnetic fields associated with maternal use of mobile phones during pregnancy is not linked to neurodevelopment in children.

- [**Research shows how DNA molecules cross nanopores**](#) [周三, 06 9月 02:55]

Research sheds new light on the understanding of the measurement of polymer properties in diverse chemical industries such as plastics

manufacturing and food processing, and the design of biosensors.

• [**Swings in dad's testosterone affects the family -- for better or worse -- after baby arrives**](#) [周三, 06 9月 02:55]

Testosterone levels are a key factor in a family's health and happiness after a newborn arrives. Researchers have found that a drop can signal postpartum depression in dad, and a spike may be a sign of aggression.

• [**Aeroices: Newly discovered ultralow-density ice**](#) [周三, 06 9月 02:55]

Relatively little is known about the effects of extreme negative pressure on water molecules. Exploring a significant region of negative pressure through molecular dynamic simulations, researchers have now theoretically discovered a new family of ice phases. Called aeroices, these ices have the lowest density of all known ice crystals.

• [**New, ultra-rare gene mutations implicated in eating disorders**](#) [周三, 06 9月 01:45]

A combination of whole exome sequencing, machine learning, and network analysis, has identified new, ultra-rare gene mutations within specific biological pathways that may contribute to eating disorders, according to a study.

• [**Eating meat linked to higher risk of diabetes**](#) [周三, 06 9月 01:45]

Higher intake of red meat and poultry is associated with significantly increased risk of developing diabetes, which is partially attributed to their higher content of heme iron in these meats, new research shows.

• [**Could switchgrass help China's air quality?**](#) [周三, 06 9月 01:45]

Researchers have proposed an idea that could improve China's air quality, but they're not atmospheric scientists. They're agronomists.

• [**Test of cervical mucus may reveal pregnant women's risk of going into labor too early**](#) [周三, 06 9月 01:45]

A new approach to evaluating the risk of preterm birth has been proposed by analyzing the properties of cervical mucus. The researchers found that cervical mucus from women who delivered their babies early,

before 37 weeks, was very different from that of women who delivered later.

- **[More durable, less expensive fuel cells](#)** [周三, 06 9月 01:44]

A new technology has been created that could make fuel cells cheaper and more durable. Hydrogen-powered fuel cells are a green alternative to internal combustion engines because they produce power through electrochemical reactions, leaving no pollution behind. Platinum is the most common catalyst in the type of fuel cells used in vehicles, but it's expensive. The UD team used a novel method to come up with a less expensive catalyst.

- **[Boosting a lipid fuel makes mice less sensitive to the cold](#)** [周三, 06 9月 00:57]

Humans, like other animals, become more sensitive to cold with age. Now, scientists report that delivering a single dose of a nutritional supplement called L-carnitine to older mice restores a youthful ability to adapt to the cold. After treatment, they tolerate chilly conditions that would ordinarily trigger hypothermia. The supplement works by boosting levels of a newly discovered fuel source for brown fat, or “good fat”.

- **[Contagious yawning more closely associated with perceptual sensitivity than empathy](#)** [周三, 06 9月 00:33]

Contrary to common belief that the yawning contagion is associated with empathy, it is in fact, more likely that perceptual sensitivity is to blame, research suggests.

- **[Building a morphogen gradient by simple diffusion in a growing plant leaf](#)** [周三, 06 9月 00:33]

The research team has shown that a transcriptional co-activator ANGUSTIFOLIA3 (AN3) forms a signaling gradient along the leaf proximal-to-distal axis to determine cell-proliferation domain.

- **[Human-made reefs: A compelling diving alternative](#)** [周三, 06 9月 00:33]

Researchers have examined diving habits and behavior around Eilat's natural and artificial reefs. According to study, the average diver density at the artificial reef was higher than at the two nearby natural knolls, and the Tamar reef effectively diverts divers from natural knolls. Secondly, the study found that regarding attitudes toward natural versus artificial reefs, divers consider the artificial reefs more appropriate for training, but they feel less relaxed around them.

- ['Waves' of neural activity give new clues about Alzheimer's](#) [周三, 06 9月 00:32]

While unconscious during deep sleep, millions of neurons' activity travels across the cerebral cortex. This phenomenon, known as slow waves, is related to the consolidation of memory. The European project called SloW Dyn, has now revealed anomalies in this activity in mice displaying a decline similar to Alzheimer's.

- [New evidence about how to prevent worsening pneumonia](#) [周三, 06 9月 00:32]

Sodium channels in the cells that line the tiny capillaries in our lungs play an important role in keeping those capillaries from leaking and potentially worsening conditions like pneumonia, scientists report.

- [Surgeons create 'vacuum' procedure to remove infected pacemaker](#) [周三, 06 9月 00:32]

Electrophysiologists get creative in removing infected pacemaker wires of a patient unable to have open heart surgery. He would have died if they didn't use a 'vacuum' typically used to remove foreign objects.

- [Discovery of boron on Mars adds to evidence for habitability](#) [周三, 06 9月 00:32]

The discovery of boron on Mars gives scientists more clues about whether life could have ever existed on the planet, according to a new paper.

- [Glowing cancer tool illuminates benign, but dangerous, brain tumors during pituitary](#)

[surgery](#) [周三, 06 9月 00:32]

An experimental imaging tool that uses a targeted fluorescent dye successfully lit up the benign brain tumors of patients during removal surgery, allowing surgeons to identify tumor tissue, a new study shows.

. [Dig, dive, survive: Fruit fly larvae can make decisions about feeding that balance risk against benefit, biologists show](#) [周三, 06 9月 00:32]

We humans aren't the only creatures drawn by the smell of a good meal. Fruit fly larvae, it turns out, are equally susceptible to food scents, although the odors that attract them may not appeal to us.

'Vampires' may have been real people with this blood disorder: Dana-Farber/Boston Children's researchers and collaborators have identified a genetic mutation that may be responsible for vampire folklore -- ScienceDaily

Porphyrias, a group of eight known blood disorders, affect the body's molecular machinery for making heme, which is a component of the oxygen-transporting protein, hemoglobin. When heme binds with iron, it gives blood its hallmark red color.

The different genetic variations that affect heme production give rise to different clinical presentations of porphyria -- including one form that may be responsible for vampire folklore.

A clinical cause for nocturnal blood drinking?

Erythropoietic protoporphyria (EPP), the most

common kind of porphyria to occur in childhood, causes people's skin to become very sensitive to light. Prolonged exposure to sunshine can cause painful, disfiguring blisters.

"People with EPP are chronically anemic, which makes them feel very tired and look very pale with increased photosensitivity because they can't come out in the daylight," says Barry Paw MD, PhD, of the Dana-Farber/Boston Children's Cancer and Blood Disorders Center. "Even on a cloudy day, there's enough ultraviolet light to cause blistering and disfigurement of the exposed body parts, ears and nose."

Staying indoors during the day and receiving blood transfusions containing sufficient heme levels can help alleviate some of the disorder's symptoms. In ancient times, drinking animal blood and emerging only at night may have achieved a similar effect -- adding further fuel to the legend of vampires.

Now, Paw and his team of international investigators report -- in a paper in the *Proceedings of the National Academy of Sciences* (PNAS) -- a newly discovered genetic mutation that triggers EPP. It illuminates a novel biological mechanism potentially responsible for

stories of "vampires" and identifies a potential therapeutic target for treating EPP.

The nature of EPP's "supernatural" symptoms

To produce heme, the body goes through a process called porphyrin synthesis, which mainly occurs in the liver and bone marrow. Any genetic defects that impact this process can interrupt the body's ability to produce heme; the decreased heme production leads to a buildup of protoporphyrin components. In the case of EPP, type of protoporphyrin called protoporphrin IX accumulates in the red blood cells, plasma and sometimes the liver.

When protoporphrin IX is exposed to light, it produces chemicals that damage surrounding cells. As a result, people with EPP experience swelling, burning and redness of the skin after exposure to sunlight -- even trace amounts of sunlight that pass through window glass.

Some genetic pathways leading to build-up of protoporphyrin IX have already been described, but many cases of EPP remain unexplained. By performing deep gene sequencing on members of a family from

Northern France with EPP of a previously unknown genetic signature, Paw's team discovered a novel mutation of the gene CLPX, which plays a role in mitochondrial protein folding.

"This newly-discovered mutation really highlights the complex genetic network that underpins heme metabolism," says Paw, who was co-senior author on the study. "Loss-of-function mutations in any number of genes that are part of this network can result in devastating, disfiguring disorders."

Myth vs. reality

Paw suggests that identifying the various gene mutations that contribute to porphyria could pave the way for future therapies that could correct the faulty genes responsible for these related disorders.

"Although vampires aren't real, there is a real need for innovative therapies to improve the lives of people with porphyrias," says Paw.

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Sleep may help eyewitnesses from choosing innocent suspects -- ScienceDaily

Sleep may influence an eyewitness's ability to correctly pick a guilty person out of a police lineup, indicates a study by Michigan State University researchers.

Published in *PLOS ONE*, the research found that eyewitnesses to a crime who sleep before being given a lineup are much less likely to pick an innocent person out of a lineup -- at least when the perpetrator is not in the lineup.

Some 70 percent of wrongful convictions in the United States are related to false eyewitness accounts. This study is the first scientific investigation into how sleep affects eyewitness memory of a crime, said lead author Michelle Stepan, a doctoral student in psychology.

"It's concerning that more people aren't making the correct decision during lineups; this suggests our memories are not super accurate and that's a problem

when you're dealing with the consequences of the criminal justice system," Stepan said. "Putting someone in jail is a big decision based on somebody's memory of a crime."

Stepan and Kimberly Fenn, associate professor of psychology and director of MSU's Sleep and Learning Lab, conducted an experiment in which about 200 participants watched a video of a crime (a man planting a bomb on a rooftop) and then, 12 hours later, viewed one of two computer lineups of six similar-looking people. One lineup included the perpetrator; the other lineup did not.

Some participants watched the crime video in the morning and viewed a lineup that night, with no sleep in between. Others watched the crime video at night and viewed a lineup the next morning, after sleeping.

When the perpetrator was not in the lineup, participants who had slept identified an innocent person 42 percent of the time -- compared to 66 percent for participants who had not slept.

"This is the most interesting finding of the study -- that individuals are less likely to choose an innocent

suspect after a period of sleep when the perpetrator is absent from the lineup," Fenn said. This is relevant, she added, because false convictions too often stem from an incorrect eyewitness identification of a suspect who did not commit the crime.

When the perpetrator was in the lineup, there was essentially no difference between the sleep and no-sleep groups' ability to choose the guilty man. Both groups correctly identified the perpetrator about 50 percent of the time.

"In other words," Fenn said, "sleep may not help you get the right guy, but it may help you keep an innocent individual out of jail."

The results could reflect both changes in memory strength and decision-making strategies after sleep.

The researchers believe participants who slept were more likely to use an "absolute strategy," in which they compare each person in the lineup to their memory of the suspect, while participants who didn't sleep were more likely to use a "relative strategy," in which they compare the people in the lineup to each other to determine who most resembles the perpetrator relative

to the others.

Using a relative strategy is believed to increase false identifications relative to an absolute strategy in perpetrator-absent lineups, Stepan said.

"These findings tell us that sleep likely impacts memory processes but that it might also impact how people search through a lineup, and those search strategies might be a critical factor when the perpetrator is not in the lineup," she said.

Fenn noted that the key findings of the study have since been replicated.

The MSU team is conducting research that further explores how sleep may directly or indirectly affect eyewitness memory.

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Improved vaccine that protects against nine types of HPV is highly effective -- ScienceDaily

Cervical cancer is the second most common cause of cancer-related death worldwide, with almost 300,000 deaths occurring each year. More than 80 percent of these deaths occur in developing nations. The advent of human papillomavirus (HPV) vaccines has significantly reduced the number of those who develop and die from cervical cancer. And thanks to an international effort to improve the vaccine, the medical community is one step closer to preventing more HPV-associated diseases. The researchers, including those from Moffitt Cancer Center, published the final results of a study showing the newest vaccine is highly effective at preventing HPV infection and disease. The study was published this week in *The Lancet*.

HPV is an extremely common virus. It is estimated that by age 50, four out of five women have been infected with the virus at one point throughout their lifetimes. HPV causes ailments such as genital and anal warts

and, in some instances, continued infection can lead to the development of benign or cancerous growths of the cervix, vulva, vagina, anus, penis, tonsils, and base of the tongue. There are more than 100 types of HPV, but only approximately 13 types are associated with cancer development. HPV 16 and 18 alone are estimated to cause 70 percent of all cervical cancers.

Two existing HPV vaccines, Cervarix[®] and Gardasil[®], are effective at preventing disease caused by HPV types 16 and 18, while Gardasil also protects against genital warts caused by HPV 6 and 11. However, these vaccines do not protect against all HPV types that are associated with cancer. Scientists developed an improved vaccine called 9vHPV that targets HPV 16, 18, 6, and 11, and an additional 5 HPV types that are the next most commonly associated with cervical cancer (HPV 31, 33, 45, 52 and 58).

"Based on epidemiological studies, the 9vHPV vaccine could prevent approximately 90 percent of cervical cancer, 90 percent of HPV-related vulvar and vaginal cancer, 70 to 85 percent of high-grade cervical disease in females, and approximately 90 percent of HPV-related anal cancer and genital warts in males and females worldwide," explained Anna R. Giuliano,

Ph.D., Director of the Center for Infection Research in Cancer at Moffitt.

Researchers from 18 countries and 105 study sites conducted a phase 3 study to compare the activity of the new 9vHPV vaccine against the older vaccine that protected against four HPV types (Gardasil). The study randomized 14,215 women 16 to 26 years of age to either 9vHPV or Gardasil, and the study participants were medically followed for 6 years after vaccination.

The study found that the 9vHPV vaccine has long-term activity against HPV infection and disease. The 9vHPV vaccine reduced the risk of developing HPV 31/33/45/52/58-related cervical, vulvar, and vaginal disease by 97.7 percent when compared to Gardasil®, and the two vaccines had similar activity at preventing HPV 6/11/16/18-associated disease. The 9vHPV vaccine was also highly effective at reducing the risk of having HPV 31/33/45/52/58-associated cervical cell abnormalities, biopsies, and definitive therapies.

9vHPV, known as Gardasil 9, became available in 2015 to protect females and males ages 9 through 26 years against HPV-associated cancers and genital warts. Scientists hope its continued use will greatly

reduce the incidence and mortality of HPV-associated diseases.

"The 9vHPV vaccine is licensed in over 40 countries for the prevention of HPV-related anogenital cancers and pre-cancer, and genital warts. The results of this study support comprehensive vaccination programs and inform public health decision related to implementation," said Giuliano.

Story Source:

[Materials](#) provided by [Moffitt Cancer Center](#). *Note: Content may be edited for style and length.*

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Concussions in women: Rates, symptoms and recovery are different than men -- ScienceDaily

Scientists have known for more than a decade that female athletes sustain concussions at a higher rate than males when playing sports with similar rules, such as soccer, basketball and baseball/softball. Females also tend to report more symptoms -- and more severe ones -- and may also take longer to recover from brain injuries than their male counterparts.

Despite that information, relatively little is known about how females experience concussions differently because there has been scant research on the topic. But scientists are trying to hoping to change that, says Dr. Mayumi Prins, a professor of neurosurgery at the David Geffen School of Medicine at UCLA and director of the UCLA Brain Injury Research Center education program.

"Most of the research in the past has focused on males, and there's been little basic science research done on

adolescents, females and concussions," Prins says, which means that the science on why girls may suffer more concussions and more prolonged symptoms is still uncertain.

But scientific research has shown that female and male brains differ in dozens of ways in activity patterns, anatomy, chemistry and physiology.

There are some reasons why concussions might affect female athletes and non-athletes differently than males. Those include hormonal issues, differences in how their upper bodies, particularly the muscles in the neck, react after collisions, and that females may be more likely than males to disclose concussion-related symptoms such as headaches, diminished social interaction or depression, Prins says.

For parents of children who participate in sports, Prins offers the following advice:

- While concussions in females are a serious concern, it's important to bear in mind that the relative risk of concussion is quite low compared to other activities of adolescents and young adults, such as driving, drugs, sexually transmitted diseases and

obesity. "There are other things besides concussion that children and young adults are at greater risk for," Prins says.

- Involvement in sports and athletic activities have been shown to benefit females in a variety of positive ways, such as development of positive body image, increasing bone density, psychological benefits.
- While the majority of females (and males) will recover from concussions in a week or two, some will have prolonged symptoms, a condition known as post-concussive syndrome and should seek medical assistance from a neurologist.
- Among adolescent women concussions can particularly affect feelings of social isolation and stress during a critical time of social development. "If you break a foot and are in a cast, everyone sees that and understands," Prins says. "But if you have a head injury, people may just look at you and pick up on some different behaviors and say 'What's wrong with you?' That can produce some social alienation, particularly in female athletes."

More information about the UCLA Steve Tisch BrainSPORT Program is available here:

<https://www.uclahealth.org/brainsport/about-brainsport>

Story Source:

Materials provided by University of California, Los Angeles (UCLA), Health Sciences. *Note: Content may be edited for style and length.*

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| [Section menu](#) | [主菜单](#) |

Synthetic version of popular anticoagulant poised for clinical trials - - ScienceDaily

A synthetic version of low molecular weight heparin is poised for clinical trials and development as a drug for patients with clotting disorders, and those undergoing procedures such as kidney dialysis, heart bypass surgery, stent implantation, and knee and hip replacement. Naturally derived low molecular weight heparin is extracted from pig intestines and the synthetic version offers several advantages: a synthesized version poses less risk for contamination in manufacturing, and, unlike its natural counterpart, it has been engineered to be safer for patients with poor kidney function and reversible in cases of complication.

Results of preclinical studies, which demonstrate the compounds' safety and efficacy in animal models of deep vein thrombosis and sickle cell disease, appear in the journal *Science Translational Medicine* today.

"This is at the cusp of clinical trials and commercial use. There is no question about the science; we have proven that this is a safer, more effective alternative to its natural counterpart, and what now determines its success or failure is the marketplace," said Robert Linhardt, the Ann and John H. Broadbent Jr. '59 Senior Constellation Professor of Biocatalysis and Metabolic Engineering at Rensselaer Polytechnic Institute (RPI), a member of the Rensselaer Center for Biotechnology and Interdisciplinary Studies (CBIS), and one of the inventors of the new drug.

Animal pharmacology and toxicology studies involved researchers at Loyola University Medical Center, the University of North Carolina at Chapel Hill (UNC), and Rensselaer. Researchers at Rensselaer -- which was involved in all previous stages of developing and manufacturing the compound -- assisted in synthesis by providing structural analysis of compounds manufactured at UNC, and tested at UNC and Loyola.

"We streamlined and altered the molecular structure of low molecular weight heparin in ways that vastly improve the function of the drug, and make it more cost-effective to synthesize, but also make it more of a challenge to analyze," said Xing Zhang, a post-doctoral

research associate in the Rensselaer Department of Chemistry and Chemical Biology working in the Linhardt Labs. "At Rensselaer, we developed sophisticated NMR and mass spectrometry techniques that ensure the high quality and purity of synthesis."

Heparin, which has been in use since the late 1930s, is an anticoagulant. There are three main types of heparin: unfractionated heparin, the more highly processed low molecular weight heparin (LMW) -- both of which are extracted from pig intestines -- and fondaparinux, a wholly synthetic ultra-low molecular weight heparin. Worldwide sales of heparin are estimated at \$4 billion annually, and LMW heparin makes up more than half the U.S. market for heparin.

In a 2014 paper published in *Nature Chemical Biology*, a team led by Linhardt and Jian Liu, a UNC professor and former student of Linhardt, announced creation of a synthetic version of LMW heparin. Synthesizing LMW heparin allowed them to make many improvements on the animal-derived form of the drug currently available. Up to 5 percent of patients receiving heparin experience some form of uncontrolled bleeding, but naturally derived LMW heparin does not fully respond to a protamine, a Food

and Drug Administration-approved antidote to unfractionated heparin. The researchers altered the molecular structure of the synthetic version so that it is neutralized by protamine. Naturally derived LMW is also cleared from the body through the kidneys so the researchers altered the synthetic version to make it safer for renally compromised patients.

The natural form of the heparin was in the spotlight in spring 2008 when more than 80 people died and hundreds of others suffered adverse reactions to it, leading to recalls of heparin in countries around the world. Authorities linked the problems to a contaminant in raw natural heparin coming from China. Linhardt has devoted his career to developing a safe, synthetic alternative to drugs like heparin to eliminate the risk of similar catastrophes.

The research was led by Liu, Linhardt, and Jawed Fareed, a professor of molecular pharmacology and therapeutics at Loyola University. "*Synthetic oligosaccharides can replace animal-sourced low-molecular weight heparins,*" appears in *Science Translational Medicine*, and was supported by the National Institutes of Health.

Linhardt's research is enabled by the vision of The New Polytechnic, an emerging paradigm for higher education which recognizes that global challenges and opportunities are so great they cannot be adequately addressed by even the most talented person working alone. Rensselaer serves as a crossroads for collaboration -- working with partners across disciplines, sectors, and geographic regions -- to address complex global challenges, using the most advanced tools and technologies, many of which are developed at Rensselaer. Research at Rensselaer addresses some of the world's most pressing technological challenges -- from energy security and sustainable development to biotechnology and human health. The New Polytechnic is transformative in the global impact of research, in its innovative pedagogy, and in the lives of students at Rensselaer.

Story Source:

[Materials](#) provided by [Rensselaer Polytechnic Institute \(RPI\)](#). Original written by Mary L. Martialay. *Note: Content may be edited for style and length.*

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All Top News

Top science stories featured on ScienceDaily's home page.

- [**Accretion-powered pulsar reveals unique timing glitch**](#) [周三, 06 9月 22:36]

The discovery of the largest timing irregularity yet observed in a pulsar is the first confirmation that pulsars in binary systems exhibit the strange phenomenon known as a 'glitch.'

- [**Clever cockatoos bend hooks into straight wire to fish for food**](#) [周三, 06 9月 08:29]

Bending of a hook into wire to fish for the handle of a basket by crow Betty 15 years ago stunned the scientific world. Cognitive biologists studied tool making in an Indonesian cockatoo. Other than crows, cockatoos are not using tools in the wild. The birds manufactured hook tools out of straight wire without ever having seen or used a hook tool before.

- [**Something to sneeze about: Democratic voting in African wild dog packs**](#) [周三, 06 9月 08:29]

Scientists studying African wild dogs in Botswana have found members of this endangered species use sneezes to vote on when the pack will move off and start hunting.

- [**Newly-discovered semiconductor dynamics may help improve energy efficiency**](#) [周三, 06 9月 08:29]

Researchers examining the flow of electricity through semiconductors have uncovered another reason these materials seem to lose their ability to carry a charge as they become more densely 'doped.'

- [**Humans still evolving, large-scale study of**](#)

[genetic data shows](#) [周三, 06 9月 02:55]

In a study analyzing the genomes of 210,000 people in the United States and Britain, researchers have found that the genetic variants linked to Alzheimer's disease and heavy smoking are less frequent in people with longer lifespans, suggesting that natural selection is weeding out these unfavorable variants in both populations.

[Swings in dad's testosterone affects the family -- for better or worse -- after baby arrives](#) [周三, 06 9月 02:55]

Testosterone levels are a key factor in a family's health and happiness after a newborn arrives. Researchers have found that a drop can signal postpartum depression in dad, and a spike may be a sign of aggression.

[Contagious yawning more closely associated with perceptual sensitivity than empathy](#) [周三, 06 9月 00:33]

Contrary to common belief that the yawning contagion is associated with empathy, it is in fact, more likely that perceptual sensitivity is to blame, research suggests.

[Discovery of boron on Mars adds to evidence for habitability](#) [周三, 06 9月 00:32]

The discovery of boron on Mars gives scientists more clues about whether life could have ever existed on the planet, according to a new paper.

['Extreme' telescopes find the second-fastest-spinning pulsar](#) [周三, 06 9月 00:32]

By following up on mysterious high-energy sources mapped by NASA's Fermi Gamma-ray Space Telescope, a Netherlands-based radio telescope has discovered a new pulsar, the second fastest-spinning known.

[The sniff test of self-recognition confirmed: Dogs have self-awareness](#) [周二, 05 9月 23:13]

A new research study used a sniff-test to evaluate the ability of dogs to recognize themselves. The experiment confirms the hypothesis of dogs'

self-cognition proposed last year.

• [**Zika virus kills brain cancer stem cells**](#) [周二, 05 9月 21:36]

While Zika virus causes devastating damage to the brains of developing fetuses, it one day may be an effective treatment for glioblastoma, a deadly form of brain cancer. New research shows that the virus kills brain cancer stem cells, the kind of cancer cells most resistant to standard treatments.

• [**Was the primordial soup a hearty pre-protein stew?**](#) [周二, 05 9月 21:36]

How proteins evolved billions of years ago, when Earth was devoid of life, has stumped many a scientist. A little do-si-do between amino acids and their chemical lookalikes may have done the trick. Evolutionary chemists tried it and got results by the boatload.

• [**Mobile women were key to cultural exchange in Stone Age and Bronze Age Europe**](#) [周二, 05 9月 03:10]

At the end of the Stone Age and in the early Bronze Age, families were established in a surprising manner in the Lechtal, south of Augsburg, Germany. The majority of women probably came from Bohemia or Central Germany, while men usually remained in the region of their birth. This so-called patrilocal pattern combined with individual female mobility persisted over a period of 800 years during the transition from the Neolithic to the Early Bronze Age.

• [**Face value: Brain's ability to recognize faces is shaped through repeated exposure, study suggests**](#) [周二, 05 9月 00:04]

Scientists have long deemed the ability to recognize faces innate for people and other primates -- something our brains just know how to do immediately from birth. However, the findings of a new study cast doubt on this longstanding view.

• [**More 'losers' than 'winners' predicted for Southern Ocean seafloor animals**](#) [周二, 05 9月 00:04]

A new study of the marine invertebrates living in the seas around Antarctica reveals there will be more 'losers' than 'winners' over the next century as the Antarctic seafloor warms.

• [Stellar corpse sheds light on origin of cosmic rays](#) [周一, 04 9月 21:34]

New research revealed that the entire zoo of electromagnetic radiation streaming from the Crab nebula -- one of the most iconic objects in the sky -- has its origin in one population of electrons and must be produced in a different way than scientists have traditionally thought. The results have implications for our understanding of how cosmic rays attain their incredible energies.

• [Physicists propose new theories of black holes from the very early universe](#) [周六, 02 9月 01:55]

'Primordial black holes,' believed to have formed shortly after the Big Bang, might explain how heavy elements such as gold, platinum and uranium came to be, physicists report.

• [Metallurgy likely has more than one birthplace](#) [周五, 01 9月 23:36]

When and where did humans invent metal smelting? Scientists have found the answer to this long-debated question in the history of technology. Metallurgy does not have a single origin but probably arose at various locations at about the same time. The experts reached this conclusion after re-examining the 8,500-year-old copper slag and analysing the chemical composition of other copper artefacts from the Stone Age settlement of Çatalhöyük in the Near East.

• [Equatorial jet in Venusian atmosphere](#) [周五, 01 9月 21:38]

Observations by Japan's Venus climate orbiter Akatsuki have revealed an equatorial jet in the lower to middle cloud layer of the planet's atmosphere, a finding that could be pivotal to unraveling a phenomenon called superrotation.

• [Paleontologist aids in new discovery 33 years after finding fossil](#) [周五, 01 9月 06:05]

The fossilized plesiosaur Sankar Chatterjee found in 1984 is giving scientists a new understanding of convergent evolution between reptiles and mammals.

- [**Mouth clicks used in human echolocation captured in unprecedented detail**](#) [周五, 01 9月 02:13]

Like some bats and marine mammals, people can develop expert echolocation skills, in which they produce a clicking sound with their mouths and listen to the reflected sound waves to 'see' their surroundings. A new study provides the first in-depth analysis of the mouth clicks used in human echolocation.

- [**Reconstructing life at its beginning, cell by cell**](#) [周五, 01 9月 02:12]

In a technological tour de force, scientists have created a virtual model of an early fly embryo. Its interactive interface allows researchers to explore the blueprint that underlies development at unprecedented spatial resolution and predict which cells express which genes.

- [**Fossil footprints challenge established theories of human evolution**](#) [周五, 01 9月 01:42]

Newly discovered human-like footprints from Crete may put the established narrative of early human evolution to the test. The footprints are approximately 5.7 million years old and were made at a time when previous research puts our ancestors in Africa -- with ape-like feet.

- [**Human bones in south Mexico: Stalagmite reveals their age as 13,000 years old**](#) [周五, 01 9月 01:12]

A prehistoric human skeleton found on the Yucatán Peninsula is at least 13,000 years old and most likely dates from a glacial period at the end of the most recent ice age, the late Pleistocene. A German-Mexican team of researchers has now dated the fossil skeleton based on a stalagmite that grew on the hip bone.

- [**Yawning: Why is it so contagious and why should it matter?**](#) [周五, 01 9月 00:30]

Feeling tired? Even if we aren't tired, why do we yawn if someone else

does? Experts have published research that suggests the human propensity for contagious yawning is triggered automatically by primitive reflexes in the primary motor cortex -- an area of the brain responsible for motor function. Their study is another stage in their research into the underlying biology of neuropsychiatric disorders and their search for new methods of treatment.

• [Scents and social preference: Neuroscientists ID the roots of attraction](#) [周五, 01 9月 00:30]

Culminating a series of studies stretching back eight years, biologists have identified the cellular and molecular basis for social preference, known in the animal kingdom as 'imprinting.' Through in vivo experiments, the researchers found the neurological roots of kinship attraction and aversion. They also employed genetics screening to find the regulators controlling this behavior. The study carries implications for understanding social attraction and aversion in a range of animals and humans.

• [What changes when you warm the Antarctic Ocean just 1 degree? Lots](#) [周五, 01 9月 00:30]

After warming a natural seabed in the Antarctic Ocean by just 1° or 2° Celsius, researchers observed massive impacts on a marine assemblage, as growth rates nearly doubled. The findings of what the researchers call the 'most realistic ocean warming experiment to date' show that the effects of future warming may far exceed expectations.

• [First hints of possible water content on TRAPPIST-1 planets](#) [周四, 31 8月 23:30]

Astronomers have been trying to determine whether there might be water on the seven Earth-sized planets orbiting the nearby dwarf star TRAPPIST-1. The results suggest that the outer planets of the system might still harbor substantial amounts of water. This includes the three planets within the habitable zone of the star, lending further weight to the possibility that they may indeed be habitable.

• [How Neanderthals made the very first glue](#) [周四, 31 8月

21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

• [**Apes' abilities misunderstood by decades of poor science**](#) [周四, 31 8月 21:14]

Hundreds of scientific studies over two decades have told us that apes are clever -- just not as clever as us. New analysis argues that what we think we know about apes' social intelligence is based on wishful thinking and flawed science.

• [**Robot learns to follow orders like Alexa**](#) [周四, 31 8月 21:14]

Computer scientists have developed an Alexa-like system that allows robots to understand a wide range of commands that require contextual knowledge about objects and their environments. They've dubbed the system 'ComText,' for 'commands in context.'

• [**New hope for reef fish living in a high CO2 world**](#) [周四, 31 8月 21:14]

New research examining the possible impacts of ocean acidification provides fresh hope for the survival of reef fish.

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

- [**'Vampires' may have been real people with this blood disorder**](#) [周四, 07 9月 02:49]

A newly discovered genetic mutation triggers erythropoietic protoporphyria (EPP). This discovery illuminates a novel biological mechanism potentially responsible for stories of 'vampires' and identifies a potential therapeutic target for treating EPP.

- [**Sleep may help eyewitnesses from choosing innocent suspects**](#) [周四, 07 9月 02:49]

Sleep may influence an eyewitness's ability to correctly pick a guilty person out of a police lineup, indicates a new study.

- [**Improved vaccine that protects against nine types of HPV is highly effective**](#) [周四, 07 9月 02:32]

Cervical cancer is the second most common cause of cancer-related death worldwide, with almost 300,000 deaths occurring each year. More than 80 percent of these deaths occur in developing nations. The advent of human papillomavirus (HPV) vaccines has significantly reduced the number of those who develop and die from cervical cancer.

- [**Concussions in women: Rates, symptoms and recovery are different than men**](#) [周四, 07 9月 02:32]

Females tend to report more symptoms -- and more severe ones -- and may also take longer to recover from brain injuries than their male counterparts.

- [**Synthetic version of popular anticoagulant**](#)

[poised for clinical trials](#) [周四, 07 9月 02:32]

A synthetic version of low molecular weight heparin is poised for clinical trials and development as a drug for patients with clotting disorders, and those undergoing procedures such as kidney dialysis, heart bypass surgery, stent implantation, and knee and hip replacement.

• [How retractions significantly hurt scientists](#) [周三, 06 9月 23:46]

Life scientists who have published papers that are retracted by journals subsequently suffer a 10 percent drop in citations of their remaining work, compared to similar but unaffected scientists, according to a new study.

• [Blindness study shows how gene causes middle-age sight loss](#) [周三, 06 9月 22:37]

Chemical changes in the eye that can lead to blindness have been identified by scientists, report investigators.

• [Substance in coffee delays onset of diabetes in laboratory mice](#) [周三, 06 9月 22:37]

Substances in coffee have been identified that could help quash the risk of developing type 2 diabetes. But few of these have been tested in animals. Now, scientists report that one of these previously untested compounds appears to improve cell function and insulin sensitivity in laboratory mice. The finding could spur the development of new drugs to treat or even prevent the disease.

• [New strategy for vaccinating pregnant mothers against malaria holds promise for protecting infants](#) [周三, 06 9月 22:37]

A mother and infant in Malawi have the same repertoire of antibodies to Plasmodium falciparum, the malaria parasite. That suggests that boosting the mother's immune response to malaria, as via vaccination, will result in better protection for the infant.

• [Quantum tech has its sights set on human](#)

[biochemistry](#) [周三, 06 9月 22:36]

Scientists have developed a new tool for imaging life at the nanoscale that will provide new insights into the role of transition metal ions such as copper in neurodegenerative diseases.

· [Colon of patients with IBS reacts differently to bacteria](#) [周三, 06 9月 22:36]

The intestinal barrier of patients with the gastrointestinal disease IBS allows bacteria to pass more freely than in healthy people, according to a study. The study is the first to investigate IBS using living bacteria.

· [Gut microbiota of larvae has an impact on mosquito's ability to transmit human pathogens](#) [周三, 06 9月 22:36]

Researchers have demonstrated that differential bacterial exposure during the development of mosquito larvae (*Aedes aegypti*) can have carry-over effects on adult traits related to an insect's ability to be a successful vector of arboviruses. This study represents an important step toward a more comprehensive understanding of how the environment shapes the risk of vector-borne disease.

· [Protein that extends life of yeast cells](#) [周三, 06 9月 22:35]

To understand and control aging is the aspiration of many scientists. Researchers have now discovered that the protein Gcn4 decreases protein synthesis and extends the life of yeast cells. Understanding how individual genes affect lifespan opens new ways to control the aging process and the occurrence of aging-related diseases.

· [Bacteria responsible for legionellosis modulates the host cell metabolism to its advantage](#) [周三, 06 9月 22:35]

The bacterial pathogen *Legionella pneumophila* has developed a specific strategy to target the host cell mitochondria, the organelles in charge of cellular bioenergetics, scientists have shown. New work provides precious information on how a pathogen manipulates the cellular metabolism to replicate intracellularly, and proposes a new concept of protection of host cells from *Legionella*-induced mitochondrial changes

in order to fight infection.

- [**Keychain detector could catch food allergens before it's too late**](#) [周三, 06 9月 22:35]

For kids and adults with food allergies, a restaurant outing can be a fraught experience. Even when care is taken, freshly prepared or packaged meals can accidentally become cross-contaminated with an offending food and trigger a reaction. Now researchers report the development of a new portable allergen-detection system -- including a keychain analyzer -- that could help prevent trips to the emergency room.

- [**Art courses could help medical students become better clinical observers**](#) [周三, 06 9月 22:35]

In an effort to explore ways to improve clinical observation skills among medical students, researchers found significant improvement in observational recognition skills among students who took an art observation course and demonstrated that art training could help teach medical students to become better clinical observers.

- [**Parkinson's severity assessed through drawing**](#) [周三, 06 9月 22:35]

Researchers asked volunteers to draw a spiral on a sheet of paper. By analyzing how long it took them to draw the spiral and how hard they pressed on the paper with the pen, the team could not only tell which volunteers had Parkinson's disease, they could also tell how severe it was. Doctors could use the automated system in their surgery to easily diagnose the disease or keep track of the progress of existing patients.

- [**Superhuman 'night' vision during the total eclipse?**](#) [周三, 06 9月 04:40]

It was dark as night during the recent total solar eclipse, yet people and objects were easier to see than on a typical moonless night. Scientists have discovered a possible biological explanation -- the presence (or absence) of a protein in the retina known as a GABA receptor.

- [**Humans still evolving, large-scale study of**](#)

[genetic data shows](#) [周三, 06 9月 02:55]

In a study analyzing the genomes of 210,000 people in the United States and Britain, researchers have found that the genetic variants linked to Alzheimer's disease and heavy smoking are less frequent in people with longer lifespans, suggesting that natural selection is weeding out these unfavorable variants in both populations.

• [Mobile phone use while pregnant not linked to child neurodevelopment problems, study suggests](#) [周三, 06 9月 02:55]

Mobile phone use during pregnancy is unlikely to have any adverse effects on child neurodevelopment, according to new research. These findings provide further evidence that exposure to radio frequency electromagnetic fields associated with maternal use of mobile phones during pregnancy is not linked to neurodevelopment in children.

• [Research shows how DNA molecules cross nanopores](#) [周三, 06 9月 02:55]

Research sheds new light on the understanding of the measurement of polymer properties in diverse chemical industries such as plastics manufacturing and food processing, and the design of biosensors.

• [Swings in dad's testosterone affects the family -- for better or worse -- after baby arrives](#) [周三, 06 9月 02:55]

Testosterone levels are a key factor in a family's health and happiness after a newborn arrives. Researchers have found that a drop can signal postpartum depression in dad, and a spike may be a sign of aggression.

• [New, ultra-rare gene mutations implicated in eating disorders](#) [周三, 06 9月 01:45]

A combination of whole exome sequencing, machine learning, and network analysis, has identified new, ultra-rare gene mutations within specific biological pathways that may contribute to eating disorders, according to a study.

• [Eating meat linked to higher risk of diabetes](#) [周三, 06

9月 01:45]

Higher intake of red meat and poultry is associated with significantly increased risk of developing diabetes, which is partially attributed to their higher content of heme iron in these meats, new research shows.

• [**Test of cervical mucus may reveal pregnant women's risk of going into labor too early**](#) [周三, 06 9月 01:45]

A new approach to evaluating the risk of preterm birth has been proposed by analyzing the properties of cervical mucus. The researchers found that cervical mucus from women who delivered their babies early, before 37 weeks, was very different from that of women who delivered later.

• [**Boosting a lipid fuel makes mice less sensitive to the cold**](#) [周三, 06 9月 00:57]

Humans, like other animals, become more sensitive to cold with age. Now, scientists report that delivering a single dose of a nutritional supplement called L-carnitine to older mice restores a youthful ability to adapt to the cold. After treatment, they tolerate chilly conditions that would ordinarily trigger hypothermia. The supplement works by boosting levels of a newly discovered fuel source for brown fat, or “good fat”.

• [**Contagious yawning more closely associated with perceptual sensitivity than empathy**](#) [周三, 06 9月 00:33]

Contrary to common belief that the yawning contagion is associated with empathy, it is in fact, more likely that perceptual sensitivity is to blame, research suggests.

• [**'Waves' of neural activity give new clues about Alzheimer's**](#) [周三, 06 9月 00:32]

While unconscious during deep sleep, millions of neurons' activity travels across the cerebral cortex. This phenomenon, known as slow waves, is related to the consolidation of memory. The European project called SloW Dyn, has now revealed anomalies in this activity in mice displaying a decline similar to Alzheimer's.

• [**New evidence about how to prevent worsening pneumonia**](#) [周三, 06 9月 00:32]

Sodium channels in the cells that line the tiny capillaries in our lungs play an important role in keeping those capillaries from leaking and potentially worsening conditions like pneumonia, scientists report.

• [**Surgeons create 'vacuum' procedure to remove infected pacemaker**](#) [周三, 06 9月 00:32]

Electrophysiologists get creative in removing infected pacemaker wires of a patient unable to have open heart surgery. He would have died if they didn't use a 'vacuum' typically used to remove foreign objects.

• [**Glowing cancer tool illuminates benign, but dangerous, brain tumors during pituitary surgery**](#) [周三, 06 9月 00:32]

An experimental imaging tool that uses a targeted fluorescent dye successfully lit up the benign brain tumors of patients during removal surgery, allowing surgeons to identify tumor tissue, a new study shows.

• [**Cannot sleep due to stress? Here is the cure**](#) [周二, 05 9月 23:13]

Everyone empirically knows that stressful events certainly affect sound sleep. Scientists have found that the active component rich in sugarcane and other natural products may ameliorate stress and help having sound sleep.

• [**Prenatal lack of omega-3 and omega-6 fatty acids linked to schizophrenic symptoms in mice**](#) [周二, 05 9月 22:44]

Researchers have discovered a process through which changes in nutrition during early mouse pregnancy lead to offspring that develop schizophrenic-like symptoms as adults. The study shows how deprivation of two polyunsaturated fatty acids during early gestation can have long lasting effects on offspring through specific epigenetic changes in gene expression.

• [**Gene related to brain damage in pre-term**](#)

infants identified [周二, 05 9月 22:44]

A gene has been identified by researchers that is thought to be associated with the types of brain damage that can be caused by pre-term birth.

Children with bone, joint infection often carry the same infectious bacteria in throat [周二, 05 9月 21:36]

The presence of the bacterium *Kingella kingae* in children's throats was strongly linked to bone and joint infection with the same bacterium, according to new research.

Zika virus kills brain cancer stem cells [周二, 05 9月 21:36]

While Zika virus causes devastating damage to the brains of developing fetuses, it one day may be an effective treatment for glioblastoma, a deadly form of brain cancer. New research shows that the virus kills brain cancer stem cells, the kind of cancer cells most resistant to standard treatments.

Link found between cognitive fatigue and effort and reward [周二, 05 9月 21:36]

Injury and disease of the brain increase the likelihood of cognitive fatigue, which can be disabling. Researchers are studying the mechanisms of cognitive fatigue, toward the goal of developing effective interventions.

Scientists discover brain area which can be targeted for treatment in patients with schizophrenia who 'hear voices' [周二, 05 9月 06:17]

For the first time, scientists have precisely identified and targeted an area of the brain which is involved in 'hearing voices,' experienced by many patients with schizophrenia. They have been able to show in a controlled trial that targeting this area with magnetic pulses can improve the condition in some patients.

DNA and protein 'liquid biopsy' for early pancreatic cancer better than either alone [周二, 05 9月]

03:10]

Scientists say they have developed a blood test that spots tumor-specific DNA and protein biomarkers for early-stage pancreatic cancer.

• [Epileptic brain activity in widely used lab mice](#) [周

二, 05 9月 01:19]

Multiple laboratories have observed unusual neural activity resembling epilepsy in some lines of genetically modified mice widely used in neuroscience research. The authors caution that this activity is easy to miss and presents potential challenges for using these animals to study the healthy brain.

• [Schizophrenia, memory deficits: Solving the mystery behind a most stubborn symptom](#) [周二, 05 9月

00:04]

Disruptions to the brain's internal GPS result in some of the severe memory deficits seen in schizophrenia. The new study in mouse models of the disorder marks the first time that schizophrenia's effects have been observed with such precision and clarity. The findings offer a promising entry point for attacking a near-universal and debilitating symptom of schizophrenia, memory deficits, which has thus far withstood all forms of treatment.

• [Face value: Brain's ability to recognize faces is shaped through repeated exposure, study suggests](#) [周二, 05 9月 00:04]

Scientists have long deemed the ability to recognize faces innate for people and other primates -- something our brains just know how to do immediately from birth. However, the findings of a new study cast doubt on this longstanding view.

• [Mysterious protein-folding molecule could trigger metabolic disorders](#) [周二, 05 9月 00:04]

A molecule with few known functions can trigger the cell's response to unfolded proteins and perpetuate metabolic disease, report researchers.

• [Superfly flight simulator helps unravel navigation in the brain](#) [周二, 05 9月 00:04]

Researchers have identified two independent pathways in the fly brain that are integrated to allow successful navigation during flight. The study combined a flight simulator designed for flies with imaging of active neurons to show that landmark locations are processed separately in the fly brain from self-motion.

• [**New fluorescent dyes could advance biological imaging**](#) [周二, 05 9月 00:04]

Scientists have developed a new method for fine-tuning the structure of rhodamine dyes, and can now create a colorful palette of fluorescent molecules.

• [**Diabetes and heart disease linked by genes, reveals study**](#) [周二, 05 9月 00:04]

In a large analysis of genetic data, a team has first looked into what causes type 2 diabetes (T2D) and second clarified how T2D and coronary heart disease (CHD) -- the two diseases that are the leading cause of global morbidity and mortality, are linked.

• [**Study in early stage breast cancer shows that even small tumors can be aggressive**](#) [周一, 04 9月 21:38]

Even small tumors can be aggressive, according to a study in patients with early stage breast cancer. Researchers found that nearly one in four small tumors were aggressive and patients benefited from chemotherapy. Aggressive tumors could be identified by a 70-gene signature.

• [**Financial stress is associated with migraine, if you have specific circadian gene variants**](#) [周一, 04 9月 21:38]

People with a specific variation in the CLOCK gene have more migraines under financial stress. This work shows the effect of the genetics of circadian rhythms on migraine.

• [**Rethinking serotonin could lead to a shift in psychiatric care**](#) [周一, 04 9月 21:37]

A better understanding of how a key chemical messenger acts in the

brain could lead to a radical shift in psychiatric care, according to a new research paper.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

- [Supercharging silicon batteries](#) [周三, 06 9月 22:36]
Scientists have designed a novel silicon-based anode to provide lithium batteries with increased power and better stability.
- [Quantum tech has its sights set on human biochemistry](#) [周三, 06 9月 22:36]
Scientists have developed a new tool for imaging life at the nanoscale that will provide new insights into the role of transition metal ions such as copper in neurodegenerative diseases.
- [Green light for ultra-fine display colors](#) [周三, 06 9月 22:36]
Chemical engineers have succeeded in generating ultra-pure green light for the first time. The new light-emitting diode will pave the way for visibly improved color quality in a new generation of ultra-high definition displays for TVs and smartphones.
- [Accretion-powered pulsar reveals unique timing glitch](#) [周三, 06 9月 22:36]
The discovery of the largest timing irregularity yet observed in a pulsar is the first confirmation that pulsars in binary systems exhibit the strange phenomenon known as a 'glitch.'
- [New tool for characterizing quantum simulators](#) [周三, 06 9月 22:35]
Physicists are developing quantum simulators, to help solve problems that are beyond the reach of conventional computers. However, they first need new tools to ensure that the simulators work properly. Researchers have now implemented a new technique in the laboratory

that can be used to efficiently characterize the complex states of quantum simulators. The technique could become a new standard tool for characterizing quantum simulators.

- [**Keychain detector could catch food allergens before it's too late**](#) [周三, 06 9月 22:35]

For kids and adults with food allergies, a restaurant outing can be a fraught experience. Even when care is taken, freshly prepared or packaged meals can accidentally become cross-contaminated with an offending food and trigger a reaction. Now researchers report the development of a new portable allergen-detection system -- including a keychain analyzer -- that could help prevent trips to the emergency room.

- [**Flip-flop qubits: Radical new quantum computing design invented**](#) [周三, 06 9月 22:35]

Engineers have invented a radical new architecture for quantum computing, based on novel 'flip-flop qubits,' that promises to make the large-scale manufacture of quantum chips dramatically cheaper -- and easier -- than thought possible. The new chip design allows for a silicon quantum processor that can be scaled up without the precise placement of atoms required in other approaches.

- [**Newly-discovered semiconductor dynamics may help improve energy efficiency**](#) [周三, 06 9月 08:29]

Researchers examining the flow of electricity through semiconductors have uncovered another reason these materials seem to lose their ability to carry a charge as they become more densely 'doped.'

- [**Superhuman 'night' vision during the total eclipse?**](#) [周三, 06 9月 04:40]

It was dark as night during the recent total solar eclipse, yet people and objects were easier to see than on a typical moonless night. Scientists have discovered a possible biological explanation -- the presence (or absence) of a protein in the retina known as a GABA receptor.

- [**Mobile phone use while pregnant not linked to child neurodevelopment problems, study suggests**](#) [周三, 06 9月 02:55]

Mobile phone use during pregnancy is unlikely to have any adverse effects on child neurodevelopment, according to new research. These findings provide further evidence that exposure to radio frequency electromagnetic fields associated with maternal use of mobile phones during pregnancy is not linked to neurodevelopment in children.

- [**Research shows how DNA molecules cross nanopores**](#) [周三, 06 9月 02:55]

Research sheds new light on the understanding of the measurement of polymer properties in diverse chemical industries such as plastics manufacturing and food processing, and the design of biosensors.

- [**Aeroices: Newly discovered ultralow-density ice**](#) [周三, 06 9月 02:55]

Relatively little is known about the effects of extreme negative pressure on water molecules. Exploring a significant region of negative pressure through molecular dynamic simulations, researchers have now theoretically discovered a new family of ice phases. Called aeroices, these ices have the lowest density of all known ice crystals.

- [**More durable, less expensive fuel cells**](#) [周三, 06 9月 01:44]

A new technology has been created that could make fuel cells cheaper and more durable. Hydrogen-powered fuel cells are a green alternative to internal combustion engines because they produce power through electrochemical reactions, leaving no pollution behind. Platinum is the most common catalyst in the type of fuel cells used in vehicles, but it's expensive. The UD team used a novel method to come up with a less expensive catalyst.

- [**Surgeons create 'vacuum' procedure to remove infected pacemaker**](#) [周三, 06 9月 00:32]

Electrophysiologists get creative in removing infected pacemaker wires of a patient unable to have open heart surgery. He would have died if

they didn't use a 'vacuum' typically used to remove foreign objects.

- [**Discovery of boron on Mars adds to evidence for habitability**](#) [周三, 06 9月 00:32]

The discovery of boron on Mars gives scientists more clues about whether life could have ever existed on the planet, according to a new paper.

- [**Glowing cancer tool illuminates benign, but dangerous, brain tumors during pituitary surgery**](#) [周三, 06 9月 00:32]

An experimental imaging tool that uses a targeted fluorescent dye successfully lit up the benign brain tumors of patients during removal surgery, allowing surgeons to identify tumor tissue, a new study shows.

- [**'Extreme' telescopes find the second-fastest-spinning pulsar**](#) [周三, 06 9月 00:32]

By following up on mysterious high-energy sources mapped by NASA's Fermi Gamma-ray Space Telescope, a Netherlands-based radio telescope has discovered a new pulsar, the second fastest-spinning known.

- [**When strangers can control our lights**](#) [周二, 05 9月 21:38]

Smart home products such as lamps controlled via mobile devices are becoming ever more popular in private households. We would, however, feel vulnerable in our own four walls if strangers suddenly started switching the lights in our homes on and off. Researchers have discovered security problems of this nature in smart lights manufactured by GE, IKEA, Philips and Osram.

- [**Was the primordial soup a hearty pre-protein stew?**](#) [周二, 05 9月 21:36]

How proteins evolved billions of years ago, when Earth was devoid of life, has stumped many a scientist. A little do-si-do between amino acids and their chemical lookalikes may have done the trick. Evolutionary chemists tried it and got results by the boatload.

- [**New fluorescent dyes could advance biological imaging**](#) [周二, 05 9月 00:04]

Scientists have developed a new method for fine-tuning the structure of rhodamine dyes, and can now create a colorful palette of fluorescent molecules.

- [**Equation reveals the characteristics of quantum chaos**](#) [周一, 04 9月 21:37]

Researchers have now succeeded in formulating a mathematical result that provides an exact answer to the question of how chaos actually behaves. The researchers have analyzed chaotic states at the atomic level.

- [**Like a revolving door: How shuttling proteins operate nuclear pores**](#) [周一, 04 9月 21:36]

Nuclear pore complexes are tiny channels where the exchange of substances between the cell nucleus and the cytoplasm takes place. Scientists report on startling new research that might overturn established models of nuclear transport regulation. Their study reveals how shuttling proteins known as importins control the function of nuclear pores – as opposed to the view that nuclear pores control the shuttling of importins.

- [**Stellar corpse sheds light on origin of cosmic rays**](#) [周一, 04 9月 21:34]

New research revealed that the entire zoo of electromagnetic radiation streaming from the Crab nebula -- one of the most iconic objects in the sky -- has its origin in one population of electrons and must be produced in a different way than scientists have traditionally thought. The results have implications for our understanding of how cosmic rays attain their incredible energies.

- [**Algorithm unlocks smartwatches that learn your every move**](#) [周一, 04 9月 21:34]

Scientists have invented a new algorithm that enables smartwatches to

detect and record your every move, without being told beforehand what to look for.

- [**Physicists propose new theories of black holes from the very early universe**](#) [周六, 02 9月 01:55]

'Primordial black holes,' believed to have formed shortly after the Big Bang, might explain how heavy elements such as gold, platinum and uranium came to be, physicists report.

- [**Reusable ruthenium-based catalyst could be a game-changer for the biomass industry**](#) [周五, 01 9月 22:46]

Researchers have developed a highly efficient reusable catalyst for the production of primary amines. By cutting the amount of undesired by-products, the catalyst is set to revolutionize the production of bio-based fuels, pharmaceuticals, agricultural chemicals and more.

- [**Bit data goes anti-skyrmions**](#) [周五, 01 9月 22:46]

Scientists have discovered a new kind of magnetic nano-object in a novel material that could serve as a magnetic bit with cloaking properties to make a magnetic disk drive with no moving parts -- a Racetrack Memory -- a reality in the near future.

- [**Astronomer's study finds 10 times fewer house-sized near earth objects in solar system**](#) [周五, 01 9月 22:09]

The surprising results of an astronomer's new study find that there are 3.5 million house-sized meteoroids whose orbits bring them close enough to Earth to pose potential impact hazards -- ten times fewer than previously thought.

- [**Molecules move faster near sticky surfaces**](#) [周五, 01 9月 21:39]

Molecules move faster as they get closer to adhesive surfaces, but this effect is not permanent.

- [**Equatorial jet in Venusian atmosphere**](#) [周五, 01 9月 21:38]

Observations by Japan's Venus climate orbiter Akatsuki have revealed an equatorial jet in the lower to middle cloud layer of the planet's atmosphere, a finding that could be pivotal to unraveling a phenomenon

called superrotation.

- [**Method speeds up time to analyze complex microscopic images**](#) [周五, 01 9月 03:13]

Researchers who typically required a week of effort to dissect cryo-electron tomography images of the 3-D structure of a single cell will now be able to do it in about an hour thanks to a new automated method.

- [**Insect eyes inspire new solar cell design**](#) [周五, 01 9月 03:12]

Packing tiny solar cells together, like micro-lenses in the compound eye of an insect, could help scientists overcome a major roadblock to the development of perovskite photovoltaics.

- [**Drugs found to be more effective against depression than electric current**](#) [周五, 01 9月 02:05]

Medicinal therapy was found to be more than twice as effective as low-intensity brain stimulation in treating depression, according to a study.

- [**Caching system could make data centers more energy efficient**](#) [周四, 31 8月 23:52]

Researchers have developed a new system for data center caching that uses flash memory, the kind of memory used in most smartphones.

- [**First hints of possible water content on TRAPPIST-1 planets**](#) [周四, 31 8月 23:30]

Astronomers have been trying to determine whether there might be water on the seven Earth-sized planets orbiting the nearby dwarf star TRAPPIST-1. The results suggest that the outer planets of the system might still harbor substantial amounts of water. This includes the three planets within the habitable zone of the star, lending further weight to the possibility that they may indeed be habitable.

- [**Aerospace test goes green with alternative to explosives**](#) [周四, 31 8月 22:14]

Scientists have successfully demonstrated a new, more environmentally friendly method to test a rocket part to ensure its avionics can withstand

the shock from stage separation during flight.

- [**How Neanderthals made the very first glue**](#) [周四, 31 8月 21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

- [**Improving earthquake resistance with a single crystal**](#) [周四, 31 8月 21:26]

A new heating method for certain metals could lead to improved earthquake-resistant construction materials.

- [**Mass production of biodegradable plastic**](#) [周四, 31 8月 21:14]

Introducing a simple step to the production of plant-derived, biodegradable plastic could improve its properties while overcoming obstacles to manufacturing it commercially, says new research.

- [**Turning heat energy into a viable fuel source**](#) [周四, 31 8月 21:14]

A new device could one day turn the heat generated by a wide array of electronics into a usable fuel source. The device is a multicomponent, multilayered composite material called a van der Waals Schottky diode. It converts heat into electricity up to three times more efficiently than silicon -- a semiconductor material widely used in the electronics industry.

- [**Robot learns to follow orders like Alexa**](#) [周四, 31 8月 21:14]

Computer scientists have developed an Alexa-like system that allows robots to understand a wide range of commands that require contextual knowledge about objects and their environments. They've dubbed the system 'ComText,' for 'commands in context.'

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Environment News

Top stories featured on ScienceDaily's Plants & Animals, Earth & Climate, and Fossils & Ruins sections.

- [**Substance in coffee delays onset of diabetes in laboratory mice**](#) [周三, 06 9月 22:37]

Substances in coffee have been identified that could help quash the risk of developing type 2 diabetes. But few of these have been tested in animals. Now, scientists report that one of these previously untested compounds appears to improve cell function and insulin sensitivity in laboratory mice. The finding could spur the development of new drugs to treat or even prevent the disease.

- [**Cloud formation suppressed by biogenic organic emissions**](#) [周三, 06 9月 22:36]

Evidence has been found that near-ground biogenic emissions of organics suppress cloud formation in cool-temperate forests in autumn, providing clues to how global warming will affect cloud formation and the overall climate.

- [**Colon of patients with IBS reacts differently to bacteria**](#) [周三, 06 9月 22:36]

The intestinal barrier of patients with the gastrointestinal disease IBS allows bacteria to pass more freely than in healthy people, according to a study. The study is the first to investigate IBS using living bacteria.

- [**Unraveling a major cause of sea ice retreat in the Arctic Ocean**](#) [周三, 06 9月 22:36]

Quantitative analysis has evidenced the acceleration system of melting ice: dark water surfaces absorb more heat than white ice surfaces, thus

melting ice and making more water surfaces in the Arctic Ocean.

- [**Gut microbiota of larvae has an impact on mosquito's ability to transmit human pathogens**](#)

[周三, 06 9月 22:36]

Researchers have demonstrated that differential bacterial exposure during the development of mosquito larvae (*Aedes aegypti*) can have carry-over effects on adult traits related to an insect's ability to be a successful vector of arboviruses. This study represents an important step toward a more comprehensive understanding of how the environment shapes the risk of vector-borne disease.

- [**Protein that extends life of yeast cells**](#) [周三, 06 9月 22:35]

To understand and control aging is the aspiration of many scientists. Researchers have now discovered that the protein Gcn4 decreases protein synthesis and extends the life of yeast cells. Understanding how individual genes affect lifespan opens new ways to control the aging process and the occurrence of aging-related diseases.

- [**Bacteria responsible for legionellosis modulates the host cell metabolism to its advantage**](#) [周三, 06 9月 22:35]

The bacterial pathogen *Legionella pneumophila* has developed a specific strategy to target the host cell mitochondria, the organelles in charge of cellular bioenergetics, scientists have shown. New work provides precious information on how a pathogen manipulates the cellular metabolism to replicate intracellularly, and proposes a new concept of protection of host cells from *Legionella*-induced mitochondrial changes in order to fight infection.

- [**Research dog helps scientists save endangered carnivores**](#) [周三, 06 9月 22:35]

Scat-sniffing research dogs are helping scientists map out a plan to save reclusive jaguars, pumas, bush dogs and other endangered carnivores in the increasingly fragmented forests of northeastern Argentina, according to a new study.

- [**Will mallards hybridize their cousins out of**](#)

[existence?](#) [周三, 06 9月 22:35]

Mallards -- the familiar ducks of city parks -- are one of a group of closely related species, many of which are far less common. Interbreeding can threaten the genetic distinctiveness of those other species and cause concern for their conservation. A new study investigates hybridization between mallards and mottled ducks, a species adapted for life in coastal marshes, and finds that while hybridization rates are currently low, human activity could cause them to rise in the future.

• [Clever cockatoos bend hooks into straight wire to fish for food](#) [周三, 06 9月 08:29]

Bending of a hook into wire to fish for the handle of a basket by crow Betty 15 years ago stunned the scientific world. Cognitive biologists studied tool making in an Indonesian cockatoo. Other than crows, cockatoos are not using tools in the wild. The birds manufactured hook tools out of straight wire without ever having seen or used a hook tool before.

• [Something to sneeze about: Democratic voting in African wild dog packs](#) [周三, 06 9月 08:29]

Scientists studying African wild dogs in Botswana have found members of this endangered species use sneezes to vote on when the pack will move off and start hunting.

• [Research shows how DNA molecules cross nanopores](#) [周三, 06 9月 02:55]

Research sheds new light on the understanding of the measurement of polymer properties in diverse chemical industries such as plastics manufacturing and food processing, and the design of biosensors.

• [Aeroices: Newly discovered ultralow-density ice](#) [周三, 06 9月 02:55]

Relatively little is known about the effects of extreme negative pressure on water molecules. Exploring a significant region of negative pressure through molecular dynamic simulations, researchers have now

theoretically discovered a new family of ice phases. Called aeroices, these ices have the lowest density of all known ice crystals.

• [**Eating meat linked to higher risk of diabetes**](#) [周三, 06 9月 01:45]

Higher intake of red meat and poultry is associated with significantly increased risk of developing diabetes, which is partially attributed to their higher content of heme iron in these meats, new research shows.

• [**Could switchgrass help China's air quality?**](#) [周三, 06 9月 01:45]

Researchers have proposed an idea that could improve China's air quality, but they're not atmospheric scientists. They're agronomists.

• [**Building a morphogen gradient by simple diffusion in a growing plant leaf**](#) [周三, 06 9月 00:33]

The research team has shown that a transcriptional co-activator ANGUSTIFOLIA3 (AN3) forms a signaling gradient along the leaf proximal-to-distal axis to determine cell-proliferation domain.

• [**Human-made reefs: A compelling diving alternative**](#) [周三, 06 9月 00:33]

Researchers have examined diving habits and behavior around Eilat's natural and artificial reefs. According to study, the average diver density at the artificial reef was higher than at the two nearby natural knolls, and the Tamar reef effectively diverts divers from natural knolls. Secondly, the study found that regarding attitudes toward natural versus artificial reefs, divers consider the artificial reefs more appropriate for training, but they feel less relaxed around them.

• [**Dig, dive, survive: Fruit fly larvae can make decisions about feeding that balance risk against benefit, biologists show**](#) [周三, 06 9月 00:32]

We humans aren't the only creatures drawn by the smell of a good meal. Fruit fly larvae, it turns out, are equally susceptible to food scents, although the odors that attract them may not appeal to us.

• [**Genome of threatened northern spotted owl**](#)

[**assembled**](#) [周二, 05 9月 23:14]

A charismatic owl iconic to Pacific Coast forests is no longer ruling the roost, and scientists now have another tool for understanding its decline. Researchers have assembled the California Academy of Sciences' first-ever animal genome after sequencing the DNA of the northern spotted owl (*Strix occidentalis caurina*). Academy scientists and collaborators extensively mapped the bird's genetic material to better understand how this threatened forest dweller is interacting with non-native owls invading...

. [**Cannot sleep due to stress? Here is the cure**](#) [周二, 05 9月 23:13]

Everyone empirically knows that stressful events certainly affect sound sleep. Scientists have found that the active component rich in sugarcane and other natural products may ameliorate stress and help having sound sleep.

. [**The sniff test of self-recognition confirmed: Dogs have self-awareness**](#) [周二, 05 9月 23:13]

A new research study used a sniff-test to evaluate the ability of dogs to recognize themselves. The experiment confirms the hypothesis of dogs' self-cognition proposed last year.

. [**When not to eat your kids**](#) [周二, 05 9月 23:07]

Even though it is known to be a cannibal, the mangrove rivulus or killifish of the Americas will never eat one of its own embryos, even if it is hungry. This slender amphibious fish can recognize its own kin, even if these are still in the embryonic stage, according to new research.

. [**'Bee' informed: Public interest exceeds understanding in bee conservation**](#) [周二, 05 9月 22:44]

Many people have heard bee populations are declining due to such threats as colony collapse disorder, pesticides and habitat loss. And many understand bees are critical to plant pollination. Yet, according to a study, few are aware of the wide diversity of bees and other pollinators beyond such species as honeybees. Because conservation efforts require substantial public support, outreach is needed to help people understand

bee declines and how to protect pollinators.

- **[Life in the fast lane: How plants avoid traffic](#)**

[jams](#) [周二, 05 9月 22:43]

Scientists have discovered how plants ingeniously avoid internal traffic jams.

- **[Discovery of dynamic seasonal changes in color perception](#)** [周二, 05 9月 21:38]

In many areas, the environment fluctuates greatly depending on the season, and animals living in those areas must adapt to the changing environment. A research group has found that color perception of Medaka, a small fish inhabiting rice fields and streams, varies greatly according to seasonal changes.

- **[Hop, skip, run, leap: Unpredictability boosts survival for bipedal desert rodents](#)** [周二, 05 9月 21:36]

Sometimes it pays to be unpredictable. A new study shows that when bipedal desert rodents called jerboas are being chased, sudden changes in direction, gait and speed help them elude hungry predators and likely give them a competitive edge over their quadrupedal neighbors.

- **[Was the primordial soup a hearty pre-protein stew?](#)** [周二, 05 9月 21:36]

How proteins evolved billions of years ago, when Earth was devoid of life, has stumped many a scientist. A little do-si-do between amino acids and their chemical lookalikes may have done the trick. Evolutionary chemists tried it and got results by the boatload.

- **[Diverse landscapes are more productive and adapt better to climate change](#)** [周二, 05 9月 04:56]

Ecosystems with high biodiversity are more productive and stable towards annual fluctuations in environmental conditions than those with a low diversity of species. They also adapt better to climate-driven environmental changes. These are the key findings environmental scientists made in a study of about 450 landscapes harboring 2,200

plants and animal species.

- [**Experts call for added focus on the impact of glacier mass loss on downstream systems**](#) [周二, 05 9月 03:10]

Researchers have warned of an 'urgent worldwide need' to address a broad spectrum of cascading impacts of glacier mass loss on downstream systems.

- [**Mobile women were key to cultural exchange in Stone Age and Bronze Age Europe**](#) [周二, 05 9月 03:10]

At the end of the Stone Age and in the early Bronze Age, families were established in a surprising manner in the Lechtal, south of Augsburg, Germany. The majority of women probably came from Bohemia or Central Germany, while men usually remained in the region of their birth. This so-called patrilocal pattern combined with individual female mobility persisted over a period of 800 years during the transition from the Neolithic to the Early Bronze Age.

- [**More 'losers' than 'winners' predicted for Southern Ocean seafloor animals**](#) [周二, 05 9月 00:04]

A new study of the marine invertebrates living in the seas around Antarctica reveals there will be more 'losers' than 'winners' over the next century as the Antarctic seafloor warms.

- [**Team gathers unprecedented data on atmosphere's organic chemistry**](#) [周二, 05 9月 00:04]

Teams of scientists have carried out the most detailed, extended observations of atmospheric chemistry ever attempted in one place, in patch of ponderosa pine forest in Colorado, and found previously unmeasured compounds.

- [**Like a revolving door: How shuttling proteins operate nuclear pores**](#) [周一, 04 9月 21:36]

Nuclear pore complexes are tiny channels where the exchange of substances between the cell nucleus and the cytoplasm takes place. Scientists report on startling new research that might overturn

established models of nuclear transport regulation. Their study reveals how shuttling proteins known as importins control the function of nuclear pores – as opposed to the view that nuclear pores control the shuttling of importins.

- [**Indigenous storytelling is a new asset for biocultural conservation**](#) [周一, 04 9月 21:36]

Some of the areas hosting most of the world's biodiversity are those inhabited by indigenous peoples. In the same way that biodiversity is being eroded, so is the world's cultural diversity. As a result, there have been several calls to promote biocultural conservation approaches that sustain both biodiversity and indigenous cultures.

- [**Reindeer grazing protects tundra plant diversity in a warming climate**](#) [周一, 04 9月 21:34]

Climate warming reduces the number of plant species in the tundra, but plant-eating animals, such as reindeer and voles, can turn this negative effect into something positive.

- [**Bacteria act as aphrodisiac for the closest relatives of animals**](#) [周六, 02 9月 01:55]

Choanoflagellates are a ubiquitous but enigmatic one-celled ocean organism that may give clues to the origin of multicellularity in animals. New research has turned up a surprising kink in the organism's sex life: swarming and mating are triggered by a marine bacterium common in their environment. Researchers traced this response to a protein secreted by the bacteria. The choanos seem to be eavesdropping on bacteria to determine their life history.

- [**Earthworms at the root of sugar maple decline**](#) [周六, 02 9月 00:51]

Non-native worms are eating up the forest floor, causing sugar maples to die back and perhaps harming other forest dwellers, a new study suggests.

- [**Metallurgy likely has more than one birthplace**](#) [周五, 01 9月 23:36]

When and where did humans invent metal smelting? Scientists have

found the answer to this long-debated question in the history of technology. Metallurgy does not have a single origin but probably arose at various locations at about the same time. The experts reached this conclusion after re-examining the 8,500-year-old copper slag and analysing the chemical composition of other copper artefacts from the Stone Age settlement of Çatalhöyük in the Near East.

• [**Etosis phenomenon discovered in human blood monocytes**](#) [周五, 01 9月 22:46]

The first clear demonstration of etosis in human blood monocytes, a type of immune cell, has now been discovered by scientists.

• [**Can corals survive climate change?**](#) [周五, 01 9月 21:39]

Scientists have issued advice that more research is urgently required to determine whether corals can acclimate and adapt to the rapid pace of climate change.

• [**Virus hijacks cell's transportation system**](#) [周五, 01 9月 21:39]

A deadly tick-borne virus uses the host neuron's transportation system to move their RNA, resulting in the local reproduction of the virus and severe neurological symptoms.

• [**New light shed on photosynthesis**](#) [周五, 01 9月 21:38]

A team of scientists has taken us a step closer to unlocking the secrets of photosynthesis, and possibly to cleaner fuels. Their discovery describes the structure of a reaction center (from a heliobacterium) which preserves the characteristics of the ancestral one, and so provides new insight into the evolution of photosynthesis.

• [**Nature imagery calms prisoners**](#) [周五, 01 9月 21:38]

Sweeping shots of majestic landscapes. Glaciers, forests and waterfalls. New research shows that these images, shown to people deprived of access to nature, can reduce tension, help defuse anger and make some of the harshest environments, like a solitary confinement cellblock in a maximum-security prison, a little easier to bear.

• [**Paleontologist aids in new discovery 33 years**](#)

[after finding fossil](#) [周五, 01 9月 06:05]

The fossilized plesiosaur Sankar Chatterjee found in 1984 is giving scientists a new understanding of convergent evolution between reptiles and mammals.

• [Fungal infections reduce frogs' tolerance of heat](#)

[周五, 01 9月 06:05]

Fungal diseases are increasing in animals, which might have serious consequences for wildlife living in a hotter world, said a scientist. A new study shows that fungal infections reduced the heat tolerance of frogs by up to 4 degrees Celsius.

• [Panama's native tree species excel in infertile tropical soils](#) [周五, 01 9月 06:03]

Scientists confirm that native tree species performed very well in field trials and would be preferable to teak in the poor soils of the Panama Canal watershed.

• [Coming soon to Montreal: The infrastructure cost of climate change](#) [周五, 01 9月 03:13]

The climate of Montreal is changing and will continue to do so at a rapidly increasing rate and with much more spatial variability in the future, according to new research.

• [Insect eyes inspire new solar cell design](#) [周五, 01 9月 03:12]

Packing tiny solar cells together, like micro-lenses in the compound eye of an insect, could help scientists overcome a major roadblock to the development of perovskite photovoltaics.

• [More research needed on effects of maternal stress in wild animals](#) [周五, 01 9月 03:12]

If a human mother is stressed while pregnant, research shows her child is much more likely to have emotional, cognitive or even physiological problems, such as attention deficit, hyperactivity, anxiety, language delay, obesity, diabetes and hypertension. Conversely, the results of maternal stress on the offspring of other animals -- particularly wildlife under threat from predators -- is believed to be positive, and contributes

to their survival.

[Study reveals ways collegiate sports venues can achieve 'zero waste'](#) [周五, 01 9月 02:13]

A new study analyzing waste and recyclables during Mizzou's 2014 home football season demonstrates that by implementing several recommendations the team developed, such as offering better recycling receptacles and better sorting options for waste, sporting venues could be well on their way to achieving environmental benefits that exceed the standards for 'zero-waste' operations.

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- [**Improved vaccine that protects against nine types of HPV is highly effective**](#) [周四, 07 9月 02:32]

Cervical cancer is the second most common cause of cancer-related death worldwide, with almost 300,000 deaths occurring each year. More than 80 percent of these deaths occur in developing nations. The advent of human papillomavirus (HPV) vaccines has significantly reduced the number of those who develop and die from cervical cancer.

- [**How retractions significantly hurt scientists**](#) [周三, 06 9月 23:46]

Life scientists who have published papers that are retracted by journals subsequently suffer a 10 percent drop in citations of their remaining work, compared to similar but unaffected scientists, according to a new study.

- [**PSA screening significantly reduces the risk for death from prostate cancer**](#) [周二, 05 9月 06:17]

After differences in implementation and settings were accounted for, two important prostate cancer screening trials provide compatible evidence that screening reduces prostate cancer mortality.

- [**Vaccines save 20 million lives, \\$350 billion in poor countries since 2001**](#) [周五, 01 9月 22:10]

Vaccination efforts made in the world's poorest countries since 2001 will have prevented 20 million deaths and saved \$350 billion in health-care costs by 2020, according to a new study.

- [**Nature imagery calms prisoners**](#) [周五, 01 9月 21:38]

Sweeping shots of majestic landscapes. Glaciers, forests and waterfalls. New research shows that these images, shown to people deprived of access to nature, can reduce tension, help defuse anger and make some of the harshest environments, like a solitary confinement cellblock in a maximum-security prison, a little easier to bear.

- [**New boarding procedures, smaller cabin size may limit infection on planes**](#) [周五, 01 9月 03:13]

During major epidemics, cramped airplane cabins are fertile ground for the spread of infection, but new research suggests changing routine boarding protocols could be a key to reducing rampant transmission of disease.

- [**Measuring the cost of quality measurement**](#) [周五, 01 9月 03:12]

Less than 2 decades after publication of the National Academy of Medicine's (formerly the Institute of Medicine) Crossing the Quality Chasm: A New Health System for the 21st Century, quality measurement has become routine and widespread throughout the US health care system.

- [**Study reveals ways collegiate sports venues can achieve 'zero waste'**](#) [周五, 01 9月 02:13]

A new study analyzing waste and recyclables during Mizzou's 2014 home football season demonstrates that by implementing several recommendations the team developed, such as offering better recycling receptacles and better sorting options for waste, sporting venues could be well on their way to achieving environmental benefits that exceed the standards for 'zero-waste' operations.

- [**People become more economically conservative when angered**](#) [周四, 31 8月 23:30]

People tend to lean more economically conservative when they're angry, according to a new article. Researchers came to the conclusion after running multiple studies that included more than 1,000 participants.

- [**How reading and writing with your child boost**](#)

more than just literacy [周四, 31 8月 22:21]

Children who read and write at home -- whether for assignments or just for fun -- are building long-term study and executive function skills, according to a new article

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [**'Vampires' may have been real people with this blood disorder**](#) [周四, 07 9月 02:49]

A newly discovered genetic mutation triggers erythropoietic protoporphyria (EPP). This discovery illuminates a novel biological mechanism potentially responsible for stories of 'vampires' and identifies a potential therapeutic target for treating EPP.

- [**Clever cockatoos bend hooks into straight wire to fish for food**](#) [周三, 06 9月 08:29]

Bending of a hook into wire to fish for the handle of a basket by crow Betty 15 years ago stunned the scientific world. Cognitive biologists studied tool making in an Indonesian cockatoo. Other than crows, cockatoos are not using tools in the wild. The birds manufactured hook tools out of straight wire without ever having seen or used a hook tool before.

- [**Something to sneeze about: Democratic voting in African wild dog packs**](#) [周三, 06 9月 08:29]

Scientists studying African wild dogs in Botswana have found members of this endangered species use sneezes to vote on when the pack will move off and start hunting.

- [**Bacteria act as aphrodisiac for the closest relatives of animals**](#) [周六, 02 9月 01:55]

Choanoflagellates are a ubiquitous but enigmatic one-celled ocean organism that may give clues to the origin of multicellularity in animals.

New research has turned up a surprising kink in the organism's sex life: swarming and mating are triggered by a marine bacterium common in their environment. Researchers traced this response to a protein secreted by the bacteria. The choanos seem to be eavesdropping on bacteria to determine their life history.

- [**Mouth clicks used in human echolocation captured in unprecedented detail**](#) [周五, 01 9月 02:13]

Like some bats and marine mammals, people can develop expert echolocation skills, in which they produce a clicking sound with their mouths and listen to the reflected sound waves to 'see' their surroundings. A new study provides the first in-depth analysis of the mouth clicks used in human echolocation.

- [**First hints of possible water content on TRAPPIST-1 planets**](#) [周四, 31 8月 23:30]

Astronomers have been trying to determine whether there might be water on the seven Earth-sized planets orbiting the nearby dwarf star TRAPPIST-1. The results suggest that the outer planets of the system might still harbor substantial amounts of water. This includes the three planets within the habitable zone of the star, lending further weight to the possibility that they may indeed be habitable.

- [**How Neanderthals made the very first glue**](#) [周四, 31 8月 21:34]

The world's oldest known glue was made by Neanderthals. But how did they make it 200,000 years ago? Archaeologists have discovered three possible ways.

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- [**Eighteenth century nautical charts reveal coral loss**](#) [周五, 08 9月 02:27]

Centuries-old nautical charts, mapped by long-deceased sailors to avoid shipwrecks, have been used by modern scientists to study loss of coral reefs. A new study compared early British charts to modern coral habitat maps to understand changes to reef environments.

- [**Discovery of chromosome motor supports DNA loop extrusion**](#) [周五, 08 9月 02:26]

It is one of the mysteries in biology: how does a cell neatly distribute its replicated DNA between two daughter cells? Scientists are split into two camps: the first argues that condensing works like a hook, tying DNA together. The other camp thinks that the ring-shaped protein pulls the DNA inwards to create a loop. Now researchers from give the 'loop-extrusion camp' a boost: condensin does indeed have the putative 'motor power' on board.

- [**Researchers closer to uncovering a new feature in heart failure**](#) [周五, 08 9月 01:29]

Each cell in the average human body contains 23 pairs of chromosomes, with four telomeres on each pair. Telomeres cover the end of the chromosome, protecting it from deterioration or fusion with adjacent

chromosomes. While there is a length range for classifying a healthy telomere, researchers found, for the first time ever, that people with heart failure have shorter telomeres within the cells that make up the heart muscle (known as cardiomyocytes).

• [Human skin cells transformed directly into motor neurons](#) [周五, 08 9月 01:28]

Scientists have converted skin cells from healthy adults directly into motor neurons without going through a stem cell state. The technique makes it possible to study motor neurons of the human central nervous system in the lab. Unlike commonly studied mouse motor neurons, human motor neurons growing in the lab would be a new tool since researchers can't take samples of these neurons from living people but can easily take skin samples.

• [Shortened telomeres linked to dysfunction in Duchenne muscular dystrophy, researchers find](#) [周五, 08 9月 01:25]

A discovery about muscular dystrophy disorders has been made that suggests new possibilities for treatment. Researchers found that stem cells in the muscles of muscular dystrophy patients may, at an early age, lose their ability to regenerate new muscle, due to shortened telomeres.

• [New acid-free magnet recycling process created](#) [周五, 08 9月 01:25]

A new rare-earth magnet recycling process dissolves magnets in an acid-free solution and recovers high purity rare earth elements.

• [SNAP benefits aren't enough to afford a healthy diet](#) [周五, 08 9月 00:56]

A new study finds that the Supplemental Nutrition Assistance Program (SNAP), formerly known as Food Stamps, only covers 43-60 percent of what it costs to consume a diet consistent with federal dietary guidelines for what constitutes a healthy diet. The study highlights the challenges lower-income households face in trying to eat a healthy diet.

• [Producing malaria treatment at large scales](#) [周五, 08 9月 00:56]

For the first time, production of the anti-malarial drug artemisinin has

been achieved at an industrial scale using genetically engineered moss. This offers new hope for stabilizing artemisinin supplies and combatting malaria.

- [**What makes alcoholics drink? Research shows it's more complex than supposed**](#) [周五, 08 9月 00:02]

What makes alcoholics drink? New research has found that in both men and women with alcohol dependence, the major factor predicting the amount of drinking seems to be a question of immediate mood. Surprisingly men with a history of depression were drinking less often than men who were not depressed. This probably means that alcohol treatment needs to be individually tailored.

- [**Scanning tunneling microscopy measurements identify active sites on catalyst surfaces**](#) [周五, 08 9月 00:02]

Chemistry live: using a scanning tunneling microscope, researchers were able for the very first time to witness in detail the activity of catalysts during an electrochemical reaction. The measurements show how the surface structure of the catalysts influences their activity. The new analysis method can now be used to improve catalysts for the electrochemical industry.

- [**Direct evidence of sea level 'fingerprints' discovered**](#) [周五, 08 9月 00:02]

The first observation of sea level 'fingerprints' -- tell-tale differences in sea level rise around the world in response to changes in continental water and ice sheet mass -- has been reported by researchers.

- [**Climate change for aliens**](#) [周四, 07 9月 23:24]

For more than 50 years, the Kardashev scale has been the gold standard for classifying hypothetical 'exo-civilizations' by their ability to harness energy. A team of researchers has devised a new system that takes into account the impacts of that energy use.

- [**Pluto features given first official names**](#) [周四, 07 9月 23:24]

The Working Group for Planetary System Nomenclature of the International Astronomical Union has officially approved the naming of

14 features on the surface of Pluto. These are the first geological features on the planet to be named following the close flyby by the New Horizons spacecraft in July 2015.

- **[Nutrition has benefits for brain network organization](#)** [周四, 07 9月 23:24]

Nutrition has been linked to cognitive performance, but researchers have not pinpointed what underlies the connection. A new study found that monounsaturated fatty acids -- a class of nutrients found in olive oils, nuts and avocados -- are linked to general intelligence, and that this relationship is driven by the correlation between MUFAs and the organization of the brain's attention network.

- **[3-D-printed biomaterials that degrade on demand](#)** [周四, 07 9月 23:24]

The temporary structures, which can be degraded away with a biocompatible chemical trigger, could be useful in fabricating microfluidic devices, creating biomaterials that respond dynamically to stimuli and in patterning artificial tissue.

- **[Link between positive emotions and health depends on culture](#)** [周四, 07 9月 23:24]

Positive emotions are often seen as critical aspects of healthy living, but new research suggests that the link between emotion and health outcomes may vary by cultural context. The findings show that experiencing positive emotions is linked with better cardiovascular health in the US but not in Japan.

- **[Using antidepressants during pregnancy may affect your child's mental health](#)** [周四, 07 9月 23:24]

The use of antidepressants during pregnancy increases the risk of your child being diagnosed with a psychiatric disorder later in life, a study of almost one million Danish children shows. However, heritability also plays a part, according to the researchers.

- **[Biomarkers as predictive of sepsis as lengthy](#)**

[patient monitoring](#) [周四, 07 9月 23:23]

One measurement of key biomarkers in blood that characterize sepsis can give physicians as much information as hours of monitoring symptoms, a new study found.

[Connection between low oxygen levels, human gene discovered](#) [周四, 07 9月 23:23]

Researchers have established a link between hypoxia, a condition that reduces the flow of oxygen to tissues, and HOTAIR, a noncoding RNA or molecule that has been implicated in several types of cancer.

[You are what you think you eat](#) [周四, 07 9月 22:43]

Despite eating the same breakfast, made from the same ingredients, people consumed more calories throughout the day when they believed that one of the breakfasts was less substantial than the other, investigators have found.

[Fifty–fifty split best for children of divorce, study suggests](#) [周四, 07 9月 22:43]

Preschool children in joint physical custody have less psychological symptoms than those who live mostly or only with one parent after a separation. In a new study of 3,656 children, researchers show that 3–5-year-olds living alternately with their parents after a separation show less behavioral problems and psychological symptoms than those living mostly or only with one of the parents.

[Smartphone screen technology used to trick harmful bacteria](#) [周四, 07 9月 22:41]

Conducting plastics found in smartphone screens can be used to trick the metabolism of pathogenic bacteria, report scientists. By adding or removing electrons from the plastic surface, bacteria may be tricked into growing more or less. The method may find widespread use in preventing bacterial infections in hospitals or improve effectiveness in wastewater management.

[Genes behind gestation length, preterm delivery](#)

identified [周四, 07 9月 22:39]

The genes that regulate gestational length and the likelihood of preterm delivery, have been identified in a study involving more than 50,000 women. An article describes the scientific breakthrough that can lead to improved health and survival among children.

• **Hidden Inca treasure: Remarkable new tree genus discovered in the Andes** [周四, 07 9月 22:24]

Hidden in plain sight -- that's how researchers describe their discovery of a new genus of large forest tree commonly found, yet previously scientifically unknown, in the tropical Andes.

• **Ultraviolet light from superluminous supernova key to revealing explosion mechanism** [周四, 07 9月 22:24]

An international team of researchers has discovered a way to use UV light from superluminous supernovae to uncover its explosion mechanism, and used it to identify Gaia16apd as a shock-interacting supernova, reports a new study.

• **Sometimes you shouldn't say sorry** [周四, 07 9月 22:24]

Being socially rejected can be a painful emotional experience -- but being told sorry may not soften the blow, finds a new study. Contrary to popular belief, apologies increase hurt feelings and the need to express forgiveness, but do not increase feelings of forgiveness, for the person being rebuffed.

• **Fast magnetic writing of data** [周四, 07 9月 22:24]

Magnetic data storage has long been considered too slow for use in the working memories of computers. Researchers have now investigated a technique by which magnetic data writing can be done considerably faster and using less energy.

• **Trigger for fatty liver in obesity** [周四, 07 9月 22:24]

Morbid obesity affects the liver: almost one-third of all adults suffer from chronic fatty liver disease, which can lead to infections and even trigger cancer. Researchers have now found a signaling pathway in cells that play an important role in the development of fatty liver disease.

- [**Algorithm reconstructs processes from individual images**](#) [周四, 07 9月 22:24]

Researchers have developed a new method for reconstructing continuous biological processes, such as disease progression, using image data.

- [**Australian Magpie 'dunks' its food before eating, researchers find**](#) [周四, 07 9月 22:23]

Scientists have shown that the Australian Magpie may 'dunk' its food in water before eating, a process that appears to be 'copied' by its offspring.

- [**Want your question answered quickly? Use gestures as well as words**](#) [周四, 07 9月 22:23]

When someone asks a question during a conversation, their conversation partner answers more quickly if the questioner also moves their hands or head to accompany their words. The study focuses on how gestures influence language processing.

- [**Intermittent electrical brain stimulation improves memory**](#) [周四, 07 9月 22:23]

Intermittent electrical stimulation of an area deep inside the brain that degenerates in Alzheimer's appears to improve working memory, scientists report. Conversely, continuous deep brain stimulation, like the type used for Parkinson's and currently under study in humans with Alzheimer's, impairs memory, according to study.

- [**Long-term opioid prescription use jumps threefold over 16-year period, study suggests**](#) [周四, 07 9月 22:23]

Opioid prescription use increased significantly between 1999 and 2014, new research has found, and that much of that increase stemmed from patients who'd been taking their medication for 90 days or longer.

- [**Increasing effective decision-making for coastal marine ecosystems**](#) [周四, 07 9月 22:23]

Marine restoration, rather than protection, might be the most cost-

effective solution for coastal marine ecosystems suffering from human activities, a new study has found. The study examined how to best benefit coastal marine ecosystems on limited conservation budgets, to help managers better understand the trade-offs.

- [**Breaking through the wall in bacterial membrane vesicle research**](#) [周四, 07 9月 21:36]

Researchers used advanced imaging techniques to investigate the formation of membrane vesicles in a Gram-positive bacterium, a process that is poorly understood, particularly in bacteria with thick cell walls. The consortium showed that membrane vesicle formation was triggered by an enzyme called endolysin that damages the cell wall to create holes that allow the release of membrane vesicles. This mechanism could be exploited for the mass production of bacterial vesicles.

- [**A tiny device offers insights to how cancer spreads**](#) [周四, 07 9月 21:36]

Researchers developed a new type of microfluidic device that can cultivate cells for longer periods of time, better reflecting how cancer cells to change over time. The device allowed them to capture the leader cells that would be first to break away and cause metastasis.

- [**Uncovering the mechanism behind heart failure, mortality in sepsis**](#) [周四, 07 9月 21:36]

Of the nearly 1 million people in the US who are affected by sepsis annually, almost one-fifth die. Cardiovascular complications account for approximately 80 percent of those deaths. Now, researchers describe the mechanism underlying the loss of energy from heart dysfunction in sepsis, opening the way for the development of a new therapy that could save thousands of lives annually.

- [**Link established between a molecular driver of melanoma, novel therapeutic agent**](#) [周四, 07 9月 21:36]

Scientists have described a correlation between a key melanoma signaling pathway and a novel class of drugs being tested in the clinic as adjuvant therapy for advanced melanoma, providing useful information

for a more effective use of this type of treatment.

• [**How do close relationships lead to longer life?**](#) [周四, 07 9月 21:36]

While recent research has shown that loneliness can play a role in early death, psychologists are also concerned with the mechanisms by which social relationships and close personal ties affect health. New research offers an overview of the science and makes the case for psychological scientists to work together to make close relationships a public health priority.

• [**How monkey fights grow**](#) [周四, 07 9月 21:36]

New research finds evidence for a complicated structure behind primate conflict. It is not individuals who control the length of fights, but the relationships between pairs of individuals.

• [**Emoji fans take heart: Scientists pinpoint 27 states of emotion**](#) [周四, 07 9月 21:36]

The Emoji Movie, in which the protagonist can't help but express a wide variety of emotions instead of the one assigned to him, may have gotten something right. A new study challenges a long-held assumption in psychology that most human emotions fall within the universal categories of happiness, sadness, anger, surprise, fear and disgust.

• [**Drivers don't ignore a ringing phone but do ignore the risk**](#) [周四, 07 9月 21:36]

Drivers find it difficult to ignore a ringing phone but do ignore the dangers, with a new study revealing almost 50 percent believe locating and answering a ringing phone is not as risky as talking and texting. Research has found locating a ringing phone, checking who's calling, and rejecting or answering the call, is the most frequent mobile phone task undertaken by drivers.

• [**Improved stem cell transplantation therapies?**](#) [周四, 07 9月 21:36]

Researchers have demonstrated that hematopoietic stem cell (HSC) transplants can be improved by treatments that temporarily prevent the stem cells from dying. The approach could allow those in need of such

transplants, including leukemia and lymphoma patients, to be treated with fewer donor stem cells while limiting potential adverse side effects.

- [**Tooth trouble: Many middle-aged adults report dental pain, embarrassment and poor prevention**](#) [周四, 07 9月 21:36]

The dental health of middle-aged Americans faces a lot of problems right now, and an uncertain future to come, according to new national poll results. One in three Americans between the ages of 50 and 64 say they're embarrassed by the condition of their teeth, and that dental problems have caused pain or other problems in the past two years. Forty percent of those polled don't get regular cleanings or other preventive oral care.

- [**Ebola: Early immune response provides insight into vaccination**](#) [周四, 07 9月 21:36]

The latest outbreaks of emerging pathogens, such as Ebola or Zika, emphasize the importance of the rapid development of vaccines. However, being able to predict the efficacy of new vaccines remains a challenge in vaccine development. Scientists have now successfully assessed early on the longer-term immune response in humans after being vaccinated with the newly developed Ebola vaccine rVSV-ZEBOV.

- [**Discovery of genes linked to preterm birth in landmark study**](#) [周四, 07 9月 10:12]

A massive international DNA analysis of pregnant women has identified for the first time six gene regions that influence the length of pregnancy and the timing of birth. The findings may lead to new ways to prevent preterm birth and its consequences -- the leading cause of death among children under age 5 worldwide.

- [**A bioactive molecule may protect against congestive heart failure after heart attacks**](#) [周四, 07 9月 05:01]

Researchers show that giving mice a form of the fatty acid-derived

bioactive molecule called lipoxin improved heart function after a heart attack, as the lipoxin prompted early activation of the resolving phase of the immune response without altering the acute phase.

• [**Patient satisfaction with pain management linked to nurse staffing**](#) [周四, 07 9月 05:01]

Hospital patients' satisfaction with pain management is linked to nurse staffing, according to an article authored by nurse researchers from the Connell School of Nursing at Boston College and published in the journal Pain Management Nursing.

• [**New model for hard-to-study form of blindness paves way for future research**](#) [周四, 07 9月 05:01]

Researchers have created the first patient-derived laboratory model of macular degeneration, the leading cause of vision loss in older adults. With the new model, the team has identified possible drug targets for the disease, which they hope will help lead to an effective treatment.

• [**Bacterial in-fighting provides new treatment for hospital infections**](#) [周四, 07 9月 02:49]

A bacteria that is a leading cause of death worldwide from hospital acquired infections following antibiotic treatment looks set to be brought down through its own sibling rivalry.

Eighteenth century nautical charts reveal coral loss -- ScienceDaily

Centuries-old nautical charts, mapped by long-deceased sailors to avoid shipwrecks, have been used by modern scientists to study loss of coral reefs.

A new US and Australian study -- including research from The University of Queensland and the Australian Research Council Centre of Excellence in Coral Reef Studies -- compared early British charts to modern coral habitat maps to understand changes to reef environments.

UQ's Professor John Pandolfi said the study used information from surprisingly accurate 18th century nautical charts and satellite data to understand coral loss over more than two centuries in the Florida Keys.

"We found that some reefs had completely disappeared," Professor Pandolfi said.

The study was led by Loren McClenachan, Assistant Professor at Colby College, in Waterville, Maine,

USA.

Professor McClenachan said more than half of the coral reef habitat mapped in the 1770s was no longer there. In some areas, particularly near land, coral loss was closer to 90 per cent.

"We found near the shore, entire sections of reef are gone, but in contrast, most coral mapped further from land is still coral reef habitat today," she said.

This estimate of change over centuries added to modern observations of recent loss of living corals.

The marine scientists measured the loss of coral reef habitats across a large geographic area, while most studies look more closely at the loss of living coral from smaller sections of the reef.

"We found that reef used to exist in areas that today are not even classified as reef habitat anymore," Professor Pandolfi said.

"When you add this to the 75 per cent loss of living coral in the Keys at that finer scale, the magnitude of change is much greater than anyone thought."

This work was undertaken while Professor McClenachan was a visiting researcher in Professor Pandolfi's lab at UQ's School of Biological Sciences in Brisbane, Australia, while on sabbatical from Colby College.

The research revealed the precision of the early maps. Postdoctoral researcher at the Bigelow Laboratory for Ocean Sciences in East Boothbay, Maine Dr Benjamin Neal said the early chart makers represented the "Silicon Valley of their time."

"They had the best technology and they used it to create new information that conferred a lot of power," Dr Neal said.

"The maps were essential to expansion of the British Empire, and luckily for us, they also included a lot of useful ecological information."

Professor McClenachan said the findings had important conservation implications and pointed to a shifted spatial baseline.

"We tend to focus on known areas where we can measure change. That makes sense. Why would you

look for coral where you never knew it was?" she said.

The authors said when large-scale changes like this were overlooked, scientists could lose sight of past abundance, lowering expectations for conservation and recovery.

Story Source:

[Materials](#) provided by [University of Queensland](#).

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Discovery of chromosome motor supports DNA loop extrusion -- ScienceDaily

It is one of the great mysteries in biology: how does a cell neatly distribute its replicated DNA between two daughter cells? For more than a century, we have known that DNA in the cell is comparable to a plate of spaghetti: a big jumble of intermingled strands. If a human cell wants to divide, it has to pack two metres of DNA into tidy little packages: chromosomes. This packing occurs using proteins called condensin, but how? When it comes to this question, scientists are split into two camps: the first argues that the protein works like a hook, randomly grasping somewhere in the jumble of DNA and tying it all together. The other camp thinks that the ring-shaped protein pulls the DNA inwards to create a loop. With an article published this week in *Science*, researchers from TU Delft, Heidelberg and Columbia University give the 'loop-extrusion camp' a significant boost: they demonstrate that condensin does indeed have the putative 'motor power' on board.

Condensation

As early as 1882, the biologist Walter Flemming recorded the process of 'condensation' of DNA. Looking through a microscope, he saw how a cell neatly organised the bundles of DNA and subsequently divided them into two new cells. However, the exact details of this process have remained a mystery for more than 100 years.

DNA loop creators

'There are different schools on this question within the field of cell biology', explains nanobiologist and head of research Cees Dekker from TU Delft's Kavli Institute. 'In recent years, the hypothesis that condensin extrudes loops has been winning ground, supported by computer simulations. The idea is that the ring-shaped condensin grabs the DNA and pulls it through its ring in a loop-like fashion. This is only possible if the protein has motor activity. One problem with this loop extrusion model was that, up until now, a motor function of this kind had not been detected. In addition, too much energy would be required to pull the loops through the ring, far more than the fuel usage that was observed for condensin', adds Prof Cees Dekker.

Motor function

In their article in *Science*, the researchers show for the first time that condensin does indeed have a motor function. They positioned DNA molecules that were stretched on a surface and added condensin proteins, each fitted with a light-emitting quantum dot to enable observation. 'We observed how condensin does indeed translocate along the DNA. This only happened if fuel was present, in this case the molecule ATP -- the petrol that powers all processes in a cell', explains Jorine Eeftens, graduate student at Delft and one of the first authors. 'The results also show that condensin takes extremely large steps on the DNA, and therefore needs significantly less ATP than previously thought'.

In the second stage of their research, the researchers replaced the light-emitting quantum dot on the condensin with a light-emitting string of DNA. They once again witnessed condensin moving in the same way. Condensin is therefore able to move a piece of DNA in relation to another, which corresponds with the idea of a loop being formed.

'The exact underlying mechanism, so the precise details of how the motor works, is still open to discussion. But

this discovery is certainly an enormous boost to the loop extrusion camp. We have also shown that the amount of energy used is a lot less than previously thought', says Cees Dekker.

Medical relevance

The research represents a significant step in the fundamental understanding of our cells, but it is also relevant for medical research. Problems with the protein family to which condensin belongs, the SMC proteins, are related to hereditary conditions such as Cornelia de Lange Syndrome. Condensin is also crucial in the organisation of the chromosomes during cell division, and errors in the process can result in cancer. A better understanding of these processes is vital for tracking down the molecular origins of serious illnesses.

Story Source:

Materials provided by **Delft University of Technology**. *Note: Content may be edited for style and length.*

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Researchers closer to uncovering a new feature in heart failure -- ScienceDaily

Each cell in the average human body contains 23 pairs of chromosomes, with four telomeres on each pair. Telomeres cover the end of the chromosome, protecting it from deterioration or fusion with adjacent chromosomes, much like the plastic tip at the end of a shoelace protects it from unraveling. While there is a length range for classifying a healthy telomere, researchers found, for the first time ever, that people with heart failure have shorter telomeres within the cells that make up the heart muscle (known as cardiomyocytes).

A team of researchers from Penn Medicine, in collaboration with the University of Connecticut, published their findings today in the *Journal of the American Heart Association*, building on a methods paper which was published recently in *Nature Protocols*. The team is the first to have developed a method for measuring the length of telomeres using human heart tissues.

"Once we had established the method for measuring the telomeres in heart cells, which was tricky because human cardiac cells are rarely taken from a living person, we acquired heart tissue samples from patients receiving heart transplants and organ donors in order to evaluate telomere length," said the study's lead researcher, Foteini Mourkioti, PhD, an assistant professor of Orthopaedic Surgery and Cell and Developmental Biology, and co-director of the Musculoskeletal Regeneration Program in the Penn Institute for Regenerative Medicine. "Using samples from the Penn Heart Tissue Biobank meant we were also able to acquire patient data for the samples, so we knew useful information like the patient's age, sex, and heart function."

Researchers were able to measure the telomeres in the samples of patients who had heart disease and those who did not, and group the findings into categories based on patients' age. They found that in the samples for healthy people, age did not play a role in telomere length, since the telomeres of both young and old healthy individuals were not affected. However, patients with heart failure had shorter telomeres regardless of their age. In comparing diseased and healthy samples, researchers were able to draw a

correlation between shorter telomeres and the presence of heart failure. Patients with the shortest telomeres in their cardiac cells also had the most severely decreased cardiac function. The team also found that the cardiomyocytes were the only heart cells affected by the telomere length in disease samples, but the telomere length of other cells within the same diseased heart samples were not different.

"This human tissue research is critical as it may open the door for future telomere preserving therapies to help protect heart failure patients" said co-author Kenneth B. Margulies, MD, a professor of Medicine and research director for Heart Failure and Transplantation. "While there is a need to better understand *how* heart disease induces telomere shortening, this is an important step in the research process, one that brings us closer to a better understanding of heart failure"

Leaning on this human data to inform basic science studies, Mourkioti and her team are now working to pinpoint pathways that specifically target cardiomyocytes, in order to track the disease progression and identify areas for therapeutic interventions that can later be tested in in-human

clinical trials. "The important thing is that we now have a new lead to follow and test how cardiac-specific telomere interventions can improve heart function" Mourkioti said.

Story Source:

[Materials](#) provided by [Perelman School of Medicine at the University of Pennsylvania](#). *Note: Content may be edited for style and length.*

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Human skin cells transformed directly into motor neurons -- ScienceDaily

Scientists working to develop new treatments for neurodegenerative diseases have been stymied by the inability to grow human motor neurons in the lab. Motor neurons drive muscle contractions, and their damage underlies devastating diseases such as amyotrophic lateral sclerosis and spinal muscular atrophy, both of which ultimately lead to paralysis and early death.

In new research, scientists at Washington University School of Medicine in St. Louis have converted skin cells from healthy adults directly into motor neurons without going through a stem cell state.

The technique makes it possible to study motor neurons of the human central nervous system in the lab. Unlike commonly studied mouse motor neurons, human motor neurons growing in the lab would be a new tool since researchers can't take samples of these neurons from living people but can easily take skin samples.

The study is published Sept. 7 in the journal *Cell Stem Cell*.

Avoiding the stem cell phase eliminates ethical concerns raised when producing what are called pluripotent stem cells, which are similar to embryonic stem cells in their ability to become all adult cell types. And importantly, avoiding a stem cell state allows the resulting motor neurons to retain the age of the original skin cells and, therefore, the age of the patient. Maintaining the chronological age of these cells is vital when studying neurodegenerative diseases that develop in people at different ages and worsen over decades.

"In this study, we only used skin cells from healthy adults ranging in age from early 20s to late 60s," said senior author Andrew S. Yoo, PhD, an assistant professor of developmental biology. "Our research revealed how small RNA molecules can work with other cell signals called transcription factors to generate specific types of neurons, in this case motor neurons. In the future, we would like to study skin cells from patients with disorders of motor neurons. Our conversion process should model late-onset aspects of the disease using neurons derived from patients with the condition."

"Going back through a pluripotent stem cell phase is a bit like demolishing a house and building a new one from the ground up," Yoo said. "What we're doing is more like renovation. We change the interior but leave the original structure, which retains the characteristics of the aging adult neurons that we want to study."

The ability of scientists to convert human skin cells into other cell types, such as neurons, has the potential to enhance understanding of disease and lead to finding new ways to heal damaged tissues and organs, a field called regenerative medicine.

To convert skin cells into motor neurons, the researchers exposed the skin cells to molecular signals that are usually present at high levels in the brain. Past work by Yoo and his colleagues -- then at Stanford University -- showed that exposure to two short snippets of RNA turned human skin cells into neurons. These two microRNAs -- called miR-9 and miR-124 -- are involved with repackaging the genetic instructions of the cell.

In the new study, the researchers extensively characterized this repackaging process, detailing how skin cells reprogrammed into generic neurons then can

be guided into specific types of neurons. They found that genes involved in this process become poised for expression but remain inactive until the correct combination of molecules is provided. After much experimentation with multiple combinations, the researchers found that adding two more signals to the mix -- transcription factors called ISL1 and LHX3 -- turned the skin cells into spinal cord motor neurons in about 30 days.

The combination of signals -- microRNAs miR-9 and miR-124 plus transcription factors ISL1 and LHX3 -- tells the cell to fold up the genetic instructions for making skin and unfurl the instructions for making motor neurons, according to Yoo and the study's co-first authors, Daniel G. Abernathy and Matthew J. McCoy, doctoral students in Yoo's lab; and Woo Kyung Kim, PhD, a postdoctoral research associate.

Another past study from Yoo's team showed that exposure to the same two microRNAs, miR-9 and miR-124, plus a different mix of transcription factors could turn skin cells into a different type of neuron. In that case, the skin cells became striatal medium spiny neurons, which are affected in Huntington's disease -- an inherited, eventually fatal genetic disorder that

causes involuntary muscle movements and cognitive decline beginning in middle adulthood.

In the new study, the researchers said the converted motor neurons compared favorably to normal mouse motor neurons, in terms of the genes that are turned on and off and how they function. But the scientists can't be certain these cells are perfect matches for native human motor neurons since it's difficult to obtain samples of cultured motor neurons from adult individuals. Future work studying neuron samples donated from patients after death is required to determine how precisely these cells mimic native human motor neurons.

Story Source:

Materials provided by **Washington University in St. Louis**. Original written by Julia Evangelou Strait.

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· [**Human skin cells transformed directly into motor neurons**](#) [周五, 08 9月 01:28]

Scientists have converted skin cells from healthy adults directly into motor neurons without going through a stem cell state. The technique makes it possible to study motor neurons of the human central nervous system in the lab. Unlike commonly studied mouse motor neurons, human motor neurons growing in the lab would be a new tool since researchers can't take samples of these neurons from living people but can easily take skin samples.

· [**Direct evidence of sea level 'fingerprints' discovered**](#) [周五, 08 9月 00:02]

The first observation of sea level 'fingerprints' -- tell-tale differences in sea level rise around the world in response to changes in continental water and ice sheet mass -- has been reported by researchers.

· [**Pluto features given first official names**](#) [周四, 07 9月 23:24]

The Working Group for Planetary System Nomenclature of the International Astronomical Union has officially approved the naming of 14 features on the surface of Pluto. These are the first geological features on the planet to be named following the close flyby by the New Horizons spacecraft in July 2015.

· [**Nutrition has benefits for brain network organization**](#) [周四, 07 9月 23:24]

Nutrition has been linked to cognitive performance, but researchers have not pinpointed what underlies the connection. A new study found that monounsaturated fatty acids -- a class of nutrients found in olive oils,

nuts and avocados -- are linked to general intelligence, and that this relationship is driven by the correlation between MUFAs and the organization of the brain's attention network.

[**3-D-printed biomaterials that degrade on demand**](#) [周四, 07 9月 23:24]

The temporary structures, which can be degraded away with a biocompatible chemical trigger, could be useful in fabricating microfluidic devices, creating biomaterials that respond dynamically to stimuli and in patterning artificial tissue.

[**Intermittent electrical brain stimulation improves memory**](#) [周四, 07 9月 22:23]

Intermittent electrical stimulation of an area deep inside the brain that degenerates in Alzheimer's appears to improve working memory, scientists report. Conversely, continuous deep brain stimulation, like the type used for Parkinson's and currently under study in humans with Alzheimer's, impairs memory, according to study.

[**How monkey fights grow**](#) [周四, 07 9月 21:36]

New research finds evidence for a complicated structure behind primate conflict. It is not individuals who control the length of fights, but the relationships between pairs of individuals.

[**Emoji fans take heart: Scientists pinpoint 27 states of emotion**](#) [周四, 07 9月 21:36]

The Emoji Movie, in which the protagonist can't help but express a wide variety of emotions instead of the one assigned to him, may have gotten something right. A new study challenges a long-held assumption in psychology that most human emotions fall within the universal categories of happiness, sadness, anger, surprise, fear and disgust.

[**Monkey sees ... monkey knows?**](#) [周四, 07 9月 01:55]

Monkeys had higher confidence in their ability to remember an image when the visual contrast was high. These kinds of metacognitive illusions -- false beliefs about how we learn or remember best -- are shared by humans, leading brain and cognitive scientists to believe that

metacognition could have an evolutionary basis.

- [**Accretion-powered pulsar reveals unique timing glitch**](#) [周三, 06 9月 22:36]

The discovery of the largest timing irregularity yet observed in a pulsar is the first confirmation that pulsars in binary systems exhibit the strange phenomenon known as a 'glitch.'

- [**Biologists slow aging, extend lifespan of fruit flies**](#) [周三, 06 9月 22:34]

In research that potentially could delay the onset of Parkinson's disease, Alzheimer's disease, cancer, stroke, cardiovascular disease, and other diseases of aging, biologists have produced a genetic one-two punch that significantly slowed aging and improved health in the middle-aged fruit flies they studied.

- [**Clever cockatoos bend hooks into straight wire to fish for food**](#) [周三, 06 9月 08:29]

Bending of a hook into wire to fish for the handle of a basket by crow Betty 15 years ago stunned the scientific world. Cognitive biologists studied tool making in an Indonesian cockatoo. Other than crows, cockatoos are not using tools in the wild. The birds manufactured hook tools out of straight wire without ever having seen or used a hook tool before.

- [**Something to sneeze about: Democratic voting in African wild dog packs**](#) [周三, 06 9月 08:29]

Scientists studying African wild dogs in Botswana have found members of this endangered species use sneezes to vote on when the pack will move off and start hunting.

- [**Newly-discovered semiconductor dynamics may help improve energy efficiency**](#) [周三, 06 9月 08:29]

Researchers examining the flow of electricity through semiconductors have uncovered another reason these materials seem to lose their ability to carry a charge as they become more densely 'doped.'

- [**Humans still evolving, large-scale study of genetic data shows**](#) [周三, 06 9月 02:55]

In a study analyzing the genomes of 210,000 people in the United States and Britain, researchers have found that the genetic variants linked to Alzheimer's disease and heavy smoking are less frequent in people with longer lifespans, suggesting that natural selection is weeding out these unfavorable variants in both populations.

- [**Eat fat, live longer?**](#) [周三, 06 9月 02:55]

As more people live into their 80s and 90s, researchers have delved into the issues of health and quality of life during aging. A recent mouse study sheds light on those questions by demonstrating that a high fat, or ketogenic, diet not only increases longevity, but improves physical strength.

- [**Swings in dad's testosterone affects the family -- for better or worse -- after baby arrives**](#) [周三, 06 9月 02:55]

Testosterone levels are a key factor in a family's health and happiness after a newborn arrives. Researchers have found that a drop can signal postpartum depression in dad, and a spike may be a sign of aggression.

- [**Cooling system works without electricity**](#) [周三, 06 9月 02:55]

Scientists cooled water without electricity by sending excess heat where it won't be noticed -- space. The specialized optical surfaces they developed are a major step toward applying this technology to air conditioning and refrigeration.

- [**Crab nebula in the limelight: Unified model for the entire radiation spectrum**](#) [周三, 06 9月 00:48]

The origin of cosmic rays, high-energy particles from outer space constantly impacting on Earth, is among the most challenging open questions in astrophysics. Now research sheds new light on the origin of those energetic particles.

- [**Contagious yawning more closely associated with perceptual sensitivity than empathy**](#) [周三, 06 9月 00:33]

Contrary to common belief that the yawning contagion is associated with empathy, it is in fact, more likely that perceptual sensitivity is to blame, research suggests.

- [**Discovery of boron on Mars adds to evidence for habitability**](#) [周三, 06 9月 00:32]

The discovery of boron on Mars gives scientists more clues about whether life could have ever existed on the planet, according to a new paper.

- [**'Extreme' telescopes find the second-fastest-spinning pulsar**](#) [周三, 06 9月 00:32]

By following up on mysterious high-energy sources mapped by NASA's Fermi Gamma-ray Space Telescope, a Netherlands-based radio telescope has discovered a new pulsar, the second fastest-spinning known.

- [**The sniff test of self-recognition confirmed: Dogs have self-awareness**](#) [周二, 05 9月 23:13]

A new research study used a sniff-test to evaluate the ability of dogs to recognize themselves. The experiment confirms the hypothesis of dogs' self-cognition proposed last year.

- [**Zika virus kills brain cancer stem cells**](#) [周二, 05 9月 21:36]

While Zika virus causes devastating damage to the brains of developing fetuses, it one day may be an effective treatment for glioblastoma, a deadly form of brain cancer. New research shows that the virus kills brain cancer stem cells, the kind of cancer cells most resistant to standard treatments.

- [**Was the primordial soup a hearty pre-protein stew?**](#) [周二, 05 9月 21:36]

How proteins evolved billions of years ago, when Earth was devoid of life, has stumped many a scientist. A little do-si-do between amino acids and their chemical lookalikes may have done the trick. Evolutionary chemists tried it and got results by the boatload.

• [**Mobile women were key to cultural exchange in Stone Age and Bronze Age Europe**](#) [周二, 05 9月 03:10]

At the end of the Stone Age and in the early Bronze Age, families were established in a surprising manner in the Lechtal, south of Augsburg, Germany. The majority of women probably came from Bohemia or Central Germany, while men usually remained in the region of their birth. This so-called patrilocal pattern combined with individual female mobility persisted over a period of 800 years during the transition from the Neolithic to the Early Bronze Age.

• [**Face value: Brain's ability to recognize faces is shaped through repeated exposure, study suggests**](#) [周二, 05 9月 00:04]

Scientists have long deemed the ability to recognize faces innate for people and other primates -- something our brains just know how to do immediately from birth. However, the findings of a new study cast doubt on this longstanding view.

• [**More 'losers' than 'winners' predicted for Southern Ocean seafloor animals**](#) [周二, 05 9月 00:04]

A new study of the marine invertebrates living in the seas around Antarctica reveals there will be more 'losers' than 'winners' over the next century as the Antarctic seafloor warms.

• [**Stellar corpse sheds light on origin of cosmic rays**](#) [周一, 04 9月 21:34]

New research revealed that the entire zoo of electromagnetic radiation streaming from the Crab nebula -- one of the most iconic objects in the sky -- has its origin in one population of electrons and must be produced in a different way than scientists have traditionally thought. The results have implications for our understanding of how cosmic rays attain their incredible energies.

• [**Physicists propose new theories of black holes from the very early universe**](#) [周六, 02 9月 01:55]

'Primordial black holes,' believed to have formed shortly after the Big Bang, might explain how heavy elements such as gold, platinum and uranium came to be, physicists report.

• [Metallurgy likely has more than one birthplace](#) [周五, 01 9月 23:36]

When and where did humans invent metal smelting? Scientists have found the answer to this long-debated question in the history of technology. Metallurgy does not have a single origin but probably arose at various locations at about the same time. The experts reached this conclusion after re-examining the 8,500-year-old copper slag and analysing the chemical composition of other copper artefacts from the Stone Age settlement of Çatalhöyük in the Near East.

• [Equatorial jet in Venusian atmosphere](#) [周五, 01 9月 21:38]

Observations by Japan's Venus climate orbiter Akatsuki have revealed an equatorial jet in the lower to middle cloud layer of the planet's atmosphere, a finding that could be pivotal to unraveling a phenomenon called superrotation.

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

- [**Discovery of chromosome motor supports DNA loop extrusion**](#) [周五, 08 9月 02:26]

It is one of the mysteries in biology: how does a cell neatly distribute its replicated DNA between two daughter cells? Scientists are split into two camps: the first argues that condensing works like a hook, tying DNA together. The other camp thinks that the ring-shaped protein pulls the DNA inwards to create a loop. Now researchers from give the 'loop-extrusion camp' a boost: condensin does indeed have the putative 'motor power' on board.

- [**Researchers closer to uncovering a new feature in heart failure**](#) [周五, 08 9月 01:29]

Each cell in the average human body contains 23 pairs of chromosomes, with four telomeres on each pair. Telomeres cover the end of the chromosome, protecting it from deterioration or fusion with adjacent chromosomes. While there is a length range for classifying a healthy telomere, researchers found, for the first time ever, that people with heart failure have shorter telomeres within the cells that make up the heart muscle (known as cardiomyocytes).

- [**Human skin cells transformed directly into motor neurons**](#) [周五, 08 9月 01:28]

Scientists have converted skin cells from healthy adults directly into motor neurons without going through a stem cell state. The technique makes it possible to study motor neurons of the human central nervous system in the lab. Unlike commonly studied mouse motor neurons,

human motor neurons growing in the lab would be a new tool since researchers can't take samples of these neurons from living people but can easily take skin samples.

- [**SNAP benefits aren't enough to afford a healthy diet**](#) [周五, 08 9月 00:56]

A new study finds that the Supplemental Nutrition Assistance Program (SNAP), formerly known as Food Stamps, only covers 43-60 percent of what it costs to consume a diet consistent with federal dietary guidelines for what constitutes a healthy diet. The study highlights the challenges lower-income households face in trying to eat a healthy diet.

- [**Producing malaria treatment at large scales**](#) [周五, 08 9月 00:56]

For the first time, production of the anti-malarial drug artemisinin has been achieved at an industrial scale using genetically engineered moss. This offers new hope for stabilizing artemisinin supplies and combatting malaria.

- [**What makes alcoholics drink? Research shows it's more complex than supposed**](#) [周五, 08 9月 00:02]

What makes alcoholics drink? New research has found that in both men and women with alcohol dependence, the major factor predicting the amount of drinking seems to be a question of immediate mood. Surprisingly men with a history of depression were drinking less often than men who were not depressed. This probably means that alcohol treatment needs to be individually tailored.

- [**Nutrition has benefits for brain network organization**](#) [周四, 07 9月 23:24]

Nutrition has been linked to cognitive performance, but researchers have not pinpointed what underlies the connection. A new study found that monounsaturated fatty acids -- a class of nutrients found in olive oils, nuts and avocados -- are linked to general intelligence, and that this relationship is driven by the correlation between MUFAs and the organization of the brain's attention network.

[3-D-printed biomaterials that degrade on demand](#) [周四, 07 9月 23:24]

The temporary structures, which can be degraded away with a biocompatible chemical trigger, could be useful in fabricating microfluidic devices, creating biomaterials that respond dynamically to stimuli and in patterning artificial tissue.

[Link between positive emotions and health depends on culture](#) [周四, 07 9月 23:24]

Positive emotions are often seen as critical aspects of healthy living, but new research suggests that the link between emotion and health outcomes may vary by cultural context. The findings show that experiencing positive emotions is linked with better cardiovascular health in the US but not in Japan.

[Using antidepressants during pregnancy may affect your child's mental health](#) [周四, 07 9月 23:24]

The use of antidepressants during pregnancy increases the risk of your child being diagnosed with a psychiatric disorder later in life, a study of almost one million Danish children shows. However, heritability also plays a part, according to the researchers.

[Biomarkers as predictive of sepsis as lengthy patient monitoring](#) [周四, 07 9月 23:23]

One measurement of key biomarkers in blood that characterize sepsis can give physicians as much information as hours of monitoring symptoms, a new study found.

[Connection between low oxygen levels, human gene discovered](#) [周四, 07 9月 23:23]

Researchers have established a link between hypoxia, a condition that reduces the flow of oxygen to tissues, and HOTAIR, a noncoding RNA or molecule that has been implicated in several types of cancer.

[You are what you think you eat](#) [周四, 07 9月 22:43]

Despite eating the same breakfast, made from the same ingredients,

people consumed more calories throughout the day when they believed that one of the breakfasts was less substantial than the other, investigators have found.

- [**Fifty–fifty split best for children of divorce, study suggests**](#) [周四, 07 9月 22:43]

Preschool children in joint physical custody have less psychological symptoms than those who live mostly or only with one parent after a separation. In a new study of 3,656 children, researchers show that 3–5-year-olds living alternately with their parents after a separation show less behavioral problems and psychological symptoms than those living mostly or only with one of the parents.

- [**Smartphone screen technology used to trick harmful bacteria**](#) [周四, 07 9月 22:41]

Conducting plastics found in smartphone screens can be used to trick the metabolism of pathogenic bacteria, report scientists. By adding or removing electrons from the plastic surface, bacteria may be tricked into growing more or less. The method may find widespread use in preventing bacterial infections in hospitals or improve effectiveness in wastewater management.

- [**Genes behind gestation length, preterm delivery identified**](#) [周四, 07 9月 22:39]

The genes that regulate gestational length and the likelihood of preterm delivery, have been identified in a study involving more than 50,000 women. An article describes the scientific breakthrough that can lead to improved health and survival among children.

- [**Sometimes you shouldn't say sorry**](#) [周四, 07 9月 22:24]

Being socially rejected can be a painful emotional experience -- but being told sorry may not soften the blow, finds a new study. Contrary to popular belief, apologies increase hurt feelings and the need to express forgiveness, but do not increase feelings of forgiveness, for the person being rebuffed.

- [**Trigger for fatty liver in obesity**](#) [周四, 07 9月 22:24]

Morbid obesity affects the liver: almost one-third of all adults suffer from chronic fatty liver disease, which can lead to infections and even trigger cancer. Researchers have now found a signaling pathway in cells that play an important role in the development of fatty liver disease.

• [**Want your question answered quickly? Use gestures as well as words**](#) [周四, 07 9月 22:23]

When someone asks a question during a conversation, their conversation partner answers more quickly if the questioner also moves their hands or head to accompany their words. The study focuses on how gestures influence language processing.

• [**Intermittent electrical brain stimulation improves memory**](#) [周四, 07 9月 22:23]

Intermittent electrical stimulation of an area deep inside the brain that degenerates in Alzheimer's appears to improve working memory, scientists report. Conversely, continuous deep brain stimulation, like the type used for Parkinson's and currently under study in humans with Alzheimer's, impairs memory, according to study.

• [**Long-term opioid prescription use jumps threefold over 16-year period, study suggests**](#) [周四, 07 9月 22:23]

Opioid prescription use increased significantly between 1999 and 2014, new research has found, and that much of that increase stemmed from patients who'd been taking their medication for 90 days or longer.

• [**A tiny device offers insights to how cancer spreads**](#) [周四, 07 9月 21:36]

Researchers developed a new type of microfluidic device that can cultivate cells for longer periods of time, better reflecting how cancer cells to change over time. The device allowed them to capture the leader cells that would be first to break away and cause metastasis.

• [**Uncovering the mechanism behind heart failure, mortality in sepsis**](#) [周四, 07 9月 21:36]

Of the nearly 1 million people in the US who are affected by sepsis

annually, almost one-fifth die. Cardiovascular complications account for approximately 80 percent of those deaths. Now, researchers describe the mechanism underlying the loss of energy from heart dysfunction in sepsis, opening the way for the development of a new therapy that could save thousands of lives annually.

• [**Link established between a molecular driver of melanoma, novel therapeutic agent**](#) [周四, 07 9月 21:36]

Scientists have described a correlation between a key melanoma signaling pathway and a novel class of drugs being tested in the clinic as adjuvant therapy for advanced melanoma, providing useful information for a more effective use of this type of treatment.

• [**How do close relationships lead to longer life?**](#) [周四, 07 9月 21:36]

While recent research has shown that loneliness can play a role in early death, psychologists are also concerned with the mechanisms by which social relationships and close personal ties affect health. New research offers an overview of the science and makes the case for psychological scientists to work together to make close relationships a public health priority.

• [**Emoji fans take heart: Scientists pinpoint 27 states of emotion**](#) [周四, 07 9月 21:36]

The Emoji Movie, in which the protagonist can't help but express a wide variety of emotions instead of the one assigned to him, may have gotten something right. A new study challenges a long-held assumption in psychology that most human emotions fall within the universal categories of happiness, sadness, anger, surprise, fear and disgust.

• [**Drivers don't ignore a ringing phone but do ignore the risk**](#) [周四, 07 9月 21:36]

Drivers find it difficult to ignore a ringing phone but do ignore the dangers, with a new study revealing almost 50 percent believe locating and answering a ringing phone is not as risky as talking and texting. Research has found locating a ringing phone, checking who's calling, and rejecting or answering the call, is the most frequent mobile phone

task undertaken by drivers.

[Improved stem cell transplantation therapies?](#) [周四, 07 9月 21:36]

Researchers have demonstrated that hematopoietic stem cell (HSC) transplants can be improved by treatments that temporarily prevent the stem cells from dying. The approach could allow those in need of such transplants, including leukemia and lymphoma patients, to be treated with fewer donor stem cells while limiting potential adverse side effects.

[Tooth trouble: Many middle-aged adults report dental pain, embarrassment and poor prevention](#) [周四, 07 9月 21:36]

The dental health of middle-aged Americans faces a lot of problems right now, and an uncertain future to come, according to new national poll results. One in three Americans between the ages of 50 and 64 say they're embarrassed by the condition of their teeth, and that dental problems have caused pain or other problems in the past two years. Forty percent of those polled don't get regular cleanings or other preventive oral care.

[Ebola: Early immune response provides insight into vaccination](#) [周四, 07 9月 21:36]

The latest outbreaks of emerging pathogens, such as Ebola or Zika, emphasize the importance of the rapid development of vaccines. However, being able to predict the efficacy of new vaccines remains a challenge in vaccine development. Scientists have now successfully assessed early on the longer-term immune response in humans after being vaccinated with the newly developed Ebola vaccine rVSV-ZEBOV.

[Discovery of genes linked to preterm birth in landmark study](#) [周四, 07 9月 10:12]

A massive international DNA analysis of pregnant women has identified for the first time six gene regions that influence the length of pregnancy and the timing of birth. The findings may lead to new ways to prevent

preterm birth and its consequences -- the leading cause of death among children under age 5 worldwide.

- [**A bioactive molecule may protect against congestive heart failure after heart attacks**](#) [周四, 07 9月 05:01]

Researchers show that giving mice a form of the fatty acid-derived bioactive molecule called lipoxin improved heart function after a heart attack, as the lipoxin prompted early activation of the resolving phase of the immune response without altering the acute phase.

- [**Patient satisfaction with pain management linked to nurse staffing**](#) [周四, 07 9月 05:01]

Hospital patients' satisfaction with pain management is linked to nurse staffing, according to an article authored by nurse researchers from the Connell School of Nursing at Boston College and published in the journal Pain Management Nursing.

- [**New model for hard-to-study form of blindness paves way for future research**](#) [周四, 07 9月 05:01]

Researchers have created the first patient-derived laboratory model of macular degeneration, the leading cause of vision loss in older adults. With the new model, the team has identified possible drug targets for the disease, which they hope will help lead to an effective treatment.

- [**Bacterial in-fighting provides new treatment for hospital infections**](#) [周四, 07 9月 02:49]

A bacteria that is a leading cause of death worldwide from hospital acquired infections following antibiotic treatment looks set to be brought down through its own sibling rivalry.

- [**New device accurately identifies cancer in seconds**](#) [周四, 07 9月 02:49]

A team of scientists and engineers has invented a powerful tool that rapidly and accurately identifies cancerous tissue during surgery, delivering results in about 10 seconds. The MasSpec Pen is an innovative handheld instrument that gives surgeons precise diagnostic

information about what tissue to cut or preserve, helping improve treatment and reduce the chances of cancer recurrence.

- [**'Vampires' may have been real people with this blood disorder**](#) [周四, 07 9月 02:49]

A newly discovered genetic mutation triggers erythropoietic protoporphyria (EPP). This discovery illuminates a novel biological mechanism potentially responsible for stories of 'vampires' and identifies a potential therapeutic target for treating EPP.

- [**Sleep may help eyewitnesses from choosing innocent suspects**](#) [周四, 07 9月 02:49]

Sleep may influence an eyewitness's ability to correctly pick a guilty person out of a police lineup, indicates a new study.

- [**Improved vaccine that protects against nine types of HPV is highly effective**](#) [周四, 07 9月 02:32]

Cervical cancer is the second most common cause of cancer-related death worldwide, with almost 300,000 deaths occurring each year. More than 80 percent of these deaths occur in developing nations. The advent of human papillomavirus (HPV) vaccines has significantly reduced the number of those who develop and die from cervical cancer.

- [**Concussions in women: Rates, symptoms and recovery are different than men**](#) [周四, 07 9月 02:32]

Females tend to report more symptoms -- and more severe ones -- and may also take longer to recover from brain injuries than their male counterparts.

- [**Synthetic version of popular anticoagulant poised for clinical trials**](#) [周四, 07 9月 02:32]

A synthetic version of low molecular weight heparin is poised for clinical trials and development as a drug for patients with clotting disorders, and those undergoing procedures such as kidney dialysis, heart bypass surgery, stent implantation, and knee and hip replacement.

- [**Monkey sees ... monkey knows?**](#) [周四, 07 9月 01:55]

Monkeys had higher confidence in their ability to remember an image when the visual contrast was high. These kinds of metacognitive illusions -- false beliefs about how we learn or remember best -- are shared by humans, leading brain and cognitive scientists to believe that metacognition could have an evolutionary basis.

- [**How retractions significantly hurt scientists**](#) [周三, 06 9月 23:46]

Life scientists who have published papers that are retracted by journals subsequently suffer a 10 percent drop in citations of their remaining work, compared to similar but unaffected scientists, according to a new study.

- [**Blindness study shows how gene causes middle-age sight loss**](#) [周三, 06 9月 22:37]

Chemical changes in the eye that can lead to blindness have been identified by scientists, report investigators.

- [**Substance in coffee delays onset of diabetes in laboratory mice**](#) [周三, 06 9月 22:37]

Substances in coffee have been identified that could help quash the risk of developing type 2 diabetes. But few of these have been tested in animals. Now, scientists report that one of these previously untested compounds appears to improve cell function and insulin sensitivity in laboratory mice. The finding could spur the development of new drugs to treat or even prevent the disease.

- [**New strategy for vaccinating pregnant mothers against malaria holds promise for protecting infants**](#) [周三, 06 9月 22:37]

A mother and infant in Malawi have the same repertoire of antibodies to Plasmodium falciparum, the malaria parasite. That suggests that boosting the mother's immune response to malaria, as via vaccination, will result in better protection for the infant.

- [**Quantum tech has its sights set on human**](#)

[biochemistry](#) [周三, 06 9月 22:36]

Scientists have developed a new tool for imaging life at the nanoscale that will provide new insights into the role of transition metal ions such as copper in neurodegenerative diseases.

. [Colon of patients with IBS reacts differently to bacteria](#) [周三, 06 9月 22:36]

The intestinal barrier of patients with the gastrointestinal disease IBS allows bacteria to pass more freely than in healthy people, according to a study. The study is the first to investigate IBS using living bacteria.

. [Gut microbiota of larvae has an impact on mosquito's ability to transmit human pathogens](#) [周三, 06 9月 22:36]

Researchers have demonstrated that differential bacterial exposure during the development of mosquito larvae (*Aedes aegypti*) can have carry-over effects on adult traits related to an insect's ability to be a successful vector of arboviruses. This study represents an important step toward a more comprehensive understanding of how the environment shapes the risk of vector-borne disease.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

- [**New acid-free magnet recycling process created**](#)

[周五, 08 9月 01:25]

A new rare-earth magnet recycling process dissolves magnets in an acid-free solution and recovers high purity rare earth elements.

- [**Scanning tunneling microscopy measurements identify active sites on catalyst surfaces**](#)

[周五, 08 9月 00:02]

Chemistry live: using a scanning tunneling microscope, researchers were able for the very first time to witness in detail the activity of catalysts during an electrochemical reaction. The measurements show how the surface structure of the catalysts influences their activity. The new analysis method can now be used to improve catalysts for the electrochemical industry.

- [**Climate change for aliens**](#)

[周四, 07 9月 23:24]

For more than 50 years, the Kardashev scale has been the gold standard for classifying hypothetical 'exo-civilizations' by their ability to harness energy. A team of researchers has devised a new system that takes into account the impacts of that energy use.

- [**Pluto features given first official names**](#)

[周四, 07 9月 23:24]

The Working Group for Planetary System Nomenclature of the International Astronomical Union has officially approved the naming of 14 features on the surface of Pluto. These are the first geological features on the planet to be named following the close flyby by the New Horizons spacecraft in July 2015.

- [**3-D-printed biomaterials that degrade on**](#)

demand [周四, 07 9月 23:24]

The temporary structures, which can be degraded away with a biocompatible chemical trigger, could be useful in fabricating microfluidic devices, creating biomaterials that respond dynamically to stimuli and in patterning artificial tissue.

• **Smartphone screen technology used to trick harmful bacteria** [周四, 07 9月 22:41]

Conducting plastics found in smartphone screens can be used to trick the metabolism of pathogenic bacteria, report scientists. By adding or removing electrons from the plastic surface, bacteria may be tricked into growing more or less. The method may find widespread use in preventing bacterial infections in hospitals or improve effectiveness in wastewater management.

• **Ultraviolet light from superluminous supernova key to revealing explosion mechanism** [周四, 07 9月 22:24]

An international team of researchers has discovered a way to use UV light from superluminous supernovae to uncover its explosion mechanism, and used it to identify Gaia16apd as a shock-interacting supernova, reports a new study.

• **Fast magnetic writing of data** [周四, 07 9月 22:24]

Magnetic data storage has long been considered too slow for use in the working memories of computers. Researchers have now investigated a technique by which magnetic data writing can be done considerably faster and using less energy.

• **Intermittent electrical brain stimulation improves memory** [周四, 07 9月 22:23]

Intermittent electrical stimulation of an area deep inside the brain that degenerates in Alzheimer's appears to improve working memory, scientists report. Conversely, continuous deep brain stimulation, like the type used for Parkinson's and currently under study in humans with Alzheimer's, impairs memory, according to study.

- [**A tiny device offers insights to how cancer spreads**](#) [周四, 07 9月 21:36]

Researchers developed a new type of microfluidic device that can cultivate cells for longer periods of time, better reflecting how cancer cells to change over time. The device allowed them to capture the leader cells that would be first to break away and cause metastasis.

- [**Drivers don't ignore a ringing phone but do ignore the risk**](#) [周四, 07 9月 21:36]

Drivers find it difficult to ignore a ringing phone but do ignore the dangers, with a new study revealing almost 50 percent believe locating and answering a ringing phone is not as risky as talking and texting. Research has found locating a ringing phone, checking who's calling, and rejecting or answering the call, is the most frequent mobile phone task undertaken by drivers.

- [**New device accurately identifies cancer in seconds**](#) [周四, 07 9月 02:49]

A team of scientists and engineers has invented a powerful tool that rapidly and accurately identifies cancerous tissue during surgery, delivering results in about 10 seconds. The MasSpec Pen is an innovative handheld instrument that gives surgeons precise diagnostic information about what tissue to cut or preserve, helping improve treatment and reduce the chances of cancer recurrence.

- [**Supercharging silicon batteries**](#) [周三, 06 9月 22:36]

Scientists have designed a novel silicon-based anode to provide lithium batteries with increased power and better stability.

- [**Quantum tech has its sights set on human biochemistry**](#) [周三, 06 9月 22:36]

Scientists have developed a new tool for imaging life at the nanoscale that will provide new insights into the role of transition metal ions such as copper in neurodegenerative diseases.

- [**Green light for ultra-fine display colors**](#) [周三, 06 9月 22:36]

Chemical engineers have succeeded in generating ultra-pure green light for the first time. The new light-emitting diode will pave the way for visibly improved color quality in a new generation of ultra-high definition displays for TVs and smartphones.

- [**Accretion-powered pulsar reveals unique timing glitch**](#) [周三, 06 9月 22:36]

The discovery of the largest timing irregularity yet observed in a pulsar is the first confirmation that pulsars in binary systems exhibit the strange phenomenon known as a 'glitch.'

- [**New tool for characterizing quantum simulators**](#) [周三, 06 9月 22:35]

Physicists are developing quantum simulators, to help solve problems that are beyond the reach of conventional computers. However, they first need new tools to ensure that the simulators work properly.

Researchers have now implemented a new technique in the laboratory that can be used to efficiently characterize the complex states of quantum simulators. The technique could become a new standard tool for characterizing quantum simulators.

- [**Keychain detector could catch food allergens before it's too late**](#) [周三, 06 9月 22:35]

For kids and adults with food allergies, a restaurant outing can be a fraught experience. Even when care is taken, freshly prepared or packaged meals can accidentally become cross-contaminated with an offending food and trigger a reaction. Now researchers report the development of a new portable allergen-detection system -- including a keychain analyzer -- that could help prevent trips to the emergency room.

- [**Flip-flop qubits: Radical new quantum computing design invented**](#) [周三, 06 9月 22:35]

Engineers have invented a radical new architecture for quantum computing, based on novel 'flip-flop qubits,' that promises to make the large-scale manufacture of quantum chips dramatically cheaper -- and easier -- than thought possible. The new chip design allows for a silicon

quantum processor that can be scaled up without the precise placement of atoms required in other approaches.

- [**Newly-discovered semiconductor dynamics may help improve energy efficiency**](#) [周三, 06 9月 08:29]

Researchers examining the flow of electricity through semiconductors have uncovered another reason these materials seem to lose their ability to carry a charge as they become more densely 'doped.'

- [**Superhuman 'night' vision during the total eclipse?**](#) [周三, 06 9月 04:40]

It was dark as night during the recent total solar eclipse, yet people and objects were easier to see than on a typical moonless night. Scientists have discovered a possible biological explanation -- the presence (or absence) of a protein in the retina known as a GABA receptor.

- [**Mobile phone use while pregnant not linked to child neurodevelopment problems, study suggests**](#) [周三, 06 9月 02:55]

Mobile phone use during pregnancy is unlikely to have any adverse effects on child neurodevelopment, according to new research. These findings provide further evidence that exposure to radio frequency electromagnetic fields associated with maternal use of mobile phones during pregnancy is not linked to neurodevelopment in children.

- [**Research shows how DNA molecules cross nanopores**](#) [周三, 06 9月 02:55]

Research sheds new light on the understanding of the measurement of polymer properties in diverse chemical industries such as plastics manufacturing and food processing, and the design of biosensors.

- [**Aeroices: Newly discovered ultralow-density ice**](#) [周三, 06 9月 02:55]

Relatively little is known about the effects of extreme negative pressure on water molecules. Exploring a significant region of negative pressure through molecular dynamic simulations, researchers have now theoretically discovered a new family of ice phases. Called aeroices,

these ices have the lowest density of all known ice crystals.

- [**Cooling system works without electricity**](#) [周三, 06 9月 02:55]

Scientists cooled water without electricity by sending excess heat where it won't be noticed -- space. The specialized optical surfaces they developed are a major step toward applying this technology to air conditioning and refrigeration.

- [**More durable, less expensive fuel cells**](#) [周三, 06 9月 01:44]

A new technology has been created that could make fuel cells cheaper and more durable. Hydrogen-powered fuel cells are a green alternative to internal combustion engines because they produce power through electrochemical reactions, leaving no pollution behind. Platinum is the most common catalyst in the type of fuel cells used in vehicles, but it's expensive. The UD team used a novel method to come up with a less expensive catalyst.

- [**Nanoparticles limit damage in spinal cord injury**](#)

[周三, 06 9月 01:44]

After a spinal cord injury, significant secondary nerve damage is caused by inflammation and internal scarring that inhibits the ability of the nervous system to repair itself. A biodegradable nanoparticle injected after a spinal cord trauma prevented the inflammation and internal scarring that inhibits the repair process, reports a new study.

- [**Unique study tests fundamental laws of physics**](#) [周

三, 06 9月 00:54]

A study that will 'test our understanding of how the Universe works, particularly outside the relatively narrow confines of our planet' is being undertaken by an international team of researchers.

- [**Crab nebula in the limelight: Unified model for the entire radiation spectrum**](#) [周三, 06 9月 00:48]

The origin of cosmic rays, high-energy particles from outer space constantly impacting on Earth, is among the most challenging open questions in astrophysics. Now research sheds new light on the origin of those energetic particles.

- [**Solubility study could impact energy, biology,**](#)

[environment](#) [周三, 06 9月 00:32]

Chemical engineers have used the most realistic computer model yet devised to simulate the precise atomic and molecular interactions that come into play when water mixes with alkanes, a family of hydrocarbons that includes methane, propane and other refined products.

• [Surgeons create 'vacuum' procedure to remove infected pacemaker](#) [周三, 06 9月 00:32]

Electrophysiologists get creative in removing infected pacemaker wires of a patient unable to have open heart surgery. He would have died if they didn't use a 'vacuum' typically used to remove foreign objects.

• [Discovery of boron on Mars adds to evidence for habitability](#) [周三, 06 9月 00:32]

The discovery of boron on Mars gives scientists more clues about whether life could have ever existed on the planet, according to a new paper.

• [Glowing cancer tool illuminates benign, but dangerous, brain tumors during pituitary surgery](#) [周三, 06 9月 00:32]

An experimental imaging tool that uses a targeted fluorescent dye successfully lit up the benign brain tumors of patients during removal surgery, allowing surgeons to identify tumor tissue, a new study shows.

• ['Extreme' telescopes find the second-fastest-spinning pulsar](#) [周三, 06 9月 00:32]

By following up on mysterious high-energy sources mapped by NASA's Fermi Gamma-ray Space Telescope, a Netherlands-based radio telescope has discovered a new pulsar, the second fastest-spinning known.

• [When strangers can control our lights](#) [周二, 05 9月 21:38]

Smart home products such as lamps controlled via mobile devices are becoming ever more popular in private households. We would, however, feel vulnerable in our own four walls if strangers suddenly started

switching the lights in our homes on and off. Researchers have discovered security problems of this nature in smart lights manufactured by GE, IKEA, Philips and Osram.

• [**Was the primordial soup a hearty pre-protein stew?**](#) [周二, 05 9月 21:36]

How proteins evolved billions of years ago, when Earth was devoid of life, has stumped many a scientist. A little do-si-do between amino acids and their chemical lookalikes may have done the trick. Evolutionary chemists tried it and got results by the boatload.

• [**New fluorescent dyes could advance biological imaging**](#) [周二, 05 9月 00:04]

Scientists have developed a new method for fine-tuning the structure of rhodamine dyes, and can now create a colorful palette of fluorescent molecules.

• [**Equation reveals the characteristics of quantum chaos**](#) [周一, 04 9月 21:37]

Researchers have now succeeded in formulating a mathematical result that provides an exact answer to the question of how chaos actually behaves. The researchers have analyzed chaotic states at the atomic level.

• [**Like a revolving door: How shuttling proteins operate nuclear pores**](#) [周一, 04 9月 21:36]

Nuclear pore complexes are tiny channels where the exchange of substances between the cell nucleus and the cytoplasm takes place. Scientists report on startling new research that might overturn established models of nuclear transport regulation. Their study reveals how shuttling proteins known as importins control the function of nuclear pores – as opposed to the view that nuclear pores control the shuttling of importins.

• [**Stellar corpse sheds light on origin of cosmic rays**](#) [周一, 04 9月 21:34]

New research revealed that the entire zoo of electromagnetic radiation streaming from the Crab nebula -- one of the most iconic objects in the sky -- has its origin in one population of electrons and must be produced in a different way than scientists have traditionally thought. The results have implications for our understanding of how cosmic rays attain their incredible energies.

- [**Algorithm unlocks smartwatches that learn your every move**](#) [周一, 04 9月 21:34]

Scientists have invented a new algorithm that enables smartwatches to detect and record your every move, without being told beforehand what to look for.

- [**Physicists propose new theories of black holes from the very early universe**](#) [周六, 02 9月 01:55]

'Primordial black holes,' believed to have formed shortly after the Big Bang, might explain how heavy elements such as gold, platinum and uranium came to be, physicists report.

- [**Reusable ruthenium-based catalyst could be a game-changer for the biomass industry**](#) [周五, 01 9月 22:46]

Researchers have developed a highly efficient reusable catalyst for the production of primary amines. By cutting the amount of undesired by-products, the catalyst is set to revolutionize the production of bio-based fuels, pharmaceuticals, agricultural chemicals and more.

- [**Bit data goes anti-skyrmions**](#) [周五, 01 9月 22:46]

Scientists have discovered a new kind of magnetic nano-object in a novel material that could serve as a magnetic bit with cloaking properties to make a magnetic disk drive with no moving parts -- a Racetrack Memory -- a reality in the near future.

- [**Astronomer's study finds 10 times fewer house-sized near earth objects in solar system**](#) [周五, 01 9月 22:09]

The surprising results of a astronomer's new study find that there are 3.5 million house-sized meteoroids whose orbits bring them close enough to

Earth to pose potential impact hazards -- ten times fewer than previously thought.

• **[Molecules move faster near sticky surfaces](#)** [周五, 01 9月 21:39]

Molecules move faster as they get closer to adhesive surfaces, but this effect is not permanent.

• **[Equatorial jet in Venusian atmosphere](#)** [周五, 01 9月 21:38]

Observations by Japan's Venus climate orbiter Akatsuki have revealed an equatorial jet in the lower to middle cloud layer of the planet's atmosphere, a finding that could be pivotal to unraveling a phenomenon called superrotation.

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Environment News

Top stories featured on ScienceDaily's Plants & Animals, Earth & Climate, and Fossils & Ruins sections.

- [**Eighteenth century nautical charts reveal coral loss**](#) [周五, 08 9月 02:27]

Centuries-old nautical charts, mapped by long-deceased sailors to avoid shipwrecks, have been used by modern scientists to study loss of coral reefs. A new study compared early British charts to modern coral habitat maps to understand changes to reef environments.

- [**Discovery of chromosome motor supports DNA loop extrusion**](#) [周五, 08 9月 02:26]

It is one of the mysteries in biology: how does a cell neatly distribute its replicated DNA between two daughter cells? Scientists are split into two camps: the first argues that condensing works like a hook, tying DNA together. The other camp thinks that the ring-shaped protein pulls the DNA inwards to create a loop. Now researchers from give the 'loop-extrusion camp' a boost: condensin does indeed have the putative 'motor power' on board.

- [**New acid-free magnet recycling process created**](#) [周五, 08 9月 01:25]

A new rare-earth magnet recycling process dissolves magnets in an acid-free solution and recovers high purity rare earth elements.

- [**Direct evidence of sea level 'fingerprints' discovered**](#) [周五, 08 9月 00:02]

The first observation of sea level 'fingerprints' -- tell-tale differences in sea level rise around the world in response to changes in continental water and ice sheet mass -- has been reported by researchers.

- [**Smartphone screen technology used to trick harmful bacteria**](#) [周四, 07 9月 22:41]

Conducting plastics found in smartphone screens can be used to trick the metabolism of pathogenic bacteria, report scientists. By adding or removing electrons from the plastic surface, bacteria may be tricked into growing more or less. The method may find widespread use in preventing bacterial infections in hospitals or improve effectiveness in wastewater management.

- [**Hidden Inca treasure: Remarkable new tree genus discovered in the Andes**](#) [周四, 07 9月 22:24]

Hidden in plain sight -- that's how researchers describe their discovery of a new genus of large forest tree commonly found, yet previously scientifically unknown, in the tropical Andes.

- [**Algorithm reconstructs processes from individual images**](#) [周四, 07 9月 22:24]

Researchers have developed a new method for reconstructing continuous biological processes, such as disease progression, using image data.

- [**Australian Magpie 'dunks' its food before eating, researchers find**](#) [周四, 07 9月 22:23]

Scientists have shown that the Australian Magpie may 'dunk' its food in water before eating, a process that appears to be 'copied' by its offspring.

- [**Increasing effective decision-making for coastal marine ecosystems**](#) [周四, 07 9月 22:23]

Marine restoration, rather than protection, might be the most cost-effective solution for coastal marine ecosystems suffering from human activities, a new study has found. The study examined how to best benefit coastal marine ecosystems on limited conservation budgets, to help managers better understand the trade-offs.

- [**Breaking through the wall in bacterial**](#)

[membrane vesicle research](#) [周四, 07 9月 21:36]

Researchers used advanced imaging techniques to investigate the formation of membrane vesicles in a Gram-positive bacterium, a process that is poorly understood, particularly in bacteria with thick cell walls. The consortium showed that membrane vesicle formation was triggered by an enzyme called endolysin that damages the cell wall to create holes that allow the release of membrane vesicles. This mechanism could be exploited for the mass production of bacterial vesicles.

• [How monkey fights grow](#) [周四, 07 9月 21:36]

New research finds evidence for a complicated structure behind primate conflict. It is not individuals who control the length of fights, but the relationships between pairs of individuals.

• [Ebola: Early immune response provides insight into vaccination](#) [周四, 07 9月 21:36]

The latest outbreaks of emerging pathogens, such as Ebola or Zika, emphasize the importance of the rapid development of vaccines. However, being able to predict the efficacy of new vaccines remains a challenge in vaccine development. Scientists have now successfully assessed early on the longer-term immune response in humans after being vaccinated with the newly developed Ebola vaccine rVSV-ZEBOV.

• [Bacterial in-fighting provides new treatment for hospital infections](#) [周四, 07 9月 02:49]

A bacteria that is a leading cause of death worldwide from hospital acquired infections following antibiotic treatment looks set to be brought down through its own sibling rivalry.

• [Pollen stays on bee bodies right where flowers need it for pollination](#) [周四, 07 9月 02:49]

After grooming, bees still have pollen on body parts that match the position of flower pollen-sacs and stigmas, according to a new study.

• [Monkey sees ... monkey knows?](#) [周四, 07 9月 01:55]

Monkeys had higher confidence in their ability to remember an image when the visual contrast was high. These kinds of metacognitive illusions -- false beliefs about how we learn or remember best -- are shared by humans, leading brain and cognitive scientists to believe that metacognition could have an evolutionary basis.

- [**Substance in coffee delays onset of diabetes in laboratory mice**](#) [周三, 06 9月 22:37]

Substances in coffee have been identified that could help quash the risk of developing type 2 diabetes. But few of these have been tested in animals. Now, scientists report that one of these previously untested compounds appears to improve cell function and insulin sensitivity in laboratory mice. The finding could spur the development of new drugs to treat or even prevent the disease.

- [**Cloud formation suppressed by biogenic organic emissions**](#) [周三, 06 9月 22:36]

Evidence has been found that near-ground biogenic emissions of organics suppress cloud formation in cool-temperate forests in autumn, providing clues to how global warming will affect cloud formation and the overall climate.

- [**Colon of patients with IBS reacts differently to bacteria**](#) [周三, 06 9月 22:36]

The intestinal barrier of patients with the gastrointestinal disease IBS allows bacteria to pass more freely than in healthy people, according to a study. The study is the first to investigate IBS using living bacteria.

- [**Unraveling a major cause of sea ice retreat in the Arctic Ocean**](#) [周三, 06 9月 22:36]

Quantitative analysis has evidenced the acceleration system of melting ice: dark water surfaces absorb more heat than white ice surfaces, thus melting ice and making more water surfaces in the Arctic Ocean.

- [**Gut microbiota of larvae has an impact on mosquito's ability to transmit human pathogens**](#) [周三, 06 9月 22:36]

Researchers have demonstrated that differential bacterial exposure during the development of mosquito larvae (*Aedes aegypti*) can have carry-over effects on adult traits related to an insect's ability to be a successful vector of arboviruses. This study represents an important step toward a more comprehensive understanding of how the environment shapes the risk of vector-borne disease.

• [**Protein that extends life of yeast cells**](#) [周三, 06 9月 22:35]

To understand and control aging is the aspiration of many scientists. Researchers have now discovered that the protein Gcn4 decreases protein synthesis and extends the life of yeast cells. Understanding how individual genes affect lifespan opens new ways to control the aging process and the occurrence of aging-related diseases.

• [**Bacteria responsible for legionellosis modulates the host cell metabolism to its advantage**](#) [周三, 06 9月 22:35]

The bacterial pathogen *Legionella pneumophila* has developed a specific strategy to target the host cell mitochondria, the organelles in charge of cellular bioenergetics, scientists have shown. New work provides precious information on how a pathogen manipulates the cellular metabolism to replicate intracellularly, and proposes a new concept of protection of host cells from *Legionella*-induced mitochondrial changes in order to fight infection.

• [**Research dog helps scientists save endangered carnivores**](#) [周三, 06 9月 22:35]

Scat-sniffing research dogs are helping scientists map out a plan to save reclusive jaguars, pumas, bush dogs and other endangered carnivores in the increasingly fragmented forests of northeastern Argentina, according to a new study.

• [**Will mallards hybridize their cousins out of existence?**](#) [周三, 06 9月 22:35]

Mallards -- the familiar ducks of city parks -- are one of a group of closely related species, many of which are far less common. Interbreeding can threaten the genetic distinctiveness of those other

species and cause concern for their conservation. A new study investigates hybridization between mallards and mottled ducks, a species adapted for life in coastal marshes, and finds that while hybridization rates are currently low, human activity could cause them to rise in the future.

• [**Biologists slow aging, extend lifespan of fruit flies**](#) [周三, 06 9月 22:34]

In research that potentially could delay the onset of Parkinson's disease, Alzheimer's disease, cancer, stroke, cardiovascular disease, and other diseases of aging, biologists have produced a genetic one-two punch that significantly slowed aging and improved health in the middle-aged fruit flies they studied.

• [**Clever cockatoos bend hooks into straight wire to fish for food**](#) [周三, 06 9月 08:29]

Bending of a hook into wire to fish for the handle of a basket by crow Betty 15 years ago stunned the scientific world. Cognitive biologists studied tool making in an Indonesian cockatoo. Other than crows, cockatoos are not using tools in the wild. The birds manufactured hook tools out of straight wire without ever having seen or used a hook tool before.

• [**Something to sneeze about: Democratic voting in African wild dog packs**](#) [周三, 06 9月 08:29]

Scientists studying African wild dogs in Botswana have found members of this endangered species use sneezes to vote on when the pack will move off and start hunting.

• [**Invasive plants change ecosystems from the bottom up**](#) [周三, 06 9月 02:56]

Even when two different Phragmite lineages are grown side-by-side in the same ecosystem, the bacterial communities in the soil differ dramatically. This is a discovery that will aid in understanding how plant invasions get started and the conditions necessary for their success.

- [**Research shows how DNA molecules cross nanopores**](#) [周三, 06 9月 02:55]

Research sheds new light on the understanding of the measurement of polymer properties in diverse chemical industries such as plastics manufacturing and food processing, and the design of biosensors.

- [**Aeroices: Newly discovered ultralow-density ice**](#) [周三, 06 9月 02:55]

Relatively little is known about the effects of extreme negative pressure on water molecules. Exploring a significant region of negative pressure through molecular dynamic simulations, researchers have now theoretically discovered a new family of ice phases. Called aeroices, these ices have the lowest density of all known ice crystals.

- [**Eating meat linked to higher risk of diabetes**](#) [周三, 06 9月 01:45]

Higher intake of red meat and poultry is associated with significantly increased risk of developing diabetes, which is partially attributed to their higher content of heme iron in these meats, new research shows.

- [**Could switchgrass help China's air quality?**](#) [周三, 06 9月 01:45]

Researchers have proposed an idea that could improve China's air quality, but they're not atmospheric scientists. They're agronomists.

- [**Oregon's marijuana legalization prompted big drop in sales in Washington's border counties**](#) [周三, 06 9月 01:44]

Three days after recreational marijuana sales became legal in Oregon, sales across the border in Washington, where retail availability already existed, dropped by 41 percent, say economists. Their study also suggests that illegal cross-border movement, or diversion, of legally produced marijuana sold at retail outlets across state borders is a real concern but not occurring at alarming levels.

- [**Birds choose mates with ornamental traits**](#) [周三, 06 9月 00:57]

A recurring theme in nature documentaries is that of choosy females selecting brightly colored males. A new study shows that, in monogamous mating systems, male birds may select their lifelong mates

in much the same way.

- [**First detailed decoding of complex finger millet genome**](#) [周三, 06 9月 00:56]

Finger millet has two important properties: The grain is rich in important minerals and resistant towards drought and heat. Thanks to a novel combination of state-of-the-art technologies, researchers were able to decode the large and extremely complex genome of finger millet in high quality for the first time. This represents a fundamental basis for improving food security in countries like India and parts of Africa.

- [**Cell marking opens up a window into the body**](#) [周三, 06 9月 00:35]

Researchers have developed new methods to track cells in mice which could help to reduce animal experiments.

- [**Building a morphogen gradient by simple diffusion in a growing plant leaf**](#) [周三, 06 9月 00:33]

The research team has shown that a transcriptional co-activator ANGUSTIFOLIA3 (AN3) forms a signaling gradient along the leaf proximal-to-distal axis to determine cell-proliferation domain.

- [**Human-made reefs: A compelling diving alternative**](#) [周三, 06 9月 00:33]

Researchers have examined diving habits and behavior around Eilat's natural and artificial reefs. According to study, the average diver density at the artificial reef was higher than at the two nearby natural knolls, and the Tamar reef effectively diverts divers from natural knolls. Secondly, the study found that regarding attitudes toward natural versus artificial reefs, divers consider the artificial reefs more appropriate for training, but they feel less relaxed around them.

- [**Warmer world may bring more local, less global, temperature variability**](#) [周三, 06 9月 00:32]

Many tropical or subtropical regions could see increases in naturally occurring temperature variability as Earth warms over coming decades, a new study suggests. These local changes could occur even though

Earth's global mean surface temperature variability will likely decrease because of less solar reflection from icecaps at high latitudes.

- [**Dig, dive, survive: Fruit fly larvae can make decisions about feeding that balance risk against benefit, biologists show**](#) [周三, 06 9月 00:32]

We humans aren't the only creatures drawn by the smell of a good meal. Fruit fly larvae, it turns out, are equally susceptible to food scents, although the odors that attract them may not appeal to us.

- [**Genome of threatened northern spotted owl assembled**](#) [周二, 05 9月 23:14]

A charismatic owl iconic to Pacific Coast forests is no longer ruling the roost, and scientists now have another tool for understanding its decline. Researchers have assembled the California Academy of Sciences' first-ever animal genome after sequencing the DNA of the northern spotted owl (*Strix occidentalis caurina*). Academy scientists and collaborators extensively mapped the bird's genetic material to better understand how this threatened forest dweller is interacting with non-native owls invading...

- [**Cannot sleep due to stress? Here is the cure**](#) [周二, 05 9月 23:13]

Everyone empirically knows that stressful events certainly affect sound sleep. Scientists have found that the active component rich in sugarcane and other natural products may ameliorate stress and help having sound sleep.

- [**The sniff test of self-recognition confirmed: Dogs have self-awareness**](#) [周二, 05 9月 23:13]

A new research study used a sniff-test to evaluate the ability of dogs to recognize themselves. The experiment confirms the hypothesis of dogs' self-cognition proposed last year.

- [**When not to eat your kids**](#) [周二, 05 9月 23:07]

Even though it is known to be a cannibal, the mangrove rivulus or killifish of the Americas will never eat one of its own embryos, even if it

is hungry. This slender amphibious fish can recognize its own kin, even if these are still in the embryonic stage, according to new research.

- [**'Bee' informed: Public interest exceeds understanding in bee conservation**](#) [周二, 05 9月 22:44]

Many people have heard bee populations are declining due to such threats as colony collapse disorder, pesticides and habitat loss. And many understand bees are critical to plant pollination. Yet, according to a study, few are aware of the wide diversity of bees and other pollinators beyond such species as honeybees. Because conservation efforts require substantial public support, outreach is needed to help people understand bee declines and how to protect pollinators.

- [**Life in the fast lane: How plants avoid traffic jams**](#) [周二, 05 9月 22:43]

Scientists have discovered how plants ingeniously avoid internal traffic jams.

- [**Discovery of dynamic seasonal changes in color perception**](#) [周二, 05 9月 21:38]

In many areas, the environment fluctuates greatly depending on the season, and animals living in those areas must adapt to the changing environment. A research group has found that color perception of Medaka, a small fish inhabiting rice fields and streams, varies greatly according to seasonal changes.

- [**Hop, skip, run, leap: Unpredictability boosts survival for bipedal desert rodents**](#) [周二, 05 9月 21:36]

Sometimes it pays to be unpredictable. A new study shows that when bipedal desert rodents called jerboas are being chased, sudden changes in direction, gait and speed help them elude hungry predators and likely give them a competitive edge over their quadrupedal neighbors.

- [**Was the primordial soup a hearty pre-protein stew?**](#) [周二, 05 9月 21:36]

How proteins evolved billions of years ago, when Earth was devoid of

life, has stumped many a scientist. A little do-si-do between amino acids and their chemical lookalikes may have done the trick. Evolutionary chemists tried it and got results by the boatload.

[Zika virus could be used to treat brain cancer patients, study suggests](#) [周二, 05 9月 21:35]

Recent outbreaks of Zika virus have revealed that the virus causes brain defects in unborn children. But researchers now report that the virus could eventually be used to target and kill cancer cells in the brain.

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- [**SNAP benefits aren't enough to afford a healthy diet**](#) [周五, 08 9月 00:56]

A new study finds that the Supplemental Nutrition Assistance Program (SNAP), formerly known as Food Stamps, only covers 43-60 percent of what it costs to consume a diet consistent with federal dietary guidelines for what constitutes a healthy diet. The study highlights the challenges lower-income households face in trying to eat a healthy diet.

- [**Nutrition has benefits for brain network organization**](#) [周四, 07 9月 23:24]

Nutrition has been linked to cognitive performance, but researchers have not pinpointed what underlies the connection. A new study found that monounsaturated fatty acids -- a class of nutrients found in olive oils, nuts and avocados -- are linked to general intelligence, and that this relationship is driven by the correlation between MUFAs and the organization of the brain's attention network.

- [**Improved vaccine that protects against nine types of HPV is highly effective**](#) [周四, 07 9月 02:32]

Cervical cancer is the second most common cause of cancer-related death worldwide, with almost 300,000 deaths occurring each year. More than 80 percent of these deaths occur in developing nations. The advent of human papillomavirus (HPV) vaccines has significantly reduced the number of those who develop and die from cervical cancer.

- [**How retractions significantly hurt scientists**](#) [周三, 06 9月 23:46]

Life scientists who have published papers that are retracted by journals subsequently suffer a 10 percent drop in citations of their remaining work, compared to similar but unaffected scientists, according to a new study.

• [**Oregon's marijuana legalization prompted big drop in sales in Washington's border counties**](#) [周三, 06 9月 01:44]

Three days after recreational marijuana sales became legal in Oregon, sales across the border in Washington, where retail availability already existed, dropped by 41 percent, say economists. Their study also suggests that illegal cross-border movement, or diversion, of legally produced marijuana sold at retail outlets across state borders is a real concern but not occurring at alarming levels.

• [**PSA screening significantly reduces the risk for death from prostate cancer**](#) [周二, 05 9月 06:17]

After differences in implementation and settings were accounted for, two important prostate cancer screening trials provide compatible evidence that screening reduces prostate cancer mortality.

• [**Vaccines save 20 million lives, \\$350 billion in poor countries since 2001**](#) [周五, 01 9月 22:10]

Vaccination efforts made in the world's poorest countries since 2001 will have prevented 20 million deaths and saved \$350 billion in health-care costs by 2020, according to a new study.

• [**Nature imagery calms prisoners**](#) [周五, 01 9月 21:38]

Sweeping shots of majestic landscapes. Glaciers, forests and waterfalls. New research shows that these images, shown to people deprived of access to nature, can reduce tension, help defuse anger and make some of the harshest environments, like a solitary confinement cellblock in a maximum-security prison, a little easier to bear.

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [Climate change for aliens](#) [周四, 07 9月 23:24]

For more than 50 years, the Kardashev scale has been the gold standard for classifying hypothetical 'exo-civilizations' by their ability to harness energy. A team of researchers has devised a new system that takes into account the impacts of that energy use.

- [Australian Magpie 'dunks' its food before eating, researchers find](#) [周四, 07 9月 22:23]

Scientists have shown that the Australian Magpie may 'dunk' its food in water before eating, a process that appears to be 'copied' by its offspring.

- ['Vampires' may have been real people with this blood disorder](#) [周四, 07 9月 02:49]

A newly discovered genetic mutation triggers erythropoietic protoporphyria (EPP). This discovery illuminates a novel biological mechanism potentially responsible for stories of 'vampires' and identifies a potential therapeutic target for treating EPP.

- [Clever cockatoos bend hooks into straight wire to fish for food](#) [周三, 06 9月 08:29]

Bending of a hook into wire to fish for the handle of a basket by crow Betty 15 years ago stunned the scientific world. Cognitive biologists studied tool making in an Indonesian cockatoo. Other than crows, cockatoos are not using tools in the wild. The birds manufactured hook tools out of straight wire without ever having seen or used a hook tool before.

· [**Something to sneeze about: Democratic voting in African wild dog packs**](#) [周三, 06 9月 08:29]

Scientists studying African wild dogs in Botswana have found members of this endangered species use sneezes to vote on when the pack will move off and start hunting.

· [**Cooling system works without electricity**](#) [周三, 06 9月 02:55]

Scientists cooled water without electricity by sending excess heat where it won't be noticed -- space. The specialized optical surfaces they developed are a major step toward applying this technology to air conditioning and refrigeration.

· [**Bacteria act as aphrodisiac for the closest relatives of animals**](#) [周六, 02 9月 01:55]

Choanoflagellates are a ubiquitous but enigmatic one-celled ocean organism that may give clues to the origin of multicellularity in animals. New research has turned up a surprising kink in the organism's sex life: swarming and mating are triggered by a marine bacterium common in their environment. Researchers traced this response to a protein secreted by the bacteria. The choanos seem to be eavesdropping on bacteria to determine their life history.

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• [**Better understanding of 'one of the most complex organs' for better lung treatments**](#) [周五, 08 9月 02:45]

Details of lung cell molecular pathways that promote or inhibit tissue regeneration have been reported by researchers. Their aim is to find new ways to treat lung disorders.

• [**Interrupting Parkinson's disease**](#) [周五, 08 9月 02:30]

Scientists have identified a toxic cascade that leads to neuronal degeneration in patients with Parkinson's disease and figured out how to interrupt it, reports a study. Intervening with an antioxidant early in the disease process may break the degenerative cycle and improve neuron function in Parkinson's, the study showed. Parkinson's is second most common neurodegenerative disorder.

• [**Mediterranean-style diet may eliminate need for reflux medications**](#) [周五, 08 9月 02:30]

A plant-based, Mediterranean-style diet has been shown to provide the same medical benefits for treating laryngopharyngeal reflux as popular reflux medications, according to new research.

• [**Ship exhaust makes oceanic thunderstorms more intense**](#) [周五, 08 9月 02:27]

Thunderstorms directly above two of the world's busiest shipping lanes are significantly more powerful than storms in areas of the ocean where ships don't travel, according to new research.

• [**Why are fossilized hairs so rare?**](#) [周五, 08 9月 02:27]

When it comes to preserving body parts, fossilized hair is rare--five times rarer than feathers--despite being an important tool for understanding ancient species. This finding has researchers trying to determine if the lack of hair in the fossil record has to do with physical traits that might make it more difficult for hair to fossilize, or an issue with scientists' collection techniques that could lead to them missing important finds.

• [**Cilia: 'The bouncer' of bacteria**](#) [周五, 08 9月 02:27]

A new paper elucidates the active role of cilia in regulating flow for bacteria filtering and enhancing chemical communication.

• [**Eighteenth century nautical charts reveal coral loss**](#) [周五, 08 9月 02:27]

Centuries-old nautical charts, mapped by long-deceased sailors to avoid shipwrecks, have been used by modern scientists to study loss of coral reefs. A new study compared early British charts to modern coral habitat maps to understand changes to reef environments.

• [**Courts' critical, underappreciated role in climate policy**](#) [周五, 08 9月 02:26]

Both climate lawsuits and their reliance on scientific data have increased over the past decade, the most extensive study to date shows.

• [**Circadian clock's inner gears**](#) [周五, 08 9月 02:26]

A set of core clock proteins organize themselves into a handful of molecular machines that control the precise workings of the body's circadian rhythms, new research has found.

• [**Discovery of chromosome motor supports DNA loop extrusion**](#) [周五, 08 9月 02:26]

It is one of the mysteries in biology: how does a cell neatly distribute its

replicated DNA between two daughter cells? Scientists are split into two camps: the first argues that condensing works like a hook, tying DNA together. The other camp thinks that the ring-shaped protein pulls the DNA inwards to create a loop. Now researchers from give the 'loop-extrusion camp' a boost: condensin does indeed have the putative 'motor power' on board.

Researchers closer to uncovering a new feature in heart failure [周五, 08 9月 01:29]

Each cell in the average human body contains 23 pairs of chromosomes, with four telomeres on each pair. Telomeres cover the end of the chromosome, protecting it from deterioration or fusion with adjacent chromosomes. While there is a length range for classifying a healthy telomere, researchers found, for the first time ever, that people with heart failure have shorter telomeres within the cells that make up the heart muscle (known as cardiomyocytes).

Human skin cells transformed directly into motor neurons [周五, 08 9月 01:28]

Scientists have converted skin cells from healthy adults directly into motor neurons without going through a stem cell state. The technique makes it possible to study motor neurons of the human central nervous system in the lab. Unlike commonly studied mouse motor neurons, human motor neurons growing in the lab would be a new tool since researchers can't take samples of these neurons from living people but can easily take skin samples.

Shortened telomeres linked to dysfunction in Duchenne muscular dystrophy, researchers find [周五, 08 9月 01:25]

A discovery about muscular dystrophy disorders has been made that suggests new possibilities for treatment. Researchers found that stem cells in the muscles of muscular dystrophy patients may, at an early age, lose their ability to regenerate new muscle, due to shortened telomeres.

New acid-free magnet recycling process created [周五, 08 9月 01:25]

A new rare-earth magnet recycling process dissolves magnets in an acid-free solution and recovers high purity rare earth elements.

• [**Curious properties: Researchers analyze flocking behavior on curved surfaces**](#) [周五, 08 9月 01:25]

A murmuration of starlings. The phrase reads like something from literature or the title of an arthouse film. In fact, it is meant to describe the phenomenon that results when hundreds, sometimes thousands, of these birds fly in swooping, intricately coordinated patterns through the sky.

• [**SNAP benefits aren't enough to afford a healthy diet**](#) [周五, 08 9月 00:56]

A new study finds that the Supplemental Nutrition Assistance Program (SNAP), formerly known as Food Stamps, only covers 43-60 percent of what it costs to consume a diet consistent with federal dietary guidelines for what constitutes a healthy diet. The study highlights the challenges lower-income households face in trying to eat a healthy diet.

• [**Producing malaria treatment at large scales**](#) [周五, 08 9月 00:56]

For the first time, production of the anti-malarial drug artemisinin has been achieved at an industrial scale using genetically engineered moss. This offers new hope for stabilizing artemisinin supplies and combatting malaria.

• [**Lignin: Much more valuable than just as waste**](#) [周五, 08 9月 00:03]

Lignin, a substance considered as a waste product in biomass and ethanol production, will now reach its proper value as bio-oil in new products.

• [**Aspirin tablets help unravel basic physics**](#) [周五, 08 9月 00:03]

Aspirin in form of small crystallites provides new insight into delicate motions of electrons and atomic nuclei. Set into molecular vibration by strong ultrashort far-infrared (terahertz) pulses, the nuclei oscillate much faster than for weak excitation. They gradually return to their intrinsic oscillation frequency, in parallel to the picosecond decay of electronic

motions. An analysis of the terahertz waves radiated from the moving particles by in-depth theory reveals the strongly coupled chara...

• [**What makes alcoholics drink? Research shows it's more complex than supposed**](#) [周五, 08 9月 00:02]

What makes alcoholics drink? New research has found that in both men and women with alcohol dependence, the major factor predicting the amount of drinking seems to be a question of immediate mood.

Surprisingly men with a history of depression were drinking less often than men who were not depressed. This probably means that alcohol treatment needs to be individually tailored.

• [**Scanning tunneling microscopy measurements identify active sites on catalyst surfaces**](#) [周五, 08 9月 00:02]

Chemistry live: using a scanning tunneling microscope, researchers were able for the very first time to witness in detail the activity of catalysts during an electrochemical reaction. The measurements show how the surface structure of the catalysts influences their activity. The new analysis method can now be used to improve catalysts for the electrochemical industry.

• [**'Rubber material' discovered that could lead to scratch-proof paint for car**](#) [周五, 08 9月 00:02]

A stretchy miracle material has been discovered that could be used to create highly resistant smart devices and scratch-proof paint for cars, report investigators.

• [**Direct evidence of sea level 'fingerprints' discovered**](#) [周五, 08 9月 00:02]

The first observation of sea level 'fingerprints' -- tell-tale differences in sea level rise around the world in response to changes in continental water and ice sheet mass -- has been reported by researchers.

• [**Cellular tango: Immune and nerve cells work together to fight gut infections**](#) [周四, 07 9月 23:24]

Nerve cells in the gut play a crucial role in the body's ability to marshal

an immune response to infection, according to a new study.

• [**Climate change for aliens**](#) [周四, 07 9月 23:24]

For more than 50 years, the Kardashev scale has been the gold standard for classifying hypothetical 'exo-civilizations' by their ability to harness energy. A team of researchers has devised a new system that takes into account the impacts of that energy use.

• [**Pluto features given first official names**](#) [周四, 07 9月 23:24]

The Working Group for Planetary System Nomenclature of the International Astronomical Union has officially approved the naming of 14 features on the surface of Pluto. These are the first geological features on the planet to be named following the close flyby by the New Horizons spacecraft in July 2015.

• [**Nutrition has benefits for brain network organization**](#) [周四, 07 9月 23:24]

Nutrition has been linked to cognitive performance, but researchers have not pinpointed what underlies the connection. A new study found that monounsaturated fatty acids -- a class of nutrients found in olive oils, nuts and avocados -- are linked to general intelligence, and that this relationship is driven by the correlation between MUFAs and the organization of the brain's attention network.

• [**3-D-printed biomaterials that degrade on demand**](#) [周四, 07 9月 23:24]

The temporary structures, which can be degraded away with a biocompatible chemical trigger, could be useful in fabricating microfluidic devices, creating biomaterials that respond dynamically to stimuli and in patterning artificial tissue.

• [**Link between positive emotions and health depends on culture**](#) [周四, 07 9月 23:24]

Positive emotions are often seen as critical aspects of healthy living, but new research suggests that the link between emotion and health outcomes may vary by cultural context. The findings show that experiencing positive emotions is linked with better cardiovascular

health in the US but not in Japan.

- [**Using antidepressants during pregnancy may affect your child's mental health**](#) [周四, 07 9月 23:24]

The use of antidepressants during pregnancy increases the risk of your child being diagnosed with a psychiatric disorder later in life, a study of almost one million Danish children shows. However, heritability also plays a part, according to the researchers.

- [**Biomarkers as predictive of sepsis as lengthy patient monitoring**](#) [周四, 07 9月 23:23]

One measurement of key biomarkers in blood that characterize sepsis can give physicians as much information as hours of monitoring symptoms, a new study found.

- [**Connection between low oxygen levels, human gene discovered**](#) [周四, 07 9月 23:23]

Researchers have established a link between hypoxia, a condition that reduces the flow of oxygen to tissues, and HOTAIR, a noncoding RNA or molecule that has been implicated in several types of cancer.

- [**You are what you think you eat**](#) [周四, 07 9月 22:43]

Despite eating the same breakfast, made from the same ingredients, people consumed more calories throughout the day when they believed that one of the breakfasts was less substantial than the other, investigators have found.

- [**Fifty-fifty split best for children of divorce, study suggests**](#) [周四, 07 9月 22:43]

Preschool children in joint physical custody have less psychological symptoms than those who live mostly or only with one parent after a separation. In a new study of 3,656 children, researchers show that 3–5-year-olds living alternately with their parents after a separation show less behavioral problems and psychological symptoms than those living mostly or only with one of the parents.

- [**Smartphone screen technology used to trick**](#)

[harmful bacteria](#) [周四, 07 9月 22:41]

Conducting plastics found in smartphone screens can be used to trick the metabolism of pathogenic bacteria, report scientists. By adding or removing electrons from the plastic surface, bacteria may be tricked into growing more or less. The method may find widespread use in preventing bacterial infections in hospitals or improve effectiveness in wastewater management.

• [Academic argues for changes in the laws governing modern warfare](#) [周四, 07 9月 22:41]

Modern warfare and terrorist acts often sees the killing of innocent civilians which presents complex challenges for the international legal framework governing the conduct of armed conflicts, explains a new report.

• [Genes behind gestation length, preterm delivery identified](#) [周四, 07 9月 22:39]

The genes that regulate gestational length and the likelihood of preterm delivery, have been identified in a study involving more than 50,000 women. An article describes the scientific breakthrough that can lead to improved health and survival among children.

• [Mixing and matching yeast DNA](#) [周四, 07 9月 22:38]

Scientists show molecular factors that determine why some regions in yeast chromosomes are apt for remodeling, while other regions stay faithful during cell replication.

• [Proteins keep a grip on cells](#) [周四, 07 9月 22:38]

Scientists have revealed new structural information on the integrin-laminin interaction. These findings provide important insights on cellular interactions that promote cell growth, differentiation, and migration.

• [New dental imaging method uses squid ink to fish for gum disease](#) [周四, 07 9月 22:24]

Squid ink could one day make getting checked for gum disease at the

dentist less tedious and even painless. By combining squid ink with light and ultrasound, a team led by engineers has developed a new dental imaging method to examine a patient's gums that is noninvasive, more comprehensive and more accurate than the state of the art.

- [**Hidden Inca treasure: Remarkable new tree genus discovered in the Andes**](#) [周四, 07 9月 22:24]

Hidden in plain sight -- that's how researchers describe their discovery of a new genus of large forest tree commonly found, yet previously scientifically unknown, in the tropical Andes.

- [**Ultraviolet light from superluminous supernova key to revealing explosion mechanism**](#) [周四, 07 9月 22:24]

An international team of researchers has discovered a way to use UV light from superluminous supernovae to uncover its explosion mechanism, and used it to identify Gaia16apd as a shock-interacting supernova, reports a new study.

- [**Sometimes you shouldn't say sorry**](#) [周四, 07 9月 22:24]

Being socially rejected can be a painful emotional experience -- but being told sorry may not soften the blow, finds a new study. Contrary to popular belief, apologies increase hurt feelings and the need to express forgiveness, but do not increase feelings of forgiveness, for the person being rebuffed.

- [**Fast magnetic writing of data**](#) [周四, 07 9月 22:24]

Magnetic data storage has long been considered too slow for use in the working memories of computers. Researchers have now investigated a technique by which magnetic data writing can be done considerably faster and using less energy.

- [**Trigger for fatty liver in obesity**](#) [周四, 07 9月 22:24]

Morbid obesity affects the liver: almost one-third of all adults suffer from chronic fatty liver disease, which can lead to infections and even trigger cancer. Researchers have now found a signaling pathway in cells that play an important role in the development of fatty liver disease.

- [**Algorithm reconstructs processes from**](#)

[individual images](#) [周四, 07 9月 22:24]

Researchers have developed a new method for reconstructing continuous biological processes, such as disease progression, using image data.

• [Australian Magpie 'dunks' its food before eating, researchers find](#) [周四, 07 9月 22:23]

Scientists have shown that the Australian Magpie may 'dunk' its food in water before eating, a process that appears to be 'copied' by its offspring.

• [Want your question answered quickly? Use gestures as well as words](#) [周四, 07 9月 22:23]

When someone asks a question during a conversation, their conversation partner answers more quickly if the questioner also moves their hands or head to accompany their words. The study focuses on how gestures influence language processing.

• [Intermittent electrical brain stimulation improves memory](#) [周四, 07 9月 22:23]

Intermittent electrical stimulation of an area deep inside the brain that degenerates in Alzheimer's appears to improve working memory, scientists report. Conversely, continuous deep brain stimulation, like the type used for Parkinson's and currently under study in humans with Alzheimer's, impairs memory, according to study.

• [Long-term opioid prescription use jumps threefold over 16-year period, study suggests](#) [周四, 07 9月 22:23]

Opioid prescription use increased significantly between 1999 and 2014, new research has found, and that much of that increase stemmed from patients who'd been taking their medication for 90 days or longer.

Better understanding of 'one of the most complex organs' for better lung treatments -- ScienceDaily

Details of lung cell molecular pathways that promote or inhibit tissue regeneration were reported by researchers from the Perelman School of Medicine at the University of Pennsylvania in *Cell* this week. Their aim is to find new ways to treat lung disorders.

"We need better targets," said senior author Edward E. Morrisey, PhD, a professor of Cell and Developmental Biology, and director of the Penn Center for Pulmonary Biology. "All we have now are blunt sledge hammers that don't work" for conditions such as idiopathic pulmonary fibrosis (IPF), a lung disorder whose cause is poorly understood. Knowing the specific cells and pathways that promote repair and regeneration versus scar formation in the lung will help inform the development of more precise and effective therapies.

In 2012, the annual incidence of idiopathic pulmonary

fibrosis in the United States was 16 to 17 per 100,000 people. In the United States alone, that translates into 130,000 to 200,000 people affected by IPF. The lung tissue of a person with pulmonary fibrosis becomes damaged and scarred, with thick, stiff tissue making it difficult for the lungs to expand. As it worsens, the patient often has extreme shortness of breath, and the lung, once damaged, is unable to repair itself.

Chronic obstructive pulmonary disease (COPD) is more common than IPF and is characterized by the loss of gas exchange structures in the lungs called alveoli. In the United States, more than 30 million people are affected by COPD and it is quickly becoming a leading cause of disability and death in the world. The ability to balance regeneration of structures such as alveoli with scar formation is essential for proper maintenance of respiratory function.

"The lung is one of the most complex organs in the human body," Morrisey said, with dozens of cell types, each with specialized roles such as delivering oxygen and eliminating carbon dioxide from blood in the circulatory system (gas exchange). Other cells produce surfactant and mucous to lubricate air spaces for smooth expansion and contraction, and still others

create a barrier to pathogens and harmful pollution.

"The complicated structure of lungs is why it is difficult to quickly diagnose the exact type of lung disease a person may have with any certainty," he said. "Also, as there is considerable reserve capacity in our lungs most people are not diagnosed with lung diseases such as IPF until the disease has progressed significantly." This biological compensation mechanism means that a person could lose almost 50 percent of their lung function before feeling any symptoms.

There are many distinct types of lung disorders linked to different cell types, many of which have not been thoroughly studied. The complexity of the lung suggests that the ability to promote repair and regeneration versus contributing to disease-causing lesions may arise from very different cells. For this study, the team focused on mesenchymal cells, which are generally thought to play a supportive role in maintaining lung structure. They found five distinct cell types based on a suite of genes expressed by each. Of these five, they focused on two.

One cell type the Morrissey lab identified in the mouse

lung that governs self-renewal of cell populations is called the Mesenchymal Alveolar Niche Cell (MANC). These cells are critical for the regeneration of lung alveoli. The second cell type is called the Axin2+ Myofibrogenic Progenitor cell (AMP), which generates cells called myofibroblasts that form scar tissue after injury, and likely contribute to diseases such as IPF.

The team analyzed what molecules these two cell types secreted and their surface cell receptors and compared this information to databases of known secreted molecules and receptors on adjacent cells. "One of the most important functions of these cells is to balance the repair and regeneration response after injury which occurs often due to the lung's continual assault from the outside environment," Morrisey said.

The "good" MANCs are found in niches or compartments near the alveoli to promote renewal of gas-exchange cells. They may play a key role in maintaining the alveoli during the normal life span of the adult. Dysfunction or loss of MANCs may contribute to diseases such as COPD, which involves loss of alveoli and decreased lung function. The role of the "bad" AMPs is to form scar tissue during wound healing. However, AMPs may grow out of control,

potentially leading to diseases such as IPF.

Next, the researchers aim to identify these cell types in humans, working with associate professor of Surgery Edward Cantu, III, MD, the associate surgical director of Lung Transplantation. Morrissey says the Penn team wants to target MANCs for promoting regeneration while inhibiting AMPs to reduce the fibrotic response after injury. Knowing the detailed molecular differences between these two cell types should help in the next generation of targeted therapies such as nanomedicine.

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| [Section menu](#) | [主菜单](#) |

Interrupting Parkinson's disease: Treating with antioxidants early in disease process may halt degeneration and improve neuronal function -- ScienceDaily

Northwestern Medicine scientists have identified a toxic cascade that leads to neuronal degeneration in patients with Parkinson's disease (PD) and figured out how to interrupt it, reports a study to be published September 7 in the journal *Science*.

Intervening with an antioxidant early in the disease process may break the degenerative cycle and improve neuron function in PD, the study showed.

The scientists also discovered that mouse models of PD didn't have the same abnormalities they found in human PD neurons, revealing the importance of studying human neurons to develop new therapies.

Dr. Dimitri Krainc, the Aaron Montgomery Ward Professor and chair of neurology at Northwestern

University Feinberg School of Medicine, is the study senior author. Lena Burbulla, a postdoctoral fellow in Krainc's laboratory, is first author.

The research was started about six years ago in Krainc's lab at Massachusetts General Hospital and Harvard Medical School and was completed in the last four years at Feinberg.

PD is the second most common neurodegenerative disorder, primarily caused by the death of dopamine-containing neurons in the substantia nigra, a region of the brain involved in motor control. While people naturally lose dopamine neurons as they age, patients with PD lose a much larger number of these neurons and the remaining cells are no longer able to compensate.

Understanding how and why these neurons die is an important step in identifying treatments, Krainc said. While previous research indicated that the cellular mechanism behind the cell death involved the mitochondria and lysosomes, how these two pathways converge in dopamine neurons to cause cell death remained unknown up until now.

Using human neurons from Parkinson's patients, Krainc and colleagues identified a toxic cascade of mitochondrial and lysosomal dysfunction initiated by an accumulation of oxidized dopamine and a protein called alpha-synuclein. Specifically, the current study demonstrated that an accumulation of oxidized dopamine depressed the activity of lysosomal glucocerebrosidase (GCase), an enzyme implicated in PD. That depression in turn weakened overall lysosomal function and contributed to degeneration of neurons.

The accretion of oxidized dopamine didn't just interfere with lysosomes, however. Krainc and his colleagues discovered that the dopamine also damaged the neurons' mitochondria by increasing mitochondrial oxidant stress. These dysfunctional mitochondria led to increased oxidized dopamine levels, creating a vicious cycle.

"The mitochondrial and lysosomal pathways are two critical pathways in disease development," said Krainc, who also is the director of the Center for Rare Neurological Diseases and a professor of neurological surgery and of physiology. "Combined with the alpha-synuclein accumulation, this study links the major

pathological features of PD."

Once they had catalogued this toxic cascade, Krainc and his colleagues began looking for ways to interrupt it.

"One of the key strategies that worked in our experiments is to treat dopamine neurons early in the toxic cascade with specific antioxidants that improve mitochondrial oxidant stress and lower oxidized dopamine," Krainc said. "With this approach, we found that we can attenuate or prevent the downstream toxic effects in human dopaminergic neurons."

This approach to interrupting the toxic cascade of oxidized dopamine may provide a target for the development of future therapies. However, identifying patients or subjects with early-stage neurodegeneration can be difficult, because damage has often occurred far before any symptoms are apparent, according to Krainc.

Consequently, genetic testing will be central to future diagnostic efforts. Causative genes are prime candidates for screening, while risk genes such as GBA1 are less conclusive but still important markers,

Krainc said. Early detection will also rely on brain imaging and other clinical signifiers.

Interestingly, when compared to human cellular models, mouse models of PD did not demonstrate the same toxic cascade, according to the study. Krainc and his colleagues showed this is due to differences in metabolism of dopamine between species, and underscored the importance of studying human neurons to discover new targets for drug development.

Story Source:

[Materials](#) provided by [Northwestern University](#).

Original written by Marla Paul. *Note: Content may be edited for style and length.*

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Mediterranean-style diet may eliminate need for reflux medications -- ScienceDaily

A plant-based, Mediterranean-style diet has been shown to provide the same medical benefits for treating laryngopharyngeal reflux as popular reflux medications. This is according to a study published in *JAMA Otolaryngology Head Neck Surgery* by researchers from Northwell Health's The Feinstein Institute for Medical Research and New York Medical College.

When compared to patients who took the traditional reflux medication, proton pump inhibitors (PPI), those patients who consumed a 90-95% whole food, plant-based, Mediterranean-style diet paired with alkaline water had the same if not better reduction in reflux symptoms. 62.6 percent of patients treated with a plant-based diet and alkaline water saw a six point reduction in their Reflux Symptom Index (RSI -- a measurement for the severity of reflux symptoms), compared to 54.1 percent reduction in patients taking PPI's. Though this

research only focused on those with laryngopharyngeal reflux, this same diet regimen has implications to help patients with gastro-esophageal acid reflux (also known as GERD).

Lead author of the study, Craig H. Zalvan, MD, FACS, chief of Otolaryngology and medical director of The Institute for Voice and Swallowing Disorders at Northwell Health's Phelps Hospital and researcher at the Feinstein Institute, said he was formerly one of the largest prescribers of PPI's in the region. Feeling that there had to be a better approach to treating reflux conditions like laryngopharyngeal reflux, he started to research alternatives.

"Although effective in some patients, I felt medication couldn't be the only method to treat reflux and recent studies reporting increased rates of stroke and heart attack, dementia and kidney damage from prolonged PPI use made me more certain," said Dr. Zalvan. "I did research and saw a lot of studies using plant-based diets to treat patients for many other chronic diseases, so I decided to develop a diet regimen to treat my laryngopharyngeal reflux patients. The results we found show we are heading in the right direction to treating reflux without medication."

The diet suggested by Dr. Zalvan consists of mostly fruits, vegetables, grains and nuts with near complete cessation of dairy and meats including beef, chicken, fish, eggs and pork. This is in addition to standard reflux diet precautions like avoiding coffee, tea, chocolate, soda, greasy and fried food, spicy foods, fatty foods and alcohol. Along with relieving reflux symptoms, Dr. Zalvan noted that many of his patients who were treated with a plant-based diet also experienced some weight loss and a reduction of symptoms and medication use from other medical conditions like high blood pressure and high cholesterol. Dr. Zalvan said that a plant-based diet approach with alkaline water and standard reflux precautions should either be attempted prior to the use of medication or with the short-term use of medication for more severe needs.

"Dr. Zalvan's approach of challenging assumptions in treatment norms epitomizes our view of medical research at the Feinstein Institute and Northwell Health," said Kevin J. Tracey, MD, president and CEO of the Feinstein Institute. "We are committed to developing novel strategies to benefit our patients in a way that positively impacts medical practice globally."

Story Source:

[Materials](#) provided by [Northwell Health](#). *Note: Content may be edited for style and length.*

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| [Section menu](#) | [主菜单](#) |

Ship exhaust makes oceanic thunderstorms more intense -- ScienceDaily

Thunderstorms directly above two of the world's busiest shipping lanes are significantly more powerful than storms in areas of the ocean where ships don't travel, according to new research.

A new study mapping lightning around the globe finds lightning strokes occur nearly twice as often directly above heavily-trafficked shipping lanes in the Indian Ocean and the South China Sea than they do in areas of the ocean adjacent to shipping lanes that have similar climates.

The difference in lightning activity can't be explained by changes in the weather, according to the study's authors, who conclude that aerosol particles emitted in ship exhaust are changing how storm clouds form over the ocean.

The new study is the first to show ship exhaust can

alter thunderstorm intensity. The researchers conclude that particles from ship exhaust make cloud droplets smaller, lifting them higher in the atmosphere. This creates more ice particles and leads to more lightning.

The results provide some of the first evidence that humans are changing cloud formation on a nearly continual basis, rather than after a specific incident like a wildfire, according to the authors. Cloud formation can affect rainfall patterns and alter climate by changing how much sunlight clouds reflect to space.

"It's one of the clearest examples of how humans are actually changing the intensity of storm processes on Earth through the emission of particulates from combustion," said Joel Thornton, an atmospheric scientist at the University of Washington in Seattle and lead author of the new study in *Geophysical Research Letters*, a journal of the American Geophysical Union.

"It is the first time we have, literally, a smoking gun, showing over pristine ocean areas that the lightning amount is more than doubling," said Daniel Rosenfeld, an atmospheric scientist at the Hebrew University of Jerusalem who was not connected to the study. "The study shows, highly unambiguously, the relationship

between anthropogenic emissions -- in this case, from diesel engines -- on deep convective clouds."

Mapping lightning and exhaust

All combustion engines emit exhaust, which contains microscopic particles of soot and compounds of nitrogen and sulfur. These particles, known as aerosols, form the smog and haze typical of large cities. They also act as cloud condensation nuclei -- the seeds on which clouds form. Water vapor condenses around aerosols in the atmosphere, creating droplets that make up clouds.

Cargo ships crossing oceans emit exhaust continuously and scientists can use ship exhaust to better understand how aerosols affect cloud formation.

In the new study, co-author Katrina Virts, an atmospheric scientist at NASA Marshall Space Flight Center in Huntsville, Alabama, was analyzing data from the World Wide Lightning Location Network, a network of sensors that locates lightning strokes all over the globe, when she noticed a nearly straight line of lightning strokes across the Indian Ocean.

Virts and her colleagues compared the lightning location data to maps of ships' exhaust plumes from a global database of ship emissions. Looking at the locations of 1.5 billion lightning strokes from 2005 to 2016, the team found nearly twice as many lightning strokes on average over major routes ships take across the northern Indian Ocean, through the Strait of Malacca and into the South China Sea, compared to adjacent areas of the ocean that have similar climates.

More than \$5 trillion of world trade passes through the South China Sea every year and nearly 100,000 ships pass through the Strait of Malacca alone. Lightning is a measure of storm intensity, and the researchers detected the uptick in lightning at least as far back as 2005.

"All we had to do was make a map of where the lightning was enhanced and a map of where the ships are travelling and it was pretty obvious just from the co-location of both of those that the ships were somehow involved in enhancing lightning," Thornton said.

Forming cloud seeds

Water molecules need aerosols to condense into clouds. Where the atmosphere has few aerosol particles -- over the ocean, for instance -- water molecules have fewer particles to condense around, so cloud droplets are large.

When more aerosols are added to the air, like from ship exhaust, water molecules have more particles to collect around. More cloud droplets form, but they are smaller. Being lighter, these smaller droplets travel higher into the atmosphere and more of them reach the freezing line, creating more ice, which creates more lightning. Storm clouds become electrified when ice particles collide with each other and with unfrozen droplets in the cloud. Lightning is the atmosphere's way of neutralizing that built-up electric charge.

Ships burn dirtier fuels in the open ocean away from port, spewing more aerosols and creating even more lightning, Thornton said.

"I think it's a really exciting study because it's the most solid evidence I've seen that aerosol emissions can affect deep convective clouds and intensify them and increase their electrification," said Steven Sherwood, an atmospheric scientist at the University of New

South Wales in Sydney who was not connected to the study.

"We're emitting a lot of stuff into the atmosphere, including a lot of air pollution, particulate matter, and we don't know what it's doing to clouds," Sherwood said. "That's been a huge uncertainty for a long time. This study doesn't resolve that, but it gives us a foot in the door to be able to test our understanding in a way that will move us a step closer to resolving some of those bigger questions about what some of the general impacts are of our emissions on clouds."

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Why are fossilized hairs so rare? -- ScienceDaily

When most people hear the word fossil, they probably think of gigantic leg bones or sharp teeth. But, given the right conditions, after an animal dies even delicate body coverings like skin, hair and feathers can be preserved.

New research led by The University of Texas at Austin has found that when it comes to preserving these body parts, fossilized hair is rare -- five times rarer than feathers -- despite being an important tool for understanding ancient species. This finding has researchers trying to determine if the lack of hair in the fossil record has to do with physical traits that might make it more difficult for hair to fossilize, or an issue with scientists' collection techniques that could lead to them missing important finds.

"This pattern of where and when we do find fossilized feathers and hairs can be used to inform where we look for future fossil discoveries," said first author Chad Eliason, a researcher at the Field Museum of Natural

History who conducted the research while a postdoctoral fellow at the UT Jackson School of Geosciences.

The study was published on Sept. 6 in the journal *Proceedings of the Royal Society B*. Co-authors include Julia Clarke, a professor in the Jackson School's Department of Geological Sciences who led the study, and three Jackson School undergraduate students, Leah Hudson, Taylor Watts and Hector Garza.

Fossils of body coverings contain unique data on the ecology and lifestyle of extinct animals, including what color they might have been. They also might affect our understanding of when kinds of body coverings, such as feathers and hair, evolved. In this study, the researchers used data on fossil type and age to determine that hair probably evolved much earlier than current fossil samples indicate.

Fossil beds that preserve soft tissues like hair and feathers are called lagerstatte ('fossil storehouses' in German) and are rare on their own. The researchers were interested in understanding how frequently different types of body coverings were found preserved in these exceptional sites, which include the Yixian

Formation in China and the Green River Formation in the western United States.

Eliason and his collaborators assembled the largest known database of fossilized body coverings, or integument, from land-dwelling vertebrates, a group known as tetrapods, collected from lagerstatte. They found that unlike feathers, hairs are extremely rare finds.

"Mammal hair has been around for more than 160 million years yet over that time we have very few records," Eliason said.

The rarity might be explained by feathers and hair containing different types of the protein keratin, which may impact the likelihood of fossilization. However, the study notes that the lack of hair samples could have nothing to do with fossilization, and be explained by the collecting behavior of paleontologists, with a single feather usually being much easier to identify than a single hair.

The database also allowed the researchers to conduct a type of statistical method called gap analysis, which models the probability of finding a fossil in a given

time. The team found that feathers appear to have evolved very close to the earliest known examples in the fossil record, about 165 million years ago. However, hair and hair-like filaments found on pterosaurs probably evolved far earlier in the fossil record than currently known.

"The hunt is on," said Clarke. "These data suggest we might expect to find records up to 100 million years earlier potentially."

The team also applied a statistical approach called a time series analyses to study if climatic factors might explain gaps in the fossil record. They found that soft tissue preservation was most common when ancient sea levels were high.

"There is still a lot we don't know about the chemistry of these deposits and why they are so uneven through time," Clarke said. "But we can say that their uneven distribution across the world -- most [sites] are in North America or Eurasia -- is an artifact of where paleontologists looked. We have a lot more work to do."

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All Top News

Top science stories featured on ScienceDaily's home page.

- [**Ship exhaust makes oceanic thunderstorms more intense**](#) [周五, 08 9月 02:27]

Thunderstorms directly above two of the world's busiest shipping lanes are significantly more powerful than storms in areas of the ocean where ships don't travel, according to new research.

- [**Human skin cells transformed directly into motor neurons**](#) [周五, 08 9月 01:28]

Scientists have converted skin cells from healthy adults directly into motor neurons without going through a stem cell state. The technique makes it possible to study motor neurons of the human central nervous system in the lab. Unlike commonly studied mouse motor neurons, human motor neurons growing in the lab would be a new tool since researchers can't take samples of these neurons from living people but can easily take skin samples.

- [**Direct evidence of sea level 'fingerprints' discovered**](#) [周五, 08 9月 00:02]

The first observation of sea level 'fingerprints' -- tell-tale differences in sea level rise around the world in response to changes in continental water and ice sheet mass -- has been reported by researchers.

- [**Pluto features given first official names**](#) [周四, 07 9月 23:24]

The Working Group for Planetary System Nomenclature of the International Astronomical Union has officially approved the naming of 14 features on the surface of Pluto. These are the first geological features on the planet to be named following the close flyby by the New Horizons spacecraft in July 2015.

[Nutrition has benefits for brain network organization](#) [周四, 07 9月 23:24]

Nutrition has been linked to cognitive performance, but researchers have not pinpointed what underlies the connection. A new study found that monounsaturated fatty acids -- a class of nutrients found in olive oils, nuts and avocados -- are linked to general intelligence, and that this relationship is driven by the correlation between MUFAs and the organization of the brain's attention network.

[3-D-printed biomaterials that degrade on demand](#) [周四, 07 9月 23:24]

The temporary structures, which can be degraded away with a biocompatible chemical trigger, could be useful in fabricating microfluidic devices, creating biomaterials that respond dynamically to stimuli and in patterning artificial tissue.

[Intermittent electrical brain stimulation improves memory](#) [周四, 07 9月 22:23]

Intermittent electrical stimulation of an area deep inside the brain that degenerates in Alzheimer's appears to improve working memory, scientists report. Conversely, continuous deep brain stimulation, like the type used for Parkinson's and currently under study in humans with Alzheimer's, impairs memory, according to study.

[How monkey fights grow](#) [周四, 07 9月 21:36]

New research finds evidence for a complicated structure behind primate conflict. It is not individuals who control the length of fights, but the relationships between pairs of individuals.

[Emoji fans take heart: Scientists pinpoint 27 states of emotion](#) [周四, 07 9月 21:36]

The Emoji Movie, in which the protagonist can't help but express a wide variety of emotions instead of the one assigned to him, may have gotten something right. A new study challenges a long-held assumption in psychology that most human emotions fall within the universal

categories of happiness, sadness, anger, surprise, fear and disgust.

• [**Monkey sees ... monkey knows?**](#) [周四, 07 9月 01:55]

Monkeys had higher confidence in their ability to remember an image when the visual contrast was high. These kinds of metacognitive illusions -- false beliefs about how we learn or remember best -- are shared by humans, leading brain and cognitive scientists to believe that metacognition could have an evolutionary basis.

• [**Researchers report new way to make dissolving electronics**](#) [周四, 07 9月 01:55]

Researchers have reported a new type of electronic device that can be triggered to dissolve through exposure to water molecules in the atmosphere. The work holds promise for eco-friendly disposable personal electronics and biomedical devices that dissolve within the body.

• [**Accretion-powered pulsar reveals unique timing glitch**](#) [周三, 06 9月 22:36]

The discovery of the largest timing irregularity yet observed in a pulsar is the first confirmation that pulsars in binary systems exhibit the strange phenomenon known as a 'glitch.'

• [**Biologists slow aging, extend lifespan of fruit flies**](#) [周三, 06 9月 22:34]

In research that potentially could delay the onset of Parkinson's disease, Alzheimer's disease, cancer, stroke, cardiovascular disease, and other diseases of aging, biologists have produced a genetic one-two punch that significantly slowed aging and improved health in the middle-aged fruit flies they studied.

• [**Clever cockatoos bend hooks into straight wire to fish for food**](#) [周三, 06 9月 08:29]

Bending of a hook into wire to fish for the handle of a basket by crow Betty 15 years ago stunned the scientific world. Cognitive biologists studied tool making in an Indonesian cockatoo. Other than crows,

cockatoos are not using tools in the wild. The birds manufactured hook tools out of straight wire without ever having seen or used a hook tool before.

- [**Something to sneeze about: Democratic voting in African wild dog packs**](#) [周三, 06 9月 08:29]

Scientists studying African wild dogs in Botswana have found members of this endangered species use sneezes to vote on when the pack will move off and start hunting.

- [**Newly-discovered semiconductor dynamics may help improve energy efficiency**](#) [周三, 06 9月 08:29]

Researchers examining the flow of electricity through semiconductors have uncovered another reason these materials seem to lose their ability to carry a charge as they become more densely 'doped.'

- [**Humans still evolving, large-scale study of genetic data shows**](#) [周三, 06 9月 02:55]

In a study analyzing the genomes of 210,000 people in the United States and Britain, researchers have found that the genetic variants linked to Alzheimer's disease and heavy smoking are less frequent in people with longer lifespans, suggesting that natural selection is weeding out these unfavorable variants in both populations.

- [**Eat fat, live longer?**](#) [周三, 06 9月 02:55]

As more people live into their 80s and 90s, researchers have delved into the issues of health and quality of life during aging. A recent mouse study sheds light on those questions by demonstrating that a high fat, or ketogenic, diet not only increases longevity, but improves physical strength.

- [**Swings in dad's testosterone affects the family -- for better or worse -- after baby arrives**](#) [周三, 06 9月 02:55]

Testosterone levels are a key factor in a family's health and happiness after a newborn arrives. Researchers have found that a drop can signal postpartum depression in dad, and a spike may be a sign of aggression.

• [**Cooling system works without electricity**](#) [周三, 06 9月 02:55]

Scientists cooled water without electricity by sending excess heat where it won't be noticed -- space. The specialized optical surfaces they developed are a major step toward applying this technology to air conditioning and refrigeration.

• [**Crab nebula in the limelight: Unified model for the entire radiation spectrum**](#) [周三, 06 9月 00:48]

The origin of cosmic rays, high-energy particles from outer space constantly impacting on Earth, is among the most challenging open questions in astrophysics. Now research sheds new light on the origin of those energetic particles.

• [**Contagious yawning more closely associated with perceptual sensitivity than empathy**](#) [周三, 06 9月 00:33]

Contrary to common belief that the yawning contagion is associated with empathy, it is in fact, more likely that perceptual sensitivity is to blame, research suggests.

• [**Discovery of boron on Mars adds to evidence for habitability**](#) [周三, 06 9月 00:32]

The discovery of boron on Mars gives scientists more clues about whether life could have ever existed on the planet, according to a new paper.

• [**'Extreme' telescopes find the second-fastest-spinning pulsar**](#) [周三, 06 9月 00:32]

By following up on mysterious high-energy sources mapped by NASA's Fermi Gamma-ray Space Telescope, a Netherlands-based radio telescope has discovered a new pulsar, the second fastest-spinning known.

• [**The sniff test of self-recognition confirmed: Dogs have self-awareness**](#) [周二, 05 9月 23:13]

A new research study used a sniff-test to evaluate the ability of dogs to recognize themselves. The experiment confirms the hypothesis of dogs'

self-cognition proposed last year.

• [**Zika virus kills brain cancer stem cells**](#) [周二, 05 9月 21:36]

While Zika virus causes devastating damage to the brains of developing fetuses, it one day may be an effective treatment for glioblastoma, a deadly form of brain cancer. New research shows that the virus kills brain cancer stem cells, the kind of cancer cells most resistant to standard treatments.

• [**Was the primordial soup a hearty pre-protein stew?**](#) [周二, 05 9月 21:36]

How proteins evolved billions of years ago, when Earth was devoid of life, has stumped many a scientist. A little do-si-do between amino acids and their chemical lookalikes may have done the trick. Evolutionary chemists tried it and got results by the boatload.

• [**Mobile women were key to cultural exchange in Stone Age and Bronze Age Europe**](#) [周二, 05 9月 03:10]

At the end of the Stone Age and in the early Bronze Age, families were established in a surprising manner in the Lechtal, south of Augsburg, Germany. The majority of women probably came from Bohemia or Central Germany, while men usually remained in the region of their birth. This so-called patrilocal pattern combined with individual female mobility persisted over a period of 800 years during the transition from the Neolithic to the Early Bronze Age.

• [**Face value: Brain's ability to recognize faces is shaped through repeated exposure, study suggests**](#) [周二, 05 9月 00:04]

Scientists have long deemed the ability to recognize faces innate for people and other primates -- something our brains just know how to do immediately from birth. However, the findings of a new study cast doubt on this longstanding view.

• [**More 'losers' than 'winners' predicted for Southern Ocean seafloor animals**](#) [周二, 05 9月 00:04]

A new study of the marine invertebrates living in the seas around Antarctica reveals there will be more 'losers' than 'winners' over the next century as the Antarctic seafloor warms.

[Stellar corpse sheds light on origin of cosmic rays](#) [周一, 04 9月 21:34]

New research revealed that the entire zoo of electromagnetic radiation streaming from the Crab nebula -- one of the most iconic objects in the sky -- has its origin in one population of electrons and must be produced in a different way than scientists have traditionally thought. The results have implications for our understanding of how cosmic rays attain their incredible energies.

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

· [**Better understanding of 'one of the most complex organs' for better lung treatments**](#) [周五, 08 9月 02:45]

Details of lung cell molecular pathways that promote or inhibit tissue regeneration have been reported by researchers. Their aim is to find new ways to treat lung disorders.

· [**Interrupting Parkinson's disease**](#) [周五, 08 9月 02:30]

Scientists have identified a toxic cascade that leads to neuronal degeneration in patients with Parkinson's disease and figured out how to interrupt it, reports a study. Intervening with an antioxidant early in the disease process may break the degenerative cycle and improve neuron function in Parkinson's, the study showed. Parkinson's is second most common neurodegenerative disorder.

· [**Mediterranean-style diet may eliminate need for reflux medications**](#) [周五, 08 9月 02:30]

A plant-based, Mediterranean-style diet has been shown to provide the same medical benefits for treating laryngopharyngeal reflux as popular reflux medications, according to new research.

· [**Cilia: 'The bouncer' of bacteria**](#) [周五, 08 9月 02:27]

A new paper elucidates the active role of cilia in regulating flow for bacteria filtering and enhancing chemical communication.

· [**Circadian clock's inner gears**](#) [周五, 08 9月 02:26]

A set of core clock proteins organize themselves into a handful of molecular machines that control the precise workings of the body's

circadian rhythms, new research has found.

- [**Discovery of chromosome motor supports DNA loop extrusion**](#) [周五, 08 9月 02:26]

It is one of the mysteries in biology: how does a cell neatly distribute its replicated DNA between two daughter cells? Scientists are split into two camps: the first argues that condensing works like a hook, tying DNA together. The other camp thinks that the ring-shaped protein pulls the DNA inwards to create a loop. Now researchers from give the 'loop-extrusion camp' a boost: condensin does indeed have the putative 'motor power' on board.

- [**Researchers closer to uncovering a new feature in heart failure**](#) [周五, 08 9月 01:29]

Each cell in the average human body contains 23 pairs of chromosomes, with four telomeres on each pair. Telomeres cover the end of the chromosome, protecting it from deterioration or fusion with adjacent chromosomes. While there is a length range for classifying a healthy telomere, researchers found, for the first time ever, that people with heart failure have shorter telomeres within the cells that make up the heart muscle (known as cardiomyocytes).

- [**Human skin cells transformed directly into motor neurons**](#) [周五, 08 9月 01:28]

Scientists have converted skin cells from healthy adults directly into motor neurons without going through a stem cell state. The technique makes it possible to study motor neurons of the human central nervous system in the lab. Unlike commonly studied mouse motor neurons, human motor neurons growing in the lab would be a new tool since researchers can't take samples of these neurons from living people but can easily take skin samples.

- [**Shortened telomeres linked to dysfunction in Duchenne muscular dystrophy, researchers find**](#) [周五, 08 9月 01:25]

A discovery about muscular dystrophy disorders has been made that

suggests new possibilities for treatment. Researchers found that stem cells in the muscles of muscular dystrophy patients may, at an early age, lose their ability to regenerate new muscle, due to shortened telomeres.

• [**SNAP benefits aren't enough to afford a healthy diet**](#) [周五, 08 9月 00:56]

A new study finds that the Supplemental Nutrition Assistance Program (SNAP), formerly known as Food Stamps, only covers 43-60 percent of what it costs to consume a diet consistent with federal dietary guidelines for what constitutes a healthy diet. The study highlights the challenges lower-income households face in trying to eat a healthy diet.

• [**Producing malaria treatment at large scales**](#) [周五, 08 9月 00:56]

For the first time, production of the anti-malarial drug artemisinin has been achieved at an industrial scale using genetically engineered moss. This offers new hope for stabilizing artemisinin supplies and combatting malaria.

• [**What makes alcoholics drink? Research shows it's more complex than supposed**](#) [周五, 08 9月 00:02]

What makes alcoholics drink? New research has found that in both men and women with alcohol dependence, the major factor predicting the amount of drinking seems to be a question of immediate mood. Surprisingly men with a history of depression were drinking less often than men who were not depressed. This probably means that alcohol treatment needs to be individually tailored.

• [**Cellular tango: Immune and nerve cells work together to fight gut infections**](#) [周四, 07 9月 23:24]

Nerve cells in the gut play a crucial role in the body's ability to marshal an immune response to infection, according to a new study.

• [**Nutrition has benefits for brain network organization**](#) [周四, 07 9月 23:24]

Nutrition has been linked to cognitive performance, but researchers have not pinpointed what underlies the connection. A new study found that

monounsaturated fatty acids -- a class of nutrients found in olive oils, nuts and avocados -- are linked to general intelligence, and that this relationship is driven by the correlation between MUFAs and the organization of the brain's attention network.

• [**3-D-printed biomaterials that degrade on demand**](#) [周四, 07 9月 23:24]

The temporary structures, which can be degraded away with a biocompatible chemical trigger, could be useful in fabricating microfluidic devices, creating biomaterials that respond dynamically to stimuli and in patterning artificial tissue.

• [**Link between positive emotions and health depends on culture**](#) [周四, 07 9月 23:24]

Positive emotions are often seen as critical aspects of healthy living, but new research suggests that the link between emotion and health outcomes may vary by cultural context. The findings show that experiencing positive emotions is linked with better cardiovascular health in the US but not in Japan.

• [**Using antidepressants during pregnancy may affect your child's mental health**](#) [周四, 07 9月 23:24]

The use of antidepressants during pregnancy increases the risk of your child being diagnosed with a psychiatric disorder later in life, a study of almost one million Danish children shows. However, heritability also plays a part, according to the researchers.

• [**Biomarkers as predictive of sepsis as lengthy patient monitoring**](#) [周四, 07 9月 23:23]

One measurement of key biomarkers in blood that characterize sepsis can give physicians as much information as hours of monitoring symptoms, a new study found.

• [**Connection between low oxygen levels, human gene discovered**](#) [周四, 07 9月 23:23]

Researchers have established a link between hypoxia, a condition that

reduces the flow of oxygen to tissues, and HOTAIR, a noncoding RNA or molecule that has been implicated in several types of cancer.

- [**You are what you think you eat**](#) [周四, 07 9月 22:43]

Despite eating the same breakfast, made from the same ingredients, people consumed more calories throughout the day when they believed that one of the breakfasts was less substantial than the other, investigators have found.

- [**Fifty–fifty split best for children of divorce, study suggests**](#) [周四, 07 9月 22:43]

Preschool children in joint physical custody have less psychological symptoms than those who live mostly or only with one parent after a separation. In a new study of 3,656 children, researchers show that 3–5-year-olds living alternately with their parents after a separation show less behavioral problems and psychological symptoms than those living mostly or only with one of the parents.

- [**Smartphone screen technology used to trick harmful bacteria**](#) [周四, 07 9月 22:41]

Conducting plastics found in smartphone screens can be used to trick the metabolism of pathogenic bacteria, report scientists. By adding or removing electrons from the plastic surface, bacteria may be tricked into growing more or less. The method may find widespread use in preventing bacterial infections in hospitals or improve effectiveness in wastewater management.

- [**Genes behind gestation length, preterm delivery identified**](#) [周四, 07 9月 22:39]

The genes that regulate gestational length and the likelihood of preterm delivery, have been identified in a study involving more than 50,000 women. An article describes the scientific breakthrough that can lead to improved health and survival among children.

- [**Mixing and matching yeast DNA**](#) [周四, 07 9月 22:38]

Scientists show molecular factors that determine why some regions in yeast chromosomes are apt for remodeling, while other regions stay

faithful during cell replication.

- [**Proteins keep a grip on cells**](#) [周四, 07 9月 22:38]

Scientists have revealed new structural information on the integrin-laminin interaction. These findings provide important insights on cellular interactions that promote cell growth, differentiation, and migration.

- [**New dental imaging method uses squid ink to fish for gum disease**](#) [周四, 07 9月 22:24]

Squid ink could one day make getting checked for gum disease at the dentist less tedious and even painless. By combining squid ink with light and ultrasound, a team led by engineers has developed a new dental imaging method to examine a patient's gums that is noninvasive, more comprehensive and more accurate than the state of the art.

- [**Sometimes you shouldn't say sorry**](#) [周四, 07 9月 22:24]

Being socially rejected can be a painful emotional experience -- but being told sorry may not soften the blow, finds a new study. Contrary to popular belief, apologies increase hurt feelings and the need to express forgiveness, but do not increase feelings of forgiveness, for the person being rebuffed.

- [**Trigger for fatty liver in obesity**](#) [周四, 07 9月 22:24]

Morbid obesity affects the liver: almost one-third of all adults suffer from chronic fatty liver disease, which can lead to infections and even trigger cancer. Researchers have now found a signaling pathway in cells that play an important role in the development of fatty liver disease.

- [**Want your question answered quickly? Use gestures as well as words**](#) [周四, 07 9月 22:23]

When someone asks a question during a conversation, their conversation partner answers more quickly if the questioner also moves their hands or head to accompany their words. The study focuses on how gestures influence language processing.

- [**Intermittent electrical brain stimulation**](#)

improves memory [周四, 07 9月 22:23]

Intermittent electrical stimulation of an area deep inside the brain that degenerates in Alzheimer's appears to improve working memory, scientists report. Conversely, continuous deep brain stimulation, like the type used for Parkinson's and currently under study in humans with Alzheimer's, impairs memory, according to study.

Long-term opioid prescription use jumps threefold over 16-year period, study suggests [周四, 07 9月 22:23]

Opioid prescription use increased significantly between 1999 and 2014, new research has found, and that much of that increase stemmed from patients who'd been taking their medication for 90 days or longer.

A tiny device offers insights to how cancer spreads [周四, 07 9月 21:36]

Researchers developed a new type of microfluidic device that can cultivate cells for longer periods of time, better reflecting how cancer cells to change over time. The device allowed them to capture the leader cells that would be first to break away and cause metastasis.

Uncovering the mechanism behind heart failure, mortality in sepsis [周四, 07 9月 21:36]

Of the nearly 1 million people in the US who are affected by sepsis annually, almost one-fifth die. Cardiovascular complications account for approximately 80 percent of those deaths. Now, researchers describe the mechanism underlying the loss of energy from heart dysfunction in sepsis, opening the way for the development of a new therapy that could save thousands of lives annually.

Children exposed to chemicals in 9/11 'dust' show early signs of risk of heart disease [周四, 07 9月 21:36]

Sixteen years after the collapse of the World Trade Center towers sent a 'cloud' of toxic debris across Lower Manhattan, children living nearby who likely breathed in the ash and fumes are showing early signs of risk for future heart disease.

• [**Link established between a molecular driver of melanoma, novel therapeutic agent**](#) [周四, 07 9月 21:36]

Scientists have described a correlation between a key melanoma signaling pathway and a novel class of drugs being tested in the clinic as adjuvant therapy for advanced melanoma, providing useful information for a more effective use of this type of treatment.

• [**How do close relationships lead to longer life?**](#) [周四, 07 9月 21:36]

While recent research has shown that loneliness can play a role in early death, psychologists are also concerned with the mechanisms by which social relationships and close personal ties affect health. New research offers an overview of the science and makes the case for psychological scientists to work together to make close relationships a public health priority.

• [**Emoji fans take heart: Scientists pinpoint 27 states of emotion**](#) [周四, 07 9月 21:36]

The Emoji Movie, in which the protagonist can't help but express a wide variety of emotions instead of the one assigned to him, may have gotten something right. A new study challenges a long-held assumption in psychology that most human emotions fall within the universal categories of happiness, sadness, anger, surprise, fear and disgust.

• [**Drivers don't ignore a ringing phone but do ignore the risk**](#) [周四, 07 9月 21:36]

Drivers find it difficult to ignore a ringing phone but do ignore the dangers, with a new study revealing almost 50 percent believe locating and answering a ringing phone is not as risky as talking and texting. Research has found locating a ringing phone, checking who's calling, and rejecting or answering the call, is the most frequent mobile phone task undertaken by drivers.

• [**Improved stem cell transplantation therapies?**](#) [周四, 07 9月 21:36]

Researchers have demonstrated that hematopoietic stem cell (HSC) transplants can be improved by treatments that temporarily prevent the

stem cells from dying. The approach could allow those in need of such transplants, including leukemia and lymphoma patients, to be treated with fewer donor stem cells while limiting potential adverse side effects.

• [**Cheaper, faster test for E. coli in drinking water**](#)

[周四, 07 9月 21:36]

Researchers have invented a fast, affordable way for developing communities to test their drinking water for potentially deadly E. coli.

• [**Tooth trouble: Many middle-aged adults report dental pain, embarrassment and poor prevention**](#)

[周四, 07 9月 21:36]

The dental health of middle-aged Americans faces a lot of problems right now, and an uncertain future to come, according to new national poll results. One in three Americans between the ages of 50 and 64 say they're embarrassed by the condition of their teeth, and that dental problems have caused pain or other problems in the past two years. Forty percent of those polled don't get regular cleanings or other preventive oral care.

• [**Ebola: Early immune response provides insight into vaccination**](#)

[周四, 07 9月 21:36]

The latest outbreaks of emerging pathogens, such as Ebola or Zika, emphasize the importance of the rapid development of vaccines. However, being able to predict the efficacy of new vaccines remains a challenge in vaccine development. Scientists have now successfully assessed early on the longer-term immune response in humans after being vaccinated with the newly developed Ebola vaccine rVSV-ZEBOV.

• [**Chronic bronchitis: New insights could lead to first diagnostic test, better treatments**](#)

[周四, 07 9月 10:12]

Researchers describe how the concentration of mucins -- the proteins that make mucus thick -- is abnormally high in chronic bronchitis and that high mucin concentrations are associated with disease severity in people with chronic bronchitis. This finding could become the first-ever

objective marker of chronic bronchitis and lead to the creation of diagnostic and prognostic tools.

- [**Discovery of genes linked to preterm birth in landmark study**](#) [周四, 07 9月 10:12]

A massive international DNA analysis of pregnant women has identified for the first time six gene regions that influence the length of pregnancy and the timing of birth. The findings may lead to new ways to prevent preterm birth and its consequences -- the leading cause of death among children under age 5 worldwide.

- [**Human genetics studies reveal new targets to reduce heart disease**](#) [周四, 07 9月 05:06]

Again and again, it's the rare among humans that help the rest of us. The exploration of human genetics is revealing new targets to combat heart disease among atypical variants. Mutations in genes that play a role in heart health are the inspiration for a cluster of new heart drugs.

- [**Honeybees could play a role in developing new antibiotics**](#) [周四, 07 9月 05:06]

An antimicrobial compound made by honeybees could become the basis for new antibiotics, according to new research.

- [**Statins reduce deaths from coronary heart disease by 28 per cent in men, according to longest ever study**](#) [周四, 07 9月 05:04]

A new study focused on men with high levels of 'bad' cholesterol and no other risk factors or signs of heart disease.

- [**A bioactive molecule may protect against congestive heart failure after heart attacks**](#) [周四, 07 9月 05:01]

Researchers show that giving mice a form of the fatty acid-derived bioactive molecule called lipoxin improved heart function after a heart attack, as the lipoxin prompted early activation of the resolving phase of the immune response without altering the acute phase.

. [**Patient satisfaction with pain management linked to nurse staffing**](#) [周四, 07 9月 05:01]

Hospital patients' satisfaction with pain management is linked to nurse staffing, according to an article authored by nurse researchers from the Connell School of Nursing at Boston College and published in the journal Pain Management Nursing.

. [**New model for hard-to-study form of blindness paves way for future research**](#) [周四, 07 9月 05:01]

Researchers have created the first patient-derived laboratory model of macular degeneration, the leading cause of vision loss in older adults. With the new model, the team has identified possible drug targets for the disease, which they hope will help lead to an effective treatment.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

- [**New acid-free magnet recycling process created**](#)

[周五, 08 9月 01:25]

A new rare-earth magnet recycling process dissolves magnets in an acid-free solution and recovers high purity rare earth elements.

- [**Curious properties: Researchers analyze flocking behavior on curved surfaces**](#)

[周五, 08 9月 01:25]

A murmuration of starlings. The phrase reads like something from literature or the title of an arthouse film. In fact, it is meant to describe the phenomenon that results when hundreds, sometimes thousands, of these birds fly in swooping, intricately coordinated patterns through the sky.

- [**Lignin: Much more valuable than just as waste**](#)

[周五, 08 9月 00:03]

Lignin, a substance considered as a waste product in biomass and ethanol production, will now reach its proper value as bio-oil in new products.

- [**Aspirin tablets help unravel basic physics**](#)

[周五, 08 9月 00:03]

Aspirin in form of small crystallites provides new insight into delicate motions of electrons and atomic nuclei. Set into molecular vibration by strong ultrashort far-infrared (terahertz) pulses, the nuclei oscillate much faster than for weak excitation. They gradually return to their intrinsic oscillation frequency, in parallel to the picosecond decay of electronic motions. An analysis of the terahertz waves radiated from the moving particles by in-depth theory reveals the strongly coupled chara...

- [**Scanning tunneling microscopy measurements**](#)

[identify active sites on catalyst surfaces](#) [周五, 08 9月 00:02]

Chemistry live: using a scanning tunneling microscope, researchers were able for the very first time to witness in detail the activity of catalysts during an electrochemical reaction. The measurements show how the surface structure of the catalysts influences their activity. The new analysis method can now be used to improve catalysts for the electrochemical industry.

• ['Rubber material' discovered that could lead to scratch-proof paint for car](#) [周五, 08 9月 00:02]

A stretchy miracle material has been discovered that could be used to create highly resistant smart devices and scratch-proof paint for cars, report investigators.

• [Climate change for aliens](#) [周四, 07 9月 23:24]

For more than 50 years, the Kardashev scale has been the gold standard for classifying hypothetical 'exo-civilizations' by their ability to harness energy. A team of researchers has devised a new system that takes into account the impacts of that energy use.

• [Pluto features given first official names](#) [周四, 07 9月 23:24]

The Working Group for Planetary System Nomenclature of the International Astronomical Union has officially approved the naming of 14 features on the surface of Pluto. These are the first geological features on the planet to be named following the close flyby by the New Horizons spacecraft in July 2015.

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- [**Ultraviolet light from superluminous supernova key to revealing explosion mechanism**](#) [周四, 07 9月 22:24]

An international team of researchers has discovered a way to use UV light from superluminous supernovae to uncover its explosion mechanism, and used it to identify Gaia16apd as a shock-interacting supernova, reports a new study.

- [**Fast magnetic writing of data**](#) [周四, 07 9月 22:24]

Magnetic data storage has long been considered too slow for use in the working memories of computers. Researchers have now investigated a technique by which magnetic data writing can be done considerably faster and using less energy.

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. [Water-based lithium-ion batteries that don't explode now created](#) [周四, 07 9月 05:01]

For the first time a lithium-ion battery has been developed that uses a water-salt solution as its electrolyte and reaches the 4.0 volt mark desired for household electronics, such as laptop computers, without the fire and explosive risks associated with some commercially available non-aqueous lithium-ion batteries.

. [Study quantifies potential for water reuse in permian basin oil production](#) [周四, 07 9月 05:01]

Hydraulic fracturing has once again made the Permian Basin one of the richest oil fields in the world. But the improved reserves come with some serious water management issues. Drilling for oil uses water upfront, and brings up large volumes of water that need to be managed. The study found that recycling the water produced during operations at other hydraulic fracturing sites could help reduce potential problems associated with the technology.

. [Researchers challenge status quo of battery commercialization](#) [周四, 07 9月 05:01]

Researchers are looking to the pharmaceutical industry to propose an updated model of US battery commercialization.

• [**New device accurately identifies cancer in seconds**](#) [周四, 07 9月 02:49]

A team of scientists and engineers has invented a powerful tool that rapidly and accurately identifies cancerous tissue during surgery, delivering results in about 10 seconds. The MasSpec Pen is an innovative handheld instrument that gives surgeons precise diagnostic information about what tissue to cut or preserve, helping improve treatment and reduce the chances of cancer recurrence.

• [**Particle physicists on a quest for 'new physics'**](#) [周四, 07 9月 02:29]

The Large Hadron Collider (LHC) at CERN, the European Organization for Nuclear Research, produces hundreds of millions of proton collisions per second. But researchers working on the Large Hadron Collider beauty (LHCb) experiment can only record 2,000 of those collisions, using one of the detectors installed on the accelerator. So in the end, this technological marvel leaves the physicists wanting more. They are convinced that the vast volume of uncaptured data holds the answers to several unreso...

• [**Earth as hybrid planet: New classification places Anthropocene era in astrobiological context**](#) [周四, 07 9月 01:55]

A new classification scheme has been devised for the evolutionary stages of worlds based on 'non-equilibrium thermodynamics' -- a planet's energy flow being out of sync, as the presence of life could cause.

• [**Researchers report new way to make dissolving electronics**](#) [周四, 07 9月 01:55]

Researchers have reported a new type of electronic device that can be triggered to dissolve through exposure to water molecules in the atmosphere. The work holds promise for eco-friendly disposable personal electronics and biomedical devices that dissolve within the body.

• [**Supercharging silicon batteries**](#) [周三, 06 9月 22:36]

Scientists have designed a novel silicon-based anode to provide lithium batteries with increased power and better stability.

• [**Quantum tech has its sights set on human biochemistry**](#) [周三, 06 9月 22:36]

Scientists have developed a new tool for imaging life at the nanoscale that will provide new insights into the role of transition metal ions such as copper in neurodegenerative diseases.

• [**Green light for ultra-fine display colors**](#) [周三, 06 9月 22:36]

Chemical engineers have succeeded in generating ultra-pure green light for the first time. The new light-emitting diode will pave the way for visibly improved color quality in a new generation of ultra-high definition displays for TVs and smartphones.

• [**Accretion-powered pulsar reveals unique timing glitch**](#) [周三, 06 9月 22:36]

The discovery of the largest timing irregularity yet observed in a pulsar is the first confirmation that pulsars in binary systems exhibit the strange phenomenon known as a 'glitch.'

• [**New tool for characterizing quantum simulators**](#) [周三, 06 9月 22:35]

Physicists are developing quantum simulators, to help solve problems that are beyond the reach of conventional computers. However, they first need new tools to ensure that the simulators work properly. Researchers have now implemented a new technique in the laboratory that can be used to efficiently characterize the complex states of quantum simulators. The technique could become a new standard tool for characterizing quantum simulators.

• [**Keychain detector could catch food allergens before it's too late**](#) [周三, 06 9月 22:35]

For kids and adults with food allergies, a restaurant outing can be a fraught experience. Even when care is taken, freshly prepared or packaged meals can accidentally become cross-contaminated with an

offending food and trigger a reaction. Now researchers report the development of a new portable allergen-detection system -- including a keychain analyzer -- that could help prevent trips to the emergency room.

• [**Flip-flop qubits: Radical new quantum computing design invented**](#) [周三, 06 9月 22:35]

Engineers have invented a radical new architecture for quantum computing, based on novel 'flip-flop qubits,' that promises to make the large-scale manufacture of quantum chips dramatically cheaper -- and easier -- than thought possible. The new chip design allows for a silicon quantum processor that can be scaled up without the precise placement of atoms required in other approaches.

• [**Newly-discovered semiconductor dynamics may help improve energy efficiency**](#) [周三, 06 9月 08:29]

Researchers examining the flow of electricity through semiconductors have uncovered another reason these materials seem to lose their ability to carry a charge as they become more densely 'doped.'

• [**Superhuman 'night' vision during the total eclipse?**](#) [周三, 06 9月 04:40]

It was dark as night during the recent total solar eclipse, yet people and objects were easier to see than on a typical moonless night. Scientists have discovered a possible biological explanation -- the presence (or absence) of a protein in the retina known as a GABA receptor.

• [**Mobile phone use while pregnant not linked to child neurodevelopment problems, study suggests**](#) [周三, 06 9月 02:55]

Mobile phone use during pregnancy is unlikely to have any adverse effects on child neurodevelopment, according to new research. These findings provide further evidence that exposure to radio frequency electromagnetic fields associated with maternal use of mobile phones during pregnancy is not linked to neurodevelopment in children.

- [**Research shows how DNA molecules cross nanopores**](#) [周三, 06 9月 02:55]

Research sheds new light on the understanding of the measurement of polymer properties in diverse chemical industries such as plastics manufacturing and food processing, and the design of biosensors.

- [**Aeroices: Newly discovered ultralow-density ice**](#) [周三, 06 9月 02:55]

Relatively little is known about the effects of extreme negative pressure on water molecules. Exploring a significant region of negative pressure through molecular dynamic simulations, researchers have now theoretically discovered a new family of ice phases. Called aeroices, these ices have the lowest density of all known ice crystals.

- [**Cooling system works without electricity**](#) [周三, 06 9月 02:55]

Scientists cooled water without electricity by sending excess heat where it won't be noticed -- space. The specialized optical surfaces they developed are a major step toward applying this technology to air conditioning and refrigeration.

- [**More durable, less expensive fuel cells**](#) [周三, 06 9月 01:44]

A new technology has been created that could make fuel cells cheaper and more durable. Hydrogen-powered fuel cells are a green alternative to internal combustion engines because they produce power through electrochemical reactions, leaving no pollution behind. Platinum is the most common catalyst in the type of fuel cells used in vehicles, but it's expensive. The UD team used a novel method to come up with a less expensive catalyst.

- [**Nanoparticles limit damage in spinal cord injury**](#) [周三, 06 9月 01:44]

After a spinal cord injury, significant secondary nerve damage is caused by inflammation and internal scarring that inhibits the ability of the nervous system to repair itself. A biodegradable nanoparticle injected after a spinal cord trauma prevented the inflammation and internal scarring that inhibits the repair process, reports a new study.

- [**Unique study tests fundamental laws of physics**](#) [周三, 06 9月 00:54]

A study that will ‘test our understanding of how the Universe works, particularly outside the relatively narrow confines of our planet’ is being undertaken by an international team of researchers.

- [**Crab nebula in the limelight: Unified model for the entire radiation spectrum**](#) [周三, 06 9月 00:48]

The origin of cosmic rays, high-energy particles from outer space constantly impacting on Earth, is among the most challenging open questions in astrophysics. Now research sheds new light on the origin of those energetic particles.

- [**Solubility study could impact energy, biology, environment**](#) [周三, 06 9月 00:32]

Chemical engineers have used the most realistic computer model yet devised to simulate the precise atomic and molecular interactions that come into play when water mixes with alkanes, a family of hydrocarbons that includes methane, propane and other refined products.

- [**Surgeons create 'vacuum' procedure to remove infected pacemaker**](#) [周三, 06 9月 00:32]

Electrophysiologists get creative in removing infected pacemaker wires of a patient unable to have open heart surgery. He would have died if they didn't use a 'vacuum' typically used to remove foreign objects.

- [**Discovery of boron on Mars adds to evidence for habitability**](#) [周三, 06 9月 00:32]

The discovery of boron on Mars gives scientists more clues about whether life could have ever existed on the planet, according to a new paper.

- [**Glowing cancer tool illuminates benign, but dangerous, brain tumors during pituitary surgery**](#) [周三, 06 9月 00:32]

An experimental imaging tool that uses a targeted fluorescent dye successfully lit up the benign brain tumors of patients during removal surgery, allowing surgeons to identify tumor tissue, a new study shows.

- ['Extreme' telescopes find the second-fastest-spinning pulsar](#) [周三, 06 9月 00:32]

By following up on mysterious high-energy sources mapped by NASA's Fermi Gamma-ray Space Telescope, a Netherlands-based radio telescope has discovered a new pulsar, the second fastest-spinning known.

- [When strangers can control our lights](#) [周二, 05 9月 21:38]

Smart home products such as lamps controlled via mobile devices are becoming ever more popular in private households. We would, however, feel vulnerable in our own four walls if strangers suddenly started switching the lights in our homes on and off. Researchers have discovered security problems of this nature in smart lights manufactured by GE, IKEA, Philips and Osram.

- [Was the primordial soup a hearty pre-protein stew?](#) [周二, 05 9月 21:36]

How proteins evolved billions of years ago, when Earth was devoid of life, has stumped many a scientist. A little do-si-do between amino acids and their chemical lookalikes may have done the trick. Evolutionary chemists tried it and got results by the boatload.

- [New fluorescent dyes could advance biological imaging](#) [周二, 05 9月 00:04]

Scientists have developed a new method for fine-tuning the structure of rhodamine dyes, and can now create a colorful palette of fluorescent molecules.

- [Equation reveals the characteristics of quantum chaos](#) [周一, 04 9月 21:37]

Researchers have now succeeded in formulating a mathematical result that provides an exact answer to the question of how chaos actually behaves. The researchers have analyzed chaotic states at the atomic level.

- [Like a revolving door: How shuttling proteins](#)

[operate nuclear pores](#) [周一, 04 9月 21:36]

Nuclear pore complexes are tiny channels where the exchange of substances between the cell nucleus and the cytoplasm takes place. Scientists report on startling new research that might overturn established models of nuclear transport regulation. Their study reveals how shuttling proteins known as importins control the function of nuclear pores – as opposed to the view that nuclear pores control the shuttling of importins.

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Environment News

Top stories featured on ScienceDaily's Plants & Animals, Earth & Climate, and Fossils & Ruins sections.

- [**Ship exhaust makes oceanic thunderstorms more intense**](#) [周五, 08 9月 02:27]

Thunderstorms directly above two of the world's busiest shipping lanes are significantly more powerful than storms in areas of the ocean where ships don't travel, according to new research.

- [**Why are fossilized hairs so rare?**](#) [周五, 08 9月 02:27]

When it comes to preserving body parts, fossilized hair is rare--five times rarer than feathers--despite being an important tool for understanding ancient species. This finding has researchers trying to determine if the lack of hair in the fossil record has to do with physical traits that might make it more difficult for hair to fossilize, or an issue with scientists' collection techniques that could lead to them missing important finds.

- [**Cilia: 'The bouncer' of bacteria**](#) [周五, 08 9月 02:27]

A new paper elucidates the active role of cilia in regulating flow for bacteria filtering and enhancing chemical communication.

- [**Eighteenth century nautical charts reveal coral loss**](#) [周五, 08 9月 02:27]

Centuries-old nautical charts, mapped by long-deceased sailors to avoid shipwrecks, have been used by modern scientists to study loss of coral reefs. A new study compared early British charts to modern coral habitat maps to understand changes to reef environments.

- [**Courts' critical, underappreciated role in**](#)

[climate policy](#) [周五, 08 9月 02:26]

Both climate lawsuits and their reliance on scientific data have increased over the past decade, the most extensive study to date shows.

• [Discovery of chromosome motor supports DNA loop extrusion](#) [周五, 08 9月 02:26]

It is one of the mysteries in biology: how does a cell neatly distribute its replicated DNA between two daughter cells? Scientists are split into two camps: the first argues that condensing works like a hook, tying DNA together. The other camp thinks that the ring-shaped protein pulls the DNA inwards to create a loop. Now researchers from give the 'loop-extrusion camp' a boost: condensin does indeed have the putative 'motor power' on board.

• [New acid-free magnet recycling process created](#) [周五, 08 9月 01:25]

A new rare-earth magnet recycling process dissolves magnets in an acid-free solution and recovers high purity rare earth elements.

• [Curious properties: Researchers analyze flocking behavior on curved surfaces](#) [周五, 08 9月 01:25]

A murmuration of starlings. The phrase reads like something from literature or the title of an arthouse film. In fact, it is meant to describe the phenomenon that results when hundreds, sometimes thousands, of these birds fly in swooping, intricately coordinated patterns through the sky.

• [Direct evidence of sea level 'fingerprints' discovered](#) [周五, 08 9月 00:02]

The first observation of sea level 'fingerprints' -- tell-tale differences in sea level rise around the world in response to changes in continental water and ice sheet mass -- has been reported by researchers.

• [Smartphone screen technology used to trick harmful bacteria](#) [周四, 07 9月 22:41]

Conducting plastics found in smartphone screens can be used to trick the metabolism of pathogenic bacteria, report scientists. By adding or

removing electrons from the plastic surface, bacteria may be tricked into growing more or less. The method may find widespread use in preventing bacterial infections in hospitals or improve effectiveness in wastewater management.

- [**Mixing and matching yeast DNA**](#) [周四, 07 9月 22:38]

Scientists show molecular factors that determine why some regions in yeast chromosomes are apt for remodeling, while other regions stay faithful during cell replication.

- [**Proteins keep a grip on cells**](#) [周四, 07 9月 22:38]

Scientists have revealed new structural information on the integrin-laminin interaction. These findings provide important insights on cellular interactions that promote cell growth, differentiation, and migration.

- [**New dental imaging method uses squid ink to fish for gum disease**](#) [周四, 07 9月 22:24]

Squid ink could one day make getting checked for gum disease at the dentist less tedious and even painless. By combining squid ink with light and ultrasound, a team led by engineers has developed a new dental imaging method to examine a patient's gums that is noninvasive, more comprehensive and more accurate than the state of the art.

- [**Hidden Inca treasure: Remarkable new tree genus discovered in the Andes**](#) [周四, 07 9月 22:24]

Hidden in plain sight -- that's how researchers describe their discovery of a new genus of large forest tree commonly found, yet previously scientifically unknown, in the tropical Andes.

- [**Algorithm reconstructs processes from individual images**](#) [周四, 07 9月 22:24]

Researchers have developed a new method for reconstructing continuous biological processes, such as disease progression, using image data.

- [**Australian Magpie 'dunks' its food before**](#)

[eating, researchers find](#) [周四, 07 9月 22:23]

Scientists have shown that the Australian Magpie may 'dunk' its food in water before eating, a process that appears to be 'copied' by its offspring.

• [Increasing effective decision-making for coastal marine ecosystems](#) [周四, 07 9月 22:23]

Marine restoration, rather than protection, might be the most cost-effective solution for coastal marine ecosystems suffering from human activities, a new study has found. The study examined how to best benefit coastal marine ecosystems on limited conservation budgets, to help managers better understand the trade-offs.

• [Breaking through the wall in bacterial membrane vesicle research](#) [周四, 07 9月 21:36]

Researchers used advanced imaging techniques to investigate the formation of membrane vesicles in a Gram-positive bacterium, a process that is poorly understood, particularly in bacteria with thick cell walls. The consortium showed that membrane vesicle formation was triggered by an enzyme called endolysin that damages the cell wall to create holes that allow the release of membrane vesicles. This mechanism could be exploited for the mass production of bacterial vesicles.

• [How monkey fights grow](#) [周四, 07 9月 21:36]

New research finds evidence for a complicated structure behind primate conflict. It is not individuals who control the length of fights, but the relationships between pairs of individuals.

• [Ebola: Early immune response provides insight into vaccination](#) [周四, 07 9月 21:36]

The latest outbreaks of emerging pathogens, such as Ebola or Zika, emphasize the importance of the rapid development of vaccines. However, being able to predict the efficacy of new vaccines remains a challenge in vaccine development. Scientists have now successfully assessed early on the longer-term immune response in humans after being vaccinated with the newly developed Ebola vaccine rVSV-ZEBOV.

- [**Honeybees could play a role in developing new antibiotics**](#) [周四, 07 9月 05:06]

An antimicrobial compound made by honeybees could become the basis for new antibiotics, according to new research.

- [**Study quantifies potential for water reuse in permian basin oil production**](#) [周四, 07 9月 05:01]

Hydraulic fracturing has once again made the Permian Basin one of the richest oil fields in the world. But the improved reserves come with some serious water management issues. Drilling for oil uses water upfront, and brings up large volumes of water that need to be managed. The study found that recycling the water produced during operations at other hydraulic fracturing sites could help reduce potential problems associated with the technology.

- [**Bacterial in-fighting provides new treatment for hospital infections**](#) [周四, 07 9月 02:49]

A bacteria that is a leading cause of death worldwide from hospital acquired infections following antibiotic treatment looks set to be brought down through its own sibling rivalry.

- [**Pollen stays on bee bodies right where flowers need it for pollination**](#) [周四, 07 9月 02:49]

After grooming, bees still have pollen on body parts that match the position of flower pollen-sacs and stigmas, according to a new study.

- [**Giant bacterium contains genomes for an entire population**](#) [周四, 07 9月 02:26]

Achromatium oxaliferum is the largest (known) freshwater bacterium in the world. It is 30,000 times larger than its “normal” counterparts that live in water and owing to its calcite deposits it is visible to the naked eye. It has long been known – at least among bacteria fans – that some sulfur bacteria such as *Achromatium* can be extremely large and may contain several genome copies. But the fact that a single bacterial cell harbors hundreds of different genomes is new – also to bacteria

aficiona...

• [**Monkey sees ... monkey knows?**](#) [周四, 07 9月 01:55]

Monkeys had higher confidence in their ability to remember an image when the visual contrast was high. These kinds of metacognitive illusions -- false beliefs about how we learn or remember best -- are shared by humans, leading brain and cognitive scientists to believe that metacognition could have an evolutionary basis.

• [**Researchers report new way to make dissolving electronics**](#) [周四, 07 9月 01:55]

Researchers have reported a new type of electronic device that can be triggered to dissolve through exposure to water molecules in the atmosphere. The work holds promise for eco-friendly disposable personal electronics and biomedical devices that dissolve within the body.

• [**Tick tock: Biologists show wildlife loss and climate change can synergistically increase tick abundance and the risk of tick-borne disease**](#) [周三, 06 9月 23:46]

Around the world, ticks are one of the most important vectors of zoonotic diseases -- animal diseases communicable to humans -- and they're everywhere. New research suggests that the abundance of ticks that carry certain fevers are likely to rise in the future, thanks to a combination of wildlife loss and climate change.

• [**Substance in coffee delays onset of diabetes in laboratory mice**](#) [周三, 06 9月 22:37]

Substances in coffee have been identified that could help quash the risk of developing type 2 diabetes. But few of these have been tested in animals. Now, scientists report that one of these previously untested compounds appears to improve cell function and insulin sensitivity in laboratory mice. The finding could spur the development of new drugs to treat or even prevent the disease.

• [**Cloud formation suppressed by biogenic organic**](#)

[emissions](#) [周三, 06 9月 22:36]

Evidence has been found that near-ground biogenic emissions of organics suppress cloud formation in cool-temperate forests in autumn, providing clues to how global warming will affect cloud formation and the overall climate.

• [Colon of patients with IBS reacts differently to bacteria](#) [周三, 06 9月 22:36]

The intestinal barrier of patients with the gastrointestinal disease IBS allows bacteria to pass more freely than in healthy people, according to a study. The study is the first to investigate IBS using living bacteria.

• [Unraveling a major cause of sea ice retreat in the Arctic Ocean](#) [周三, 06 9月 22:36]

Quantitative analysis has evidenced the acceleration system of melting ice: dark water surfaces absorb more heat than white ice surfaces, thus melting ice and making more water surfaces in the Arctic Ocean.

• [Gut microbiota of larvae has an impact on mosquito's ability to transmit human pathogens](#) [周三, 06 9月 22:36]

Researchers have demonstrated that differential bacterial exposure during the development of mosquito larvae (*Aedes aegypti*) can have carry-over effects on adult traits related to an insect's ability to be a successful vector of arboviruses. This study represents an important step toward a more comprehensive understanding of how the environment shapes the risk of vector-borne disease.

• [Protein that extends life of yeast cells](#) [周三, 06 9月 22:35]

To understand and control aging is the aspiration of many scientists. Researchers have now discovered that the protein Gcn4 decreases protein synthesis and extends the life of yeast cells. Understanding how individual genes affect lifespan opens new ways to control the aging process and the occurrence of aging-related diseases.

• [Bacteria responsible for legionellosis modulates the host cell metabolism to its advantage](#) [周三, 06 9月 22:35]

The bacterial pathogen *Legionella pneumophila* has developed a specific strategy to target the host cell mitochondria, the organelles in charge of cellular bioenergetics, scientists have shown. New work provides precious information on how a pathogen manipulates the cellular metabolism to replicate intracellularly, and proposes a new concept of protection of host cells from *Legionella*-induced mitochondrial changes in order to fight infection.

[Research dog helps scientists save endangered carnivores](#) [周三, 06 9月 22:35]

Scat-sniffing research dogs are helping scientists map out a plan to save reclusive jaguars, pumas, bush dogs and other endangered carnivores in the increasingly fragmented forests of northeastern Argentina, according to a new study.

[Will mallards hybridize their cousins out of existence?](#) [周三, 06 9月 22:35]

Mallards -- the familiar ducks of city parks -- are one of a group of closely related species, many of which are far less common. Interbreeding can threaten the genetic distinctiveness of those other species and cause concern for their conservation. A new study investigates hybridization between mallards and mottled ducks, a species adapted for life in coastal marshes, and finds that while hybridization rates are currently low, human activity could cause them to rise in the future.

[Biologists slow aging, extend lifespan of fruit flies](#) [周三, 06 9月 22:34]

In research that potentially could delay the onset of Parkinson's disease, Alzheimer's disease, cancer, stroke, cardiovascular disease, and other diseases of aging, biologists have produced a genetic one-two punch that significantly slowed aging and improved health in the middle-aged fruit flies they studied.

[Clever cockatoos bend hooks into straight wire to fish for food](#) [周三, 06 9月 08:29]

Bending of a hook into wire to fish for the handle of a basket by crow Betty 15 years ago stunned the scientific world. Cognitive biologists studied tool making in an Indonesian cockatoo. Other than crows, cockatoos are not using tools in the wild. The birds manufactured hook tools out of straight wire without ever having seen or used a hook tool before.

- [**Something to sneeze about: Democratic voting in African wild dog packs**](#) [周三, 06 9月 08:29]

Scientists studying African wild dogs in Botswana have found members of this endangered species use sneezes to vote on when the pack will move off and start hunting.

- [**Invasive plants change ecosystems from the bottom up**](#) [周三, 06 9月 02:56]

Even when two different Phragmite lineages are grown side-by-side in the same ecosystem, the bacterial communities in the soil differ dramatically. This is a discovery that will aid in understanding how plant invasions get started and the conditions necessary for their success.

- [**Research shows how DNA molecules cross nanopores**](#) [周三, 06 9月 02:55]

Research sheds new light on the understanding of the measurement of polymer properties in diverse chemical industries such as plastics manufacturing and food processing, and the design of biosensors.

- [**Aeroices: Newly discovered ultralow-density ice**](#) [周三, 06 9月 02:55]

Relatively little is known about the effects of extreme negative pressure on water molecules. Exploring a significant region of negative pressure through molecular dynamic simulations, researchers have now theoretically discovered a new family of ice phases. Called aeroices, these ices have the lowest density of all known ice crystals.

- [**Eating meat linked to higher risk of diabetes**](#) [周三, 06 9月 01:45]

Higher intake of red meat and poultry is associated with significantly increased risk of developing diabetes, which is partially attributed to

their higher content of heme iron in these meats, new research shows.

• [Could switchgrass help China's air quality?](#) [周三, 06 9月 01:45]

Researchers have proposed an idea that could improve China's air quality, but they're not atmospheric scientists. They're agronomists.

• [Oregon's marijuana legalization prompted big drop in sales in Washington's border counties](#) [周三, 06 9月 01:44]

Three days after recreational marijuana sales became legal in Oregon, sales across the border in Washington, where retail availability already existed, dropped by 41 percent, say economists. Their study also suggests that illegal cross-border movement, or diversion, of legally produced marijuana sold at retail outlets across state borders is a real concern but not occurring at alarming levels.

• [Birds choose mates with ornamental traits](#) [周三, 06 9月 00:57]

A recurring theme in nature documentaries is that of choosy females selecting brightly colored males. A new study shows that, in monogamous mating systems, male birds may select their lifelong mates in much the same way.

• [First detailed decoding of complex finger millet genome](#) [周三, 06 9月 00:56]

Finger millet has two important properties: The grain is rich in important minerals and resistant towards drought and heat. Thanks to a novel combination of state-of-the-art technologies, researchers were able to decode the large and extremely complex genome of finger millet in high quality for the first time. This represents a fundamental basis for improving food security in countries like India and parts of Africa.

• [Cell marking opens up a window into the body](#) [周三, 06 9月 00:35]

Researchers have developed new methods to track cells in mice which could help to reduce animal experiments.

• [Building a morphogen gradient by simple diffusion in a growing plant leaf](#) [周三, 06 9月 00:33]

The research team has shown that a transcriptional co-activator ANGUSTIFOLIA3 (AN3) forms a signaling gradient along the leaf proximal-to-distal axis to determine cell-proliferation domain.

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- [**Ship exhaust makes oceanic thunderstorms more intense**](#) [周五, 08 9月 02:27]

Thunderstorms directly above two of the world's busiest shipping lanes are significantly more powerful than storms in areas of the ocean where ships don't travel, according to new research.

- [**Courts' critical, underappreciated role in climate policy**](#) [周五, 08 9月 02:26]

Both climate lawsuits and their reliance on scientific data have increased over the past decade, the most extensive study to date shows.

- [**SNAP benefits aren't enough to afford a healthy diet**](#) [周五, 08 9月 00:56]

A new study finds that the Supplemental Nutrition Assistance Program (SNAP), formerly known as Food Stamps, only covers 43-60 percent of what it costs to consume a diet consistent with federal dietary guidelines for what constitutes a healthy diet. The study highlights the challenges lower-income households face in trying to eat a healthy diet.

- [**Nutrition has benefits for brain network organization**](#) [周四, 07 9月 23:24]

Nutrition has been linked to cognitive performance, but researchers have not pinpointed what underlies the connection. A new study found that monounsaturated fatty acids -- a class of nutrients found in olive oils, nuts and avocados -- are linked to general intelligence, and that this relationship is driven by the correlation between MUFAs and the

organization of the brain's attention network.

- [**Academic argues for changes in the laws governing modern warfare**](#) [周四, 07 9月 22:41]

Modern warfare and terrorist acts often sees the killing of innocent civilians which presents complex challenges for the international legal framework governing the conduct of armed conflicts, explains a new report.

- [**Children exposed to chemicals in 9/11 'dust' show early signs of risk of heart disease**](#) [周四, 07 9月 21:36]

Sixteen years after the collapse of the World Trade Center towers sent a 'cloud' of toxic debris across Lower Manhattan, children living nearby who likely breathed in the ash and fumes are showing early signs of risk for future heart disease.

- [**Study quantifies potential for water reuse in Permian basin oil production**](#) [周四, 07 9月 05:01]

Hydraulic fracturing has once again made the Permian Basin one of the richest oil fields in the world. But the improved reserves come with some serious water management issues. Drilling for oil uses water upfront, and brings up large volumes of water that need to be managed. The study found that recycling the water produced during operations at other hydraulic fracturing sites could help reduce potential problems associated with the technology.

- [**Improved vaccine that protects against nine types of HPV is highly effective**](#) [周四, 07 9月 02:32]

Cervical cancer is the second most common cause of cancer-related death worldwide, with almost 300,000 deaths occurring each year. More than 80 percent of these deaths occur in developing nations. The advent of human papillomavirus (HPV) vaccines has significantly reduced the number of those who develop and die from cervical cancer.

- [**How retractions significantly hurt scientists**](#) [周三, 06 9月 23:46]

Life scientists who have published papers that are retracted by journals

subsequently suffer a 10 percent drop in citations of their remaining work, compared to similar but unaffected scientists, according to a new study.

· [**Oregon's marijuana legalization prompted big drop in sales in Washington's border counties**](#) [周三, 06 9月 01:44]

Three days after recreational marijuana sales became legal in Oregon, sales across the border in Washington, where retail availability already existed, dropped by 41 percent, say economists. Their study also suggests that illegal cross-border movement, or diversion, of legally produced marijuana sold at retail outlets across state borders is a real concern but not occurring at alarming levels.

· [**PSA screening significantly reduces the risk for death from prostate cancer**](#) [周二, 05 9月 06:17]

After differences in implementation and settings were accounted for, two important prostate cancer screening trials provide compatible evidence that screening reduces prostate cancer mortality.

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [Climate change for aliens](#) [周四, 07 9月 23:24]

For more than 50 years, the Kardashev scale has been the gold standard for classifying hypothetical 'exo-civilizations' by their ability to harness energy. A team of researchers has devised a new system that takes into account the impacts of that energy use.

- [Australian Magpie 'dunks' its food before eating, researchers find](#) [周四, 07 9月 22:23]

Scientists have shown that the Australian Magpie may 'dunk' its food in water before eating, a process that appears to be 'copied' by its offspring.

- ['Vampires' may have been real people with this blood disorder](#) [周四, 07 9月 02:49]

A newly discovered genetic mutation triggers erythropoietic protoporphyria (EPP). This discovery illuminates a novel biological mechanism potentially responsible for stories of 'vampires' and identifies a potential therapeutic target for treating EPP.

- [Giant bacterium contains genomes for an entire population](#) [周四, 07 9月 02:26]

Achromatium oxaliferum is the largest (known) freshwater bacterium in the world. It is 30,000 times larger than its "normal" counterparts that live in water and owing to its calcite deposits it is visible to the naked eye. It has long been known – at least among bacteria fans – that some sulfur bacteria such as *Achromatium* can be extremely large and may contain several genome copies. But the fact that a single bacterial cell harbors hundreds of different genomes is new – also to bacteria

aficiona...

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· [**Something to sneeze about: Democratic voting in African wild dog packs**](#) [周三, 06 9月 08:29]

Scientists studying African wild dogs in Botswana have found members of this endangered species use sneezes to vote on when the pack will move off and start hunting.

· [**Cooling system works without electricity**](#) [周三, 06 9月 02:55]

Scientists cooled water without electricity by sending excess heat where it won't be noticed -- space. The specialized optical surfaces they developed are a major step toward applying this technology to air conditioning and refrigeration.

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ScienceDaily

周日, 10 9月 2017

ScienceDaily

[周日, 10 9月 2017]

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Latest Science News

Breaking science news and articles on global warming, extrasolar planets, stem cells, bird flu, autism, nanotechnology, dinosaurs, evolution -- the latest discoveries in astronomy, anthropology, biology, chemistry, climate and environment, computers, engineering, health and medicine, math, physics, psychology, technology, and more -- from the world's leading universities and research organizations.

- [**Folic acid may mitigate autism risk from pesticides**](#) [周六, 09 9月 08:55]

Researchers have shown that mothers who take recommended amounts of folic acid around conception might reduce their children's pesticide-related autism risk.

- [**When electrons ride a wave**](#) [周六, 09 9月 08:55]

Conventional electron accelerators are an indispensable tool in modern research. But even smaller versions of these super microscopes are the size of a soccer field. Laser plasma acceleration could offer an alternative with a smaller footprint and higher peak currents. So far, the challenge with laser accelerators has been to create a reliable and stable electron beam, which is the prerequisite for applications. Physicists have developed a method to increase beam stability and quality.

- [**Scientists unravel new insights into promising semiconductor material**](#) [周六, 09 9月 08:55]

Researchers have established new findings on the properties of two-dimensional molybdenum disulfide, a widely studied semiconductor of the future.

- [**An officer and a gentlewoman from the Viking**](#)

[army in Birka](#) [周六, 09 9月 08:55]

War was not an activity exclusive to males in the Viking world. A new study shows that women could be found in the higher ranks at the battlefield.

• [Immune cells help fat deal with environmental challenges](#) [周六, 09 9月 08:55]

Immunosuppressive regulatory T-cells play an important role in the functioning of adipose tissue.

• [Are we being watched? Tens of other worlds could spot the Earth](#) [周六, 09 9月 08:55]

Scientists have turned exoplanet-hunting on its head, in a study that instead looks at how an alien observer might be able to detect Earth using our own methods. They find that at least nine exoplanets are ideally placed to observe transits of Earth.

• [Better understanding of 'one of the most complex organs' for better lung treatments](#) [周五, 08 9月 02:45]

Details of lung cell molecular pathways that promote or inhibit tissue regeneration have been reported by researchers. Their aim is to find new ways to treat lung disorders.

• [Interrupting Parkinson's disease](#) [周五, 08 9月 02:30]

Scientists have identified a toxic cascade that leads to neuronal degeneration in patients with Parkinson's disease and figured out how to interrupt it, reports a study. Intervening with an antioxidant early in the disease process may break the degenerative cycle and improve neuron function in Parkinson's, the study showed. Parkinson's is second most common neurodegenerative disorder.

• [Mediterranean-style diet may eliminate need for reflux medications](#) [周五, 08 9月 02:30]

A plant-based, Mediterranean-style diet has been shown to provide the same medical benefits for treating laryngopharyngeal reflux as popular reflux medications, according to new research.

- [**Ship exhaust makes oceanic thunderstorms more intense**](#) [周五, 08 9月 02:27]

Thunderstorms directly above two of the world's busiest shipping lanes are significantly more powerful than storms in areas of the ocean where ships don't travel, according to new research.

- [**Why are fossilized hairs so rare?**](#) [周五, 08 9月 02:27]

When it comes to preserving body parts, fossilized hair is rare--five times rarer than feathers--despite being an important tool for understanding ancient species. This finding has researchers trying to determine if the lack of hair in the fossil record has to do with physical traits that might make it more difficult for hair to fossilize, or an issue with scientists' collection techniques that could lead to them missing important finds.

- [**Cilia: 'The bouncer' of bacteria**](#) [周五, 08 9月 02:27]

A new paper elucidates the active role of cilia in regulating flow for bacteria filtering and enhancing chemical communication.

- [**Eighteenth century nautical charts reveal coral loss**](#) [周五, 08 9月 02:27]

Centuries-old nautical charts, mapped by long-deceased sailors to avoid shipwrecks, have been used by modern scientists to study loss of coral reefs. A new study compared early British charts to modern coral habitat maps to understand changes to reef environments.

- [**Courts' critical, underappreciated role in climate policy**](#) [周五, 08 9月 02:26]

Both climate lawsuits and their reliance on scientific data have increased over the past decade, the most extensive study to date shows.

- [**Circadian clock's inner gears**](#) [周五, 08 9月 02:26]

A set of core clock proteins organize themselves into a handful of molecular machines that control the precise workings of the body's circadian rhythms, new research has found.

- [**Discovery of chromosome motor supports DNA**](#)

[loop extrusion](#) [周五, 08 9月 02:26]

It is one of the mysteries in biology: how does a cell neatly distribute its replicated DNA between two daughter cells? Scientists are split into two camps: the first argues that condensing works like a hook, tying DNA together. The other camp thinks that the ring-shaped protein pulls the DNA inwards to create a loop. Now researchers from give the 'loop-extrusion camp' a boost: condensin does indeed have the putative 'motor power' on board.

[Researchers closer to uncovering a new feature in heart failure](#) [周五, 08 9月 01:29]

Each cell in the average human body contains 23 pairs of chromosomes, with four telomeres on each pair. Telomeres cover the end of the chromosome, protecting it from deterioration or fusion with adjacent chromosomes. While there is a length range for classifying a healthy telomere, researchers found, for the first time ever, that people with heart failure have shorter telomeres within the cells that make up the heart muscle (known as cardiomyocytes).

[Human skin cells transformed directly into motor neurons](#) [周五, 08 9月 01:28]

Scientists have converted skin cells from healthy adults directly into motor neurons without going through a stem cell state. The technique makes it possible to study motor neurons of the human central nervous system in the lab. Unlike commonly studied mouse motor neurons, human motor neurons growing in the lab would be a new tool since researchers can't take samples of these neurons from living people but can easily take skin samples.

[Shortened telomeres linked to dysfunction in Duchenne muscular dystrophy, researchers find](#) [周五, 08 9月 01:25]

A discovery about muscular dystrophy disorders has been made that suggests new possibilities for treatment. Researchers found that stem cells in the muscles of muscular dystrophy patients may, at an early age, lose their ability to regenerate new muscle, due to shortened telomeres.

[**New acid-free magnet recycling process created**](#)

[周五, 08 9月 01:25]

A new rare-earth magnet recycling process dissolves magnets in an acid-free solution and recovers high purity rare earth elements.

[**Curious properties: Researchers analyze flocking behavior on curved surfaces**](#)

[周五, 08 9月 01:25]

A murmuration of starlings. The phrase reads like something from literature or the title of an arthouse film. In fact, it is meant to describe the phenomenon that results when hundreds, sometimes thousands, of these birds fly in swooping, intricately coordinated patterns through the sky.

[**SNAP benefits aren't enough to afford a healthy diet**](#)

[周五, 08 9月 00:56]

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[**Producing malaria treatment at large scales**](#)

[周五, 08 9月 00:56]

For the first time, production of the anti-malarial drug artemisinin has been achieved at an industrial scale using genetically engineered moss. This offers new hope for stabilizing artemisinin supplies and combatting malaria.

[**Lignin: Much more valuable than just as waste**](#)

[周五, 08 9月 00:03]

Lignin, a substance considered as a waste product in biomass and ethanol production, will now reach its proper value as bio-oil in new products.

[**Aspirin tablets help unravel basic physics**](#)

[周五, 08 9月 00:03]

Aspirin in form of small crystallites provides new insight into delicate motions of electrons and atomic nuclei. Set into molecular vibration by strong ultrashort far-infrared (terahertz) pulses, the nuclei oscillate much

faster than for weak excitation. They gradually return to their intrinsic oscillation frequency, in parallel to the picosecond decay of electronic motions. An analysis of the terahertz waves radiated from the moving particles by in-depth theory reveals the strongly coupled chara...

- [**What makes alcoholics drink? Research shows it's more complex than supposed**](#) [周五, 08 9月 00:02]

What makes alcoholics drink? New research has found that in both men and women with alcohol dependence, the major factor predicting the amount of drinking seems to be a question of immediate mood. Surprisingly men with a history of depression were drinking less often than men who were not depressed. This probably means that alcohol treatment needs to be individually tailored.

- [**Scanning tunneling microscopy measurements identify active sites on catalyst surfaces**](#) [周五, 08 9月 00:02]

Chemistry live: using a scanning tunneling microscope, researchers were able for the very first time to witness in detail the activity of catalysts during an electrochemical reaction. The measurements show how the surface structure of the catalysts influences their activity. The new analysis method can now be used to improve catalysts for the electrochemical industry.

- [**'Rubber material' discovered that could lead to scratch-proof paint for car**](#) [周五, 08 9月 00:02]

A stretchy miracle material has been discovered that could be used to create highly resistant smart devices and scratch-proof paint for cars, report investigators.

- [**Direct evidence of sea level 'fingerprints' discovered**](#) [周五, 08 9月 00:02]

The first observation of sea level 'fingerprints' -- tell-tale differences in sea level rise around the world in response to changes in continental water and ice sheet mass -- has been reported by researchers.

- [**Cellular tango: Immune and nerve cells work**](#)

[together to fight gut infections](#) [周四, 07 9月 23:24]

Nerve cells in the gut play a crucial role in the body's ability to marshal an immune response to infection, according to a new study.

• [Climate change for aliens](#) [周四, 07 9月 23:24]

For more than 50 years, the Kardashev scale has been the gold standard for classifying hypothetical 'exo-civilizations' by their ability to harness energy. A team of researchers has devised a new system that takes into account the impacts of that energy use.

• [Pluto features given first official names](#) [周四, 07 9月 23:24]

The Working Group for Planetary System Nomenclature of the International Astronomical Union has officially approved the naming of 14 features on the surface of Pluto. These are the first geological features on the planet to be named following the close flyby by the New Horizons spacecraft in July 2015.

• [Nutrition has benefits for brain network organization](#) [周四, 07 9月 23:24]

Nutrition has been linked to cognitive performance, but researchers have not pinpointed what underlies the connection. A new study found that monounsaturated fatty acids -- a class of nutrients found in olive oils, nuts and avocados -- are linked to general intelligence, and that this relationship is driven by the correlation between MUFAs and the organization of the brain's attention network.

• [3-D-printed biomaterials that degrade on demand](#) [周四, 07 9月 23:24]

The temporary structures, which can be degraded away with a biocompatible chemical trigger, could be useful in fabricating microfluidic devices, creating biomaterials that respond dynamically to stimuli and in patterning artificial tissue.

• [Link between positive emotions and health depends on culture](#) [周四, 07 9月 23:24]

Positive emotions are often seen as critical aspects of healthy living, but

new research suggests that the link between emotion and health outcomes may vary by cultural context. The findings show that experiencing positive emotions is linked with better cardiovascular health in the US but not in Japan.

- [**Using antidepressants during pregnancy may affect your child's mental health**](#) [周四, 07 9月 23:24]

The use of antidepressants during pregnancy increases the risk of your child being diagnosed with a psychiatric disorder later in life, a study of almost one million Danish children shows. However, heritability also plays a part, according to the researchers.

- [**Biomarkers as predictive of sepsis as lengthy patient monitoring**](#) [周四, 07 9月 23:23]

One measurement of key biomarkers in blood that characterize sepsis can give physicians as much information as hours of monitoring symptoms, a new study found.

- [**You are what you think you eat**](#) [周四, 07 9月 22:43]

Despite eating the same breakfast, made from the same ingredients, people consumed more calories throughout the day when they believed that one of the breakfasts was less substantial than the other, investigators have found.

- [**Fifty–fifty split best for children of divorce, study suggests**](#) [周四, 07 9月 22:43]

Preschool children in joint physical custody have less psychological symptoms than those who live mostly or only with one parent after a separation. In a new study of 3,656 children, researchers show that 3–5-year-olds living alternately with their parents after a separation show less behavioral problems and psychological symptoms than those living mostly or only with one of the parents.

- [**Smartphone screen technology used to trick harmful bacteria**](#) [周四, 07 9月 22:41]

Conducting plastics found in smartphone screens can be used to trick the

metabolism of pathogenic bacteria, report scientists. By adding or removing electrons from the plastic surface, bacteria may be tricked into growing more or less. The method may find widespread use in preventing bacterial infections in hospitals or improve effectiveness in wastewater management.

- [**Academic argues for changes in the laws governing modern warfare**](#) [周四, 07 9月 22:41]

Modern warfare and terrorist acts often sees the killing of innocent civilians which presents complex challenges for the international legal framework governing the conduct of armed conflicts, explains a new report.

- [**Genes behind gestation length, preterm delivery identified**](#) [周四, 07 9月 22:39]

The genes that regulate gestational length and the likelihood of preterm delivery, have been identified in a study involving more than 50,000 women. An article describes the scientific breakthrough that can lead to improved health and survival among children.

- [**Mixing and matching yeast DNA**](#) [周四, 07 9月 22:38]

Scientists show molecular factors that determine why some regions in yeast chromosomes are apt for remodeling, while other regions stay faithful during cell replication.

- [**Proteins keep a grip on cells**](#) [周四, 07 9月 22:38]

Scientists have revealed new structural information on the integrin-laminin interaction. These findings provide important insights on cellular interactions that promote cell growth, differentiation, and migration.

- [**New dental imaging method uses squid ink to fish for gum disease**](#) [周四, 07 9月 22:24]

Squid ink could one day make getting checked for gum disease at the dentist less tedious and even painless. By combining squid ink with light and ultrasound, a team led by engineers has developed a new dental imaging method to examine a patient's gums that is noninvasive, more

comprehensive and more accurate than the state of the art.

- [**Hidden Inca treasure: Remarkable new tree genus discovered in the Andes**](#) [周四, 07 9月 22:24]

Hidden in plain sight -- that's how researchers describe their discovery of a new genus of large forest tree commonly found, yet previously scientifically unknown, in the tropical Andes.

- [**Ultraviolet light from superluminous supernova key to revealing explosion mechanism**](#) [周四, 07 9月 22:24]

An international team of researchers has discovered a way to use UV light from superluminous supernovae to uncover its explosion mechanism, and used it to identify Gaia16apd as a shock-interacting supernova, reports a new study.

- [**Sometimes you shouldn't say sorry**](#) [周四, 07 9月 22:24]

Being socially rejected can be a painful emotional experience -- but being told sorry may not soften the blow, finds a new study. Contrary to popular belief, apologies increase hurt feelings and the need to express forgiveness, but do not increase feelings of forgiveness, for the person being rebuffed.

- [**Fast magnetic writing of data**](#) [周四, 07 9月 22:24]

Magnetic data storage has long been considered too slow for use in the working memories of computers. Researchers have now investigated a technique by which magnetic data writing can be done considerably faster and using less energy.

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When electrons ride a wave: Optimum conditions for laser plasma acceleration -- ScienceDaily

Conventional electron accelerators have become an indispensable tool in modern research. The extremely bright radiation generated by synchrotrons, or free electron lasers, provides us with unique insights into matter at the atomic level. But even the smallest versions of these super microscopes are the size of a soccer field. Laser plasma acceleration could offer an alternative: with a much smaller footprint and much higher peak currents it could be the basis for the next generation of compact light sources. So far, the challenge with laser accelerators has been to create a reliable and stable electron beam, which is the prerequisite for possible applications. Physicists at the Helmholtz-Zentrum Dresden-Rossendorf (HZDR) have now developed a method to increase both beam stability and quality.

The basic principle of laser acceleration seems quite simple: A bundled, ultra-strong laser beam hits a trace

of gas, which instantly creates plasma -- an ionized state of matter or, in other words, a whirling mix of charged particles. The power of the light pulse pushes electrons away from their parent ions, creating a sort of bubble-like structure with a strong electric field in the plasma. This field, which the laser pulse drags behind itself like a stern wave, traps the electrons, accelerating them to nearly the speed of light. "These speedy particles allow us to generate x-rays," Dr. Arie Irman from the HZDR Institute of Radiation Physics explains the purpose of the procedure. "For instance, when we make these electron bundles collide with another laser beam, the impact generates bright, ultra-short x-ray flashes -- an immensely valuable research tool for examining extreme states of matter."

Right Time + Right Place = Perfect Acceleration

The strength of the secondary radiation greatly depends on the particles' electrical current. The current, in turn, is mostly determined by the number of electrons fed into the process. Laser-powered acceleration therefore holds great potential, because it reaches significantly higher peak currents in comparison with the conventional method. However, as physicist Jurjen Pieter Couperus points out, the so-called beam loading

effect kicks in: "These higher currents create an electric self-field strong enough to superimpose and disturb the laser-driven wave, distorting thereby the beam. The bundle is stretched out and not accelerated properly. The electrons therefore have different energies and quality levels." But in order to use them as a tool for other experiments, each beam must have the same parameters. "The electrons have to be in the right place at the right time," summarizes Couperus, who is a Ph.D. candidate in Irman's team.

Together with other colleagues at the HZDR, the two researchers were the first to demonstrate how the beam loading effect can be exploited for improved beam quality. They add a bit of nitrogen to the helium at which the laser beam is usually directed. "We can control the number of electrons we feed into the process by changing the concentration of the nitrogen," Irman explains. "In our experiments, we found out that conditions are ideal at a charge of about 300 picocoulomb. Any deviation from it -- if we add more or fewer electrons to the wave -- results in a broader spread of energy, which impairs beam quality."

As the physicists' calculations have shown, experiments under ideal conditions yield peak currents

of about 50 kiloamperes. "To put this in context, only about 0.6 kiloamperes flow through the standard overhead line for a German high-speed train," Jurjen Pieter Couperus explains. He is confident that they can beat their own record: "Using our findings and a laser pulse in the petawatt range, which our high-intensity laser DRACO can achieve, we should be able to generate a high-quality electron beam with peak currents of 150 kiloamperes. That would exceed modern large-scale research accelerators by about two orders of magnitude." An achievement which the researchers from Dresden believe would pave the way for the next generation of compact radiation sources.

Story Source:

Materials provided by **[Helmholtz-Zentrum Dresden-Rossendorf](#)**. *Note: Content may be edited for style and length.*

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Scientists unravel new insights into promising semiconductor material -- ScienceDaily

Researchers from the National University of Singapore (NUS) have established new findings on the properties of two-dimensional molybdenum disulfide (MoS_2), a widely studied semiconductor of the future.

In two separate studies led by Professor Andrew Wee and Assistant Professor Andriwo Rusydi from the Department of Physics at the NUS Faculty of Science, the researchers uncovered the role of oxygen in MoS_2 , and a novel technique to create multiple tunable, inverted optical band gaps in the material. These novel insights deepen the understanding of the intrinsic properties of MoS_2 which could potentially transform its applications in the semiconductor industry.

The studies were published in scientific journals *Physical Review Letters* and *Nature Communications* respectively.

MoS₂ -- An alternative to graphene

MoS₂ is a semiconductor-like material that exhibits desirable electronic and optical properties for the development and enhancement of transistors, photodetectors and solar cells.

Prof Wee explained, "MoS₂ holds great industrial importance. With an atomically thin two-dimensional structure and the presence of a 1.8eV energy band gap, MoS₂ is a semiconductor that can offer broader applications than graphene which lacks a band gap."

Presence of oxygen alters the electronic and optical properties of MoS₂

In the first study published in *Physical Review Letters* on 16 August 2017, NUS researchers conducted an in-depth analysis which revealed that the energy storage capacity or dielectric function of MoS₂ can be altered using oxygen.

The team observed that MoS₂ displayed a higher dielectric function when exposed to oxygen. This new knowledge shed light on how adsorption and

desorption of oxygen by MoS₂ can be employed to modify its electronic and optical properties to suit different applications. The study also highlights the need for adequate consideration of extrinsic factors that may affect the properties of the material in future research.

The first author of this paper is Dr Pranjali Kumar Gogoi from the Department of Physics at NUS Faculty of Science.

MoS₂ can possess two tunable optical band gaps

In the second study published in *Nature Communications* on 7 September 2017, the team of NUS researchers discovered that as opposed to conventional semiconductors which typically have only one optical band gap, electron doping of MoS₂ on gold can create two unusual optical band gaps in the material. In addition, the two optical bandgaps in MoS₂ are tunable via a simple, straight forward annealing process.

The research team also identified that the tunable optical band gaps are induced by strong-charge lattice coupling as a result of the electron doping.

The first author of this second paper is Dr Xinmao Yin from the Department of Physics at NUS Faculty of Science.

The research findings from the two studies lend insights to other materials that possess similar structure with MoS₂.

"MoS₂ falls under a group of material known as the two-dimensional transitional metal dichalcogenides (2D-TMDs) which are of great research interest because of their potential industrial applications. The new knowledge from our studies will assist us in unlocking the possibilities of 2D-TMD-based applications such as the fabrication of 2D-TMD-based field effect transistors," said Asst Prof Rusydi.

Leveraging the findings of these studies, the researchers will apply similar studies to other 2D-TMDs and to explore different possibilities of generating new, valuable properties in 2D-TMDs that do not exist in nature.

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An officer and a gentlewoman from the Viking army in Birka -- ScienceDaily

War was not an activity exclusive to males in the Viking world. A new study conducted by researchers at Stockholm and Uppsala Universities shows that women could be found in the higher ranks at the battlefield.

Charlotte Hedenstierna-Jonson, who led the study, explains: "What we have studied was not a Valkyrie from the sagas but a real life military leader, that happens to be a woman."

The study was conducted on one of the most iconic graves from the Viking Age. It holds the remains of a warrior surrounded by weapons, including a sword, armour-piercing arrows, and two horses. There were also a full set of gaming pieces and a gaming board. "The gaming set indicates that she was an officer," says Charlotte, "someone who worked with tactics and strategy and could lead troops in battle." The warrior was buried in the Viking town of Birka during the mid-10th century. Isotope analyses confirm an itinerant life

style, well in tune with the martial society that dominated 8th to 10th century northern Europe.

Anna Kjellström, who also participated in the study, has taken an interest in the burial previously. "The morphology of some skeletal traits strongly suggests that she was a woman, but this has been the type specimen for a Viking warrior for over a century why we needed to confirm the sex in any way we could."

And this is why the archaeologists turned to genetics, to retrieve a molecular sex identification based on X and Y chromosomes. Such analyses can be quite useful according to Maja Krezwinska: "Using ancient DNA for sex identification is useful when working with children for example, but can also help to resolve controversial cases such as this one." Maja was thus able to confirm the morphological sex identification with the presence of X chromosomes but the lack of a Y chromosome.

Jan Storå, who holds the senior position on this study, reflects over the history of the material: "This burial was excavated in the 1880ies and has served as a model of a professional Viking warrior ever since. Especially, the grave-goods cemented an interpretation

for over a century." It was just assumed she was a man through all these years. "The utilization of new techniques, methods, but also renewed critical perspectives, again, shows the research potential and scientific value of our museum collections."

The study is a part of the ongoing ATLAS project, which is a joint effort by Stockholm University and Uppsala University, supported by Riksbankens Jubileumsfond (The Swedish Foundation for Humanities and Social Sciences) and Vetenskapsrådet (The Swedish Research Council), to investigate the genetic history of Scandinavia.

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Immune cells help fat deal with environmental challenges -- ScienceDaily

Immunosuppressive regulatory T-cells play an important role in the functioning of adipose tissue. This is the discovery of scientists from the Helmholtz Diabetes Center (HDC) at Helmholtz Zentrum München and the Technical University of Munich (TUM). Their findings are published in the journal *Cell Metabolism*.

The number of obese people as well as those suffering from type 2 diabetes is increasing worldwide. Both disorders are associated with metabolic changes including amplified inflammatory responses in adipose tissue. "Previous studies have indicated that immunosuppressive regulatory T-cells -- or Tregs for short -- play an important role in these processes," explains the leader of the study Dr. Carolin Daniel, group leader at the Institute for Diabetes Research (IDF) of the Helmholtz Zentrum München and a scientist in the German Center for Diabetes Research

(DZD). "We now wanted to examine how these immune cells might support adipose function in more detail."

In an experimental model, Daniel, together with co-first authors Dr. Stefanie Kälin and Maike Becker and colleagues, determined that the number of Tregs in adipose tissue increases in response to different environmental stimuli. These stimuli included a short-term cold treatment, stimulation of the sympathetic nervous system (β -adrenoreceptors) or short-term high-caloric exposure. "All these stimuli supported those immunosuppressive cells directly in the adipose tissue," says Becker.

Fat burning activated

The magnitude of the increase in Tregs differed depending on the type of adipose tissue: it was particularly pronounced in brown fat, somewhat weaker in subcutaneous fat and weakest in visceral fat. To investigate the specific function of Tregs, the researchers determined how gene expression changes in adipose tissue. Especially in brown fat, genes were activated that promote heat production (thermogenesis) as well as those that are used for the breakdown

(lipolysis) and burning (oxidation) of fatty acids. Subsequent experiments revealed that the signalling molecules Stat6 und Pten play a vital role in this process.

"A better understanding of the immunological mechanisms involved in the target tissue will be critical for the development of personalized interventions in order to improve adipose tissue function during obesity and diabetes," says the leader of the study Carolin Daniel. "Our experiments show for the first time that Tregs can support fat depots in dealing with environmental challenges."

"Our findings highlight the complex interactions between our body and the environment. We have known for a while that hormones play a key role here - - but now have to accept that immune cells may be just as important for a balanced metabolism," comments Prof. Dr. Matthias Tschöp. He is the scientific director of the HDC at Helmholtz Zentrum München and holds the chair for metabolic diseases at the TUM. "These insights therefore help us tremendously with designing more efficient ways to therapeutically optimize when and how to store calories."

Prof. Dr. Matthias Mann from the Max Planck Institute of Biochemistry in Martinsried as well as the group of PD Dr. Benno Weigmann from Universitätsklinikum Erlangen also made significant contributions to the study.

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All Top News

Top science stories featured on ScienceDaily's home page.

- [**Ship exhaust makes oceanic thunderstorms more intense**](#) [周五, 08 9月 02:27]

Thunderstorms directly above two of the world's busiest shipping lanes are significantly more powerful than storms in areas of the ocean where ships don't travel, according to new research.

- [**Human skin cells transformed directly into motor neurons**](#) [周五, 08 9月 01:28]

Scientists have converted skin cells from healthy adults directly into motor neurons without going through a stem cell state. The technique makes it possible to study motor neurons of the human central nervous system in the lab. Unlike commonly studied mouse motor neurons, human motor neurons growing in the lab would be a new tool since researchers can't take samples of these neurons from living people but can easily take skin samples.

- [**Direct evidence of sea level 'fingerprints' discovered**](#) [周五, 08 9月 00:02]

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The temporary structures, which can be degraded away with a biocompatible chemical trigger, could be useful in fabricating microfluidic devices, creating biomaterials that respond dynamically to stimuli and in patterning artificial tissue.

[Intermittent electrical brain stimulation improves memory](#) [周四, 07 9月 22:23]

Intermittent electrical stimulation of an area deep inside the brain that degenerates in Alzheimer's appears to improve working memory, scientists report. Conversely, continuous deep brain stimulation, like the type used for Parkinson's and currently under study in humans with Alzheimer's, impairs memory, according to study.

[How monkey fights grow](#) [周四, 07 9月 21:36]

New research finds evidence for a complicated structure behind primate conflict. It is not individuals who control the length of fights, but the relationships between pairs of individuals.

[Emoji fans take heart: Scientists pinpoint 27 states of emotion](#) [周四, 07 9月 21:36]

The Emoji Movie, in which the protagonist can't help but express a wide variety of emotions instead of the one assigned to him, may have gotten something right. A new study challenges a long-held assumption in psychology that most human emotions fall within the universal

categories of happiness, sadness, anger, surprise, fear and disgust.

• [**Monkey sees ... monkey knows?**](#) [周四, 07 9月 01:55]

Monkeys had higher confidence in their ability to remember an image when the visual contrast was high. These kinds of metacognitive illusions -- false beliefs about how we learn or remember best -- are shared by humans, leading brain and cognitive scientists to believe that metacognition could have an evolutionary basis.

• [**Researchers report new way to make dissolving electronics**](#) [周四, 07 9月 01:55]

Researchers have reported a new type of electronic device that can be triggered to dissolve through exposure to water molecules in the atmosphere. The work holds promise for eco-friendly disposable personal electronics and biomedical devices that dissolve within the body.

• [**Accretion-powered pulsar reveals unique timing glitch**](#) [周三, 06 9月 22:36]

The discovery of the largest timing irregularity yet observed in a pulsar is the first confirmation that pulsars in binary systems exhibit the strange phenomenon known as a 'glitch.'

• [**Biologists slow aging, extend lifespan of fruit flies**](#) [周三, 06 9月 22:34]

In research that potentially could delay the onset of Parkinson's disease, Alzheimer's disease, cancer, stroke, cardiovascular disease, and other diseases of aging, biologists have produced a genetic one-two punch that significantly slowed aging and improved health in the middle-aged fruit flies they studied.

• [**Something to sneeze about: Democratic voting in African wild dog packs**](#) [周三, 06 9月 08:29]

Scientists studying African wild dogs in Botswana have found members of this endangered species use sneezes to vote on when the pack will move off and start hunting.

• [**Newly-discovered semiconductor dynamics may help improve energy efficiency**](#) [周三, 06 9月 08:29]

Researchers examining the flow of electricity through semiconductors have uncovered another reason these materials seem to lose their ability to carry a charge as they become more densely 'doped.'

• [**Humans still evolving, large-scale study of genetic data shows**](#) [周三, 06 9月 02:55]

In a study analyzing the genomes of 210,000 people in the United States and Britain, researchers have found that the genetic variants linked to Alzheimer's disease and heavy smoking are less frequent in people with longer lifespans, suggesting that natural selection is weeding out these unfavorable variants in both populations.

• [**Eat fat, live longer?**](#) [周三, 06 9月 02:55]

As more people live into their 80s and 90s, researchers have delved into the issues of health and quality of life during aging. A recent mouse study sheds light on those questions by demonstrating that a high fat, or ketogenic, diet not only increases longevity, but improves physical strength.

• [**Swings in dad's testosterone affects the family -- for better or worse -- after baby arrives**](#) [周三, 06 9月 02:55]

Testosterone levels are a key factor in a family's health and happiness after a newborn arrives. Researchers have found that a drop can signal postpartum depression in dad, and a spike may be a sign of aggression.

• [**Cooling system works without electricity**](#) [周三, 06 9月 02:55]

Scientists cooled water without electricity by sending excess heat where it won't be noticed -- space. The specialized optical surfaces they developed are a major step toward applying this technology to air conditioning and refrigeration.

• [**Crab nebula in the limelight: Unified model for the entire radiation spectrum**](#) [周三, 06 9月 00:48]

The origin of cosmic rays, high-energy particles from outer space

constantly impacting on Earth, is among the most challenging open questions in astrophysics. Now research sheds new light on the origin of those energetic particles.

- [**Contagious yawning more closely associated with perceptual sensitivity than empathy**](#) [周三, 06 9月 00:33]

Contrary to common belief that the yawning contagion is associated with empathy, it is in fact, more likely that perceptual sensitivity is to blame, research suggests.

- [**Discovery of boron on Mars adds to evidence for habitability**](#) [周三, 06 9月 00:32]

The discovery of boron on Mars gives scientists more clues about whether life could have ever existed on the planet, according to a new paper.

- [**'Extreme' telescopes find the second-fastest-spinning pulsar**](#) [周三, 06 9月 00:32]

By following up on mysterious high-energy sources mapped by NASA's Fermi Gamma-ray Space Telescope, a Netherlands-based radio telescope has discovered a new pulsar, the second fastest-spinning known.

- [**CRISPR technology used to change flower color**](#) [周三, 06 9月 00:32]

In a world-first, scientists have used the revolutionary CRISPR, or CRISPR/Cas9, genome-editing tool to change flower color in an ornamental plant.

- [**The sniff test of self-recognition confirmed: Dogs have self-awareness**](#) [周二, 05 9月 23:13]

A new research study used a sniff-test to evaluate the ability of dogs to recognize themselves. The experiment confirms the hypothesis of dogs' self-cognition proposed last year.

- [**Zika virus kills brain cancer stem cells**](#) [周二, 05 9月 21:36]

While Zika virus causes devastating damage to the brains of developing

fetuses, it one day may be an effective treatment for glioblastoma, a deadly form of brain cancer. New research shows that the virus kills brain cancer stem cells, the kind of cancer cells most resistant to standard treatments.

• [**Was the primordial soup a hearty pre-protein stew?**](#) [周二, 05 9月 21:36]

How proteins evolved billions of years ago, when Earth was devoid of life, has stumped many a scientist. A little do-si-do between amino acids and their chemical lookalikes may have done the trick. Evolutionary chemists tried it and got results by the boatload.

• [**Mobile women were key to cultural exchange in Stone Age and Bronze Age Europe**](#) [周二, 05 9月 03:10]

At the end of the Stone Age and in the early Bronze Age, families were established in a surprising manner in the Lechtal, south of Augsburg, Germany. The majority of women probably came from Bohemia or Central Germany, while men usually remained in the region of their birth. This so-called patrilocal pattern combined with individual female mobility persisted over a period of 800 years during the transition from the Neolithic to the Early Bronze Age.

• [**Face value: Brain's ability to recognize faces is shaped through repeated exposure, study suggests**](#) [周二, 05 9月 00:04]

Scientists have long deemed the ability to recognize faces innate for people and other primates -- something our brains just know how to do immediately from birth. However, the findings of a new study cast doubt on this longstanding view.

• [**More 'losers' than 'winners' predicted for Southern Ocean seafloor animals**](#) [周二, 05 9月 00:04]

A new study of the marine invertebrates living in the seas around Antarctica reveals there will be more 'losers' than 'winners' over the next century as the Antarctic seafloor warms.

[Stellar corpse sheds light on origin of cosmic](#)

[rays](#) [周一, 04 9月 21:34]

New research revealed that the entire zoo of electromagnetic radiation streaming from the Crab nebula -- one of the most iconic objects in the sky -- has its origin in one population of electrons and must be produced in a different way than scientists have traditionally thought. The results have implications for our understanding of how cosmic rays attain their incredible energies.

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

- [**Folic acid may mitigate autism risk from pesticides**](#) [周六, 09 9月 08:55]

Researchers have shown that mothers who take recommended amounts of folic acid around conception might reduce their children's pesticide-related autism risk.

- [**Immune cells help fat deal with environmental challenges**](#) [周六, 09 9月 08:55]

Immunosuppressive regulatory T-cells play an important role in the functioning of adipose tissue.

- [**Better understanding of 'one of the most complex organs' for better lung treatments**](#) [周五, 08 9月 02:45]

Details of lung cell molecular pathways that promote or inhibit tissue regeneration have been reported by researchers. Their aim is to find new ways to treat lung disorders.

- [**Interrupting Parkinson's disease**](#) [周五, 08 9月 02:30]

Scientists have identified a toxic cascade that leads to neuronal degeneration in patients with Parkinson's disease and figured out how to interrupt it, reports a study. Intervening with an antioxidant early in the disease process may break the degenerative cycle and improve neuron function in Parkinson's, the study showed. Parkinson's is second most common neurodegenerative disorder.

- [**Mediterranean-style diet may eliminate need for**](#)

[reflux medications](#) [周五, 08 9月 02:30]

A plant-based, Mediterranean-style diet has been shown to provide the same medical benefits for treating laryngopharyngeal reflux as popular reflux medications, according to new research.

• [Cilia: 'The bouncer' of bacteria](#) [周五, 08 9月 02:27]

A new paper elucidates the active role of cilia in regulating flow for bacteria filtering and enhancing chemical communication.

• [Circadian clock's inner gears](#) [周五, 08 9月 02:26]

A set of core clock proteins organize themselves into a handful of molecular machines that control the precise workings of the body's circadian rhythms, new research has found.

• [Discovery of chromosome motor supports DNA loop extrusion](#) [周五, 08 9月 02:26]

It is one of the mysteries in biology: how does a cell neatly distribute its replicated DNA between two daughter cells? Scientists are split into two camps: the first argues that condensing works like a hook, tying DNA together. The other camp thinks that the ring-shaped protein pulls the DNA inwards to create a loop. Now researchers from give the 'loop-extrusion camp' a boost: condensin does indeed have the putative 'motor power' on board.

• [Researchers closer to uncovering a new feature in heart failure](#) [周五, 08 9月 01:29]

Each cell in the average human body contains 23 pairs of chromosomes, with four telomeres on each pair. Telomeres cover the end of the chromosome, protecting it from deterioration or fusion with adjacent chromosomes. While there is a length range for classifying a healthy telomere, researchers found, for the first time ever, that people with heart failure have shorter telomeres within the cells that make up the heart muscle (known as cardiomyocytes).

• [Human skin cells transformed directly into motor neurons](#) [周五, 08 9月 01:28]

Scientists have converted skin cells from healthy adults directly into motor neurons without going through a stem cell state. The technique makes it possible to study motor neurons of the human central nervous system in the lab. Unlike commonly studied mouse motor neurons, human motor neurons growing in the lab would be a new tool since researchers can't take samples of these neurons from living people but can easily take skin samples.

[Shortened telomeres linked to dysfunction in Duchenne muscular dystrophy, researchers find](#)

[周五, 08 9月 01:25]

A discovery about muscular dystrophy disorders has been made that suggests new possibilities for treatment. Researchers found that stem cells in the muscles of muscular dystrophy patients may, at an early age, lose their ability to regenerate new muscle, due to shortened telomeres.

[SNAP benefits aren't enough to afford a healthy diet](#)

[周五, 08 9月 00:56]

A new study finds that the Supplemental Nutrition Assistance Program (SNAP), formerly known as Food Stamps, only covers 43-60 percent of what it costs to consume a diet consistent with federal dietary guidelines for what constitutes a healthy diet. The study highlights the challenges lower-income households face in trying to eat a healthy diet.

[Producing malaria treatment at large scales](#)

[周五, 08 9月 00:56]

For the first time, production of the anti-malarial drug artemisinin has been achieved at an industrial scale using genetically engineered moss. This offers new hope for stabilizing artemisinin supplies and combatting malaria.

[What makes alcoholics drink? Research shows it's more complex than supposed](#)

[周五, 08 9月 00:02]

What makes alcoholics drink? New research has found that in both men and women with alcohol dependence, the major factor predicting the amount of drinking seems to be a question of immediate mood. Surprisingly men with a history of depression were drinking less often

than men who were not depressed. This probably means that alcohol treatment needs to be individually tailored.

- [**Cellular tango: Immune and nerve cells work together to fight gut infections**](#) [周四, 07 9月 23:24]

Nerve cells in the gut play a crucial role in the body's ability to marshal an immune response to infection, according to a new study.

- [**Nutrition has benefits for brain network organization**](#) [周四, 07 9月 23:24]

Nutrition has been linked to cognitive performance, but researchers have not pinpointed what underlies the connection. A new study found that monounsaturated fatty acids -- a class of nutrients found in olive oils, nuts and avocados -- are linked to general intelligence, and that this relationship is driven by the correlation between MUFAs and the organization of the brain's attention network.

- [**3-D-printed biomaterials that degrade on demand**](#) [周四, 07 9月 23:24]

The temporary structures, which can be degraded away with a biocompatible chemical trigger, could be useful in fabricating microfluidic devices, creating biomaterials that respond dynamically to stimuli and in patterning artificial tissue.

- [**Link between positive emotions and health depends on culture**](#) [周四, 07 9月 23:24]

Positive emotions are often seen as critical aspects of healthy living, but new research suggests that the link between emotion and health outcomes may vary by cultural context. The findings show that experiencing positive emotions is linked with better cardiovascular health in the US but not in Japan.

- [**Using antidepressants during pregnancy may affect your child's mental health**](#) [周四, 07 9月 23:24]

The use of antidepressants during pregnancy increases the risk of your child being diagnosed with a psychiatric disorder later in life, a study of

almost one million Danish children shows. However, heritability also plays a part, according to the researchers.

- [**Biomarkers as predictive of sepsis as lengthy patient monitoring**](#) [周四, 07 9月 23:23]

One measurement of key biomarkers in blood that characterize sepsis can give physicians as much information as hours of monitoring symptoms, a new study found.

- [**Connection between low oxygen levels, human gene discovered**](#) [周四, 07 9月 23:23]

Researchers have established a link between hypoxia, a condition that reduces the flow of oxygen to tissues, and HOTAIR, a noncoding RNA or molecule that has been implicated in several types of cancer.

- [**You are what you think you eat**](#) [周四, 07 9月 22:43]

Despite eating the same breakfast, made from the same ingredients, people consumed more calories throughout the day when they believed that one of the breakfasts was less substantial than the other, investigators have found.

- [**Fifty–fifty split best for children of divorce, study suggests**](#) [周四, 07 9月 22:43]

Preschool children in joint physical custody have less psychological symptoms than those who live mostly or only with one parent after a separation. In a new study of 3,656 children, researchers show that 3–5-year-olds living alternately with their parents after a separation show less behavioral problems and psychological symptoms than those living mostly or only with one of the parents.

- [**Smartphone screen technology used to trick harmful bacteria**](#) [周四, 07 9月 22:41]

Conducting plastics found in smartphone screens can be used to trick the metabolism of pathogenic bacteria, report scientists. By adding or removing electrons from the plastic surface, bacteria may be tricked into growing more or less. The method may find widespread use in

preventing bacterial infections in hospitals or improve effectiveness in wastewater management.

- [**Genes behind gestation length, preterm delivery identified**](#) [周四, 07 9月 22:39]

The genes that regulate gestational length and the likelihood of preterm delivery, have been identified in a study involving more than 50,000 women. An article describes the scientific breakthrough that can lead to improved health and survival among children.

- [**Mixing and matching yeast DNA**](#) [周四, 07 9月 22:38]

Scientists show molecular factors that determine why some regions in yeast chromosomes are apt for remodeling, while other regions stay faithful during cell replication.

- [**Proteins keep a grip on cells**](#) [周四, 07 9月 22:38]

Scientists have revealed new structural information on the integrin-laminin interaction. These findings provide important insights on cellular interactions that promote cell growth, differentiation, and migration.

- [**New dental imaging method uses squid ink to fish for gum disease**](#) [周四, 07 9月 22:24]

Squid ink could one day make getting checked for gum disease at the dentist less tedious and even painless. By combining squid ink with light and ultrasound, a team led by engineers has developed a new dental imaging method to examine a patient's gums that is noninvasive, more comprehensive and more accurate than the state of the art.

- [**Sometimes you shouldn't say sorry**](#) [周四, 07 9月 22:24]

Being socially rejected can be a painful emotional experience -- but being told sorry may not soften the blow, finds a new study. Contrary to popular belief, apologies increase hurt feelings and the need to express forgiveness, but do not increase feelings of forgiveness, for the person being rebuffed.

- [**Trigger for fatty liver in obesity**](#) [周四, 07 9月 22:24]

Morbid obesity affects the liver: almost one-third of all adults suffer

from chronic fatty liver disease, which can lead to infections and even trigger cancer. Researchers have now found a signaling pathway in cells that play an important role in the development of fatty liver disease.

• [**Want your question answered quickly? Use gestures as well as words**](#) [周四, 07 9月 22:23]

When someone asks a question during a conversation, their conversation partner answers more quickly if the questioner also moves their hands or head to accompany their words. The study focuses on how gestures influence language processing.

• [**Intermittent electrical brain stimulation improves memory**](#) [周四, 07 9月 22:23]

Intermittent electrical stimulation of an area deep inside the brain that degenerates in Alzheimer's appears to improve working memory, scientists report. Conversely, continuous deep brain stimulation, like the type used for Parkinson's and currently under study in humans with Alzheimer's, impairs memory, according to study.

• [**Long-term opioid prescription use jumps threefold over 16-year period, study suggests**](#) [周四, 07 9月 22:23]

Opioid prescription use increased significantly between 1999 and 2014, new research has found, and that much of that increase stemmed from patients who'd been taking their medication for 90 days or longer.

• [**A tiny device offers insights to how cancer spreads**](#) [周四, 07 9月 21:36]

Researchers developed a new type of microfluidic device that can cultivate cells for longer periods of time, better reflecting how cancer cells to change over time. The device allowed them to capture the leader cells that would be first to break away and cause metastasis.

• [**Uncovering the mechanism behind heart failure, mortality in sepsis**](#) [周四, 07 9月 21:36]

Of the nearly 1 million people in the US who are affected by sepsis annually, almost one-fifth die. Cardiovascular complications account for

approximately 80 percent of those deaths. Now, researchers describe the mechanism underlying the loss of energy from heart dysfunction in sepsis, opening the way for the development of a new therapy that could save thousands of lives annually.

• [**Children exposed to chemicals in 9/11 'dust' show early signs of risk of heart disease**](#) [周四, 07 9月 21:36]

Sixteen years after the collapse of the World Trade Center towers sent a 'cloud' of toxic debris across Lower Manhattan, children living nearby who likely breathed in the ash and fumes are showing early signs of risk for future heart disease.

• [**Link established between a molecular driver of melanoma, novel therapeutic agent**](#) [周四, 07 9月 21:36]

Scientists have described a correlation between a key melanoma signaling pathway and a novel class of drugs being tested in the clinic as adjuvant therapy for advanced melanoma, providing useful information for a more effective use of this type of treatment.

• [**How do close relationships lead to longer life?**](#) [周四, 07 9月 21:36]

While recent research has shown that loneliness can play a role in early death, psychologists are also concerned with the mechanisms by which social relationships and close personal ties affect health. New research offers an overview of the science and makes the case for psychological scientists to work together to make close relationships a public health priority.

• [**Emoji fans take heart: Scientists pinpoint 27 states of emotion**](#) [周四, 07 9月 21:36]

The Emoji Movie, in which the protagonist can't help but express a wide variety of emotions instead of the one assigned to him, may have gotten something right. A new study challenges a long-held assumption in psychology that most human emotions fall within the universal categories of happiness, sadness, anger, surprise, fear and disgust.

• [**Drivers don't ignore a ringing phone but do**](#)

ignore the risk [周四, 07 9月 21:36]

Drivers find it difficult to ignore a ringing phone but do ignore the dangers, with a new study revealing almost 50 percent believe locating and answering a ringing phone is not as risky as talking and texting. Research has found locating a ringing phone, checking who's calling, and rejecting or answering the call, is the most frequent mobile phone task undertaken by drivers.

Improved stem cell transplantation therapies? [周四, 07 9月 21:36]

Researchers have demonstrated that hematopoietic stem cell (HSC) transplants can be improved by treatments that temporarily prevent the stem cells from dying. The approach could allow those in need of such transplants, including leukemia and lymphoma patients, to be treated with fewer donor stem cells while limiting potential adverse side effects.

Cheaper, faster test for E. coli in drinking water [周四, 07 9月 21:36]

Researchers have invented a fast, affordable way for developing communities to test their drinking water for potentially deadly E. coli.

Tooth trouble: Many middle-aged adults report dental pain, embarrassment and poor prevention [周四, 07 9月 21:36]

The dental health of middle-aged Americans faces a lot of problems right now, and an uncertain future to come, according to new national poll results. One in three Americans between the ages of 50 and 64 say they're embarrassed by the condition of their teeth, and that dental problems have caused pain or other problems in the past two years. Forty percent of those polled don't get regular cleanings or other preventive oral care.

Ebola: Early immune response provides insight into vaccination [周四, 07 9月 21:36]

The latest outbreaks of emerging pathogens, such as Ebola or Zika, emphasize the importance of the rapid development of vaccines. However, being able to predict the efficacy of new vaccines remains a

challenge in vaccine development. Scientists have now successfully assessed early on the longer-term immune response in humans after being vaccinated with the newly developed Ebola vaccine rVSV-ZEBOV.

- [**Chronic bronchitis: New insights could lead to first diagnostic test, better treatments**](#) [周四, 07 9月 10:12]

Researchers describe how the concentration of mucins -- the proteins that make mucus thick -- is abnormally high in chronic bronchitis and that high mucin concentrations are associated with disease severity in people with chronic bronchitis. This finding could become the first-ever objective marker of chronic bronchitis and lead to the creation of diagnostic and prognostic tools.

- [**Discovery of genes linked to preterm birth in landmark study**](#) [周四, 07 9月 10:12]

A massive international DNA analysis of pregnant women has identified for the first time six gene regions that influence the length of pregnancy and the timing of birth. The findings may lead to new ways to prevent preterm birth and its consequences -- the leading cause of death among children under age 5 worldwide.

- [**Human genetics studies reveal new targets to reduce heart disease**](#) [周四, 07 9月 05:06]

Again and again, it's the rare among humans that help the rest of us. The exploration of human genetics is revealing new targets to combat heart disease among atypical variants. Mutations in genes that play a role in heart health are the inspiration for a cluster of new heart drugs.

- [**Honeybees could play a role in developing new antibiotics**](#) [周四, 07 9月 05:06]

An antimicrobial compound made by honeybees could become the basis for new antibiotics, according to new research.

- [**Statins reduce deaths from coronary heart disease by 28 per cent in men, according to**](#)

longest ever study [周四, 07 9月 05:04]

A new study focused on men with high levels of ‘bad’ cholesterol and no other risk factors or signs of heart disease.

A bioactive molecule may protect against congestive heart failure after heart attacks [周四, 07 9月 05:01]

Researchers show that giving mice a form of the fatty acid-derived bioactive molecule called lipoxin improved heart function after a heart attack, as the lipoxin prompted early activation of the resolving phase of the immune response without altering the acute phase.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

- [**When electrons ride a wave**](#) [周六, 09 9月 08:55]

Conventional electron accelerators are an indispensable tool in modern research. But even smaller versions of these super microscopes are the size of a soccer field. Laser plasma acceleration could offer an alternative with a smaller footprint and higher peak currents. So far, the challenge with laser accelerators has been to create a reliable and stable electron beam, which is the prerequisite for applications. Physicists have developed a method to increase beam stability and quality.

- [**Scientists unravel new insights into promising semiconductor material**](#) [周六, 09 9月 08:55]

Researchers have established new findings on the properties of two-dimensional molybdenum disulfide, a widely studied semiconductor of the future.

- [**Are we being watched? Tens of other worlds could spot the Earth**](#) [周六, 09 9月 08:55]

Scientists have turned exoplanet-hunting on its head, in a study that instead looks at how an alien observer might be able to detect Earth using our own methods. They find that at least nine exoplanets are ideally placed to observe transits of Earth.

- [**New acid-free magnet recycling process created**](#) [周五, 08 9月 01:25]

A new rare-earth magnet recycling process dissolves magnets in an acid-free solution and recovers high purity rare earth elements.

- [**Curious properties: Researchers analyze**](#)

[flocking behavior on curved surfaces](#) [周五, 08 9月 01:25]

A murmuration of starlings. The phrase reads like something from literature or the title of an arthouse film. In fact, it is meant to describe the phenomenon that results when hundreds, sometimes thousands, of these birds fly in swooping, intricately coordinated patterns through the sky.

• [Lignin: Much more valuable than just as waste](#) [周五, 08 9月 00:03]

Lignin, a substance considered as a waste product in biomass and ethanol production, will now reach its proper value as bio-oil in new products.

• [Aspirin tablets help unravel basic physics](#) [周五, 08 9月 00:03]

Aspirin in form of small crystallites provides new insight into delicate motions of electrons and atomic nuclei. Set into molecular vibration by strong ultrashort far-infrared (terahertz) pulses, the nuclei oscillate much faster than for weak excitation. They gradually return to their intrinsic oscillation frequency, in parallel to the picosecond decay of electronic motions. An analysis of the terahertz waves radiated from the moving particles by in-depth theory reveals the strongly coupled chara...

• [Scanning tunneling microscopy measurements identify active sites on catalyst surfaces](#) [周五, 08 9月 00:02]

Chemistry live: using a scanning tunneling microscope, researchers were able for the very first time to witness in detail the activity of catalysts during an electrochemical reaction. The measurements show how the surface structure of the catalysts influences their activity. The new analysis method can now be used to improve catalysts for the electrochemical industry.

• ['Rubber material' discovered that could lead to scratch-proof paint for car](#) [周五, 08 9月 00:02]

A stretchy miracle material has been discovered that could be used to create highly resistant smart devices and scratch-proof paint for cars, report investigators.

- [**Climate change for aliens**](#) [周四, 07 9月 23:24]

For more than 50 years, the Kardashev scale has been the gold standard for classifying hypothetical 'exo-civilizations' by their ability to harness energy. A team of researchers has devised a new system that takes into account the impacts of that energy use.

- [**Pluto features given first official names**](#) [周四, 07 9月 23:24]

The Working Group for Planetary System Nomenclature of the International Astronomical Union has officially approved the naming of 14 features on the surface of Pluto. These are the first geological features on the planet to be named following the close flyby by the New Horizons spacecraft in July 2015.

- [**3-D-printed biomaterials that degrade on demand**](#) [周四, 07 9月 23:24]

The temporary structures, which can be degraded away with a biocompatible chemical trigger, could be useful in fabricating microfluidic devices, creating biomaterials that respond dynamically to stimuli and in patterning artificial tissue.

- [**Smartphone screen technology used to trick harmful bacteria**](#) [周四, 07 9月 22:41]

Conducting plastics found in smartphone screens can be used to trick the metabolism of pathogenic bacteria, report scientists. By adding or removing electrons from the plastic surface, bacteria may be tricked into growing more or less. The method may find widespread use in preventing bacterial infections in hospitals or improve effectiveness in wastewater management.

- [**New dental imaging method uses squid ink to fish for gum disease**](#) [周四, 07 9月 22:24]

Squid ink could one day make getting checked for gum disease at the dentist less tedious and even painless. By combining squid ink with light and ultrasound, a team led by engineers has developed a new dental imaging method to examine a patient's gums that is noninvasive, more comprehensive and more accurate than the state of the art.

• **[Ultraviolet light from superluminous supernova key to revealing explosion mechanism](#)** [周四, 07 9月 22:24]

An international team of researchers has discovered a way to use UV light from superluminous supernovae to uncover its explosion mechanism, and used it to identify Gaia16apd as a shock-interacting supernova, reports a new study.

• **[Fast magnetic writing of data](#)** [周四, 07 9月 22:24]

Magnetic data storage has long been considered too slow for use in the working memories of computers. Researchers have now investigated a technique by which magnetic data writing can be done considerably faster and using less energy.

• **[Intermittent electrical brain stimulation improves memory](#)** [周四, 07 9月 22:23]

Intermittent electrical stimulation of an area deep inside the brain that degenerates in Alzheimer's appears to improve working memory, scientists report. Conversely, continuous deep brain stimulation, like the type used for Parkinson's and currently under study in humans with Alzheimer's, impairs memory, according to study.

• **[A tiny device offers insights to how cancer spreads](#)** [周四, 07 9月 21:36]

Researchers developed a new type of microfluidic device that can cultivate cells for longer periods of time, better reflecting how cancer cells to change over time. The device allowed them to capture the leader cells that would be first to break away and cause metastasis.

• **[Drivers don't ignore a ringing phone but do ignore the risk](#)** [周四, 07 9月 21:36]

Drivers find it difficult to ignore a ringing phone but do ignore the dangers, with a new study revealing almost 50 percent believe locating and answering a ringing phone is not as risky as talking and texting. Research has found locating a ringing phone, checking who's calling, and rejecting or answering the call, is the most frequent mobile phone

task undertaken by drivers.

• [**Water-based lithium-ion batteries that don't explode now created**](#) [周四, 07 9月 05:01]

For the first time a lithium-ion battery has been developed that uses a water-salt solution as its electrolyte and reaches the 4.0 volt mark desired for household electronics, such as laptop computers, without the fire and explosive risks associated with some commercially available non-aqueous lithium-ion batteries.

• [**Study quantifies potential for water reuse in permian basin oil production**](#) [周四, 07 9月 05:01]

Hydraulic fracturing has once again made the Permian Basin one of the richest oil fields in the world. But the improved reserves come with some serious water management issues. Drilling for oil uses water upfront, and brings up large volumes of water that need to be managed. The study found that recycling the water produced during operations at other hydraulic fracturing sites could help reduce potential problems associated with the technology.

• [**Researchers challenge status quo of battery commercialization**](#) [周四, 07 9月 05:01]

Researchers are looking to the pharmaceutical industry to propose an updated model of US battery commercialization.

• [**New device accurately identifies cancer in seconds**](#) [周四, 07 9月 02:49]

A team of scientists and engineers has invented a powerful tool that rapidly and accurately identifies cancerous tissue during surgery, delivering results in about 10 seconds. The MasSpec Pen is an innovative handheld instrument that gives surgeons precise diagnostic information about what tissue to cut or preserve, helping improve treatment and reduce the chances of cancer recurrence.

• [**Particle physicists on a quest for 'new physics'**](#) [周四, 07 9月 02:29]

The Large Hadron Collider (LHC) at CERN, the European Organization

for Nuclear Research, produces hundreds of millions of proton collisions per second. But researchers working on the Large Hadron Collider beauty (LHCb) experiment can only record 2,000 of those collisions, using one of the detectors installed on the accelerator. So in the end, this technological marvel leaves the physicists wanting more. They are convinced that the vast volume of uncaptured data holds the answers to several unreso...

- [**Earth as hybrid planet: New classification places Anthropocene era in astrobiological context**](#) [周四, 07 9月 01:55]

A new classification scheme has been devised for the evolutionary stages of worlds based on 'non-equilibrium thermodynamics' -- a planet's energy flow being out of sync, as the presence of life could cause.

- [**Researchers report new way to make dissolving electronics**](#) [周四, 07 9月 01:55]

Researchers have reported a new type of electronic device that can be triggered to dissolve through exposure to water molecules in the atmosphere. The work holds promise for eco-friendly disposable personal electronics and biomedical devices that dissolve within the body.

- [**Supercharging silicon batteries**](#) [周三, 06 9月 22:36]

Scientists have designed a novel silicon-based anode to provide lithium batteries with increased power and better stability.

- [**Quantum tech has its sights set on human biochemistry**](#) [周三, 06 9月 22:36]

Scientists have developed a new tool for imaging life at the nanoscale that will provide new insights into the role of transition metal ions such as copper in neurodegenerative diseases.

- [**Green light for ultra-fine display colors**](#) [周三, 06 9月 22:36]

Chemical engineers have succeeded in generating ultra-pure green light for the first time. The new light-emitting diode will pave the way for visibly improved color quality in a new generation of ultra-high

definition displays for TVs and smartphones.

- [**Accretion-powered pulsar reveals unique timing glitch**](#) [周三, 06 9月 22:36]

The discovery of the largest timing irregularity yet observed in a pulsar is the first confirmation that pulsars in binary systems exhibit the strange phenomenon known as a 'glitch.'

- [**New tool for characterizing quantum simulators**](#) [周三, 06 9月 22:35]

Physicists are developing quantum simulators, to help solve problems that are beyond the reach of conventional computers. However, they first need new tools to ensure that the simulators work properly. Researchers have now implemented a new technique in the laboratory that can be used to efficiently characterize the complex states of quantum simulators. The technique could become a new standard tool for characterizing quantum simulators.

- [**Keychain detector could catch food allergens before it's too late**](#) [周三, 06 9月 22:35]

For kids and adults with food allergies, a restaurant outing can be a fraught experience. Even when care is taken, freshly prepared or packaged meals can accidentally become cross-contaminated with an offending food and trigger a reaction. Now researchers report the development of a new portable allergen-detection system -- including a keychain analyzer -- that could help prevent trips to the emergency room.

- [**Flip-flop qubits: Radical new quantum computing design invented**](#) [周三, 06 9月 22:35]

Engineers have invented a radical new architecture for quantum computing, based on novel 'flip-flop qubits,' that promises to make the large-scale manufacture of quantum chips dramatically cheaper -- and easier -- than thought possible. The new chip design allows for a silicon quantum processor that can be scaled up without the precise placement of atoms required in other approaches.

• [**Newly-discovered semiconductor dynamics may help improve energy efficiency**](#) [周三, 06 9月 08:29]

Researchers examining the flow of electricity through semiconductors have uncovered another reason these materials seem to lose their ability to carry a charge as they become more densely 'doped.'

• [**Superhuman 'night' vision during the total eclipse?**](#) [周三, 06 9月 04:40]

It was dark as night during the recent total solar eclipse, yet people and objects were easier to see than on a typical moonless night. Scientists have discovered a possible biological explanation -- the presence (or absence) of a protein in the retina known as a GABA receptor.

• [**Mobile phone use while pregnant not linked to child neurodevelopment problems, study suggests**](#) [周三, 06 9月 02:55]

Mobile phone use during pregnancy is unlikely to have any adverse effects on child neurodevelopment, according to new research. These findings provide further evidence that exposure to radio frequency electromagnetic fields associated with maternal use of mobile phones during pregnancy is not linked to neurodevelopment in children.

• [**Research shows how DNA molecules cross nanopores**](#) [周三, 06 9月 02:55]

Research sheds new light on the understanding of the measurement of polymer properties in diverse chemical industries such as plastics manufacturing and food processing, and the design of biosensors.

• [**Aeroices: Newly discovered ultralow-density ice**](#) [周三, 06 9月 02:55]

Relatively little is known about the effects of extreme negative pressure on water molecules. Exploring a significant region of negative pressure through molecular dynamic simulations, researchers have now theoretically discovered a new family of ice phases. Called aeroices, these ices have the lowest density of all known ice crystals.

• [**Cooling system works without electricity**](#) [周三, 06 9月 02:55]

Scientists cooled water without electricity by sending excess heat where it won't be noticed -- space. The specialized optical surfaces they developed are a major step toward applying this technology to air conditioning and refrigeration.

• [**More durable, less expensive fuel cells**](#) [周三, 06 9月 01:44]

A new technology has been created that could make fuel cells cheaper and more durable. Hydrogen-powered fuel cells are a green alternative to internal combustion engines because they produce power through electrochemical reactions, leaving no pollution behind. Platinum is the most common catalyst in the type of fuel cells used in vehicles, but it's expensive. The UD team used a novel method to come up with a less expensive catalyst.

• [**Nanoparticles limit damage in spinal cord injury**](#) [周三, 06 9月 01:44]

After a spinal cord injury, significant secondary nerve damage is caused by inflammation and internal scarring that inhibits the ability of the nervous system to repair itself. A biodegradable nanoparticle injected after a spinal cord trauma prevented the inflammation and internal scarring that inhibits the repair process, reports a new study.

• [**Unique study tests fundamental laws of physics**](#) [周三, 06 9月 00:54]

A study that will 'test our understanding of how the Universe works, particularly outside the relatively narrow confines of our planet' is being undertaken by an international team of researchers.

• [**Crab nebula in the limelight: Unified model for the entire radiation spectrum**](#) [周三, 06 9月 00:48]

The origin of cosmic rays, high-energy particles from outer space constantly impacting on Earth, is among the most challenging open questions in astrophysics. Now research sheds new light on the origin of those energetic particles.

• [**Solubility study could impact energy, biology, environment**](#) [周三, 06 9月 00:32]

Chemical engineers have used the most realistic computer model yet devised to simulate the precise atomic and molecular interactions that come into play when water mixes with alkanes, a family of hydrocarbons that includes methane, propane and other refined products.

- [**Surgeons create 'vacuum' procedure to remove infected pacemaker**](#) [周三, 06 9月 00:32]

Electrophysiologists get creative in removing infected pacemaker wires of a patient unable to have open heart surgery. He would have died if they didn't use a 'vacuum' typically used to remove foreign objects.

- [**Discovery of boron on Mars adds to evidence for habitability**](#) [周三, 06 9月 00:32]

The discovery of boron on Mars gives scientists more clues about whether life could have ever existed on the planet, according to a new paper.

- [**Glowing cancer tool illuminates benign, but dangerous, brain tumors during pituitary surgery**](#) [周三, 06 9月 00:32]

An experimental imaging tool that uses a targeted fluorescent dye successfully lit up the benign brain tumors of patients during removal surgery, allowing surgeons to identify tumor tissue, a new study shows.

- [**'Extreme' telescopes find the second-fastest-spinning pulsar**](#) [周三, 06 9月 00:32]

By following up on mysterious high-energy sources mapped by NASA's Fermi Gamma-ray Space Telescope, a Netherlands-based radio telescope has discovered a new pulsar, the second fastest-spinning known.

- [**Sweet success: Nanocapsule perfectly binds sucrose in water**](#) [周二, 05 9月 22:44]

Researchers have developed an artificial receptor that can bind sucrose in water with exquisite precision. The achievement represents a leap forward for the development of biosensors, and provides new insights

into our perception of sweetness.

• [**When strangers can control our lights**](#) [周二, 05 9月 21:38]

Smart home products such as lamps controlled via mobile devices are becoming ever more popular in private households. We would, however, feel vulnerable in our own four walls if strangers suddenly started switching the lights in our homes on and off. Researchers have discovered security problems of this nature in smart lights manufactured by GE, IKEA, Philips and Osram.

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Environment News

Top stories featured on ScienceDaily's Plants & Animals, Earth & Climate, and Fossils & Ruins sections.

- [**An officer and a gentlewoman from the Viking army in Birka**](#) [周六, 09 9月 08:55]

War was not an activity exclusive to males in the Viking world. A new study shows that women could be found in the higher ranks at the battlefield.

- [**Ship exhaust makes oceanic thunderstorms more intense**](#) [周五, 08 9月 02:27]

Thunderstorms directly above two of the world's busiest shipping lanes are significantly more powerful than storms in areas of the ocean where ships don't travel, according to new research.

- [**Why are fossilized hairs so rare?**](#) [周五, 08 9月 02:27]

When it comes to preserving body parts, fossilized hair is rare--five times rarer than feathers--despite being an important tool for understanding ancient species. This finding has researchers trying to determine if the lack of hair in the fossil record has to do with physical traits that might make it more difficult for hair to fossilize, or an issue with scientists' collection techniques that could lead to them missing important finds.

- [**Cilia: 'The bouncer' of bacteria**](#) [周五, 08 9月 02:27]

A new paper elucidates the active role of cilia in regulating flow for bacteria filtering and enhancing chemical communication.

- [**Eighteenth century nautical charts reveal coral loss**](#) [周五, 08 9月 02:27]

Centuries-old nautical charts, mapped by long-deceased sailors to avoid shipwrecks, have been used by modern scientists to study loss of coral reefs. A new study compared early British charts to modern coral habitat maps to understand changes to reef environments.

- [**Courts' critical, underappreciated role in climate policy**](#) [周五, 08 9月 02:26]

Both climate lawsuits and their reliance on scientific data have increased over the past decade, the most extensive study to date shows.

- [**Discovery of chromosome motor supports DNA loop extrusion**](#) [周五, 08 9月 02:26]

It is one of the mysteries in biology: how does a cell neatly distribute its replicated DNA between two daughter cells? Scientists are split into two camps: the first argues that condensing works like a hook, tying DNA together. The other camp thinks that the ring-shaped protein pulls the DNA inwards to create a loop. Now researchers from give the 'loop-extrusion camp' a boost: condensin does indeed have the putative 'motor power' on board.

- [**New acid-free magnet recycling process created**](#) [周五, 08 9月 01:25]

A new rare-earth magnet recycling process dissolves magnets in an acid-free solution and recovers high purity rare earth elements.

- [**Curious properties: Researchers analyze flocking behavior on curved surfaces**](#) [周五, 08 9月 01:25]

A murmuration of starlings. The phrase reads like something from literature or the title of an arthouse film. In fact, it is meant to describe the phenomenon that results when hundreds, sometimes thousands, of these birds fly in swooping, intricately coordinated patterns through the sky.

- [**Direct evidence of sea level 'fingerprints' discovered**](#) [周五, 08 9月 00:02]

The first observation of sea level 'fingerprints' -- tell-tale differences in sea level rise around the world in response to changes in continental

water and ice sheet mass -- has been reported by researchers.

- [**Smartphone screen technology used to trick harmful bacteria**](#) [周四, 07 9月 22:41]

Conducting plastics found in smartphone screens can be used to trick the metabolism of pathogenic bacteria, report scientists. By adding or removing electrons from the plastic surface, bacteria may be tricked into growing more or less. The method may find widespread use in preventing bacterial infections in hospitals or improve effectiveness in wastewater management.

- [**Mixing and matching yeast DNA**](#) [周四, 07 9月 22:38]

Scientists show molecular factors that determine why some regions in yeast chromosomes are apt for remodeling, while other regions stay faithful during cell replication.

- [**Proteins keep a grip on cells**](#) [周四, 07 9月 22:38]

Scientists have revealed new structural information on the integrin-laminin interaction. These findings provide important insights on cellular interactions that promote cell growth, differentiation, and migration.

- [**New dental imaging method uses squid ink to fish for gum disease**](#) [周四, 07 9月 22:24]

Squid ink could one day make getting checked for gum disease at the dentist less tedious and even painless. By combining squid ink with light and ultrasound, a team led by engineers has developed a new dental imaging method to examine a patient's gums that is noninvasive, more comprehensive and more accurate than the state of the art.

- [**Hidden Inca treasure: Remarkable new tree genus discovered in the Andes**](#) [周四, 07 9月 22:24]

Hidden in plain sight -- that's how researchers describe their discovery of a new genus of large forest tree commonly found, yet previously scientifically unknown, in the tropical Andes.

- [**Algorithm reconstructs processes from**](#)

[individual images](#) [周四, 07 9月 22:24]

Researchers have developed a new method for reconstructing continuous biological processes, such as disease progression, using image data.

• [Australian Magpie 'dunks' its food before eating, researchers find](#) [周四, 07 9月 22:23]

Scientists have shown that the Australian Magpie may 'dunk' its food in water before eating, a process that appears to be 'copied' by its offspring.

• [Breaking through the wall in bacterial membrane vesicle research](#) [周四, 07 9月 21:36]

Researchers used advanced imaging techniques to investigate the formation of membrane vesicles in a Gram-positive bacterium, a process that is poorly understood, particularly in bacteria with thick cell walls. The consortium showed that membrane vesicle formation was triggered by an enzyme called endolysin that damages the cell wall to create holes that allow the release of membrane vesicles. This mechanism could be exploited for the mass production of bacterial vesicles.

• [How monkey fights grow](#) [周四, 07 9月 21:36]

New research finds evidence for a complicated structure behind primate conflict. It is not individuals who control the length of fights, but the relationships between pairs of individuals.

• [Ebola: Early immune response provides insight into vaccination](#) [周四, 07 9月 21:36]

The latest outbreaks of emerging pathogens, such as Ebola or Zika, emphasize the importance of the rapid development of vaccines. However, being able to predict the efficacy of new vaccines remains a challenge in vaccine development. Scientists have now successfully assessed early on the longer-term immune response in humans after being vaccinated with the newly developed Ebola vaccine rVSV-ZEBOV.

• [Honeybees could play a role in developing new](#)

antibiotics [周四, 07 9月 05:06]

An antimicrobial compound made by honeybees could become the basis for new antibiotics, according to new research.

• **Study quantifies potential for water reuse in permian basin oil production** [周四, 07 9月 05:01]

Hydraulic fracturing has once again made the Permian Basin one of the richest oil fields in the world. But the improved reserves come with some serious water management issues. Drilling for oil uses water upfront, and brings up large volumes of water that need to be managed. The study found that recycling the water produced during operations at other hydraulic fracturing sites could help reduce potential problems associated with the technology.

• **Bacterial in-fighting provides new treatment for hospital infections** [周四, 07 9月 02:49]

A bacteria that is a leading cause of death worldwide from hospital acquired infections following antibiotic treatment looks set to be brought down through its own sibling rivalry.

• **Pollen stays on bee bodies right where flowers need it for pollination** [周四, 07 9月 02:49]

After grooming, bees still have pollen on body parts that match the position of flower pollen-sacs and stigmas, according to a new study.

• **Giant bacterium contains genomes for an entire population** [周四, 07 9月 02:26]

Achromatium oxaliferum is the largest (known) freshwater bacterium in the world. It is 30,000 times larger than its “normal” counterparts that live in water and owing to its calcite deposits it is visible to the naked eye. It has long been known – at least among bacteria fans – that some sulfur bacteria such as *Achromatium* can be extremely large and may contain several genome copies. But the fact that a single bacterial cell harbors hundreds of different genomes is new – also to bacteria aficionados...

• [**Monkey sees ... monkey knows?**](#) [周四, 07 9月 01:55]

Monkeys had higher confidence in their ability to remember an image when the visual contrast was high. These kinds of metacognitive illusions -- false beliefs about how we learn or remember best -- are shared by humans, leading brain and cognitive scientists to believe that metacognition could have an evolutionary basis.

• [**Researchers report new way to make dissolving electronics**](#) [周四, 07 9月 01:55]

Researchers have reported a new type of electronic device that can be triggered to dissolve through exposure to water molecules in the atmosphere. The work holds promise for eco-friendly disposable personal electronics and biomedical devices that dissolve within the body.

• [**Tick tock: Biologists show wildlife loss and climate change can synergistically increase tick abundance and the risk of tick-borne disease**](#) [周三, 06 9月 23:46]

Around the world, ticks are one of the most important vectors of zoonotic diseases -- animal diseases communicable to humans -- and they're everywhere. New research suggests that the abundance of ticks that carry certain fevers are likely to rise in the future, thanks to a combination of wildlife loss and climate change.

• [**Substance in coffee delays onset of diabetes in laboratory mice**](#) [周三, 06 9月 22:37]

Substances in coffee have been identified that could help quash the risk of developing type 2 diabetes. But few of these have been tested in animals. Now, scientists report that one of these previously untested compounds appears to improve cell function and insulin sensitivity in laboratory mice. The finding could spur the development of new drugs to treat or even prevent the disease.

• [**Cloud formation suppressed by biogenic organic emissions**](#) [周三, 06 9月 22:36]

Evidence has been found that near-ground biogenic emissions of organics suppress cloud formation in cool-temperate forests in autumn, providing clues to how global warming will affect cloud formation and the overall climate.

• [**Colon of patients with IBS reacts differently to bacteria**](#) [周三, 06 9月 22:36]

The intestinal barrier of patients with the gastrointestinal disease IBS allows bacteria to pass more freely than in healthy people, according to a study. The study is the first to investigate IBS using living bacteria.

• [**Unraveling a major cause of sea ice retreat in the Arctic Ocean**](#) [周三, 06 9月 22:36]

Quantitative analysis has evidenced the acceleration system of melting ice: dark water surfaces absorb more heat than white ice surfaces, thus melting ice and making more water surfaces in the Arctic Ocean.

• [**Gut microbiota of larvae has an impact on mosquito's ability to transmit human pathogens**](#) [周三, 06 9月 22:36]

Researchers have demonstrated that differential bacterial exposure during the development of mosquito larvae (*Aedes aegypti*) can have carry-over effects on adult traits related to an insect's ability to be a successful vector of arboviruses. This study represents an important step toward a more comprehensive understanding of how the environment shapes the risk of vector-borne disease.

• [**Protein that extends life of yeast cells**](#) [周三, 06 9月 22:35]

To understand and control aging is the aspiration of many scientists. Researchers have now discovered that the protein Gcn4 decreases protein synthesis and extends the life of yeast cells. Understanding how individual genes affect lifespan opens new ways to control the aging process and the occurrence of aging-related diseases.

• [**Bacteria responsible for legionellosis modulates the host cell metabolism to its advantage**](#) [周三, 06 9月 22:35]

The bacterial pathogen *Legionella pneumophila* has developed a specific

strategy to target the host cell mitochondria, the organelles in charge of cellular bioenergetics, scientists have shown. New work provides precious information on how a pathogen manipulates the cellular metabolism to replicate intracellularly, and proposes a new concept of protection of host cells from Legionella-induced mitochondrial changes in order to fight infection.

Research dog helps scientists save endangered carnivores [周三, 06 9月 22:35]

Scat-sniffing research dogs are helping scientists map out a plan to save reclusive jaguars, pumas, bush dogs and other endangered carnivores in the increasingly fragmented forests of northeastern Argentina, according to a new study.

Will mallards hybridize their cousins out of existence? [周三, 06 9月 22:35]

Mallards -- the familiar ducks of city parks -- are one of a group of closely related species, many of which are far less common. Interbreeding can threaten the genetic distinctiveness of those other species and cause concern for their conservation. A new study investigates hybridization between mallards and mottled ducks, a species adapted for life in coastal marshes, and finds that while hybridization rates are currently low, human activity could cause them to rise in the future.

Biologists slow aging, extend lifespan of fruit flies [周三, 06 9月 22:34]

In research that potentially could delay the onset of Parkinson's disease, Alzheimer's disease, cancer, stroke, cardiovascular disease, and other diseases of aging, biologists have produced a genetic one-two punch that significantly slowed aging and improved health in the middle-aged fruit flies they studied.

Clever cockatoos bend hooks into straight wire to fish for food [周三, 06 9月 08:29]

Bending of a hook into wire to fish for the handle of a basket by crow

Betty 15 years ago stunned the scientific world. Cognitive biologists studied tool making in an Indonesian cockatoo. Other than crows, cockatoos are not using tools in the wild. The birds manufactured hook tools out of straight wire without ever having seen or used a hook tool before.

• [**Something to sneeze about: Democratic voting in African wild dog packs**](#) [周三, 06 9月 08:29]

Scientists studying African wild dogs in Botswana have found members of this endangered species use sneezes to vote on when the pack will move off and start hunting.

• [**Invasive plants change ecosystems from the bottom up**](#) [周三, 06 9月 02:56]

Even when two different Phragmite lineages are grown side-by-side in the same ecosystem, the bacterial communities in the soil differ dramatically. This is a discovery that will aid in understanding how plant invasions get started and the conditions necessary for their success.

• [**Research shows how DNA molecules cross nanopores**](#) [周三, 06 9月 02:55]

Research sheds new light on the understanding of the measurement of polymer properties in diverse chemical industries such as plastics manufacturing and food processing, and the design of biosensors.

• [**Aeroices: Newly discovered ultralow-density ice**](#) [周三, 06 9月 02:55]

Relatively little is known about the effects of extreme negative pressure on water molecules. Exploring a significant region of negative pressure through molecular dynamic simulations, researchers have now theoretically discovered a new family of ice phases. Called aeroices, these ices have the lowest density of all known ice crystals.

• [**Eating meat linked to higher risk of diabetes**](#) [周三, 06 9月 01:45]

Higher intake of red meat and poultry is associated with significantly increased risk of developing diabetes, which is partially attributed to their higher content of heme iron in these meats, new research shows.

· [Could switchgrass help China's air quality?](#) [周三, 06 9月 01:45]

Researchers have proposed an idea that could improve China's air quality, but they're not atmospheric scientists. They're agronomists.

· [Oregon's marijuana legalization prompted big drop in sales in Washington's border counties](#) [周三, 06 9月 01:44]

Three days after recreational marijuana sales became legal in Oregon, sales across the border in Washington, where retail availability already existed, dropped by 41 percent, say economists. Their study also suggests that illegal cross-border movement, or diversion, of legally produced marijuana sold at retail outlets across state borders is a real concern but not occurring at alarming levels.

· [Birds choose mates with ornamental traits](#) [周三, 06 9月 00:57]

A recurring theme in nature documentaries is that of choosy females selecting brightly colored males. A new study shows that, in monogamous mating systems, male birds may select their lifelong mates in much the same way.

· [First detailed decoding of complex finger millet genome](#) [周三, 06 9月 00:56]

Finger millet has two important properties: The grain is rich in important minerals and resistant towards drought and heat. Thanks to a novel combination of state-of-the-art technologies, researchers were able to decode the large and extremely complex genome of finger millet in high quality for the first time. This represents a fundamental basis for improving food security in countries like India and parts of Africa.

· [Cell marking opens up a window into the body](#) [周三, 06 9月 00:35]

Researchers have developed new methods to track cells in mice which could help to reduce animal experiments.

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- [**Ship exhaust makes oceanic thunderstorms more intense**](#) [周五, 08 9月 02:27]

Thunderstorms directly above two of the world's busiest shipping lanes are significantly more powerful than storms in areas of the ocean where ships don't travel, according to new research.

- [**Courts' critical, underappreciated role in climate policy**](#) [周五, 08 9月 02:26]

Both climate lawsuits and their reliance on scientific data have increased over the past decade, the most extensive study to date shows.

- [**SNAP benefits aren't enough to afford a healthy diet**](#) [周五, 08 9月 00:56]

A new study finds that the Supplemental Nutrition Assistance Program (SNAP), formerly known as Food Stamps, only covers 43-60 percent of what it costs to consume a diet consistent with federal dietary guidelines for what constitutes a healthy diet. The study highlights the challenges lower-income households face in trying to eat a healthy diet.

- [**Nutrition has benefits for brain network organization**](#) [周四, 07 9月 23:24]

Nutrition has been linked to cognitive performance, but researchers have not pinpointed what underlies the connection. A new study found that monounsaturated fatty acids -- a class of nutrients found in olive oils, nuts and avocados -- are linked to general intelligence, and that this relationship is driven by the correlation between MUFAs and the

organization of the brain's attention network.

- [**Academic argues for changes in the laws governing modern warfare**](#) [周四, 07 9月 22:41]

Modern warfare and terrorist acts often sees the killing of innocent civilians which presents complex challenges for the international legal framework governing the conduct of armed conflicts, explains a new report.

- [**Children exposed to chemicals in 9/11 'dust' show early signs of risk of heart disease**](#) [周四, 07 9月 21:36]

Sixteen years after the collapse of the World Trade Center towers sent a 'cloud' of toxic debris across Lower Manhattan, children living nearby who likely breathed in the ash and fumes are showing early signs of risk for future heart disease.

- [**Study quantifies potential for water reuse in Permian basin oil production**](#) [周四, 07 9月 05:01]

Hydraulic fracturing has once again made the Permian Basin one of the richest oil fields in the world. But the improved reserves come with some serious water management issues. Drilling for oil uses water upfront, and brings up large volumes of water that need to be managed. The study found that recycling the water produced during operations at other hydraulic fracturing sites could help reduce potential problems associated with the technology.

- [**Improved vaccine that protects against nine types of HPV is highly effective**](#) [周四, 07 9月 02:32]

Cervical cancer is the second most common cause of cancer-related death worldwide, with almost 300,000 deaths occurring each year. More than 80 percent of these deaths occur in developing nations. The advent of human papillomavirus (HPV) vaccines has significantly reduced the number of those who develop and die from cervical cancer.

- [**How retractions significantly hurt scientists**](#) [周三, 06 9月 23:46]

Life scientists who have published papers that are retracted by journals

subsequently suffer a 10 percent drop in citations of their remaining work, compared to similar but unaffected scientists, according to a new study.

· [**Oregon's marijuana legalization prompted big drop in sales in Washington's border counties**](#) [周三, 06 9月 01:44]

Three days after recreational marijuana sales became legal in Oregon, sales across the border in Washington, where retail availability already existed, dropped by 41 percent, say economists. Their study also suggests that illegal cross-border movement, or diversion, of legally produced marijuana sold at retail outlets across state borders is a real concern but not occurring at alarming levels.

· [**PSA screening significantly reduces the risk for death from prostate cancer**](#) [周二, 05 9月 06:17]

After differences in implementation and settings were accounted for, two important prostate cancer screening trials provide compatible evidence that screening reduces prostate cancer mortality.

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [Climate change for aliens](#) [周四, 07 9月 23:24]

For more than 50 years, the Kardashev scale has been the gold standard for classifying hypothetical 'exo-civilizations' by their ability to harness energy. A team of researchers has devised a new system that takes into account the impacts of that energy use.

- [Australian Magpie 'dunks' its food before eating, researchers find](#) [周四, 07 9月 22:23]

Scientists have shown that the Australian Magpie may 'dunk' its food in water before eating, a process that appears to be 'copied' by its offspring.

- ['Vampires' may have been real people with this blood disorder](#) [周四, 07 9月 02:49]

A newly discovered genetic mutation triggers erythropoietic protoporphyria (EPP). This discovery illuminates a novel biological mechanism potentially responsible for stories of 'vampires' and identifies a potential therapeutic target for treating EPP.

- [Giant bacterium contains genomes for an entire population](#) [周四, 07 9月 02:26]

Achromatium oxaliferum is the largest (known) freshwater bacterium in the world. It is 30,000 times larger than its "normal" counterparts that live in water and owing to its calcite deposits it is visible to the naked eye. It has long been known – at least among bacteria fans – that some sulfur bacteria such as *Achromatium* can be extremely large and may contain several genome copies. But the fact that a single bacterial cell harbors hundreds of different genomes is new – also to bacteria

aficiona...

· [**Clever cockatoos bend hooks into straight wire to fish for food**](#) [周三, 06 9月 08:29]

Bending of a hook into wire to fish for the handle of a basket by crow Betty 15 years ago stunned the scientific world. Cognitive biologists studied tool making in an Indonesian cockatoo. Other than crows, cockatoos are not using tools in the wild. The birds manufactured hook tools out of straight wire without ever having seen or used a hook tool before.

· [**Something to sneeze about: Democratic voting in African wild dog packs**](#) [周三, 06 9月 08:29]

Scientists studying African wild dogs in Botswana have found members of this endangered species use sneezes to vote on when the pack will move off and start hunting.

· [**Cooling system works without electricity**](#) [周三, 06 9月 02:55]

Scientists cooled water without electricity by sending excess heat where it won't be noticed -- space. The specialized optical surfaces they developed are a major step toward applying this technology to air conditioning and refrigeration.

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- [**Folic acid may mitigate autism risk from pesticides**](#) [周六, 09 9月 08:55]

Researchers have shown that mothers who take recommended amounts of folic acid around conception might reduce their children's pesticide-related autism risk.

- [**When electrons ride a wave**](#) [周六, 09 9月 08:55]

Conventional electron accelerators are an indispensable tool in modern research. But even smaller versions of these super microscopes are the size of a soccer field. Laser plasma acceleration could offer an alternative with a smaller footprint and higher peak currents. So far, the challenge with laser accelerators has been to create a reliable and stable electron beam, which is the prerequisite for applications. Physicists have developed a method to increase beam stability and quality.

- [**Scientists unravel new insights into promising semiconductor material**](#) [周六, 09 9月 08:55]

Researchers have established new findings on the properties of two-dimensional molybdenum disulfide, a widely studied semiconductor of the future.

- [**An officer and a gentlewoman from the Viking**](#)

[army in Birka](#) [周六, 09 9月 08:55]

War was not an activity exclusive to males in the Viking world. A new study shows that women could be found in the higher ranks at the battlefield.

• [Immune cells help fat deal with environmental challenges](#) [周六, 09 9月 08:55]

Immunosuppressive regulatory T-cells play an important role in the functioning of adipose tissue.

• [Are we being watched? Tens of other worlds could spot the Earth](#) [周六, 09 9月 08:55]

Scientists have turned exoplanet-hunting on its head, in a study that instead looks at how an alien observer might be able to detect Earth using our own methods. They find that at least nine exoplanets are ideally placed to observe transits of Earth.

• [High-speed quantum memory for photons](#) [周六, 09 9月 08:54]

Physicists have developed a memory that can store photons. These quantum particles travel at the speed of light and are thus suitable for high-speed data transfer. The researchers were able to store them in an atomic vapor and read them out again later without altering their quantum mechanical properties too much. This memory technology is simple and fast and it could find application in a future quantum Internet.

• [How to draw electricity from the bloodstream](#) [周六, 09 9月 08:54]

Men build dams and huge turbines to turn the energy of waterfalls and tides into electricity. To produce hydropower on a much smaller scale, scientists have now developed a lightweight power generator based on carbon nanotube fibers suitable to convert even the energy of flowing blood in blood vessels into electricity.

• [Better understanding of 'one of the most complex organs' for better lung treatments](#) [周五, 08 9月 02:45]

Details of lung cell molecular pathways that promote or inhibit tissue regeneration have been reported by researchers. Their aim is to find new ways to treat lung disorders.

- [**Interrupting Parkinson's disease**](#) [周五, 08 9月 02:30]

Scientists have identified a toxic cascade that leads to neuronal degeneration in patients with Parkinson's disease and figured out how to interrupt it, reports a study. Intervening with an antioxidant early in the disease process may break the degenerative cycle and improve neuron function in Parkinson's, the study showed. Parkinson's is second most common neurodegenerative disorder.

- [**Mediterranean-style diet may eliminate need for reflux medications**](#) [周五, 08 9月 02:30]

A plant-based, Mediterranean-style diet has been shown to provide the same medical benefits for treating laryngopharyngeal reflux as popular reflux medications, according to new research.

- [**Ship exhaust makes oceanic thunderstorms more intense**](#) [周五, 08 9月 02:27]

Thunderstorms directly above two of the world's busiest shipping lanes are significantly more powerful than storms in areas of the ocean where ships don't travel, according to new research.

- [**Why are fossilized hairs so rare?**](#) [周五, 08 9月 02:27]

When it comes to preserving body parts, fossilized hair is rare--five times rarer than feathers--despite being an important tool for understanding ancient species. This finding has researchers trying to determine if the lack of hair in the fossil record has to do with physical traits that might make it more difficult for hair to fossilize, or an issue with scientists' collection techniques that could lead to them missing important finds.

- [**Cilia: 'The bouncer' of bacteria**](#) [周五, 08 9月 02:27]

A new paper elucidates the active role of cilia in regulating flow for bacteria filtering and enhancing chemical communication.

- [**Eighteenth century nautical charts reveal coral**](#)

loss [周五, 08 9月 02:27]

Centuries-old nautical charts, mapped by long-deceased sailors to avoid shipwrecks, have been used by modern scientists to study loss of coral reefs. A new study compared early British charts to modern coral habitat maps to understand changes to reef environments.

• **Courts' critical, underappreciated role in climate policy** [周五, 08 9月 02:26]

Both climate lawsuits and their reliance on scientific data have increased over the past decade, the most extensive study to date shows.

• **Circadian clock's inner gears** [周五, 08 9月 02:26]

A set of core clock proteins organize themselves into a handful of molecular machines that control the precise workings of the body's circadian rhythms, new research has found.

• **Discovery of chromosome motor supports DNA loop extrusion** [周五, 08 9月 02:26]

It is one of the mysteries in biology: how does a cell neatly distribute its replicated DNA between two daughter cells? Scientists are split into two camps: the first argues that condensing works like a hook, tying DNA together. The other camp thinks that the ring-shaped protein pulls the DNA inwards to create a loop. Now researchers from give the 'loop-extrusion camp' a boost: condensin does indeed have the putative 'motor power' on board.

• **Researchers closer to uncovering a new feature in heart failure** [周五, 08 9月 01:29]

Each cell in the average human body contains 23 pairs of chromosomes, with four telomeres on each pair. Telomeres cover the end of the chromosome, protecting it from deterioration or fusion with adjacent chromosomes. While there is a length range for classifying a healthy telomere, researchers found, for the first time ever, that people with heart failure have shorter telomeres within the cells that make up the heart muscle (known as cardiomyocytes).

- [**Human skin cells transformed directly into motor neurons**](#) [周五, 08 9月 01:28]

Scientists have converted skin cells from healthy adults directly into motor neurons without going through a stem cell state. The technique makes it possible to study motor neurons of the human central nervous system in the lab. Unlike commonly studied mouse motor neurons, human motor neurons growing in the lab would be a new tool since researchers can't take samples of these neurons from living people but can easily take skin samples.

- [**Shortened telomeres linked to dysfunction in Duchenne muscular dystrophy, researchers find**](#) [周五, 08 9月 01:25]

A discovery about muscular dystrophy disorders has been made that suggests new possibilities for treatment. Researchers found that stem cells in the muscles of muscular dystrophy patients may, at an early age, lose their ability to regenerate new muscle, due to shortened telomeres.

- [**New acid-free magnet recycling process created**](#) [周五, 08 9月 01:25]

A new rare-earth magnet recycling process dissolves magnets in an acid-free solution and recovers high purity rare earth elements.

- [**Curious properties: Researchers analyze flocking behavior on curved surfaces**](#) [周五, 08 9月 01:25]

A murmuration of starlings. The phrase reads like something from literature or the title of an arthouse film. In fact, it is meant to describe the phenomenon that results when hundreds, sometimes thousands, of these birds fly in swooping, intricately coordinated patterns through the sky.

- [**SNAP benefits aren't enough to afford a healthy diet**](#) [周五, 08 9月 00:56]

A new study finds that the Supplemental Nutrition Assistance Program (SNAP), formerly known as Food Stamps, only covers 43-60 percent of what it costs to consume a diet consistent with federal dietary guidelines for what constitutes a healthy diet. The study highlights the challenges

lower-income households face in trying to eat a healthy diet.

• [**Producing malaria treatment at large scales**](#) [周五, 08 9

月 00:56]

For the first time, production of the anti-malarial drug artemisinin has been achieved at an industrial scale using genetically engineered moss. This offers new hope for stabilizing artemisinin supplies and combatting malaria.

• [**Lignin: Much more valuable than just as waste**](#) [周

五, 08 9月 00:03]

Lignin, a substance considered as a waste product in biomass and ethanol production, will now reach its proper value as bio-oil in new products.

• [**Aspirin tablets help unravel basic physics**](#) [周五, 08 9月

00:03]

Aspirin in form of small crystallites provides new insight into delicate motions of electrons and atomic nuclei. Set into molecular vibration by strong ultrashort far-infrared (terahertz) pulses, the nuclei oscillate much faster than for weak excitation. They gradually return to their intrinsic oscillation frequency, in parallel to the picosecond decay of electronic motions. An analysis of the terahertz waves radiated from the moving particles by in-depth theory reveals the strongly coupled chara...

• [**What makes alcoholics drink? Research shows it's more complex than supposed**](#) [周五, 08 9月 00:02]

What makes alcoholics drink? New research has found that in both men and women with alcohol dependence, the major factor predicting the amount of drinking seems to be a question of immediate mood. Surprisingly men with a history of depression were drinking less often than men who were not depressed. This probably means that alcohol treatment needs to be individually tailored.

• [**Scanning tunneling microscopy measurements identify active sites on catalyst surfaces**](#) [周五, 08 9月 00:02]

Chemistry live: using a scanning tunneling microscope, researchers were able for the very first time to witness in detail the activity of catalysts during an electrochemical reaction. The measurements show how the

surface structure of the catalysts influences their activity. The new analysis method can now be used to improve catalysts for the electrochemical industry.

- [**'Rubber material' discovered that could lead to scratch-proof paint for car**](#) [周五, 08 9月 00:02]

A stretchy miracle material has been discovered that could be used to create highly resistant smart devices and scratch-proof paint for cars, report investigators.

- [**Direct evidence of sea level 'fingerprints' discovered**](#) [周五, 08 9月 00:02]

The first observation of sea level 'fingerprints' -- tell-tale differences in sea level rise around the world in response to changes in continental water and ice sheet mass -- has been reported by researchers.

- [**Cellular tango: Immune and nerve cells work together to fight gut infections**](#) [周四, 07 9月 23:24]

Nerve cells in the gut play a crucial role in the body's ability to marshal an immune response to infection, according to a new study.

- [**Climate change for aliens**](#) [周四, 07 9月 23:24]

For more than 50 years, the Kardashev scale has been the gold standard for classifying hypothetical 'exo-civilizations' by their ability to harness energy. A team of researchers has devised a new system that takes into account the impacts of that energy use.

- [**Pluto features given first official names**](#) [周四, 07 9月 23:24]

The Working Group for Planetary System Nomenclature of the International Astronomical Union has officially approved the naming of 14 features on the surface of Pluto. These are the first geological features on the planet to be named following the close flyby by the New Horizons spacecraft in July 2015.

- [**Nutrition has benefits for brain network organization**](#) [周四, 07 9月 23:24]

Nutrition has been linked to cognitive performance, but researchers have

not pinpointed what underlies the connection. A new study found that monounsaturated fatty acids -- a class of nutrients found in olive oils, nuts and avocados -- are linked to general intelligence, and that this relationship is driven by the correlation between MUFAs and the organization of the brain's attention network.

- **[3-D-printed biomaterials that degrade on demand](#)** [周四, 07 9月 23:24]

The temporary structures, which can be degraded away with a biocompatible chemical trigger, could be useful in fabricating microfluidic devices, creating biomaterials that respond dynamically to stimuli and in patterning artificial tissue.

- **[Link between positive emotions and health depends on culture](#)** [周四, 07 9月 23:24]

Positive emotions are often seen as critical aspects of healthy living, but new research suggests that the link between emotion and health outcomes may vary by cultural context. The findings show that experiencing positive emotions is linked with better cardiovascular health in the US but not in Japan.

- **[Using antidepressants during pregnancy may affect your child's mental health](#)** [周四, 07 9月 23:24]

The use of antidepressants during pregnancy increases the risk of your child being diagnosed with a psychiatric disorder later in life, a study of almost one million Danish children shows. However, heritability also plays a part, according to the researchers.

- **[Biomarkers as predictive of sepsis as lengthy patient monitoring](#)** [周四, 07 9月 23:23]

One measurement of key biomarkers in blood that characterize sepsis can give physicians as much information as hours of monitoring symptoms, a new study found.

- **[Connection between low oxygen levels, human gene discovered](#)** [周四, 07 9月 23:23]

Researchers have established a link between hypoxia, a condition that reduces the flow of oxygen to tissues, and HOTAIR, a noncoding RNA or molecule that has been implicated in several types of cancer.

- [**You are what you think you eat**](#) [周四, 07 9月 22:43]

Despite eating the same breakfast, made from the same ingredients, people consumed more calories throughout the day when they believed that one of the breakfasts was less substantial than the other, investigators have found.

- [**Fifty–fifty split best for children of divorce, study suggests**](#) [周四, 07 9月 22:43]

Preschool children in joint physical custody have less psychological symptoms than those who live mostly or only with one parent after a separation. In a new study of 3,656 children, researchers show that 3–5-year-olds living alternately with their parents after a separation show less behavioral problems and psychological symptoms than those living mostly or only with one of the parents.

- [**Smartphone screen technology used to trick harmful bacteria**](#) [周四, 07 9月 22:41]

Conducting plastics found in smartphone screens can be used to trick the metabolism of pathogenic bacteria, report scientists. By adding or removing electrons from the plastic surface, bacteria may be tricked into growing more or less. The method may find widespread use in preventing bacterial infections in hospitals or improve effectiveness in wastewater management.

- [**Academic argues for changes in the laws governing modern warfare**](#) [周四, 07 9月 22:41]

Modern warfare and terrorist acts often sees the killing of innocent civilians which presents complex challenges for the international legal framework governing the conduct of armed conflicts, explains a new report.

- [**Genes behind gestation length, preterm delivery**](#)

[identified](#) [周四, 07 9月 22:39]

The genes that regulate gestational length and the likelihood of preterm delivery, have been identified in a study involving more than 50,000 women. An article describes the scientific breakthrough that can lead to improved health and survival among children.

• [Mixing and matching yeast DNA](#) [周四, 07 9月 22:38]

Scientists show molecular factors that determine why some regions in yeast chromosomes are apt for remodeling, while other regions stay faithful during cell replication.

• [New dental imaging method uses squid ink to fish for gum disease](#) [周四, 07 9月 22:24]

Squid ink could one day make getting checked for gum disease at the dentist less tedious and even painless. By combining squid ink with light and ultrasound, a team led by engineers has developed a new dental imaging method to examine a patient's gums that is noninvasive, more comprehensive and more accurate than the state of the art.

• [Hidden Inca treasure: Remarkable new tree genus discovered in the Andes](#) [周四, 07 9月 22:24]

Hidden in plain sight -- that's how researchers describe their discovery of a new genus of large forest tree commonly found, yet previously scientifically unknown, in the tropical Andes.

• [Ultraviolet light from superluminous supernova key to revealing explosion mechanism](#) [周四, 07 9月 22:24]

An international team of researchers has discovered a way to use UV light from superluminous supernovae to uncover its explosion mechanism, and used it to identify Gaia16apd as a shock-interacting supernova, reports a new study.

Folic acid may mitigate autism risk from pesticides -- ScienceDaily

Researchers at UC Davis and other institutions have shown that mothers who take recommended amounts of folic acid around conception might reduce their children's pesticide-related autism risk.

In the study, children whose mothers took 800 or more micrograms of folic acid (the amount in most prenatal vitamins) had a significantly lower risk of developing autism spectrum disorder (ASD) -- even when their mothers were exposed to household or agricultural pesticides associated with increased risk. The study appears today in the journal *Environmental Health Perspectives*.

"We found that if the mom was taking folic acid during the window around conception, the risk associated with pesticides seemed to be attenuated," said Rebecca J. Schmidt, assistant professor in the Department of Public Health Sciences and first author on the paper. "Mothers should try to avoid pesticides. But if they live near agriculture, where pesticides can blow in, this

might be a way to counter those effects."

In the paper, which used data from the Childhood Autism Risks from Genetics and the Environment (CHARGE) study, researchers looked at 296 children between 2 and 5 who had been diagnosed with ASD and 220 who had developed typically. Mothers were interviewed about their household pesticide exposure during pregnancy, as well as their folic acid and B vitamin intake. The team also linked data from California Pesticide Use reports, which provide important details about agricultural spraying, with the mothers' addresses.

Mothers who took less than 800 micrograms and encountered household pesticides had a much higher estimated risk of having a child who developed an ASD than moms who took 800 micrograms of folic acid or more and were not exposed to pesticides. The associated risk increased for women exposed repeatedly. Women with low folic acid intake who were exposed to agricultural pesticides during a window from three months before conception to three months afterward also were at higher estimated risk.

"Folic acid intake below the median and exposure to

pesticides was associated with higher risk of autism than either low intake or exposure alone," said Schmidt, a UC Davis MIND Institute faculty member. "The mothers who had the highest risk were the ones who were exposed to pesticides regularly."

While folic acid did reduce the associated risk of a child developing autism, it did not entirely eliminate it.

"It would be better for women to avoid chronic pesticide exposure if they can while pregnant," Schmidt said.

The authors caution that this is a case-control study that relied heavily on participants' memories. In addition, they have yet to establish a causal link. However, these results certainly warrant larger studies to validate them. The team is also eager to investigate the mechanisms that contribute to folic acid's possible protective effects.

"Folate plays a critical role in DNA methylation (a process by which genes are turned off or on), as well as in DNA repair and synthesis," said Schmidt. "These are all really important during periods of rapid growth when there are lots of cells dividing, as in a developing

fetus. Adding folic acid might be helping out in a number of these genomic functions."

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Scientists unravel new insights into promising semiconductor material -- ScienceDaily

Researchers from the National University of Singapore (NUS) have established new findings on the properties of two-dimensional molybdenum disulfide (MoS_2), a widely studied semiconductor of the future.

In two separate studies led by Professor Andrew Wee and Assistant Professor Andriwo Rusydi from the Department of Physics at the NUS Faculty of Science, the researchers uncovered the role of oxygen in MoS_2 , and a novel technique to create multiple tunable, inverted optical band gaps in the material. These novel insights deepen the understanding of the intrinsic properties of MoS_2 which could potentially transform its applications in the semiconductor industry.

The studies were published in scientific journals *Physical Review Letters* and *Nature Communications* respectively.

MoS₂ -- An alternative to graphene

MoS₂ is a semiconductor-like material that exhibits desirable electronic and optical properties for the development and enhancement of transistors, photodetectors and solar cells.

Prof Wee explained, "MoS₂ holds great industrial importance. With an atomically thin two-dimensional structure and the presence of a 1.8eV energy band gap, MoS₂ is a semiconductor that can offer broader applications than graphene which lacks a band gap."

Presence of oxygen alters the electronic and optical properties of MoS₂

In the first study published in *Physical Review Letters* on 16 August 2017, NUS researchers conducted an in-depth analysis which revealed that the energy storage capacity or dielectric function of MoS₂ can be altered using oxygen.

The team observed that MoS₂ displayed a higher dielectric function when exposed to oxygen. This new knowledge shed light on how adsorption and

desorption of oxygen by MoS₂ can be employed to modify its electronic and optical properties to suit different applications. The study also highlights the need for adequate consideration of extrinsic factors that may affect the properties of the material in future research.

The first author of this paper is Dr Pranjali Kumar Gogoi from the Department of Physics at NUS Faculty of Science.

MoS₂ can possess two tunable optical band gaps

In the second study published in *Nature Communications* on 7 September 2017, the team of NUS researchers discovered that as opposed to conventional semiconductors which typically have only one optical band gap, electron doping of MoS₂ on gold can create two unusual optical band gaps in the material. In addition, the two optical bandgaps in MoS₂ are tunable via a simple, straight forward annealing process.

The research team also identified that the tunable optical band gaps are induced by strong-charge lattice coupling as a result of the electron doping.

The first author of this second paper is Dr Xinmao Yin from the Department of Physics at NUS Faculty of Science.

The research findings from the two studies lend insights to other materials that possess similar structure with MoS₂.

"MoS₂ falls under a group of material known as the two-dimensional transitional metal dichalcogenides (2D-TMDs) which are of great research interest because of their potential industrial applications. The new knowledge from our studies will assist us in unlocking the possibilities of 2D-TMD-based applications such as the fabrication of 2D-TMD-based field effect transistors," said Asst Prof Rusydi.

Leveraging the findings of these studies, the researchers will apply similar studies to other 2D-TMDs and to explore different possibilities of generating new, valuable properties in 2D-TMDs that do not exist in nature.

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An officer and a gentlewoman from the Viking army in Birka -- ScienceDaily

War was not an activity exclusive to males in the Viking world. A new study conducted by researchers at Stockholm and Uppsala Universities shows that women could be found in the higher ranks at the battlefield.

Charlotte Hedenstierna-Jonson, who led the study, explains: "What we have studied was not a Valkyrie from the sagas but a real life military leader, that happens to be a woman."

The study was conducted on one of the most iconic graves from the Viking Age. It holds the remains of a warrior surrounded by weapons, including a sword, armour-piercing arrows, and two horses. There were also a full set of gaming pieces and a gaming board. "The gaming set indicates that she was an officer," says Charlotte, "someone who worked with tactics and strategy and could lead troops in battle." The warrior was buried in the Viking town of Birka during the mid-10th century. Isotope analyses confirm an itinerant life

style, well in tune with the martial society that dominated 8th to 10th century northern Europe.

Anna Kjellström, who also participated in the study, has taken an interest in the burial previously. "The morphology of some skeletal traits strongly suggests that she was a woman, but this has been the type specimen for a Viking warrior for over a century why we needed to confirm the sex in any way we could."

And this is why the archaeologists turned to genetics, to retrieve a molecular sex identification based on X and Y chromosomes. Such analyses can be quite useful according to Maja Krezwinska: "Using ancient DNA for sex identification is useful when working with children for example, but can also help to resolve controversial cases such as this one." Maja was thus able to confirm the morphological sex identification with the presence of X chromosomes but the lack of a Y chromosome.

Jan Storå, who holds the senior position on this study, reflects over the history of the material: "This burial was excavated in the 1880ies and has served as a model of a professional Viking warrior ever since. Especially, the grave-goods cemented an interpretation

for over a century." It was just assumed she was a man through all these years. "The utilization of new techniques, methods, but also renewed critical perspectives, again, shows the research potential and scientific value of our museum collections."

The study is a part of the ongoing ATLAS project, which is a joint effort by Stockholm University and Uppsala University, supported by Riksbankens Jubileumsfond (The Swedish Foundation for Humanities and Social Sciences) and Vetenskapsrådet (The Swedish Research Council), to investigate the genetic history of Scandinavia.

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Immune cells help fat deal with environmental challenges -- ScienceDaily

Immunosuppressive regulatory T-cells play an important role in the functioning of adipose tissue. This is the discovery of scientists from the Helmholtz Diabetes Center (HDC) at Helmholtz Zentrum München and the Technical University of Munich (TUM). Their findings are published in the journal *Cell Metabolism*.

The number of obese people as well as those suffering from type 2 diabetes is increasing worldwide. Both disorders are associated with metabolic changes including amplified inflammatory responses in adipose tissue. "Previous studies have indicated that immunosuppressive regulatory T-cells -- or Tregs for short -- play an important role in these processes," explains the leader of the study Dr. Carolin Daniel, group leader at the Institute for Diabetes Research (IDF) of the Helmholtz Zentrum München and a scientist in the German Center for Diabetes Research

(DZD). "We now wanted to examine how these immune cells might support adipose function in more detail."

In an experimental model, Daniel, together with co-first authors Dr. Stefanie Kälin and Maike Becker and colleagues, determined that the number of Tregs in adipose tissue increases in response to different environmental stimuli. These stimuli included a short-term cold treatment, stimulation of the sympathetic nervous system (β -adrenoreceptors) or short-term high-caloric exposure. "All these stimuli supported those immunosuppressive cells directly in the adipose tissue," says Becker.

Fat burning activated

The magnitude of the increase in Tregs differed depending on the type of adipose tissue: it was particularly pronounced in brown fat, somewhat weaker in subcutaneous fat and weakest in visceral fat. To investigate the specific function of Tregs, the researchers determined how gene expression changes in adipose tissue. Especially in brown fat, genes were activated that promote heat production (thermogenesis) as well as those that are used for the breakdown

(lipolysis) and burning (oxidation) of fatty acids. Subsequent experiments revealed that the signalling molecules Stat6 und Pten play a vital role in this process.

"A better understanding of the immunological mechanisms involved in the target tissue will be critical for the development of personalized interventions in order to improve adipose tissue function during obesity and diabetes," says the leader of the study Carolin Daniel. "Our experiments show for the first time that Tregs can support fat depots in dealing with environmental challenges."

"Our findings highlight the complex interactions between our body and the environment. We have known for a while that hormones play a key role here - - but now have to accept that immune cells may be just as important for a balanced metabolism," comments Prof. Dr. Matthias Tschöp. He is the scientific director of the HDC at Helmholtz Zentrum München and holds the chair for metabolic diseases at the TUM. "These insights therefore help us tremendously with designing more efficient ways to therapeutically optimize when and how to store calories."

Prof. Dr. Matthias Mann from the Max Planck Institute of Biochemistry in Martinsried as well as the group of PD Dr. Benno Weigmann from Universitätsklinikum Erlangen also made significant contributions to the study.

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All Top News

Top science stories featured on ScienceDaily's home page.

- [**Ship exhaust makes oceanic thunderstorms more intense**](#) [周五, 08 9月 02:27]

Thunderstorms directly above two of the world's busiest shipping lanes are significantly more powerful than storms in areas of the ocean where ships don't travel, according to new research.

- [**Human skin cells transformed directly into motor neurons**](#) [周五, 08 9月 01:28]

Scientists have converted skin cells from healthy adults directly into motor neurons without going through a stem cell state. The technique makes it possible to study motor neurons of the human central nervous system in the lab. Unlike commonly studied mouse motor neurons, human motor neurons growing in the lab would be a new tool since researchers can't take samples of these neurons from living people but can easily take skin samples.

- [**Direct evidence of sea level 'fingerprints' discovered**](#) [周五, 08 9月 00:02]

The first observation of sea level 'fingerprints' -- tell-tale differences in sea level rise around the world in response to changes in continental water and ice sheet mass -- has been reported by researchers.

- [**Pluto features given first official names**](#) [周四, 07 9月 23:24]

The Working Group for Planetary System Nomenclature of the International Astronomical Union has officially approved the naming of 14 features on the surface of Pluto. These are the first geological features on the planet to be named following the close flyby by the New Horizons spacecraft in July 2015.

[**Nutrition has benefits for brain network organization**](#) [周四, 07 9月 23:24]

Nutrition has been linked to cognitive performance, but researchers have not pinpointed what underlies the connection. A new study found that monounsaturated fatty acids -- a class of nutrients found in olive oils, nuts and avocados -- are linked to general intelligence, and that this relationship is driven by the correlation between MUFAs and the organization of the brain's attention network.

[**3-D-printed biomaterials that degrade on demand**](#) [周四, 07 9月 23:24]

The temporary structures, which can be degraded away with a biocompatible chemical trigger, could be useful in fabricating microfluidic devices, creating biomaterials that respond dynamically to stimuli and in patterning artificial tissue.

[**Intermittent electrical brain stimulation improves memory**](#) [周四, 07 9月 22:23]

Intermittent electrical stimulation of an area deep inside the brain that degenerates in Alzheimer's appears to improve working memory, scientists report. Conversely, continuous deep brain stimulation, like the type used for Parkinson's and currently under study in humans with Alzheimer's, impairs memory, according to study.

[**How monkey fights grow**](#) [周四, 07 9月 21:36]

New research finds evidence for a complicated structure behind primate conflict. It is not individuals who control the length of fights, but the relationships between pairs of individuals.

[**Emoji fans take heart: Scientists pinpoint 27 states of emotion**](#) [周四, 07 9月 21:36]

The Emoji Movie, in which the protagonist can't help but express a wide variety of emotions instead of the one assigned to him, may have gotten something right. A new study challenges a long-held assumption in psychology that most human emotions fall within the universal

categories of happiness, sadness, anger, surprise, fear and disgust.

• [**Monkey sees ... monkey knows?**](#) [周四, 07 9月 01:55]

Monkeys had higher confidence in their ability to remember an image when the visual contrast was high. These kinds of metacognitive illusions -- false beliefs about how we learn or remember best -- are shared by humans, leading brain and cognitive scientists to believe that metacognition could have an evolutionary basis.

• [**Researchers report new way to make dissolving electronics**](#) [周四, 07 9月 01:55]

Researchers have reported a new type of electronic device that can be triggered to dissolve through exposure to water molecules in the atmosphere. The work holds promise for eco-friendly disposable personal electronics and biomedical devices that dissolve within the body.

• [**Accretion-powered pulsar reveals unique timing glitch**](#) [周三, 06 9月 22:36]

The discovery of the largest timing irregularity yet observed in a pulsar is the first confirmation that pulsars in binary systems exhibit the strange phenomenon known as a 'glitch.'

• [**Biologists slow aging, extend lifespan of fruit flies**](#) [周三, 06 9月 22:34]

In research that potentially could delay the onset of Parkinson's disease, Alzheimer's disease, cancer, stroke, cardiovascular disease, and other diseases of aging, biologists have produced a genetic one-two punch that significantly slowed aging and improved health in the middle-aged fruit flies they studied.

• [**Clever cockatoos bend hooks into straight wire to fish for food**](#) [周三, 06 9月 08:29]

Bending of a hook into wire to fish for the handle of a basket by crow Betty 15 years ago stunned the scientific world. Cognitive biologists studied tool making in an Indonesian cockatoo. Other than crows,

cockatoos are not using tools in the wild. The birds manufactured hook tools out of straight wire without ever having seen or used a hook tool before.

- [**Something to sneeze about: Democratic voting in African wild dog packs**](#) [周三, 06 9月 08:29]

Scientists studying African wild dogs in Botswana have found members of this endangered species use sneezes to vote on when the pack will move off and start hunting.

- [**Newly-discovered semiconductor dynamics may help improve energy efficiency**](#) [周三, 06 9月 08:29]

Researchers examining the flow of electricity through semiconductors have uncovered another reason these materials seem to lose their ability to carry a charge as they become more densely 'doped.'

- [**Humans still evolving, large-scale study of genetic data shows**](#) [周三, 06 9月 02:55]

In a study analyzing the genomes of 210,000 people in the United States and Britain, researchers have found that the genetic variants linked to Alzheimer's disease and heavy smoking are less frequent in people with longer lifespans, suggesting that natural selection is weeding out these unfavorable variants in both populations.

- [**Eat fat, live longer?**](#) [周三, 06 9月 02:55]

As more people live into their 80s and 90s, researchers have delved into the issues of health and quality of life during aging. A recent mouse study sheds light on those questions by demonstrating that a high fat, or ketogenic, diet not only increases longevity, but improves physical strength.

- [**Swings in dad's testosterone affects the family -- for better or worse -- after baby arrives**](#) [周三, 06 9月 02:55]

Testosterone levels are a key factor in a family's health and happiness after a newborn arrives. Researchers have found that a drop can signal postpartum depression in dad, and a spike may be a sign of aggression.

• [**Cooling system works without electricity**](#) [周三, 06 9月 02:55]

Scientists cooled water without electricity by sending excess heat where it won't be noticed -- space. The specialized optical surfaces they developed are a major step toward applying this technology to air conditioning and refrigeration.

• [**Crab nebula in the limelight: Unified model for the entire radiation spectrum**](#) [周三, 06 9月 00:48]

The origin of cosmic rays, high-energy particles from outer space constantly impacting on Earth, is among the most challenging open questions in astrophysics. Now research sheds new light on the origin of those energetic particles.

• [**Contagious yawning more closely associated with perceptual sensitivity than empathy**](#) [周三, 06 9月 00:33]

Contrary to common belief that the yawning contagion is associated with empathy, it is in fact, more likely that perceptual sensitivity is to blame, research suggests.

• [**Discovery of boron on Mars adds to evidence for habitability**](#) [周三, 06 9月 00:32]

The discovery of boron on Mars gives scientists more clues about whether life could have ever existed on the planet, according to a new paper.

• [**'Extreme' telescopes find the second-fastest-spinning pulsar**](#) [周三, 06 9月 00:32]

By following up on mysterious high-energy sources mapped by NASA's Fermi Gamma-ray Space Telescope, a Netherlands-based radio telescope has discovered a new pulsar, the second fastest-spinning known.

• [**CRISPR technology used to change flower color**](#)

[周三, 06 9月 00:32]

In a world-first, scientists have used the revolutionary CRISPR, or CRISPR/Cas9, genome-editing tool to change flower color in an ornamental plant.

- [**The sniff test of self-recognition confirmed: Dogs have self-awareness**](#) [周二, 05 9月 23:13]

A new research study used a sniff-test to evaluate the ability of dogs to recognize themselves. The experiment confirms the hypothesis of dogs' self-cognition proposed last year.

- [**Zika virus kills brain cancer stem cells**](#) [周二, 05 9月 21:36]

While Zika virus causes devastating damage to the brains of developing fetuses, it one day may be an effective treatment for glioblastoma, a deadly form of brain cancer. New research shows that the virus kills brain cancer stem cells, the kind of cancer cells most resistant to standard treatments.

- [**Was the primordial soup a hearty pre-protein stew?**](#) [周二, 05 9月 21:36]

How proteins evolved billions of years ago, when Earth was devoid of life, has stumped many a scientist. A little do-si-do between amino acids and their chemical lookalikes may have done the trick. Evolutionary chemists tried it and got results by the boatload.

- [**Face value: Brain's ability to recognize faces is shaped through repeated exposure, study suggests**](#) [周二, 05 9月 00:04]

Scientists have long deemed the ability to recognize faces innate for people and other primates -- something our brains just know how to do immediately from birth. However, the findings of a new study cast doubt on this longstanding view.

- [**More 'losers' than 'winners' predicted for Southern Ocean seafloor animals**](#) [周二, 05 9月 00:04]

A new study of the marine invertebrates living in the seas around Antarctica reveals there will be more 'losers' than 'winners' over the next century as the Antarctic seafloor warms.

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

- [**Folic acid may mitigate autism risk from pesticides**](#) [周六, 09 9月 08:55]

Researchers have shown that mothers who take recommended amounts of folic acid around conception might reduce their children's pesticide-related autism risk.

- [**Immune cells help fat deal with environmental challenges**](#) [周六, 09 9月 08:55]

Immunosuppressive regulatory T-cells play an important role in the functioning of adipose tissue.

- [**How to draw electricity from the bloodstream**](#) [周六, 09 9月 08:54]

Men build dams and huge turbines to turn the energy of waterfalls and tides into electricity. To produce hydropower on a much smaller scale, scientists have now developed a lightweight power generator based on carbon nanotube fibers suitable to convert even the energy of flowing blood in blood vessels into electricity.

- [**Better understanding of 'one of the most complex organs' for better lung treatments**](#) [周五, 08 9月 02:45]

Details of lung cell molecular pathways that promote or inhibit tissue regeneration have been reported by researchers. Their aim is to find new ways to treat lung disorders.

- [**Mediterranean-style diet may eliminate need for reflux medications**](#) [周五, 08 9月 02:30]

A plant-based, Mediterranean-style diet has been shown to provide the same medical benefits for treating laryngopharyngeal reflux as popular reflux medications, according to new research.

- [**Cilia: 'The bouncer' of bacteria**](#) [周五, 08 9月 02:27]

A new paper elucidates the active role of cilia in regulating flow for bacteria filtering and enhancing chemical communication.

- [**Circadian clock's inner gears**](#) [周五, 08 9月 02:26]

A set of core clock proteins organize themselves into a handful of molecular machines that control the precise workings of the body's circadian rhythms, new research has found.

- [**Discovery of chromosome motor supports DNA loop extrusion**](#) [周五, 08 9月 02:26]

It is one of the mysteries in biology: how does a cell neatly distribute its replicated DNA between two daughter cells? Scientists are split into two camps: the first argues that condensing works like a hook, tying DNA together. The other camp thinks that the ring-shaped protein pulls the DNA inwards to create a loop. Now researchers from give the 'loop-extrusion camp' a boost: condensin does indeed have the putative 'motor power' on board.

- [**Researchers closer to uncovering a new feature in heart failure**](#) [周五, 08 9月 01:29]

Each cell in the average human body contains 23 pairs of chromosomes, with four telomeres on each pair. Telomeres cover the end of the chromosome, protecting it from deterioration or fusion with adjacent chromosomes. While there is a length range for classifying a healthy telomere, researchers found, for the first time ever, that people with heart failure have shorter telomeres within the cells that make up the heart muscle (known as cardiomyocytes).

- [**Shortened telomeres linked to dysfunction in Duchenne muscular dystrophy, researchers find**](#) [周五, 08 9月 01:25]

A discovery about muscular dystrophy disorders has been made that

suggests new possibilities for treatment. Researchers found that stem cells in the muscles of muscular dystrophy patients may, at an early age, lose their ability to regenerate new muscle, due to shortened telomeres.

- [**SNAP benefits aren't enough to afford a healthy diet**](#) [周五, 08 9月 00:56]

A new study finds that the Supplemental Nutrition Assistance Program (SNAP), formerly known as Food Stamps, only covers 43-60 percent of what it costs to consume a diet consistent with federal dietary guidelines for what constitutes a healthy diet. The study highlights the challenges lower-income households face in trying to eat a healthy diet.

- [**Producing malaria treatment at large scales**](#) [周五, 08 9月 00:56]

For the first time, production of the anti-malarial drug artemisinin has been achieved at an industrial scale using genetically engineered moss. This offers new hope for stabilizing artemisinin supplies and combatting malaria.

- [**What makes alcoholics drink? Research shows it's more complex than supposed**](#) [周五, 08 9月 00:02]

What makes alcoholics drink? New research has found that in both men and women with alcohol dependence, the major factor predicting the amount of drinking seems to be a question of immediate mood. Surprisingly men with a history of depression were drinking less often than men who were not depressed. This probably means that alcohol treatment needs to be individually tailored.

- [**Cellular tango: Immune and nerve cells work together to fight gut infections**](#) [周四, 07 9月 23:24]

Nerve cells in the gut play a crucial role in the body's ability to marshal an immune response to infection, according to a new study.

- [**Nutrition has benefits for brain network organization**](#) [周四, 07 9月 23:24]

Nutrition has been linked to cognitive performance, but researchers have not pinpointed what underlies the connection. A new study found that

monounsaturated fatty acids -- a class of nutrients found in olive oils, nuts and avocados -- are linked to general intelligence, and that this relationship is driven by the correlation between MUFAs and the organization of the brain's attention network.

- [**3-D-printed biomaterials that degrade on demand**](#) [周四, 07 9月 23:24]

The temporary structures, which can be degraded away with a biocompatible chemical trigger, could be useful in fabricating microfluidic devices, creating biomaterials that respond dynamically to stimuli and in patterning artificial tissue.

- [**Link between positive emotions and health depends on culture**](#) [周四, 07 9月 23:24]

Positive emotions are often seen as critical aspects of healthy living, but new research suggests that the link between emotion and health outcomes may vary by cultural context. The findings show that experiencing positive emotions is linked with better cardiovascular health in the US but not in Japan.

- [**Using antidepressants during pregnancy may affect your child's mental health**](#) [周四, 07 9月 23:24]

The use of antidepressants during pregnancy increases the risk of your child being diagnosed with a psychiatric disorder later in life, a study of almost one million Danish children shows. However, heritability also plays a part, according to the researchers.

- [**Biomarkers as predictive of sepsis as lengthy patient monitoring**](#) [周四, 07 9月 23:23]

One measurement of key biomarkers in blood that characterize sepsis can give physicians as much information as hours of monitoring symptoms, a new study found.

- [**Connection between low oxygen levels, human gene discovered**](#) [周四, 07 9月 23:23]

Researchers have established a link between hypoxia, a condition that

reduces the flow of oxygen to tissues, and HOTAIR, a noncoding RNA or molecule that has been implicated in several types of cancer.

- [**You are what you think you eat**](#) [周四, 07 9月 22:43]

Despite eating the same breakfast, made from the same ingredients, people consumed more calories throughout the day when they believed that one of the breakfasts was less substantial than the other, investigators have found.

- [**Fifty–fifty split best for children of divorce, study suggests**](#) [周四, 07 9月 22:43]

Preschool children in joint physical custody have less psychological symptoms than those who live mostly or only with one parent after a separation. In a new study of 3,656 children, researchers show that 3–5-year-olds living alternately with their parents after a separation show less behavioral problems and psychological symptoms than those living mostly or only with one of the parents.

- [**Smartphone screen technology used to trick harmful bacteria**](#) [周四, 07 9月 22:41]

Conducting plastics found in smartphone screens can be used to trick the metabolism of pathogenic bacteria, report scientists. By adding or removing electrons from the plastic surface, bacteria may be tricked into growing more or less. The method may find widespread use in preventing bacterial infections in hospitals or improve effectiveness in wastewater management.

- [**Genes behind gestation length, preterm delivery identified**](#) [周四, 07 9月 22:39]

The genes that regulate gestational length and the likelihood of preterm delivery, have been identified in a study involving more than 50,000 women. An article describes the scientific breakthrough that can lead to improved health and survival among children.

- [**Mixing and matching yeast DNA**](#) [周四, 07 9月 22:38]

Scientists show molecular factors that determine why some regions in yeast chromosomes are apt for remodeling, while other regions stay

faithful during cell replication.

- [**Proteins keep a grip on cells**](#) [周四, 07 9月 22:38]

Scientists have revealed new structural information on the integrin-laminin interaction. These findings provide important insights on cellular interactions that promote cell growth, differentiation, and migration.

- [**New dental imaging method uses squid ink to fish for gum disease**](#) [周四, 07 9月 22:24]

Squid ink could one day make getting checked for gum disease at the dentist less tedious and even painless. By combining squid ink with light and ultrasound, a team led by engineers has developed a new dental imaging method to examine a patient's gums that is noninvasive, more comprehensive and more accurate than the state of the art.

- [**Sometimes you shouldn't say sorry**](#) [周四, 07 9月 22:24]

Being socially rejected can be a painful emotional experience -- but being told sorry may not soften the blow, finds a new study. Contrary to popular belief, apologies increase hurt feelings and the need to express forgiveness, but do not increase feelings of forgiveness, for the person being rebuffed.

- [**Trigger for fatty liver in obesity**](#) [周四, 07 9月 22:24]

Morbid obesity affects the liver: almost one-third of all adults suffer from chronic fatty liver disease, which can lead to infections and even trigger cancer. Researchers have now found a signaling pathway in cells that play an important role in the development of fatty liver disease.

- [**Want your question answered quickly? Use gestures as well as words**](#) [周四, 07 9月 22:23]

When someone asks a question during a conversation, their conversation partner answers more quickly if the questioner also moves their hands or head to accompany their words. The study focuses on how gestures influence language processing.

- [**Intermittent electrical brain stimulation**](#)

improves memory [周四, 07 9月 22:23]

Intermittent electrical stimulation of an area deep inside the brain that degenerates in Alzheimer's appears to improve working memory, scientists report. Conversely, continuous deep brain stimulation, like the type used for Parkinson's and currently under study in humans with Alzheimer's, impairs memory, according to study.

Long-term opioid prescription use jumps threefold over 16-year period, study suggests [周四, 07 9月 22:23]

Opioid prescription use increased significantly between 1999 and 2014, new research has found, and that much of that increase stemmed from patients who'd been taking their medication for 90 days or longer.

A tiny device offers insights to how cancer spreads [周四, 07 9月 21:36]

Researchers developed a new type of microfluidic device that can cultivate cells for longer periods of time, better reflecting how cancer cells to change over time. The device allowed them to capture the leader cells that would be first to break away and cause metastasis.

Uncovering the mechanism behind heart failure, mortality in sepsis [周四, 07 9月 21:36]

Of the nearly 1 million people in the US who are affected by sepsis annually, almost one-fifth die. Cardiovascular complications account for approximately 80 percent of those deaths. Now, researchers describe the mechanism underlying the loss of energy from heart dysfunction in sepsis, opening the way for the development of a new therapy that could save thousands of lives annually.

Children exposed to chemicals in 9/11 'dust' show early signs of risk of heart disease [周四, 07 9月 21:36]

Sixteen years after the collapse of the World Trade Center towers sent a 'cloud' of toxic debris across Lower Manhattan, children living nearby who likely breathed in the ash and fumes are showing early signs of risk for future heart disease.

- [**Link established between a molecular driver of melanoma, novel therapeutic agent**](#) [周四, 07 9月 21:36]

Scientists have described a correlation between a key melanoma signaling pathway and a novel class of drugs being tested in the clinic as adjuvant therapy for advanced melanoma, providing useful information for a more effective use of this type of treatment.

- [**How do close relationships lead to longer life?**](#) [周四, 07 9月 21:36]

While recent research has shown that loneliness can play a role in early death, psychologists are also concerned with the mechanisms by which social relationships and close personal ties affect health. New research offers an overview of the science and makes the case for psychological scientists to work together to make close relationships a public health priority.

- [**Emoji fans take heart: Scientists pinpoint 27 states of emotion**](#) [周四, 07 9月 21:36]

The Emoji Movie, in which the protagonist can't help but express a wide variety of emotions instead of the one assigned to him, may have gotten something right. A new study challenges a long-held assumption in psychology that most human emotions fall within the universal categories of happiness, sadness, anger, surprise, fear and disgust.

- [**Drivers don't ignore a ringing phone but do ignore the risk**](#) [周四, 07 9月 21:36]

Drivers find it difficult to ignore a ringing phone but do ignore the dangers, with a new study revealing almost 50 percent believe locating and answering a ringing phone is not as risky as talking and texting. Research has found locating a ringing phone, checking who's calling, and rejecting or answering the call, is the most frequent mobile phone task undertaken by drivers.

- [**Improved stem cell transplantation therapies?**](#) [周四, 07 9月 21:36]

Researchers have demonstrated that hematopoietic stem cell (HSC) transplants can be improved by treatments that temporarily prevent the

stem cells from dying. The approach could allow those in need of such transplants, including leukemia and lymphoma patients, to be treated with fewer donor stem cells while limiting potential adverse side effects.

- **[Cheaper, faster test for E. coli in drinking water](#)**

[周四, 07 9月 21:36]

Researchers have invented a fast, affordable way for developing communities to test their drinking water for potentially deadly E. coli.

- **[Tooth trouble: Many middle-aged adults report dental pain, embarrassment and poor prevention](#)**

[周四, 07 9月 21:36]

The dental health of middle-aged Americans faces a lot of problems right now, and an uncertain future to come, according to new national poll results. One in three Americans between the ages of 50 and 64 say they're embarrassed by the condition of their teeth, and that dental problems have caused pain or other problems in the past two years. Forty percent of those polled don't get regular cleanings or other preventive oral care.

- **[Ebola: Early immune response provides insight into vaccination](#)**

[周四, 07 9月 21:36]

The latest outbreaks of emerging pathogens, such as Ebola or Zika, emphasize the importance of the rapid development of vaccines. However, being able to predict the efficacy of new vaccines remains a challenge in vaccine development. Scientists have now successfully assessed early on the longer-term immune response in humans after being vaccinated with the newly developed Ebola vaccine rVSV-ZEBOV.

- **[Chronic bronchitis: New insights could lead to first diagnostic test, better treatments](#)**

[周四, 07 9月 10:12]

Researchers describe how the concentration of mucins -- the proteins that make mucus thick -- is abnormally high in chronic bronchitis and that high mucin concentrations are associated with disease severity in people with chronic bronchitis. This finding could become the first-ever

objective marker of chronic bronchitis and lead to the creation of diagnostic and prognostic tools.

- [**Discovery of genes linked to preterm birth in landmark study**](#) [周四, 07 9月 10:12]

A massive international DNA analysis of pregnant women has identified for the first time six gene regions that influence the length of pregnancy and the timing of birth. The findings may lead to new ways to prevent preterm birth and its consequences -- the leading cause of death among children under age 5 worldwide.

- [**Human genetics studies reveal new targets to reduce heart disease**](#) [周四, 07 9月 05:06]

Again and again, it's the rare among humans that help the rest of us. The exploration of human genetics is revealing new targets to combat heart disease among atypical variants. Mutations in genes that play a role in heart health are the inspiration for a cluster of new heart drugs.

- [**Honeybees could play a role in developing new antibiotics**](#) [周四, 07 9月 05:06]

An antimicrobial compound made by honeybees could become the basis for new antibiotics, according to new research.

- [**Statins reduce deaths from coronary heart disease by 28 per cent in men, according to longest ever study**](#) [周四, 07 9月 05:04]

A new study focused on men with high levels of 'bad' cholesterol and no other risk factors or signs of heart disease.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

• [**When electrons ride a wave**](#) [周六, 09 9月 08:55]

Conventional electron accelerators are an indispensable tool in modern research. But even smaller versions of these super microscopes are the size of a soccer field. Laser plasma acceleration could offer an alternative with a smaller footprint and higher peak currents. So far, the challenge with laser accelerators has been to create a reliable and stable electron beam, which is the prerequisite for applications. Physicists have developed a method to increase beam stability and quality.

• [**Scientists unravel new insights into promising semiconductor material**](#) [周六, 09 9月 08:55]

Researchers have established new findings on the properties of two-dimensional molybdenum disulfide, a widely studied semiconductor of the future.

• [**Are we being watched? Tens of other worlds could spot the Earth**](#) [周六, 09 9月 08:55]

Scientists have turned exoplanet-hunting on its head, in a study that instead looks at how an alien observer might be able to detect Earth using our own methods. They find that at least nine exoplanets are ideally placed to observe transits of Earth.

• [**High-speed quantum memory for photons**](#) [周六, 09 9月 08:54]

Physicists have developed a memory that can store photons. These quantum particles travel at the speed of light and are thus suitable for high-speed data transfer. The researchers were able to store them in an atomic vapor and read them out again later without altering their

quantum mechanical properties too much. This memory technology is simple and fast and it could find application in a future quantum Internet.

- [**How to draw electricity from the bloodstream**](#) [周六, 09 9月 08:54]

Men build dams and huge turbines to turn the energy of waterfalls and tides into electricity. To produce hydropower on a much smaller scale, scientists have now developed a lightweight power generator based on carbon nanotube fibers suitable to convert even the energy of flowing blood in blood vessels into electricity.

- [**New acid-free magnet recycling process created**](#) [周五, 08 9月 01:25]

A new rare-earth magnet recycling process dissolves magnets in an acid-free solution and recovers high purity rare earth elements.

- [**Curious properties: Researchers analyze flocking behavior on curved surfaces**](#) [周五, 08 9月 01:25]

A murmuration of starlings. The phrase reads like something from literature or the title of an arthouse film. In fact, it is meant to describe the phenomenon that results when hundreds, sometimes thousands, of these birds fly in swooping, intricately coordinated patterns through the sky.

- [**Lignin: Much more valuable than just as waste**](#) [周五, 08 9月 00:03]

Lignin, a substance considered as a waste product in biomass and ethanol production, will now reach its proper value as bio-oil in new products.

- [**Scanning tunneling microscopy measurements identify active sites on catalyst surfaces**](#) [周五, 08 9月 00:02]

Chemistry live: using a scanning tunneling microscope, researchers were able for the very first time to witness in detail the activity of catalysts during an electrochemical reaction. The measurements show how the surface structure of the catalysts influences their activity. The new analysis method can now be used to improve catalysts for the electrochemical industry.

- [**'Rubber material' discovered that could lead to scratch-proof paint for car**](#) [周五, 08 9月 00:02]

A stretchy miracle material has been discovered that could be used to create highly resistant smart devices and scratch-proof paint for cars, report investigators.

- [**Climate change for aliens**](#) [周四, 07 9月 23:24]

For more than 50 years, the Kardashev scale has been the gold standard for classifying hypothetical 'exo-civilizations' by their ability to harness energy. A team of researchers has devised a new system that takes into account the impacts of that energy use.

- [**Pluto features given first official names**](#) [周四, 07 9月 23:24]

The Working Group for Planetary System Nomenclature of the International Astronomical Union has officially approved the naming of 14 features on the surface of Pluto. These are the first geological features on the planet to be named following the close flyby by the New Horizons spacecraft in July 2015.

- [**3-D-printed biomaterials that degrade on demand**](#) [周四, 07 9月 23:24]

The temporary structures, which can be degraded away with a biocompatible chemical trigger, could be useful in fabricating microfluidic devices, creating biomaterials that respond dynamically to stimuli and in patterning artificial tissue.

- [**Smartphone screen technology used to trick harmful bacteria**](#) [周四, 07 9月 22:41]

Conducting plastics found in smartphone screens can be used to trick the metabolism of pathogenic bacteria, report scientists. By adding or removing electrons from the plastic surface, bacteria may be tricked into growing more or less. The method may find widespread use in preventing bacterial infections in hospitals or improve effectiveness in wastewater management.

- [**New dental imaging method uses squid ink to**](#)

[fish for gum disease](#) [周四, 07 9月 22:24]

Squid ink could one day make getting checked for gum disease at the dentist less tedious and even painless. By combining squid ink with light and ultrasound, a team led by engineers has developed a new dental imaging method to examine a patient's gums that is noninvasive, more comprehensive and more accurate than the state of the art.

[Ultraviolet light from superluminous supernova key to revealing explosion mechanism](#) [周四, 07 9月 22:24]

An international team of researchers has discovered a way to use UV light from superluminous supernovae to uncover its explosion mechanism, and used it to identify Gaia16apd as a shock-interacting supernova, reports a new study.

[Fast magnetic writing of data](#) [周四, 07 9月 22:24]

Magnetic data storage has long been considered too slow for use in the working memories of computers. Researchers have now investigated a technique by which magnetic data writing can be done considerably faster and using less energy.

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[Drivers don't ignore a ringing phone but do](#)

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Drivers find it difficult to ignore a ringing phone but do ignore the dangers, with a new study revealing almost 50 percent believe locating and answering a ringing phone is not as risky as talking and texting. Research has found locating a ringing phone, checking who's calling, and rejecting or answering the call, is the most frequent mobile phone task undertaken by drivers.

• **[Water-based lithium-ion batteries that don't explode now created](#)** [周四, 07 9月 05:01]

For the first time a lithium-ion battery has been developed that uses a water-salt solution as its electrolyte and reaches the 4.0 volt mark desired for household electronics, such as laptop computers, without the fire and explosive risks associated with some commercially available non-aqueous lithium-ion batteries.

• **[Study quantifies potential for water reuse in permian basin oil production](#)** [周四, 07 9月 05:01]

Hydraulic fracturing has once again made the Permian Basin one of the richest oil fields in the world. But the improved reserves come with some serious water management issues. Drilling for oil uses water upfront, and brings up large volumes of water that need to be managed. The study found that recycling the water produced during operations at other hydraulic fracturing sites could help reduce potential problems associated with the technology.

• **[Researchers challenge status quo of battery commercialization](#)** [周四, 07 9月 05:01]

Researchers are looking to the pharmaceutical industry to propose an updated model of US battery commercialization.

• **[New device accurately identifies cancer in seconds](#)** [周四, 07 9月 02:49]

A team of scientists and engineers has invented a powerful tool that rapidly and accurately identifies cancerous tissue during surgery,

delivering results in about 10 seconds. The MasSpec Pen is an innovative handheld instrument that gives surgeons precise diagnostic information about what tissue to cut or preserve, helping improve treatment and reduce the chances of cancer recurrence.

• [Particle physicists on a quest for 'new physics'](#) [周四, 07 9月 02:29]

The Large Hadron Collider (LHC) at CERN, the European Organization for Nuclear Research, produces hundreds of millions of proton collisions per second. But researchers working on the Large Hadron Collider beauty (LHCb) experiment can only record 2,000 of those collisions, using one of the detectors installed on the accelerator. So in the end, this technological marvel leaves the physicists wanting more. They are convinced that the vast volume of uncaptured data holds the answers to several unreso...

• [Earth as hybrid planet: New classification places Anthropocene era in astrobiological context](#) [周四, 07 9月 01:55]

A new classification scheme has been devised for the evolutionary stages of worlds based on 'non-equilibrium thermodynamics' -- a planet's energy flow being out of sync, as the presence of life could cause.

• [Researchers report new way to make dissolving electronics](#) [周四, 07 9月 01:55]

Researchers have reported a new type of electronic device that can be triggered to dissolve through exposure to water molecules in the atmosphere. The work holds promise for eco-friendly disposable personal electronics and biomedical devices that dissolve within the body.

• [Supercharging silicon batteries](#) [周三, 06 9月 22:36]

Scientists have designed a novel silicon-based anode to provide lithium batteries with increased power and better stability.

• [Quantum tech has its sights set on human biochemistry](#) [周三, 06 9月 22:36]

Scientists have developed a new tool for imaging life at the nanoscale

that will provide new insights into the role of transition metal ions such as copper in neurodegenerative diseases.

- [**Green light for ultra-fine display colors**](#) [周三, 06 9月 22:36]

Chemical engineers have succeeded in generating ultra-pure green light for the first time. The new light-emitting diode will pave the way for visibly improved color quality in a new generation of ultra-high definition displays for TVs and smartphones.

- [**Accretion-powered pulsar reveals unique timing glitch**](#) [周三, 06 9月 22:36]

The discovery of the largest timing irregularity yet observed in a pulsar is the first confirmation that pulsars in binary systems exhibit the strange phenomenon known as a 'glitch.'

- [**New tool for characterizing quantum simulators**](#)

[周三, 06 9月 22:35]

Physicists are developing quantum simulators, to help solve problems that are beyond the reach of conventional computers. However, they first need new tools to ensure that the simulators work properly. Researchers have now implemented a new technique in the laboratory that can be used to efficiently characterize the complex states of quantum simulators. The technique could become a new standard tool for characterizing quantum simulators.

- [**Keychain detector could catch food allergens before it's too late**](#) [周三, 06 9月 22:35]

For kids and adults with food allergies, a restaurant outing can be a fraught experience. Even when care is taken, freshly prepared or packaged meals can accidentally become cross-contaminated with an offending food and trigger a reaction. Now researchers report the development of a new portable allergen-detection system -- including a keychain analyzer -- that could help prevent trips to the emergency room.

- [**Newly-discovered semiconductor dynamics may help improve energy efficiency**](#) [周三, 06 9月 08:29]

Researchers examining the flow of electricity through semiconductors have uncovered another reason these materials seem to lose their ability to carry a charge as they become more densely 'doped.'

- [**Superhuman 'night' vision during the total eclipse?**](#) [周三, 06 9月 04:40]

It was dark as night during the recent total solar eclipse, yet people and objects were easier to see than on a typical moonless night. Scientists have discovered a possible biological explanation -- the presence (or absence) of a protein in the retina known as a GABA receptor.

- [**Mobile phone use while pregnant not linked to child neurodevelopment problems, study suggests**](#) [周三, 06 9月 02:55]

Mobile phone use during pregnancy is unlikely to have any adverse effects on child neurodevelopment, according to new research. These findings provide further evidence that exposure to radio frequency electromagnetic fields associated with maternal use of mobile phones during pregnancy is not linked to neurodevelopment in children.

- [**Aeroices: Newly discovered ultralow-density ice**](#) [周三, 06 9月 02:55]

Relatively little is known about the effects of extreme negative pressure on water molecules. Exploring a significant region of negative pressure through molecular dynamic simulations, researchers have now theoretically discovered a new family of ice phases. Called aeroices, these ices have the lowest density of all known ice crystals.

- [**Cooling system works without electricity**](#) [周三, 06 9月 02:55]

Scientists cooled water without electricity by sending excess heat where it won't be noticed -- space. The specialized optical surfaces they developed are a major step toward applying this technology to air conditioning and refrigeration.

- [**More durable, less expensive fuel cells**](#) [周三, 06 9月 01:44]

A new technology has been created that could make fuel cells cheaper and more durable. Hydrogen-powered fuel cells are a green alternative

to internal combustion engines because they produce power through electrochemical reactions, leaving no pollution behind. Platinum is the most common catalyst in the type of fuel cells used in vehicles, but it's expensive. The UD team used a novel method to come up with a less expensive catalyst.

• [Nanoparticles limit damage in spinal cord injury](#)

[周三, 06 9月 01:44]

After a spinal cord injury, significant secondary nerve damage is caused by inflammation and internal scarring that inhibits the ability of the nervous system to repair itself. A biodegradable nanoparticle injected after a spinal cord trauma prevented the inflammation and internal scarring that inhibits the repair process, reports a new study.

• [Unique study tests fundamental laws of physics](#) [周

三, 06 9月 00:54]

A study that will 'test our understanding of how the Universe works, particularly outside the relatively narrow confines of our planet' is being undertaken by an international team of researchers.

• [Solubility study could impact energy, biology, environment](#) [周三, 06 9月 00:32]

Chemical engineers have used the most realistic computer model yet devised to simulate the precise atomic and molecular interactions that come into play when water mixes with alkanes, a family of hydrocarbons that includes methane, propane and other refined products.

• [Surgeons create 'vacuum' procedure to remove infected pacemaker](#) [周三, 06 9月 00:32]

Electrophysiologists get creative in removing infected pacemaker wires of a patient unable to have open heart surgery. He would have died if they didn't use a 'vacuum' typically used to remove foreign objects.

• [Discovery of boron on Mars adds to evidence for habitability](#) [周三, 06 9月 00:32]

The discovery of boron on Mars gives scientists more clues about whether life could have ever existed on the planet, according to a new paper.

[**. Glowing cancer tool illuminates benign, but dangerous, brain tumors during pituitary surgery**](#) [周三, 06 9月 00:32]

An experimental imaging tool that uses a targeted fluorescent dye successfully lit up the benign brain tumors of patients during removal surgery, allowing surgeons to identify tumor tissue, a new study shows.

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Environment News

Top stories featured on ScienceDaily's Plants & Animals, Earth & Climate, and Fossils & Ruins sections.

- [**An officer and a gentlewoman from the Viking army in Birka**](#) [周六, 09 9月 08:55]

War was not an activity exclusive to males in the Viking world. A new study shows that women could be found in the higher ranks at the battlefield.

- [**Ship exhaust makes oceanic thunderstorms more intense**](#) [周五, 08 9月 02:27]

Thunderstorms directly above two of the world's busiest shipping lanes are significantly more powerful than storms in areas of the ocean where ships don't travel, according to new research.

- [**Why are fossilized hairs so rare?**](#) [周五, 08 9月 02:27]

When it comes to preserving body parts, fossilized hair is rare--five times rarer than feathers--despite being an important tool for understanding ancient species. This finding has researchers trying to determine if the lack of hair in the fossil record has to do with physical traits that might make it more difficult for hair to fossilize, or an issue with scientists' collection techniques that could lead to them missing important finds.

- [**Cilia: 'The bouncer' of bacteria**](#) [周五, 08 9月 02:27]

A new paper elucidates the active role of cilia in regulating flow for bacteria filtering and enhancing chemical communication.

- [**Eighteenth century nautical charts reveal coral loss**](#) [周五, 08 9月 02:27]

Centuries-old nautical charts, mapped by long-deceased sailors to avoid shipwrecks, have been used by modern scientists to study loss of coral reefs. A new study compared early British charts to modern coral habitat maps to understand changes to reef environments.

- [**Courts' critical, underappreciated role in climate policy**](#) [周五, 08 9月 02:26]

Both climate lawsuits and their reliance on scientific data have increased over the past decade, the most extensive study to date shows.

- [**Discovery of chromosome motor supports DNA loop extrusion**](#) [周五, 08 9月 02:26]

It is one of the mysteries in biology: how does a cell neatly distribute its replicated DNA between two daughter cells? Scientists are split into two camps: the first argues that condensing works like a hook, tying DNA together. The other camp thinks that the ring-shaped protein pulls the DNA inwards to create a loop. Now researchers from give the 'loop-extrusion camp' a boost: condensin does indeed have the putative 'motor power' on board.

- [**New acid-free magnet recycling process created**](#) [周五, 08 9月 01:25]

A new rare-earth magnet recycling process dissolves magnets in an acid-free solution and recovers high purity rare earth elements.

- [**Direct evidence of sea level 'fingerprints' discovered**](#) [周五, 08 9月 00:02]

The first observation of sea level 'fingerprints' -- tell-tale differences in sea level rise around the world in response to changes in continental water and ice sheet mass -- has been reported by researchers.

- [**Smartphone screen technology used to trick harmful bacteria**](#) [周四, 07 9月 22:41]

Conducting plastics found in smartphone screens can be used to trick the metabolism of pathogenic bacteria, report scientists. By adding or removing electrons from the plastic surface, bacteria may be tricked into growing more or less. The method may find widespread use in

preventing bacterial infections in hospitals or improve effectiveness in wastewater management.

- [**Mixing and matching yeast DNA**](#) [周四, 07 9月 22:38]

Scientists show molecular factors that determine why some regions in yeast chromosomes are apt for remodeling, while other regions stay faithful during cell replication.

- [**Proteins keep a grip on cells**](#) [周四, 07 9月 22:38]

Scientists have revealed new structural information on the integrin-laminin interaction. These findings provide important insights on cellular interactions that promote cell growth, differentiation, and migration.

- [**New dental imaging method uses squid ink to fish for gum disease**](#) [周四, 07 9月 22:24]

Squid ink could one day make getting checked for gum disease at the dentist less tedious and even painless. By combining squid ink with light and ultrasound, a team led by engineers has developed a new dental imaging method to examine a patient's gums that is noninvasive, more comprehensive and more accurate than the state of the art.

- [**Hidden Inca treasure: Remarkable new tree genus discovered in the Andes**](#) [周四, 07 9月 22:24]

Hidden in plain sight -- that's how researchers describe their discovery of a new genus of large forest tree commonly found, yet previously scientifically unknown, in the tropical Andes.

- [**Algorithm reconstructs processes from individual images**](#) [周四, 07 9月 22:24]

Researchers have developed a new method for reconstructing continuous biological processes, such as disease progression, using image data.

- [**Australian Magpie 'dunks' its food before eating, researchers find**](#) [周四, 07 9月 22:23]

Scientists have shown that the Australian Magpie may 'dunk' its food in

water before eating, a process that appears to be 'copied' by its offspring.

- [**Increasing effective decision-making for coastal marine ecosystems**](#) [周四, 07 9月 22:23]

Marine restoration, rather than protection, might be the most cost-effective solution for coastal marine ecosystems suffering from human activities, a new study has found. The study examined how to best benefit coastal marine ecosystems on limited conservation budgets, to help managers better understand the trade-offs.

- [**Breaking through the wall in bacterial membrane vesicle research**](#) [周四, 07 9月 21:36]

Researchers used advanced imaging techniques to investigate the formation of membrane vesicles in a Gram-positive bacterium, a process that is poorly understood, particularly in bacteria with thick cell walls. The consortium showed that membrane vesicle formation was triggered by an enzyme called endolysin that damages the cell wall to create holes that allow the release of membrane vesicles. This mechanism could be exploited for the mass production of bacterial vesicles.

- [**How monkey fights grow**](#) [周四, 07 9月 21:36]

New research finds evidence for a complicated structure behind primate conflict. It is not individuals who control the length of fights, but the relationships between pairs of individuals.

- [**Ebola: Early immune response provides insight into vaccination**](#) [周四, 07 9月 21:36]

The latest outbreaks of emerging pathogens, such as Ebola or Zika, emphasize the importance of the rapid development of vaccines. However, being able to predict the efficacy of new vaccines remains a challenge in vaccine development. Scientists have now successfully assessed early on the longer-term immune response in humans after being vaccinated with the newly developed Ebola vaccine rVSV-ZEBOV.

- [**Honeybees could play a role in developing new**](#)

antibiotics [周四, 07 9月 05:06]

An antimicrobial compound made by honeybees could become the basis for new antibiotics, according to new research.

• **Study quantifies potential for water reuse in permian basin oil production** [周四, 07 9月 05:01]

Hydraulic fracturing has once again made the Permian Basin one of the richest oil fields in the world. But the improved reserves come with some serious water management issues. Drilling for oil uses water upfront, and brings up large volumes of water that need to be managed. The study found that recycling the water produced during operations at other hydraulic fracturing sites could help reduce potential problems associated with the technology.

• **Bacterial in-fighting provides new treatment for hospital infections** [周四, 07 9月 02:49]

A bacteria that is a leading cause of death worldwide from hospital acquired infections following antibiotic treatment looks set to be brought down through its own sibling rivalry.

• **Pollen stays on bee bodies right where flowers need it for pollination** [周四, 07 9月 02:49]

After grooming, bees still have pollen on body parts that match the position of flower pollen-sacs and stigmas, according to a new study.

• **Giant bacterium contains genomes for an entire population** [周四, 07 9月 02:26]

Achromatium oxaliferum is the largest (known) freshwater bacterium in the world. It is 30,000 times larger than its “normal” counterparts that live in water and owing to its calcite deposits it is visible to the naked eye. It has long been known – at least among bacteria fans – that some sulfur bacteria such as Achromatium can be extremely large and may contain several genome copies. But the fact that a single bacterial cell harbors hundreds of different genomes is new – also to bacteria aficiona...

• [**Monkey sees ... monkey knows?**](#) [周四, 07 9月 01:55]

Monkeys had higher confidence in their ability to remember an image when the visual contrast was high. These kinds of metacognitive illusions -- false beliefs about how we learn or remember best -- are shared by humans, leading brain and cognitive scientists to believe that metacognition could have an evolutionary basis.

• [**Researchers report new way to make dissolving electronics**](#) [周四, 07 9月 01:55]

Researchers have reported a new type of electronic device that can be triggered to dissolve through exposure to water molecules in the atmosphere. The work holds promise for eco-friendly disposable personal electronics and biomedical devices that dissolve within the body.

• [**Tick tock: Biologists show wildlife loss and climate change can synergistically increase tick abundance and the risk of tick-borne disease**](#) [周三, 06 9月 23:46]

Around the world, ticks are one of the most important vectors of zoonotic diseases -- animal diseases communicable to humans -- and they're everywhere. New research suggests that the abundance of ticks that carry certain fevers are likely to rise in the future, thanks to a combination of wildlife loss and climate change.

• [**Substance in coffee delays onset of diabetes in laboratory mice**](#) [周三, 06 9月 22:37]

Substances in coffee have been identified that could help quash the risk of developing type 2 diabetes. But few of these have been tested in animals. Now, scientists report that one of these previously untested compounds appears to improve cell function and insulin sensitivity in laboratory mice. The finding could spur the development of new drugs to treat or even prevent the disease.

• [**Colon of patients with IBS reacts differently to bacteria**](#) [周三, 06 9月 22:36]

The intestinal barrier of patients with the gastrointestinal disease IBS allows bacteria to pass more freely than in healthy people, according to a study. The study is the first to investigate IBS using living bacteria.

- [**Unraveling a major cause of sea ice retreat in the Arctic Ocean**](#) [周三, 06 9月 22:36]

Quantitative analysis has evidenced the acceleration system of melting ice: dark water surfaces absorb more heat than white ice surfaces, thus melting ice and making more water surfaces in the Arctic Ocean.

- [**Gut microbiota of larvae has an impact on mosquito's ability to transmit human pathogens**](#) [周三, 06 9月 22:36]

Researchers have demonstrated that differential bacterial exposure during the development of mosquito larvae (*Aedes aegypti*) can have carry-over effects on adult traits related to an insect's ability to be a successful vector of arboviruses. This study represents an important step toward a more comprehensive understanding of how the environment shapes the risk of vector-borne disease.

- [**Protein that extends life of yeast cells**](#) [周三, 06 9月 22:35]

To understand and control aging is the aspiration of many scientists. Researchers have now discovered that the protein Gcn4 decreases protein synthesis and extends the life of yeast cells. Understanding how individual genes affect lifespan opens new ways to control the aging process and the occurrence of aging-related diseases.

- [**Bacteria responsible for legionellosis modulates the host cell metabolism to its advantage**](#) [周三, 06 9月 22:35]

The bacterial pathogen *Legionella pneumophila* has developed a specific strategy to target the host cell mitochondria, the organelles in charge of cellular bioenergetics, scientists have shown. New work provides precious information on how a pathogen manipulates the cellular metabolism to replicate intracellularly, and proposes a new concept of protection of host cells from *Legionella*-induced mitochondrial changes in order to fight infection.

[**Research dog helps scientists save endangered carnivores**](#) [周三, 06 9月 22:35]

Scat-sniffing research dogs are helping scientists map out a plan to save reclusive jaguars, pumas, bush dogs and other endangered carnivores in the increasingly fragmented forests of northeastern Argentina, according to a new study.

[**Will mallards hybridize their cousins out of existence?**](#) [周三, 06 9月 22:35]

Mallards -- the familiar ducks of city parks -- are one of a group of closely related species, many of which are far less common. Interbreeding can threaten the genetic distinctiveness of those other species and cause concern for their conservation. A new study investigates hybridization between mallards and mottled ducks, a species adapted for life in coastal marshes, and finds that while hybridization rates are currently low, human activity could cause them to rise in the future.

[**Biologists slow aging, extend lifespan of fruit flies**](#) [周三, 06 9月 22:34]

In research that potentially could delay the onset of Parkinson's disease, Alzheimer's disease, cancer, stroke, cardiovascular disease, and other diseases of aging, biologists have produced a genetic one-two punch that significantly slowed aging and improved health in the middle-aged fruit flies they studied.

[**Clever cockatoos bend hooks into straight wire to fish for food**](#) [周三, 06 9月 08:29]

Bending of a hook into wire to fish for the handle of a basket by crow Betty 15 years ago stunned the scientific world. Cognitive biologists studied tool making in an Indonesian cockatoo. Other than crows, cockatoos are not using tools in the wild. The birds manufactured hook tools out of straight wire without ever having seen or used a hook tool before.

- [**Something to sneeze about: Democratic voting in African wild dog packs**](#) [周三, 06 9月 08:29]

Scientists studying African wild dogs in Botswana have found members of this endangered species use sneezes to vote on when the pack will move off and start hunting.

- [**Invasive plants change ecosystems from the bottom up**](#) [周三, 06 9月 02:56]

Even when two different Phragmite lineages are grown side-by-side in the same ecosystem, the bacterial communities in the soil differ dramatically. This is a discovery that will aid in understanding how plant invasions get started and the conditions necessary for their success.

- [**Research shows how DNA molecules cross nanopores**](#) [周三, 06 9月 02:55]

Research sheds new light on the understanding of the measurement of polymer properties in diverse chemical industries such as plastics manufacturing and food processing, and the design of biosensors.

- [**Aeroices: Newly discovered ultralow-density ice**](#) [周三, 06 9月 02:55]

Relatively little is known about the effects of extreme negative pressure on water molecules. Exploring a significant region of negative pressure through molecular dynamic simulations, researchers have now theoretically discovered a new family of ice phases. Called aeroices, these ices have the lowest density of all known ice crystals.

- [**Eating meat linked to higher risk of diabetes**](#) [周三, 06 9月 01:45]

Higher intake of red meat and poultry is associated with significantly increased risk of developing diabetes, which is partially attributed to their higher content of heme iron in these meats, new research shows.

- [**Could switchgrass help China's air quality?**](#) [周三, 06 9月 01:45]

Researchers have proposed an idea that could improve China's air quality, but they're not atmospheric scientists. They're agronomists.

- [**Oregon's marijuana legalization prompted big**](#)

[**drop in sales in Washington's border counties**](#) [周三, 06 9月 01:44]

Three days after recreational marijuana sales became legal in Oregon, sales across the border in Washington, where retail availability already existed, dropped by 41 percent, say economists. Their study also suggests that illegal cross-border movement, or diversion, of legally produced marijuana sold at retail outlets across state borders is a real concern but not occurring at alarming levels.

• [**Birds choose mates with ornamental traits**](#) [周三, 06 9月 00:57]

A recurring theme in nature documentaries is that of choosy females selecting brightly colored males. A new study shows that, in monogamous mating systems, male birds may select their lifelong mates in much the same way.

• [**First detailed decoding of complex finger millet genome**](#) [周三, 06 9月 00:56]

Finger millet has two important properties: The grain is rich in important minerals and resistant towards drought and heat. Thanks to a novel combination of state-of-the-art technologies, researchers were able to decode the large and extremely complex genome of finger millet in high quality for the first time. This represents a fundamental basis for improving food security in countries like India and parts of Africa.

• [**Cell marking opens up a window into the body**](#) [周三, 06 9月 00:35]

Researchers have developed new methods to track cells in mice which could help to reduce animal experiments.

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- [**Ship exhaust makes oceanic thunderstorms more intense**](#) [周五, 08 9月 02:27]

Thunderstorms directly above two of the world's busiest shipping lanes are significantly more powerful than storms in areas of the ocean where ships don't travel, according to new research.

- [**Courts' critical, underappreciated role in climate policy**](#) [周五, 08 9月 02:26]

Both climate lawsuits and their reliance on scientific data have increased over the past decade, the most extensive study to date shows.

- [**SNAP benefits aren't enough to afford a healthy diet**](#) [周五, 08 9月 00:56]

A new study finds that the Supplemental Nutrition Assistance Program (SNAP), formerly known as Food Stamps, only covers 43-60 percent of what it costs to consume a diet consistent with federal dietary guidelines for what constitutes a healthy diet. The study highlights the challenges lower-income households face in trying to eat a healthy diet.

- [**Nutrition has benefits for brain network organization**](#) [周四, 07 9月 23:24]

Nutrition has been linked to cognitive performance, but researchers have not pinpointed what underlies the connection. A new study found that monounsaturated fatty acids -- a class of nutrients found in olive oils, nuts and avocados -- are linked to general intelligence, and that this relationship is driven by the correlation between MUFAs and the

organization of the brain's attention network.

- [**Academic argues for changes in the laws governing modern warfare**](#) [周四, 07 9月 22:41]

Modern warfare and terrorist acts often sees the killing of innocent civilians which presents complex challenges for the international legal framework governing the conduct of armed conflicts, explains a new report.

- [**Children exposed to chemicals in 9/11 'dust' show early signs of risk of heart disease**](#) [周四, 07 9月 21:36]

Sixteen years after the collapse of the World Trade Center towers sent a 'cloud' of toxic debris across Lower Manhattan, children living nearby who likely breathed in the ash and fumes are showing early signs of risk for future heart disease.

- [**Study quantifies potential for water reuse in permian basin oil production**](#) [周四, 07 9月 05:01]

Hydraulic fracturing has once again made the Permian Basin one of the richest oil fields in the world. But the improved reserves come with some serious water management issues. Drilling for oil uses water upfront, and brings up large volumes of water that need to be managed. The study found that recycling the water produced during operations at other hydraulic fracturing sites could help reduce potential problems associated with the technology.

- [**Improved vaccine that protects against nine types of HPV is highly effective**](#) [周四, 07 9月 02:32]

Cervical cancer is the second most common cause of cancer-related death worldwide, with almost 300,000 deaths occurring each year. More than 80 percent of these deaths occur in developing nations. The advent of human papillomavirus (HPV) vaccines has significantly reduced the number of those who develop and die from cervical cancer.

- [**How retractions significantly hurt scientists**](#) [周三, 06 9月 23:46]

Life scientists who have published papers that are retracted by journals

subsequently suffer a 10 percent drop in citations of their remaining work, compared to similar but unaffected scientists, according to a new study.

· [**Oregon's marijuana legalization prompted big drop in sales in Washington's border counties**](#) [周三, 06 9月 01:44]

Three days after recreational marijuana sales became legal in Oregon, sales across the border in Washington, where retail availability already existed, dropped by 41 percent, say economists. Their study also suggests that illegal cross-border movement, or diversion, of legally produced marijuana sold at retail outlets across state borders is a real concern but not occurring at alarming levels.

· [**PSA screening significantly reduces the risk for death from prostate cancer**](#) [周二, 05 9月 06:17]

After differences in implementation and settings were accounted for, two important prostate cancer screening trials provide compatible evidence that screening reduces prostate cancer mortality.

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [How to draw electricity from the bloodstream](#) [周六, 09 9月 08:54]

Men build dams and huge turbines to turn the energy of waterfalls and tides into electricity. To produce hydropower on a much smaller scale, scientists have now developed a lightweight power generator based on carbon nanotube fibers suitable to convert even the energy of flowing blood in blood vessels into electricity.

- [Climate change for aliens](#) [周四, 07 9月 23:24]

For more than 50 years, the Kardashev scale has been the gold standard for classifying hypothetical 'exo-civilizations' by their ability to harness energy. A team of researchers has devised a new system that takes into account the impacts of that energy use.

- [Australian Magpie 'dunks' its food before eating, researchers find](#) [周四, 07 9月 22:23]

Scientists have shown that the Australian Magpie may 'dunk' its food in water before eating, a process that appears to be 'copied' by its offspring.

- ['Vampires' may have been real people with this blood disorder](#) [周四, 07 9月 02:49]

A newly discovered genetic mutation triggers erythropoietic protoporphyria (EPP). This discovery illuminates a novel biological mechanism potentially responsible for stories of 'vampires' and identifies a potential therapeutic target for treating EPP.

- [Giant bacterium contains genomes for an entire population](#) [周四, 07 9月 02:26]

Achromatium oxaliferum is the largest (known) freshwater bacterium in the world. It is 30,000 times larger than its “normal” counterparts that live in water and owing to its calcite deposits it is visible to the naked eye. It has long been known – at least among bacteria fans – that some sulfur bacteria such as Achromatium can be extremely large and may contain several genome copies. But the fact that a single bacterial cell harbors hundreds of different genomes is new – also to bacteria aficionada...

• [**Something to sneeze about: Democratic voting in African wild dog packs**](#) [周三, 06 9月 08:29]

Scientists studying African wild dogs in Botswana have found members of this endangered species use sneezes to vote on when the pack will move off and start hunting.

• [**Cooling system works without electricity**](#) [周三, 06 9月 02:55]

Scientists cooled water without electricity by sending excess heat where it won't be noticed -- space. The specialized optical surfaces they developed are a major step toward applying this technology to air conditioning and refrigeration.

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周二, 12 9月 2017

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- [**Study of circular DNA comes full circle with use of old technique**](#) [周二, 12 9月 04:32]

A 50-year-old lab technique is helping researchers better understand circular DNA, a lesser-known and poorly understood cousin of the linear version commonly associated with life's genetic blueprint. With the aid of a process called density gradient centrifugation, a research team recently published a study that for the first time characterizes all of the circular DNA in the worm *C. elegans*, as well as in three human cell types.

- [**Method controls whether freezing droplets bounce off or stick**](#) [周二, 12 9月 03:09]

Self-peeling droplets have been discovered, along with a new way to control adhesion of freezing droplets by adjusting the thermal properties of substrates. These findings could make everything from additive manufacturing to deicing more efficient.

- [**Why your ancestors would have aced the long jump**](#) [周二, 12 9月 03:09]

A 52-million-year-old ankle fossil suggests our prehuman ancestors were high-flying acrobats. For years, scientists thought the ancestors of today's humans, monkeys, lemurs and apes were relatively slow and

deliberate animals, using their grasping hands and feet to creep along small twigs and branches. But a new study suggests the first primates were masters at leaping through the trees.

- [**Earthquake triggers 'slow motion' quakes in New Zealand**](#) [周二, 12 9月 00:27]

Slow slip events, a type of slow motion earthquake that occurs over days to weeks, are thought to be capable of triggering larger, potentially damaging earthquakes. In a new study, scientists have documented the first clear-cut instance of the reverse -- a massive earthquake immediately triggering a series of large slow slip events.

- [**A new genetic marker for schizophrenia**](#) [周二, 12 9月 00:27]

Scientists find a rare genetic variant that shows strong association with schizophrenia.

- [**The turbulent healing powers of plasma**](#) [周二, 12 9月 00:27]

Non-equilibrium atmospheric pressure plasma can help heal wounds, destroy cancer cells and kill harmful bacteria. The jets of plasma that doctors might use, however, often become turbulent with the direction and velocity changing dramatically. Now, researchers have found this turbulence likely emerges from heat-induced sound waves generated at the plasma electrodes. This new insight is critical for more consistent and effective medical therapies.

- [**A novel and practical fab-route for superomniphobic liquid-free surfaces**](#) [周二, 12 9月 00:27]

Scientists have developed a fabrication technology that can inexpensively produce surfaces capable of repelling liquids, including water and oil.

- [**Connecting up the quantum internet**](#) [周二, 12 9月 00:27]

Major leap for practical building blocks of a quantum internet: New research demonstrates how to dramatically improve the storage time of a telecom-compatible quantum memory, a vital component of a global quantum network. The technology operates in the same 1550 nanometer band as today's telecommunications infrastructure. It can also be

operated as a quantum light source or used as an optical link for solid-state quantum computing devices such as superconducting qubits and silicon qubits.

- [**Scientists track the brain-skull transition from dinosaurs to birds**](#) [周二, 12 9月 00:27]

The dramatic, dinosaur-to-bird transition that occurred in reptiles millions of years ago was accompanied by profound changes in the skull roof of those animals -- and holds important clues about the way the skull forms in response to changes in the brain -- according to a new study. It is the first time scientists have tracked the link between the brain's development and the roofing bones of the skull.

- [**How openings in Antarctic sea ice affect worldwide climate**](#) [周二, 12 9月 00:26]

In a new analysis of climate models, researchers reveal the significant global effects that seemingly anomalous polynyas, or openings in sea ice, can have. Their findings indicate that heat escaping from the ocean through these openings impacts sea and atmospheric temperatures and wind patterns around the globe and even rainfall around the tropics.

- [**Brain Composer: 'Thinking' melodies onto a musical score**](#) [周二, 12 9月 00:26]

A new brain-computer interface application that allows music to be composed by the power of thought has now been developed by scientists.

- [**Muscle nuclei: May the force be with you**](#) [周二, 12 9月 00:26]

A group of researchers has revealed the mechanism by which cellular nuclei reach their position within muscle cells. This discovery can have important implications in therapeutic strategies to treat muscular diseases.

- [**Cold region 'tipping point' now inevitable**](#) [周二, 12 9月 00:26]

The decline of cold regions called periglacial zones is now inevitable due to climate change, researchers say.

• [**The evolutionary origin of the gut**](#) [周二, 12 9月 00:26]

How did the gut, the skin and musculature evolve? This question concerns scientists for more than a century. Through the investigation of the embryonic development of sea anemones, a very old animal lineage, researchers have now come to conclusions which challenge the 150-year-old hypothesis of the homology (common evolutionary origin) of the germ layers that form all later organs and tissues.

• [**USA threatened by more frequent flooding**](#) [周二, 12 9月 00:26]

The East Coast of the United States is threatened by more frequent flooding in the future. According to this study, the states of Virginia, North Carolina, and South Carolina are most at risk. Their coastal regions are being immersed by up to three millimeters per year -- among other things, due to human intervention.

• [**Cooperation driven by reciprocity, not conformity**](#) [周二, 12 9月 00:26]

From an evolutionary perspective, cooperating with others can yield benefits that increase chances of survival. But what are the conditions that motivate us to cooperate? New research suggests that reciprocity -- cooperation under the assumption that we will receive benefits in return -- outweighs our desire to conform with group norms when we're deciding whether to cooperate with someone.

• [**New treatment option discovered for brain injury patients suffering from aggression**](#) [周二, 12 9月 00:26]

A drug originally developed in the 1960s as an antiviral medication is showing promise as a treatment option for people who suffer from increased feelings of aggression following traumatic brain injury, researchers have reported.

• [**Half-a-billion-year-old fossils shed light animal evolution on Earth**](#) [周二, 12 9月 00:26]

Scientists have discovered traces of life more than half-a-billion years old that could change the way we think about how all animals evolved

on Earth.

- [**Biodiversity just as powerful as climate change for healthy ecosystems**](#) [周二, 12 9月 00:26]

Biodiversity is proving to be one of humanity's best defenses against extreme weather. In past experiments, diversity has fostered healthier, more productive ecosystems, like shoreline vegetation that guards against hurricanes. However, many experts doubted whether these experiments would hold up in the real world. A study offers a decisive answer: biodiversity's power in the wild surpasses experimental predictions, in some cases topping even effects of climate.

- [**Patients to benefit from new 3-D visualizations of the heart**](#) [周二, 12 9月 00:26]

In the future heart surgeons will have access to a new type of 3-D visualization of the cardiac conduction system. This technique could provide improved safety for patients and improve surgical outcomes in patients suffering from heart disease and cardiac malformations, explains a new report.

- [**Biophysics study makes exciting advancements for the future of DNA sequencing**](#) [周二, 12 9月 00:26]

New technology that optimizes DNA sequencing using nanophysics and electric currents has been developed by scientists. Their work offers a method for loading DNA into sequencing wells with orders of magnitude higher efficiencies.

- [**Scientists list 50 terms you may be confusing**](#) [周二, 12 9月 00:26]

A list of commonly used psychological terms that are often assumed to be similar, if not identical, but which refer to very different concepts has been revealed by new research.

- [**Study clarifies how neural nets 'think' when processing language**](#) [周二, 12 9月 00:26]

A new general-purpose technique has been developed for making sense of neural networks that are trained to perform natural-language-

processing tasks, in which computers attempt to interpret freeform texts written in ordinary, or 'natural,' language (as opposed to a structured language, such as a database-query language).

- [**Scientists construct first predictive model of inflammatory bowel disease**](#) [周二, 12 9月 00:26]

An in-depth, multi-omics approach to characterizing the immune component of inflammatory bowel disease (IBD) has been revealed by researchers. These results provide new insights into the biologic networks involved in IBD with potential to identify new targets and eventually novel interventions for the treatment of patients living with IBD.

- [**Fathers can influence the sex of their offspring, scientists show**](#) [周二, 12 9月 00:26]

It has traditionally been thought that in mammals only mothers are able to influence the sex of their offspring. But a new study in wild mice has shown that fathers can, in fact, influence sex ratios.

- [**First on-chip nanoscale optical quantum memory developed**](#) [周二, 12 9月 00:26]

Engineers have built a chip capable of storing and retrieving individual photons of light, with all of their quantum properties left intact. The chip represents the first nanoscale optical quantum memory device, and could one day be used to create more secure Internet communications.

- [**Looking stressed can help keep the peace**](#) [周一, 11 9月 21:59]

Scratching may have evolved as a communication tool to help social cohesion, new research suggests for the first time.

- [**Fire ant venom compounds may lead to skin treatments**](#) [周一, 11 9月 21:59]

Solenopsins, the main toxic components of fire ant venom, chemically resemble ceramides, which are lipid-like molecules essential for maintaining for the barrier function of the skin. Solenopsin analogs can reduce skin thickening and inflammation in a mouse model of psoriasis,

scientists have shown.

- [**Ancient wetlands offer window into climate change**](#) [周一, 11 9月 21:59]

Environmental researchers have uncovered a wealth of information about a unique part of Australia that offers never-before-seen insights into climate change since the last ice age.

- [**Desert locusts: New risks in the light of climate change**](#) [周一, 11 9月 21:59]

The desert locust is an invasive species that is both well known and feared because of the large-scale agricultural damage it can cause. It is particularly closely monitored, to prevent the risks of outbreaks and invasions. Climate change could modify its distribution area, meaning a new threat to agriculture, according to a study.

- [**Biosensor detects adulteration of horse in beef meat within one hour**](#) [周一, 11 9月 21:59]

Fraud in meat products has become, in recent years, a battle of the food industry and public health. Although there are numerous strategies to detect it, they are not sufficiently selective and sensitive to differentiate close animal species. A collaboration of experts has developed an electrochemical biosensor capable of detecting, in just one hour, processes of adulteration of beef with horse meat.

- [**Using mirrors to improve the quality of light particles**](#) [周一, 11 9月 21:59]

Scientists have succeeded in dramatically improving the quality of individual photons generated by a quantum system. The scientists have successfully put a 10-year-old theoretical prediction into practice. With their paper, they have taken an important step towards future applications in quantum information technology.

- [**Respiratory tract infections in young children linked to asthma and worse lung function**](#) [周一, 11 9月 11:25]

Respiratory tract infections in young children are linked to an increased

risk of asthma and worse lung function in later life, according to new research.

• [**Explosive birth of stars swells galactic cores**](#) [周一, 11 9月 11:25]

Astronomers found that active star formation upswells galaxies, like yeast helps bread rise. Using three powerful telescopes on the ground and in orbit, they observed galaxies from 11 billion years ago and found explosive formation of stars in the cores of galaxies. This suggests that galaxies can change their own shape without interaction with other galaxies.

• [**E-cig refills contain irritants, and people who smoke and use e-cigs suffer more symptoms**](#) [周一, 11 9月 11:25]

Two new studies highlight the risks associated with using e-cigarettes, especially for those who also smoke conventional cigarettes.

• [**Children with asthma are being prescribed unnecessary antibiotics**](#) [周一, 11 9月 11:25]

Children with asthma are more likely to be prescribed antibiotics even though there is no evidence that they need them any more than children without asthma.

• [**Study challenges perception that empathy erodes during medical school**](#) [周日, 10 9月 07:40]

A new study by social neuroscientists challenges the common perception that empathy declines during medical training.

• [**Do we need to reform international drug treaties as more countries legalize cannabis?**](#) [周六, 09 9月 08:55]

The future of international drug control treaties is in doubt because of recent treaty-violating decisions to legalize cannabis use in Canada, the United States and Uruguay. A professor, whose 2014 review of 20 years of cannabis research made world headlines, thinks so. If decriminalization is the way of the future, he advocates a cautious approach to policy reform that would involve trialing and evaluating the effects of incrementally more liberal drug policies.

- **[Folic acid may mitigate autism risk from pesticides](#)** [周六, 09 9月 08:55]

Researchers have shown that mothers who take recommended amounts of folic acid around conception might reduce their children's pesticide-related autism risk.

- **[Number of Europeans exposed to secondhand smoke at work rising to more than one in four](#)** [周六, 09 9月 08:55]

More than one in four of people who work indoors are being exposed to secondhand smoke at work, according to new research.

- **[When electrons ride a wave](#)** [周六, 09 9月 08:55]

Conventional electron accelerators are an indispensable tool in modern research. But even smaller versions of these super microscopes are the size of a soccer field. Laser plasma acceleration could offer an alternative with a smaller footprint and higher peak currents. So far, the challenge with laser accelerators has been to create a reliable and stable electron beam, which is the prerequisite for applications. Physicists have developed a method to increase beam stability and quality.

- **[Scientist finds secret to thriving](#)** [周六, 09 9月 08:55]

What it takes to thrive, rather than merely survive, could be as simple as feeling good about life and yourself and being good at something, according to new research.

- **[Eye changes may signal frontotemporal lobe degeneration](#)** [周六, 09 9月 08:55]

Frontotemporal degeneration (FTD) is a progressive neurodegenerative condition that is present in tens of thousands of Americans, but is often difficult to diagnose accurately. Now a study has found evidence that a simple eye exam and retinal imaging test may help improve that accuracy.

- **[Scientists unravel new insights into promising semiconductor material](#)** [周六, 09 9月 08:55]

Researchers have established new findings on the properties of two-dimensional molybdenum disulfide, a widely studied semiconductor of the future.

- [**A-MUD: A method for automatically detecting mouse song**](#) [周六, 09 9月 08:55]

Mice produce a remarkable repertoire of vocalizations across five octaves, which they emit during mating and other contexts. Analyses of mice song can provide important information about their social behavior and for research into neuropsychiatric disorders. But their songs are in the ultrasonic range and inaudible for humans. Researchers have now developed a freely available method to automatically detect mouse vocalizations instead of manually.

- [**An officer and a gentlewoman from the Viking army in Birka**](#) [周六, 09 9月 08:55]

War was not an activity exclusive to males in the Viking world. A new study shows that women could be found in the higher ranks at the battlefield.

- [**Immune cells help fat deal with environmental challenges**](#) [周六, 09 9月 08:55]

Immunosuppressive regulatory T-cells play an important role in the functioning of adipose tissue.

- [**Are we being watched? Tens of other worlds could spot the Earth**](#) [周六, 09 9月 08:55]

Scientists have turned exoplanet-hunting on its head, in a study that instead looks at how an alien observer might be able to detect Earth using our own methods. They find that at least nine exoplanets are ideally placed to observe transits of Earth.

- [**High-speed quantum memory for photons**](#) [周六, 09 9月 08:54]

Physicists have developed a memory that can store photons. These quantum particles travel at the speed of light and are thus suitable for high-speed data transfer. The researchers were able to store them in an

atomic vapor and read them out again later without altering their quantum mechanical properties too much. This memory technology is simple and fast and it could find application in a future quantum Internet.

• [How to draw electricity from the bloodstream](#) [周六,

09 9月 08:54]

Men build dams and huge turbines to turn the energy of waterfalls and tides into electricity. To produce hydropower on a much smaller scale, scientists have now developed a lightweight power generator based on carbon nanotube fibers suitable to convert even the energy of flowing blood in blood vessels into electricity.

Study of circular DNA comes full circle with use of old technique -- ScienceDaily

A 50-year-old lab technique is helping researchers better understand circular DNA, a lesser-known and poorly understood cousin of the linear version commonly associated with life's genetic blueprint.

With the aid of a process called density gradient centrifugation, a research team, which included scientists from The University of Texas at Dallas and Stanford University School of Medicine, recently published a study that for the first time characterizes all of the circular DNA in the worm *C. elegans*, as well as in three human cell types.

What Is Circular DNA?

The DNA molecules that make up the genes and chromosomes in our cells are rope-like strands, free at both ends and shaped like a twisted ladder, or helix. That DNA, called chromosomal DNA, is found in each

cell's nucleus and contains genetic instructions needed to carry out biological functions.

But another population of DNA, called extrachromosomal circular DNA, is shaped like a circle, with no loose ends, and exists independently of linear DNA. While researchers are beginning to better understand how circular DNA functions in humans, much is still unknown. The study, published online recently in the journal *G3: Genes, Genomes and Genetics*, found that different cell varieties harbor different sets of circular DNAs.

"The interesting thing is that different types of cells seem to have different repertoires of these circles, even within the same person," said lead study author Dr. Massa Shoura, a Beckman Foundation postdoctoral research fellow at Stanford who earned two PhDs from UT Dallas. "They're not all created equal -- the circles in your skin cells might be different from those in my skin."

'Circulome' Could Predict Disease

In both the worm and the human cells, the researchers observed circles that were copies of coding regions on

chromosomal DNA, regions that contain genes for making specific proteins. While the investigators have some clues as to how such circular DNA is created, the exact processes are not well understood.

"We think they have different functions, and different mechanisms that generate them, but much more study is needed," said Shoura BS'08, MA'10, PhD'13, PhD'14. "One of the things we're trying to find out is whether there are specific repertoires of circular DNA - - a term we coined as the 'circulome' -- that are specific to various pathologies, like cancer."

For example, Shoura and her colleagues are investigating whether there are marked differences between the circulome in healthy tissue and colon cancer tissue from the same person. If so, circular DNA offers a potential diagnostic biomarker for cancer.

"In order to establish circular DNA as a biomarker for disease, we first have to have a method for reliably and cleanly separating circular DNA out of a sample, purifying it, so that we know what we are studying is just the circles, without other genetic materials mixed in," she said. "That's where my UT Dallas training

comes in."

What's Old is New Again

Before she joined the Stanford lab of Nobel laureate Dr. Andrew Fire in 2015, Shoura was a graduate student working at UT Dallas in the lab of Dr. Stephen Levene, Cecil H. and Ida Green Professor in Systems Biology Science. For the study published in *G3*, which Fire and Levene also co-authored, the team incorporated Levene and Shoura's expertise with an old-school lab technique called density gradient centrifugation. Developed 50 years ago -- and now, according to Levene, rarely used -- the method separates DNA based on density.

Levene and Shoura both said that the technique runs circles around more modern analysis methods.

"I've been using this DNA isolation technique since I was a graduate student, and I still think it's the best method for recovering a clean sample of circular DNA," said Levene, a bioengineering professor who also is affiliated with the departments of biological sciences and physics at UT Dallas.

In the process, DNA is mixed with a dense salt solution containing cesium chloride in a small test tube, along with a dye that binds to both linear DNA and circular DNA. The dye binds differently to each DNA type, resulting in the linear DNA being less dense than the circular DNA. When the sample is spun in an ultracentrifuge at high speeds, around 120,000 rpm, the higher density circular DNA concentrates in a band near the bottom of the tube.

The researchers also subjected their samples to additional, more modern purification methods to further ensure a clean sample of circular DNA. "This study clearly shows that circular DNA is part of the genome; it plays a role in normal DNA processing," Shoura said. "The more we study it, we're learning that the human genome is more dynamic than we thought."

The work was funded primarily by the National Institutes of Health and the National Science Foundation.

UTD Prepared Scientist for Career

Dr. Massa Shoura credits UT Dallas for providing the tools and experience to further her research career. She

earned bachelor's and master's degrees in biological sciences from the School of Natural Sciences and Mathematics, and completed doctorates in molecular and cell biology, and in bioengineering, both under Levene's guidance.

"If I was a graduate student now somewhere besides UT Dallas, I might not know what cesium chloride gradients are, and I wouldn't have used them to benefit my research," Shoura said. "There are still not many labs that use this technique, and the ones that do haven't optimized it to work with extremely small samples, as Dr. Levene has done.

"What I accomplished in the Levene lab was a lot of interdisciplinary work in chemistry, math, physics and computer simulation, all applied to DNA," Shoura said. "I'm not an expert in these fields, but by being a little familiar with each one, I am better able to identify a tool or a collaborator that could help on a new problem."

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Method controls whether freezing droplets bounce off or stick: Study reveals a new way to enhance or reduce the adhesion of freezing droplets -- ScienceDaily

When freezing droplets impact a surface, they generally either stick to it or bounce away. Controlling this response is crucial to many applications, including 3-D printing, the spraying of some surface coatings, and the prevention of ice formation on structures such as airplane wings, wind turbines, or power lines.

Now, MIT researchers have found a surprising new twist to the mechanics involved when droplets come in contact with surfaces. While most research has focused on the hydrophobic properties of such surfaces, it turns out that their thermal properties are also crucially important -- and provide an unexpected opportunity to "tune" those surfaces to meet the exact needs of a given application. The new results are presented today in the journal *Nature Physics*, in a report by MIT associate

professor of mechanical engineering Kripa Varanasi, former postdoc Jolet de Ruiter, and postdoc Dan Soto.

"We found something very interesting," Varanasi explains. His team was studying the properties of a liquid -- in this case, drops of molten metal -- freezing onto a surface. "We had two substrates that had similar wetting properties [the tendency to either spread out or bead up on a surface] but different thermal properties." According to conventional thinking, the way droplets acted on the two surfaces should have been similar, but instead it turned out to be dramatically different.

On silicon, which conducts heat very well, as most metals do, "the molten metal just fell off," Varanasi says. But on glass, which is a good thermal insulator, "the drops of metal stuck and were hard to remove."

The finding showed that "we can control the adhesion of a droplet freezing on a surface by controlling the thermal properties" of that surface, he says. "It's a whole new approach" to determining how liquids interact with surfaces, he adds. "It provides new tools for us to control the outcome of such liquid-solid interactions."

To explain the difference in thermal conductivity of different materials, Varanasi gives the example of two flooring surfaces, one made of stone, another of wood. Even if both are at exactly the same temperature, if you step with bare feet on the wood, it will feel warmer than the stone. That's because the stone has higher thermal effusivity (the rate at which a material can exchange heat) than wood, so it draws heat away from your feet more rapidly, causing it to feel colder.

The experiments in the study were carried out with molten metal, which is important in some industrial processes such as the thermal spray coatings that are applied to turbine blades and other machine parts. For these processes, the quality and uniformity of the coatings can depend on how well each tiny droplet adheres to the surface during deposition. The results likely apply to all kinds of liquids as well, including water, Varanasi says.

When coating surfaces, "the way droplets impact and form splats dictates the integrity of the coating itself. If it's not perfect, it can have a tremendous impact on the performance of the part, such as a turbine blade," Varanasi says. "Our findings will provide a whole new understanding of when things stick and when they

don't."

The new insights could be useful both when it is desirable to have droplets stick to surfaces, such as in some kinds of 3-D printers, to help make sure each printed layer adheres thoroughly to the previous layer, and when it's important to prevent droplets from sticking, such as on airplane wings in icy weather. The research could also be helpful for cleaning and waste management of additive manufacturing and thermal spray processes.

Soto says the discovery came about when the team was studying the local freezing mechanism at the interface between the liquid and the substrate, using a thermal high-speed camera that revealed rapid effects during the cooling process that would have been impossible to see at longer timescales. The images showed a progressive development of fringes around the droplets' outer edges. "We then realized that the droplet was unexpectedly curling up and detaching from the surface as it froze," he says. They described this phenomenon as "self-peeling" of the droplets.

"The main ingredients for this phenomenon," de Ruiter says, "are the interplay between short timescale fluid

dynamics, which set the adhesion, and longer timescale thermal effects, which lead to global deformation." The team developed a design map that captures different possible outcomes (sticking, self-peeling, or bouncing) in terms of key thermal properties: drop and substrate effusivities, and temperatures.

Since the degree to which droplets stick or don't depends on a material's thermal properties, it's possible to tailor those properties based on the application, Soto says. "We can imagine scenarios where thermal properties can be adjusted in real time through electric or magnetic fields, allowing the stickiness of the surface to impacting droplets to be adjustable."

The sticking outcome can also be controlled simply by changing the relative temperatures of the droplets and the surface, the team found. In many cases, these changes are counterintuitive: For example, while one might expect that the only way to prevent sticking of freezing droplets is by warming a substrate, the team found a new regime, where cooling the surface can also lead to the same outcome.

| [Section menu](#) | [主菜单](#) |

Why your ancestors would have aced the long jump: First primates were built for leaping, fossil ankle suggests -- ScienceDaily

A 52-million-year-old ankle fossil suggests our prehuman ancestors were high-flying acrobats.

These first primates spent most of their time in the trees rather than on the ground, but just how nimble they were as they moved around in the treetops has been a topic of dispute.

For years, scientists thought the ancestors of today's humans, monkeys, lemurs and apes were relatively slow and deliberate animals, using their grasping hands and feet to creep along small twigs and branches to stalk insects or find flowers and fruits.

But a fossil study published in the October 2017 issue of the *Journal of Human Evolution* suggests the first primates were masters at leaping through the trees.

Paleontologists working in a quarry in southeastern France uncovered the quarter-inch-long bone, the lower part of the ankle joint.

The fossil matched up best with a chipmunk-sized creature called *Donrussellia provincialis*.

Previously only known from jaws and teeth, *Donrussellia* is thought to be one of the earliest members of the primate family tree, on the branch leading to lemurs, lorises and bush babies.

Duke University assistant professor Doug Boyer and colleagues studied scans of *Donrussellia*'s ankle and compared it to other animals, using computer algorithms to analyze the 3-D digital shape of each tiny bone.

They were surprised to find that *Donrussellia*'s ankle was not like those of other primates, but was more similar to those of treeshrews and other nonprimate species.

The team's analyses also suggest the animal didn't just clamber or scurry along small branches. Instead, it may have been able to bound between trunks and branches,

using its grasping feet to stick the landing.

The researchers say that -- contrary to what many scientists thought -- the first primates may have evolved their acrobatic leaping skills first, while anatomical changes that allowed them to cling to slender branch tips and creep from tree to tree came later.

"Being able to jump from one tree to another might have been important, especially if there were ground predators around waiting to snag them," Boyer said.

Story Source:

[Materials](#) provided by [Duke University](#). Original written by Robin Ann Smith. *Note: Content may be edited for style and length.*

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Earthquake triggers 'slow motion' quakes in New Zealand -- ScienceDaily

Slow slip events, a type of slow motion earthquake that occurs over days to weeks, are thought to be capable of triggering larger, potentially damaging earthquakes. In a new study led by The University of Texas at Austin, scientists have documented the first clear-cut instance of the reverse -- a massive earthquake immediately triggering a series of large slow slip events.

Some of the slow slip events occurred as far away as 300 miles from the earthquake's epicenter. The study of new linkages between the two types of seismic activity, published in *Nature Geoscience* on Sept. 11, may help promote better understanding of earthquake hazard posed by subduction zones, a type of fault responsible for some of the world's most powerful earthquakes.

"This is probably the clearest example worldwide of long-distance, large-scale slow slip triggering," said lead author Laura Wallace, a research scientist at the University of Texas Institute for Geophysics (UTIG). She also holds a joint position at GNS Science, a New

Zealand research organization that studies natural hazards and resources.

Co-authors include other GNS scientists, as well as scientists from Georgia Tech and the University of Missouri. UTIG is a research unit of the UT Jackson School of Geosciences.

In November 2016, the second largest quake ever recorded in New Zealand -- the 7.8 magnitude Kaikōura quake -- hit the country's South Island. A GPS network operated by GeoNet, a partnership between GNS Science and the New Zealand Earthquake Commission, detected slow slip events hundreds of miles away beneath the North Island. The events occurred along the shallow part of the Hikurangi subduction zone that runs along and across New Zealand.

A subduction zone is an area where a tectonic plate dives or "subducts" beneath an adjacent tectonic plate. This type of fault is responsible for causing some of the world's most powerful earthquakes, which occur when areas of built-up stress between the plates rupture.

Slow slip events are similar to earthquakes, as they

involve more rapid than normal movement between two pieces of Earth's crust along a fault. However, unlike earthquakes (where the movement occurs in seconds), movement in these slow slip events or "silent earthquakes" can take weeks to months to occur.

The GPS network detected the slow slip events occurring on the Hikurangi subduction zone plate boundary in the weeks and months following the Kaikōura earthquake. The slow slip occurred at less than 9 miles deep below the surface (or seabed) and spanned an area of more than 6,000 square miles offshore from the Hawke's Bay and Gisborne regions, comparable with the area occupied by the state of New Jersey. There was also a deeper slow slip event triggered on the subduction zone at 15-24 miles beneath the Kapiti Coast region, just west of New Zealand's capital city Wellington. This deeper slow slip event near Wellington is still ongoing today.

"The slow slip event following the Kaikōura earthquake is the largest and most widespread episode of slow slip observed in New Zealand since these observations started in 2002," Wallace said.

The triggering effect was probably accentuated by an

offshore "sedimentary wedge" -- a mass of sedimentary rock piled up at the edge of the subduction zone boundary offshore from the North Island's east coast. This layer of more compliant rock is particularly susceptible to trapping seismic energy, which promotes slip between the plates at the base of the sedimentary wedge where the slow slip events occur.

"Our study also suggests that the northward traveling rupture during the Kaikōura quake directed strong pulses of seismic energy towards the North Island, which also influenced the long-distance triggering of the slow slip events beneath the North Island," said Yoshihiro Kaneko, a seismologist at GNS Science.

Slow slip events in the past have been associated with triggering earthquakes, including the magnitude 9.0 Tohoku earthquake that struck Japan in 2011. The researchers have also found that the slow slip events triggered by the Kaikōura quake were the catalyst for other quakes offshore from the North Island's east coast, including a magnitude 6.0 just offshore from the town of Porangahau on Nov. 22, 2016.

Although scientists are still in the early stages of trying to understand the relationships between slow slip

events and earthquakes, Wallace said that the study results highlight additional linkages between these processes.

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| [Section menu](#) | [主菜单](#) |

A new genetic marker for schizophrenia -- ScienceDaily

Schizophrenia is a complicated disease that often appears in early adulthood. Although scientists have not traced the genetic causes, more than 80% of schizophrenia cases are considered to have a hereditary cause. In a new report published in *Translational Psychiatry*, Japanese researchers report that a rare genetic variant, RTN4R, may have a fundamental role in the disease.

"Schizophrenia is a disease caused by disturbances in neural circuits. Myelin-related genes are associated with the disease," explains Osaka University Professor Toshihide Yamashita, one of the authors of the studies.

Myelin acts as a conductor of signals for the neural circuits. Yamashita hypothesized that myelin-related genes could contribute to the pathology of schizophrenia.

RTN4R is a subunit of RTN4, which regulates crucial functions for neural circuits, namely, axon regeneration

and structural plasticity.

Moreover, "RTN4 is a promising candidate gene for schizophrenia because it is located at chromosome 22q11.2, a hotspot for schizophrenia," he said.

Rare variants describe mutations that have low frequency but a large effect. Yamashita and his colleagues searched for rare variants of RTN4. Screening the DNA of 370 schizophrenia patients, he found a single missense mutation, R292H, that changed the amino acid of this protein from arginine to histidine in two patients.

R292H is located in the domain of RTN4R that binds to ligands, so a change in even a single amino acid could have profound effects on RTN4 function. To test this possibility, the scientists expressed the mutation in chick retinal cells, which only weakly express the gene, finding a significant change in myelin-dependent axonal behavior. Computer simulations showed that the mutation reduced the interaction between RTN4 and its partner protein, LINGO1, by increasing the distance between the two.

Yamashita is convinced that rare variants could act as

risk factors for schizophrenia.

"There is growing evidence that rare variants contribute to neurodevelopment diseases. The R292H mutation was not found in any existing databases. Our findings strengthen the evidence that rare variants could contribute to schizophrenia," he said.

Story Source:

[Materials](#) provided by [Osaka University](#). *Note: Content may be edited for style and length.*

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All Top News

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- [**Why your ancestors would have aced the long jump**](#) [周二, 12 9月 03:09]

A 52-million-year-old ankle fossil suggests our prehuman ancestors were high-flying acrobats. For years, scientists thought the ancestors of today's humans, monkeys, lemurs and apes were relatively slow and deliberate animals, using their grasping hands and feet to creep along small twigs and branches. But a new study suggests the first primates were masters at leaping through the trees.

- [**Scientists track the brain-skull transition from dinosaurs to birds**](#) [周二, 12 9月 00:27]

The dramatic, dinosaur-to-bird transition that occurred in reptiles millions of years ago was accompanied by profound changes in the skull roof of those animals -- and holds important clues about the way the skull forms in response to changes in the brain -- according to a new study. It is the first time scientists have tracked the link between the brain's development and the roofing bones of the skull.

- [**How openings in Antarctic sea ice affect worldwide climate**](#) [周二, 12 9月 00:26]

In a new analysis of climate models, researchers reveal the significant global effects that seemingly anomalous polynyas, or openings in sea ice, can have. Their findings indicate that heat escaping from the ocean through these openings impacts sea and atmospheric temperatures and wind patterns around the globe and even rainfall around the tropics.

- [**Brain Composer: 'Thinking' melodies onto a**](#)

[musical score](#) [周二, 12 9月 00:26]

A new brain-computer interface application that allows music to be composed by the power of thought has now been developed by scientists.

• **[Cold region 'tipping point' now inevitable](#)** [周二, 12 9月 00:26]

The decline of cold regions called periglacial zones is now inevitable due to climate change, researchers say.

• **[The evolutionary origin of the gut](#)** [周二, 12 9月 00:26]

How did the gut, the skin and musculature evolve? This question concerns scientists for more than a century. Through the investigation of the embryonic development of sea anemones, a very old animal lineage, researchers have now come to conclusions which challenge the 150-year-old hypothesis of the homology (common evolutionary origin) of the germ layers that form all later organs and tissues.

• **[USA threatened by more frequent flooding](#)** [周二, 12 9月 00:26]

The East Coast of the United States is threatened by more frequent flooding in the future. According to this study, the states of Virginia, North Carolina, and South Carolina are most at risk. Their coastal regions are being immersed by up to three millimeters per year -- among other things, due to human intervention.

• **[Half-a-billion-year-old fossils shed light animal evolution on Earth](#)** [周二, 12 9月 00:26]

Scientists have discovered traces of life more than half-a-billion years old that could change the way we think about how all animals evolved on Earth.

• **[Biodiversity just as powerful as climate change for healthy ecosystems](#)** [周二, 12 9月 00:26]

Biodiversity is proving to be one of humanity's best defenses against extreme weather. In past experiments, diversity has fostered healthier, more productive ecosystems, like shoreline vegetation that guards against hurricanes. However, many experts doubted whether these

experiments would hold up in the real world. A study offers a decisive answer: biodiversity's power in the wild surpasses experimental predictions, in some cases topping even effects of climate.

• [Looking stressed can help keep the peace](#) [周一, 11 9月 21:59]

Scratching may have evolved as a communication tool to help social cohesion, new research suggests for the first time.

• [Explosive birth of stars swells galactic cores](#) [周一, 11 9月 11:25]

Astronomers found that active star formation upswells galaxies, like yeast helps bread rise. Using three powerful telescopes on the ground and in orbit, they observed galaxies from 11 billion years ago and found explosive formation of stars in the cores of galaxies. This suggests that galaxies can change their own shape without interaction with other galaxies.

• [Scientist finds secret to thriving](#) [周六, 09 9月 08:55]

What it takes to thrive, rather than merely survive, could be as simple as feeling good about life and yourself and being good at something, according to new research.

• [Scientists make methanol using air around us](#) [周五, 08 9月 02:27]

Scientists have created methanol from methane using oxygen from the air. Methanol is currently produced by breaking down natural gas at high temperatures. But researchers have discovered they can produce methanol from methane through simple catalysis that allows methanol production at low temperatures using oxygen and hydrogen peroxide. The findings have major implications for cleaner, greener industrial processes worldwide.

• [Individuality drives collective behavior of schooling fish](#) [周五, 08 9月 02:27]

New research sheds light on how 'animal personalities' -- inter-individual differences in animal behavior -- can drive the collective behavior and functioning of animal groups such as schools of fish, including their cohesion, leadership, movement dynamics, and group

performance.

- [**Ship exhaust makes oceanic thunderstorms more intense**](#) [周五, 08 9月 02:27]

Thunderstorms directly above two of the world's busiest shipping lanes are significantly more powerful than storms in areas of the ocean where ships don't travel, according to new research.

- [**Listening to happy music may enhance divergent creativity**](#) [周五, 08 9月 02:27]

Listening to happy music may help generate more, innovative solutions compared to listening to silence, according to a study.

- [**Human skin cells transformed directly into motor neurons**](#) [周五, 08 9月 01:28]

Scientists have converted skin cells from healthy adults directly into motor neurons without going through a stem cell state. The technique makes it possible to study motor neurons of the human central nervous system in the lab. Unlike commonly studied mouse motor neurons, human motor neurons growing in the lab would be a new tool since researchers can't take samples of these neurons from living people but can easily take skin samples.

- [**Direct evidence of sea level 'fingerprints' discovered**](#) [周五, 08 9月 00:02]

The first observation of sea level 'fingerprints' -- tell-tale differences in sea level rise around the world in response to changes in continental water and ice sheet mass -- has been reported by researchers.

- [**Pluto features given first official names**](#) [周四, 07 9月 23:24]

The Working Group for Planetary System Nomenclature of the International Astronomical Union has officially approved the naming of 14 features on the surface of Pluto. These are the first geological features on the planet to be named following the close flyby by the New Horizons spacecraft in July 2015.

- [**Nutrition has benefits for brain network**](#)

[organization](#) [周四, 07 9月 23:24]

Nutrition has been linked to cognitive performance, but researchers have not pinpointed what underlies the connection. A new study found that monounsaturated fatty acids -- a class of nutrients found in olive oils, nuts and avocados -- are linked to general intelligence, and that this relationship is driven by the correlation between MUFAs and the organization of the brain's attention network.

• [3-D-printed biomaterials that degrade on demand](#) [周四, 07 9月 23:24]

The temporary structures, which can be degraded away with a biocompatible chemical trigger, could be useful in fabricating microfluidic devices, creating biomaterials that respond dynamically to stimuli and in patterning artificial tissue.

• [Intermittent electrical brain stimulation improves memory](#) [周四, 07 9月 22:23]

Intermittent electrical stimulation of an area deep inside the brain that degenerates in Alzheimer's appears to improve working memory, scientists report. Conversely, continuous deep brain stimulation, like the type used for Parkinson's and currently under study in humans with Alzheimer's, impairs memory, according to study.

• [How monkey fights grow](#) [周四, 07 9月 21:36]

New research finds evidence for a complicated structure behind primate conflict. It is not individuals who control the length of fights, but the relationships between pairs of individuals.

• [Emoji fans take heart: Scientists pinpoint 27 states of emotion](#) [周四, 07 9月 21:36]

The Emoji Movie, in which the protagonist can't help but express a wide variety of emotions instead of the one assigned to him, may have gotten something right. A new study challenges a long-held assumption in psychology that most human emotions fall within the universal categories of happiness, sadness, anger, surprise, fear and disgust.

• [**Whole grains decrease colorectal cancer risk, processed meats increase the risk**](#) [周四, 07 9月 21:36]

Major new report finds strong evidence of links between lifestyle and colorectal cancer risk. Physical activity and whole grains lowers risk of this cancer; too much alcohol and red meat, processed meats and obesity increase the risk. An estimated 47 percent of US colorectal cancers could be prevented each year with lifestyle changes.

• [**Monkey sees ... monkey knows?**](#) [周四, 07 9月 01:55]

Monkeys had higher confidence in their ability to remember an image when the visual contrast was high. These kinds of metacognitive illusions -- false beliefs about how we learn or remember best -- are shared by humans, leading brain and cognitive scientists to believe that metacognition could have an evolutionary basis.

• [**One powerful cell makes or breaks your habits**](#) [周四, 07 9月 01:55]

Neuroscientists have pinpointed a single type of neuron deep within the brain that serves as a 'master controller' of habits. The team found that habit formation boosts the activity of this influential cell, and that shutting it down is enough to break unhelpful habits in sugar-seeking mice. The findings may point towards new treatments for addiction or compulsive behavior in humans.

• [**Researchers report new way to make dissolving electronics**](#) [周四, 07 9月 01:55]

Researchers have reported a new type of electronic device that can be triggered to dissolve through exposure to water molecules in the atmosphere. The work holds promise for eco-friendly disposable personal electronics and biomedical devices that dissolve within the body.

• [**Does the organic material of comets predate our solar system?**](#) [周三, 06 9月 23:46]

The Rosetta space probe discovered a large amount of organic material in the nucleus of comet 'Chury.' Researchers now advance the theory

that this matter has its origin in interstellar space and predates the birth of the solar system.

- [**Accretion-powered pulsar reveals unique timing glitch**](#) [周三, 06 9月 22:36]

The discovery of the largest timing irregularity yet observed in a pulsar is the first confirmation that pulsars in binary systems exhibit the strange phenomenon known as a 'glitch.'

- [**Biologists slow aging, extend lifespan of fruit flies**](#) [周三, 06 9月 22:34]

In research that potentially could delay the onset of Parkinson's disease, Alzheimer's disease, cancer, stroke, cardiovascular disease, and other diseases of aging, biologists have produced a genetic one-two punch that significantly slowed aging and improved health in the middle-aged fruit flies they studied.

- [**Clever cockatoos bend hooks into straight wire to fish for food**](#) [周三, 06 9月 08:29]

Bending of a hook into wire to fish for the handle of a basket by crow Betty 15 years ago stunned the scientific world. Cognitive biologists studied tool making in an Indonesian cockatoo. Other than crows, cockatoos are not using tools in the wild. The birds manufactured hook tools out of straight wire without ever having seen or used a hook tool before.

- [**Something to sneeze about: Democratic voting in African wild dog packs**](#) [周三, 06 9月 08:29]

Scientists studying African wild dogs in Botswana have found members of this endangered species use sneezes to vote on when the pack will move off and start hunting.

- [**Newly-discovered semiconductor dynamics may help improve energy efficiency**](#) [周三, 06 9月 08:29]

Researchers examining the flow of electricity through semiconductors have uncovered another reason these materials seem to lose their ability

to carry a charge as they become more densely 'doped.'

- [**Humans still evolving, large-scale study of genetic data shows**](#) [周三, 06 9月 02:55]

In a study analyzing the genomes of 210,000 people in the United States and Britain, researchers have found that the genetic variants linked to Alzheimer's disease and heavy smoking are less frequent in people with longer lifespans, suggesting that natural selection is weeding out these unfavorable variants in both populations.

- [**Eat fat, live longer?**](#) [周三, 06 9月 02:55]

As more people live into their 80s and 90s, researchers have delved into the issues of health and quality of life during aging. A recent mouse study sheds light on those questions by demonstrating that a high fat, or ketogenic, diet not only increases longevity, but improves physical strength.

- [**Swings in dad's testosterone affects the family -- for better or worse -- after baby arrives**](#) [周三, 06 9月 02:55]

Testosterone levels are a key factor in a family's health and happiness after a newborn arrives. Researchers have found that a drop can signal postpartum depression in dad, and a spike may be a sign of aggression.

- [**Cooling system works without electricity**](#) [周三, 06 9月 02:55]

Scientists cooled water without electricity by sending excess heat where it won't be noticed -- space. The specialized optical surfaces they developed are a major step toward applying this technology to air conditioning and refrigeration.

- [**Crab nebula in the limelight: Unified model for the entire radiation spectrum**](#) [周三, 06 9月 00:48]

The origin of cosmic rays, high-energy particles from outer space constantly impacting on Earth, is among the most challenging open questions in astrophysics. Now research sheds new light on the origin of those energetic particles.

- [**Contagious yawning more closely associated**](#)

[with perceptual sensitivity than empathy](#) [周三, 06 9月 00:33]

Contrary to common belief that the yawning contagion is associated with empathy, it is in fact, more likely that perceptual sensitivity is to blame, research suggests.

• [Discovery of boron on Mars adds to evidence for habitability](#) [周三, 06 9月 00:32]

The discovery of boron on Mars gives scientists more clues about whether life could have ever existed on the planet, according to a new paper.

• ['Extreme' telescopes find the second-fastest-spinning pulsar](#) [周三, 06 9月 00:32]

By following up on mysterious high-energy sources mapped by NASA's Fermi Gamma-ray Space Telescope, a Netherlands-based radio telescope has discovered a new pulsar, the second fastest-spinning known.

• [CRISPR technology used to change flower color](#) [周三, 06 9月 00:32]

In a world-first, scientists have used the revolutionary CRISPR, or CRISPR/Cas9, genome-editing tool to change flower color in an ornamental plant.

• [The sniff test of self-recognition confirmed: Dogs have self-awareness](#) [周二, 05 9月 23:13]

A new research study used a sniff-test to evaluate the ability of dogs to recognize themselves. The experiment confirms the hypothesis of dogs' self-cognition proposed last year.

• [Zika virus kills brain cancer stem cells](#) [周二, 05 9月 21:36]

While Zika virus causes devastating damage to the brains of developing fetuses, it one day may be an effective treatment for glioblastoma, a deadly form of brain cancer. New research shows that the virus kills brain cancer stem cells, the kind of cancer cells most resistant to standard treatments.

[Was the primordial soup a hearty pre-protein stew?](#) [周二, 05 9月 21:36]

How proteins evolved billions of years ago, when Earth was devoid of life, has stumped many a scientist. A little do-si-do between amino acids and their chemical lookalikes may have done the trick. Evolutionary chemists tried it and got results by the boatload.

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

- [**Study of circular DNA comes full circle with use of old technique**](#) [周二, 12 9月 04:32]

A 50-year-old lab technique is helping researchers better understand circular DNA, a lesser-known and poorly understood cousin of the linear version commonly associated with life's genetic blueprint. With the aid of a process called density gradient centrifugation, a research team recently published a study that for the first time characterizes all of the circular DNA in the worm *C. elegans*, as well as in three human cell types.

- [**Why your ancestors would have aced the long jump**](#) [周二, 12 9月 03:09]

A 52-million-year-old ankle fossil suggests our prehuman ancestors were high-flying acrobats. For years, scientists thought the ancestors of today's humans, monkeys, lemurs and apes were relatively slow and deliberate animals, using their grasping hands and feet to creep along small twigs and branches. But a new study suggests the first primates were masters at leaping through the trees.

- [**A new genetic marker for schizophrenia**](#) [周二, 12 9月 00:27]

Scientists find a rare genetic variant that shows strong association with schizophrenia.

- [**The turbulent healing powers of plasma**](#) [周二, 12 9月 00:27]

Non-equilibrium atmospheric pressure plasma can help heal wounds, destroy cancer cells and kill harmful bacteria. The jets of plasma that doctors might use, however, often become turbulent with the direction

and velocity changing dramatically. Now, researchers have found this turbulence likely emerges from heat-induced sound waves generated at the plasma electrodes. This new insight is critical for more consistent and effective medical therapies.

- [**Brain Composer: 'Thinking' melodies onto a musical score**](#) [周二, 12 9月 00:26]

A new brain-computer interface application that allows music to be composed by the power of thought has now been developed by scientists.

- [**The evolutionary origin of the gut**](#) [周二, 12 9月 00:26]

How did the gut, the skin and musculature evolve? This question concerns scientists for more than a century. Through the investigation of the embryonic development of sea anemones, a very old animal lineage, researchers have now come to conclusions which challenge the 150-year-old hypothesis of the homology (common evolutionary origin) of the germ layers that form all later organs and tissues.

- [**Cooperation driven by reciprocity, not conformity**](#) [周二, 12 9月 00:26]

From an evolutionary perspective, cooperating with others can yield benefits that increase chances of survival. But what are the conditions that motivate us to cooperate? New research suggests that reciprocity -- cooperation under the assumption that we will receive benefits in return -- outweighs our desire to conform with group norms when we're deciding whether to cooperate with someone.

- [**New treatment option discovered for brain injury patients suffering from aggression**](#) [周二, 12 9月 00:26]

A drug originally developed in the 1960s as an antiviral medication is showing promise as a treatment option for people who suffer from increased feelings of aggression following traumatic brain injury, researchers have reported.

- [**Patients to benefit from new 3-D visualizations**](#)

[of the heart](#) [周二, 12 9月 00:26]

In the future heart surgeons will have access to a new type of 3-D visualization of the cardiac conduction system. This technique could provide improved safety for patients and improve surgical outcomes in patients suffering from heart disease and cardiac malformations, explains a new report.

• [Biophysics study makes exciting advancements for the future of DNA sequencing](#) [周二, 12 9月 00:26]

New technology that optimizes DNA sequencing using nanophysics and electric currents has been developed by scientists. Their work offers a method for loading DNA into sequencing wells with orders of magnitude higher efficiencies.

• [Scientists list 50 terms you may be confusing](#) [周二, 12 9月 00:26]

A list of commonly used psychological terms that are often assumed to be similar, if not identical, but which refer to very different concepts has been revealed by new research.

• [Fathers can influence the sex of their offspring, scientists show](#) [周二, 12 9月 00:26]

It has traditionally been thought that in mammals only mothers are able to influence the sex of their offspring. But a new study in wild mice has shown that fathers can, in fact, influence sex ratios.

• [Looking stressed can help keep the peace](#) [周一, 11 9月 21:59]

Scratching may have evolved as a communication tool to help social cohesion, new research suggests for the first time.

• [Fire ant venom compounds may lead to skin treatments](#) [周一, 11 9月 21:59]

Solenopsins, the main toxic components of fire ant venom, chemically resemble ceramides, which are lipid-like molecules essential for maintaining for the barrier function of the skin. Solenopsin analogs can reduce skin thickening and inflammation in a mouse model of psoriasis, scientists have shown.

• [**Respiratory tract infections in young children linked to asthma and worse lung function**](#) [周一, 11 9月 11:25]

Respiratory tract infections in young children are linked to an increased risk of asthma and worse lung function in later life, according to new research.

• [**E-cig refills contain irritants, and people who smoke and use e-cigs suffer more symptoms**](#) [周一, 11 9月 11:25]

Two new studies highlight the risks associated with using e-cigarettes, especially for those who also smoke conventional cigarettes.

• [**Children with asthma are being prescribed unnecessary antibiotics**](#) [周一, 11 9月 11:25]

Children with asthma are more likely to be prescribed antibiotics even though there is no evidence that they need them any more than children without asthma.

• [**Study challenges perception that empathy erodes during medical school**](#) [周日, 10 9月 07:40]

A new study by social neuroscientists challenges the common perception that empathy declines during medical training.

• [**Do we need to reform international drug treaties as more countries legalize cannabis?**](#) [周六, 09 9月 08:55]

The future of international drug control treaties is in doubt because of recent treaty-violating decisions to legalize cannabis use in Canada, the United States and Uruguay. A professor, whose 2014 review of 20 years of cannabis research made world headlines, thinks so. If decriminalization is the way of the future, he advocates a cautious approach to policy reform that would involve trialing and evaluating the effects of incrementally more liberal drug policies.

• [**Folic acid may mitigate autism risk from pesticides**](#) [周六, 09 9月 08:55]

Researchers have shown that mothers who take recommended amounts of folic acid around conception might reduce their children's pesticide-related autism risk.

- [**Number of Europeans exposed to secondhand smoke at work rising to more than one in four**](#) [周六, 09 9月 08:55]

More than one in four of people who work indoors are being exposed to secondhand smoke at work, according to new research.

- [**Scientist finds secret to thriving**](#) [周六, 09 9月 08:55]

What it takes to thrive, rather than merely survive, could be as simple as feeling good about life and yourself and being good at something, according to new research.

- [**Eye changes may signal frontotemporal lobe degeneration**](#) [周六, 09 9月 08:55]

Frontotemporal degeneration (FTD) is a progressive neurodegenerative condition that is present in tens of thousands of Americans, but is often difficult to diagnose accurately. Now a study has found evidence that a simple eye exam and retinal imaging test may help improve that accuracy.

- [**Immune cells help fat deal with environmental challenges**](#) [周六, 09 9月 08:55]

Immunosuppressive regulatory T-cells play an important role in the functioning of adipose tissue.

- [**How to draw electricity from the bloodstream**](#) [周六, 09 9月 08:54]

Men build dams and huge turbines to turn the energy of waterfalls and tides into electricity. To produce hydropower on a much smaller scale, scientists have now developed a lightweight power generator based on carbon nanotube fibers suitable to convert even the energy of flowing blood in blood vessels into electricity.

- [**New guidelines discourage use of brain imaging as a 'lie detector' for chronic pain**](#) [周六, 09 9月 08:54]

A task force consisting of researchers from around the world has released a set of recommendations that advise against the use of brain imaging as a test for chronic pain.

- [**Blocking sweet taste receptors can help body fight off sinus infections**](#) [周六, 09 9月 08:54]

Sweet taste receptor, known as T1R, can be activated by certain amino acids secreted by bacteria. Researchers took cells from rhinosinusitis patients and isolated the various communities of bacteria that were present. They found cultures of Staphylococcus bacteria produced two D-amino acids called D-Phe and D-Leu, both of which activate T1R sweet receptors and block the release of antimicrobial peptides.

- [**Why it's difficult to predict evolutionary fate of a new trait**](#) [周六, 09 9月 08:54]

Scientists explain the vexing complexities that make it hard to predict whether a new genetic trait will take over a population or die out, a key challenge for many fields including infectious disease.

- [**Polio-like disease in children**](#) [周六, 09 9月 08:54]

In Germany in the summer and autumn of 2016, several cases of illness in children were observed that were accompanied by acute flaccid paralysis. A new article describes this disease on the basis of two case reports.

- [**Later circadian timing of food intake is associated with increased body mass index**](#) [周六, 09 9月 08:54]

Investigators examine the relationships between body fat and body mass index, and the timing of food consumption, to time of day and to the body's circadian or body clock.

- [**Extreme weather has limited effect on attitudes toward climate policies**](#) [周五, 08 9月 02:46]

People who recently experienced severe weather events such as floods, storms and drought are more likely to support policies to adapt to the effects of climate change, according to a new study.

- [**Are you barking up the wrong tree by sleeping with your dog?**](#) [周五, 08 9月 02:45]

Let sleeping dogs lie ... in the bedroom. That's according to a new study that's sure to set many tails wagging.

- [**Better understanding of 'one of the most complex organs' for better lung treatments**](#) [周五, 08 9月 02:45]

Details of lung cell molecular pathways that promote or inhibit tissue regeneration have been reported by researchers. Their aim is to find new ways to treat lung disorders.

- [**Interrupting Parkinson's disease**](#) [周五, 08 9月 02:30]

Scientists have identified a toxic cascade that leads to neuronal degeneration in patients with Parkinson's disease and figured out how to interrupt it, reports a study. Intervening with an antioxidant early in the disease process may break the degenerative cycle and improve neuron function in Parkinson's, the study showed. Parkinson's is second most common neurodegenerative disorder.

- [**Mediterranean-style diet may eliminate need for reflux medications**](#) [周五, 08 9月 02:30]

A plant-based, Mediterranean-style diet has been shown to provide the same medical benefits for treating laryngopharyngeal reflux as popular reflux medications, according to new research.

- [**Hip fracture often deadly, study shows**](#) [周五, 08 9月 02:30]

There is excess mortality risk from hip fracture while accounting for pre-injury comorbid conditions, shows a large population-based matched cohort study. The study found that hip fracture sufferers experienced significantly worse survival at 12-months post-fracture. Individuals with hip fracture were more than 3.5 times more likely to die within 12 months compared to their non-injured counterpart, and excess mortality was higher in men than in women.

- [**Cilia: 'The bouncer' of bacteria**](#) [周五, 08 9月 02:27]

A new paper elucidates the active role of cilia in regulating flow for

bacteria filtering and enhancing chemical communication.

- [**Sharpest image of Alzheimer's fibrils shows previously unknown details**](#) [周五, 08 9月 02:27]

A team of researchers has determined the structure of an amyloid fibril with previously unachieved resolution. The fibrils of the body's own amyloid beta protein are the main constituent of Alzheimer's disease related and characteristic pathological protein deposits in the brain. The atomic-level structure displays previously unknown structural details which can answer many questions on the growth of harmful deposits and also explain the effect of genetic risk factors.

- [**Tweet life vs. street life: Exploring the gap between content, feelings**](#) [周五, 08 9月 02:27]

Twitter is an unreliable witness to the world's emotions, suggests a researcher, adding that online social life doesn't always reflect offline social reality.

- [**Listening to happy music may enhance divergent creativity**](#) [周五, 08 9月 02:27]

Listening to happy music may help generate more, innovative solutions compared to listening to silence, according to a study.

- [**Human papillomavirus 16 infections may pose variable cancer risk**](#) [周五, 08 9月 02:26]

Human papillomavirus 16 accounts for about half of all cervical cancers, but researchers have found that not all infections are equal. An analysis of the HPV16 genome from 5,570 human cell and tissue samples revealed that the virus actually consists of thousands of unique genomes, such that infected women living in the same region often have different HPV16 sequences and variable risks to cancer.

- [**Seven steps to keep your brain healthy from childhood to old age**](#) [周五, 08 9月 02:26]

A set of simple steps that promote heart health, called Life's Simple 7, can also foster ideal brain health, an expert panel says. Improving your

health status with Life's Simple 7 may reduce the risk of dementia caused by strokes, vascular dementia and Alzheimer's disease.

- [**Circadian clock's inner gears**](#) [周五, 08 9月 02:26]

A set of core clock proteins organize themselves into a handful of molecular machines that control the precise workings of the body's circadian rhythms, new research has found.

- [**New mindset in the search for stroke therapies**](#) [周五, 08 9月 02:26]

Researchers have identified a promising new avenue to explore in the search for stroke treatments, after translating findings from Alzheimer's disease.

- [**Discovery of chromosome motor supports DNA loop extrusion**](#) [周五, 08 9月 02:26]

It is one of the mysteries in biology: how does a cell neatly distribute its replicated DNA between two daughter cells? Scientists are split into two camps: the first argues that condensing works like a hook, tying DNA together. The other camp thinks that the ring-shaped protein pulls the DNA inwards to create a loop. Now researchers from give the 'loop-extrusion camp' a boost: condensin does indeed have the putative 'motor power' on board.

- [**Researchers closer to uncovering a new feature in heart failure**](#) [周五, 08 9月 01:29]

Each cell in the average human body contains 23 pairs of chromosomes, with four telomeres on each pair. Telomeres cover the end of the chromosome, protecting it from deterioration or fusion with adjacent chromosomes. While there is a length range for classifying a healthy telomere, researchers found, for the first time ever, that people with heart failure have shorter telomeres within the cells that make up the heart muscle (known as cardiomyocytes).

- [**Human skin cells transformed directly into motor neurons**](#) [周五, 08 9月 01:28]

Scientists have converted skin cells from healthy adults directly into

motor neurons without going through a stem cell state. The technique makes it possible to study motor neurons of the human central nervous system in the lab. Unlike commonly studied mouse motor neurons, human motor neurons growing in the lab would be a new tool since researchers can't take samples of these neurons from living people but can easily take skin samples.

[Shortened telomeres linked to dysfunction in Duchenne muscular dystrophy, researchers find](#)

[周五, 08 9月 01:25]

A discovery about muscular dystrophy disorders has been made that suggests new possibilities for treatment. Researchers found that stem cells in the muscles of muscular dystrophy patients may, at an early age, lose their ability to regenerate new muscle, due to shortened telomeres.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

- [**Method controls whether freezing droplets bounce off or stick**](#) [周二, 12 9月 03:09]

Self-peeling droplets have been discovered, along with a new way to control adhesion of freezing droplets by adjusting the thermal properties of substrates. These findings could make everything from additive manufacturing to deicing more efficient.

- [**The turbulent healing powers of plasma**](#) [周二, 12 9月 00:27]

Non-equilibrium atmospheric pressure plasma can help heal wounds, destroy cancer cells and kill harmful bacteria. The jets of plasma that doctors might use, however, often become turbulent with the direction and velocity changing dramatically. Now, researchers have found this turbulence likely emerges from heat-induced sound waves generated at the plasma electrodes. This new insight is critical for more consistent and effective medical therapies.

- [**A novel and practical fab-route for superomniphobic liquid-free surfaces**](#) [周二, 12 9月 00:27]

Scientists have developed a fabrication technology that can inexpensively produce surfaces capable of repelling liquids, including water and oil.

- [**Connecting up the quantum internet**](#) [周二, 12 9月 00:27]

Major leap for practical building blocks of a quantum internet: New research demonstrates how to dramatically improve the storage time of a telecom-compatible quantum memory, a vital component of a global quantum network. The technology operates in the same 1550 nanometer

band as today's telecommunications infrastructure. It can also be operated as a quantum light source or used as an optical link for solid-state quantum computing devices such as superconducting qubits and silicon qubits.

- [**Brain Composer: 'Thinking' melodies onto a musical score**](#) [周二, 12 9月 00:26]

A new brain-computer interface application that allows music to be composed by the power of thought has now been developed by scientists.

- [**Patients to benefit from new 3-D visualizations of the heart**](#) [周二, 12 9月 00:26]

In the future heart surgeons will have access to a new type of 3-D visualization of the cardiac conduction system. This technique could provide improved safety for patients and improve surgical outcomes in patients suffering from heart disease and cardiac malformations, explains a new report.

- [**Study clarifies how neural nets 'think' when processing language**](#) [周二, 12 9月 00:26]

A new general-purpose technique has been developed for making sense of neural networks that are trained to perform natural-language-processing tasks, in which computers attempt to interpret freeform texts written in ordinary, or 'natural,' language (as opposed to a structured language, such as a database-query language).

- [**First on-chip nanoscale optical quantum memory developed**](#) [周二, 12 9月 00:26]

Engineers have built a chip capable of storing and retrieving individual photons of light, with all of their quantum properties left intact. The chip represents the first nanoscale optical quantum memory device, and could one day be used to create more secure Internet communications.

- [**Using mirrors to improve the quality of light particles**](#) [周一, 11 9月 21:59]

Scientists have succeeded in dramatically improving the quality of individual photons generated by a quantum system. The scientists have successfully put a 10-year-old theoretical prediction into practice. With their paper, they have taken an important step towards future applications in quantum information technology.

• [**Explosive birth of stars swells galactic cores**](#) [周一, 11 9月 11:25]

Astronomers found that active star formation upswells galaxies, like yeast helps bread rise. Using three powerful telescopes on the ground and in orbit, they observed galaxies from 11 billion years ago and found explosive formation of stars in the cores of galaxies. This suggests that galaxies can change their own shape without interaction with other galaxies.

• [**When electrons ride a wave**](#) [周六, 09 9月 08:55]

Conventional electron accelerators are an indispensable tool in modern research. But even smaller versions of these super microscopes are the size of a soccer field. Laser plasma acceleration could offer an alternative with a smaller footprint and higher peak currents. So far, the challenge with laser accelerators has been to create a reliable and stable electron beam, which is the prerequisite for applications. Physicists have developed a method to increase beam stability and quality.

• [**Scientists unravel new insights into promising semiconductor material**](#) [周六, 09 9月 08:55]

Researchers have established new findings on the properties of two-dimensional molybdenum disulfide, a widely studied semiconductor of the future.

• [**Are we being watched? Tens of other worlds could spot the Earth**](#) [周六, 09 9月 08:55]

Scientists have turned exoplanet-hunting on its head, in a study that instead looks at how an alien observer might be able to detect Earth using our own methods. They find that at least nine exoplanets are ideally placed to observe transits of Earth.

• [**High-speed quantum memory for photons**](#) [周六, 09 9月]

08:54]

Physicists have developed a memory that can store photons. These quantum particles travel at the speed of light and are thus suitable for high-speed data transfer. The researchers were able to store them in an atomic vapor and read them out again later without altering their quantum mechanical properties too much. This memory technology is simple and fast and it could find application in a future quantum Internet.

• [How to draw electricity from the bloodstream](#) [周六,

09 9月 08:54]

Men build dams and huge turbines to turn the energy of waterfalls and tides into electricity. To produce hydropower on a much smaller scale, scientists have now developed a lightweight power generator based on carbon nanotube fibers suitable to convert even the energy of flowing blood in blood vessels into electricity.

• [New guidelines discourage use of brain imaging as a 'lie detector' for chronic pain](#) [周六, 09 9月 08:54]

A task force consisting of researchers from around the world has released a set of recommendations that advise against the use of brain imaging as a test for chronic pain.

• [A sweeter way to make green products](#) [周六, 09 9月 08:16]

A more efficient process has been created for extracting the sugars from wood chips, corn cobs and other organic waste from forests and farms. This biorenewable feedstock could serve as a cheaper, sustainable substitute for the petroleum used in manufacturing tons of consumer goods annually -- goods that consumers want to be greener.

• [Scientists make methanol using air around us](#) [周五,

08 9月 02:27]

Scientists have created methanol from methane using oxygen from the air. Methanol is currently produced by breaking down natural gas at high temperatures. But researchers have discovered they can produce methanol from methane through simple catalysis that allows methanol production at low temperatures using oxygen and hydrogen peroxide. The findings have major implications for cleaner, greener industrial processes worldwide.

- [**Tweet life vs. street life: Exploring the gap between content, feelings**](#) [周五, 08 9月 02:27]

Twitter is an unreliable witness to the world's emotions, suggests a researcher, adding that online social life doesn't always reflect offline social reality.

- [**Quantum detectives in the hunt for the world's first quantum computer**](#) [周五, 08 9月 02:26]

A new paper is the latest confirmation of Majorana fermions -- a strange quasiparticle at the heart of the next generation of quantum machines being pursued by engineers.

- [**Streamlined security: Optimizing sensor placement with mathematics**](#) [周五, 08 9月 01:25]

Increasing reliance on heightened security in public and private settings calls for optimal sensor technology. However, placing security sensors to optimize resource management and system performance while simultaneously protecting people and products is undoubtedly challenging. In a new paper, experts propose a computational level set method to optimally position a sensor-based security system for maximum surveillance of a complex environment.

- [**New acid-free magnet recycling process created**](#) [周五, 08 9月 01:25]

A new rare-earth magnet recycling process dissolves magnets in an acid-free solution and recovers high purity rare earth elements.

- [**Curious properties: Researchers analyze flocking behavior on curved surfaces**](#) [周五, 08 9月 01:25]

A murmuration of starlings. The phrase reads like something from literature or the title of an arthouse film. In fact, it is meant to describe the phenomenon that results when hundreds, sometimes thousands, of these birds fly in swooping, intricately coordinated patterns through the sky.

- [**Lignin: Much more valuable than just as waste**](#) [周五, 08 9月 00:03]

Lignin, a substance considered as a waste product in biomass and ethanol production, will now reach its proper value as bio-oil in new products.

- [**Aspirin tablets help unravel basic physics**](#) [周五, 08 9月 00:03]

Aspirin in form of small crystallites provides new insight into delicate motions of electrons and atomic nuclei. Set into molecular vibration by strong ultrashort far-infrared (terahertz) pulses, the nuclei oscillate much faster than for weak excitation. They gradually return to their intrinsic oscillation frequency, in parallel to the picosecond decay of electronic motions. An analysis of the terahertz waves radiated from the moving particles by in-depth theory reveals the strongly coupled chara...

- [**Scanning tunneling microscopy measurements identify active sites on catalyst surfaces**](#) [周五, 08 9月 00:02]

Chemistry live: using a scanning tunneling microscope, researchers were able for the very first time to witness in detail the activity of catalysts during an electrochemical reaction. The measurements show how the surface structure of the catalysts influences their activity. The new analysis method can now be used to improve catalysts for the electrochemical industry.

- [**'Rubber material' discovered that could lead to scratch-proof paint for car**](#) [周五, 08 9月 00:02]

A stretchy miracle material has been discovered that could be used to create highly resistant smart devices and scratch-proof paint for cars, report investigators.

- [**Climate change for aliens**](#) [周四, 07 9月 23:24]

For more than 50 years, the Kardashev scale has been the gold standard for classifying hypothetical 'exo-civilizations' by their ability to harness energy. A team of researchers has devised a new system that takes into account the impacts of that energy use.

- [**Pluto features given first official names**](#) [周四, 07 9月 23:24]

The Working Group for Planetary System Nomenclature of the International Astronomical Union has officially approved the naming of

14 features on the surface of Pluto. These are the first geological features on the planet to be named following the close flyby by the New Horizons spacecraft in July 2015.

- [**3-D-printed biomaterials that degrade on demand**](#) [周四, 07 9月 23:24]

The temporary structures, which can be degraded away with a biocompatible chemical trigger, could be useful in fabricating microfluidic devices, creating biomaterials that respond dynamically to stimuli and in patterning artificial tissue.

- [**Smartphone screen technology used to trick harmful bacteria**](#) [周四, 07 9月 22:41]

Conducting plastics found in smartphone screens can be used to trick the metabolism of pathogenic bacteria, report scientists. By adding or removing electrons from the plastic surface, bacteria may be tricked into growing more or less. The method may find widespread use in preventing bacterial infections in hospitals or improve effectiveness in wastewater management.

- [**New dental imaging method uses squid ink to fish for gum disease**](#) [周四, 07 9月 22:24]

Squid ink could one day make getting checked for gum disease at the dentist less tedious and even painless. By combining squid ink with light and ultrasound, a team led by engineers has developed a new dental imaging method to examine a patient's gums that is noninvasive, more comprehensive and more accurate than the state of the art.

- [**Ultraviolet light from superluminous supernova key to revealing explosion mechanism**](#) [周四, 07 9月 22:24]

An international team of researchers has discovered a way to use UV light from superluminous supernovae to uncover its explosion mechanism, and used it to identify Gaia16apd as a shock-interacting supernova, reports a new study.

- [**Fast magnetic writing of data**](#) [周四, 07 9月 22:24]

Magnetic data storage has long been considered too slow for use in the working memories of computers. Researchers have now investigated a technique by which magnetic data writing can be done considerably faster and using less energy.

- [**Intermittent electrical brain stimulation improves memory**](#) [周四, 07 9月 22:23]

Intermittent electrical stimulation of an area deep inside the brain that degenerates in Alzheimer's appears to improve working memory, scientists report. Conversely, continuous deep brain stimulation, like the type used for Parkinson's and currently under study in humans with Alzheimer's, impairs memory, according to study.

- [**A tiny device offers insights to how cancer spreads**](#) [周四, 07 9月 21:36]

Researchers developed a new type of microfluidic device that can cultivate cells for longer periods of time, better reflecting how cancer cells to change over time. The device allowed them to capture the leader cells that would be first to break away and cause metastasis.

- [**Drivers don't ignore a ringing phone but do ignore the risk**](#) [周四, 07 9月 21:36]

Drivers find it difficult to ignore a ringing phone but do ignore the dangers, with a new study revealing almost 50 percent believe locating and answering a ringing phone is not as risky as talking and texting. Research has found locating a ringing phone, checking who's calling, and rejecting or answering the call, is the most frequent mobile phone task undertaken by drivers.

- [**Water-based lithium-ion batteries that don't explode now created**](#) [周四, 07 9月 05:01]

For the first time a lithium-ion battery has been developed that uses a water-salt solution as its electrolyte and reaches the 4.0 volt mark desired for household electronics, such as laptop computers, without the fire and explosive risks associated with some commercially available non-aqueous lithium-ion batteries.

- [**Study quantifies potential for water reuse in permian basin oil production**](#) [周四, 07 9月 05:01]

Hydraulic fracturing has once again made the Permian Basin one of the richest oil fields in the world. But the improved reserves come with some serious water management issues. Drilling for oil uses water upfront, and brings up large volumes of water that need to be managed. The study found that recycling the water produced during operations at other hydraulic fracturing sites could help reduce potential problems associated with the technology.

- [**Researchers challenge status quo of battery commercialization**](#) [周四, 07 9月 05:01]

Researchers are looking to the pharmaceutical industry to propose an updated model of US battery commercialization.

- [**New device accurately identifies cancer in seconds**](#) [周四, 07 9月 02:49]

A team of scientists and engineers has invented a powerful tool that rapidly and accurately identifies cancerous tissue during surgery, delivering results in about 10 seconds. The MasSpec Pen is an innovative handheld instrument that gives surgeons precise diagnostic information about what tissue to cut or preserve, helping improve treatment and reduce the chances of cancer recurrence.

- [**Particle physicists on a quest for 'new physics'**](#) [周四, 07 9月 02:29]

The Large Hadron Collider (LHC) at CERN, the European Organization for Nuclear Research, produces hundreds of millions of proton collisions per second. But researchers working on the Large Hadron Collider beauty (LHCb) experiment can only record 2,000 of those collisions, using one of the detectors installed on the accelerator. So in the end, this technological marvel leaves the physicists wanting more. They are convinced that the vast volume of uncaptured data holds the answers to several unreso...

- [**Realistic projections of economic growth and**](#)

[**carbon emissions**](#) [周四, 07 9月 01:56]

Between 2008 and 2015, the United States was able to reduce carbon emissions while enjoying limited economic growth. But in a recent commentary, John Deutch, who has worked with the energy departments of several presidential administrations, urges cautious optimism. He explains the country experienced a short-term decoupling of emissions and economic growth that models suggest won't sustain in the future or be enough to prevent climate change.

• [**Water-based lithium-ion batteries without explosive risks now a reality**](#) [周四, 07 9月 01:56]

Researchers have developed for the first time a lithium-ion battery that uses a water-salt solution as its electrolyte and reaches the 4.0 volt mark desired for household electronics, such as laptop computers, without the fire and explosive risks associated with some commercially available non-aqueous lithium-ion batteries.

• [**Defects in next-generation solar cells can be healed with light**](#) [周四, 07 9月 01:56]

Researchers have shown that defects in the molecular structure of perovskites -- a material which could revolutionize the solar cell industry -- can be 'healed' by exposing it to light and just the right amount of humidity.

• [**Earth as hybrid planet: New classification places Anthropocene era in astrobiological context**](#) [周四, 07 9月 01:55]

A new classification scheme has been devised for the evolutionary stages of worlds based on 'non-equilibrium thermodynamics' -- a planet's energy flow being out of sync, as the presence of life could cause.

• [**Researchers report new way to make dissolving electronics**](#) [周四, 07 9月 01:55]

Researchers have reported a new type of electronic device that can be triggered to dissolve through exposure to water molecules in the atmosphere. The work holds promise for eco-friendly disposable

personal electronics and biomedical devices that dissolve within the body.

- [**Light-based method improves practicality and quality of remote wind measurements**](#) [周三, 06 9月 23:46]

Researchers have developed a new remote sensing instrument based on light detection and ranging that could offer a simple and robust way to accurately measure wind speed, which could help scientists better understand how hurricanes form and provide information to pinpoint landfall earlier.

- [**Does the organic material of comets predate our solar system?**](#) [周三, 06 9月 23:46]

The Rosetta space probe discovered a large amount of organic material in the nucleus of comet 'Chury.' Researchers now advance the theory that this matter has its origin in interstellar space and predates the birth of the solar system.

- [**Voting vulnerability**](#) [周三, 06 9月 22:38]

Online attackers may be able to purchase -- for as little as a few thousand dollars -- enough personal information to potentially alter voter registration information in as many as 36 states and the District of Columbia. Dubbed 'voter identity theft,' the vulnerability could be exploited by attackers to disenfranchise many voters where voter registration information can be changed online.

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Environment News

Top stories featured on ScienceDaily's Plants & Animals, Earth & Climate, and Fossils & Ruins sections.

- [**Study of circular DNA comes full circle with use of old technique**](#) [周二, 12 9月 04:32]

A 50-year-old lab technique is helping researchers better understand circular DNA, a lesser-known and poorly understood cousin of the linear version commonly associated with life's genetic blueprint. With the aid of a process called density gradient centrifugation, a research team recently published a study that for the first time characterizes all of the circular DNA in the worm *C. elegans*, as well as in three human cell types.

- [**Why your ancestors would have aced the long jump**](#) [周二, 12 9月 03:09]

A 52-million-year-old ankle fossil suggests our prehuman ancestors were high-flying acrobats. For years, scientists thought the ancestors of today's humans, monkeys, lemurs and apes were relatively slow and deliberate animals, using their grasping hands and feet to creep along small twigs and branches. But a new study suggests the first primates were masters at leaping through the trees.

- [**Earthquake triggers 'slow motion' quakes in New Zealand**](#) [周二, 12 9月 00:27]

Slow slip events, a type of slow motion earthquake that occurs over days to weeks, are thought to be capable of triggering larger, potentially damaging earthquakes. In a new study, scientists have documented the first clear-cut instance of the reverse -- a massive earthquake immediately triggering a series of large slow slip events.

- [**Scientists track the brain-skull transition from dinosaurs to birds**](#) [周二, 12 9月 00:27]

The dramatic, dinosaur-to-bird transition that occurred in reptiles millions of years ago was accompanied by profound changes in the skull roof of those animals -- and holds important clues about the way the skull forms in response to changes in the brain -- according to a new study. It is the first time scientists have tracked the link between the brain's development and the roofing bones of the skull.

- [**How openings in Antarctic sea ice affect worldwide climate**](#) [周二, 12 9月 00:26]

In a new analysis of climate models, researchers reveal the significant global effects that seemingly anomalous polynyas, or openings in sea ice, can have. Their findings indicate that heat escaping from the ocean through these openings impacts sea and atmospheric temperatures and wind patterns around the globe and even rainfall around the tropics.

- [**Muscle nuclei: May the force be with you**](#) [周二, 12 9月 00:26]

A group of researchers has revealed the mechanism by which cellular nuclei reach their position within muscle cells. This discovery can have important implications in therapeutic strategies to treat muscular diseases.

- [**Cold region 'tipping point' now inevitable**](#) [周二, 12 9月 00:26]

The decline of cold regions called periglacial zones is now inevitable due to climate change, researchers say.

- [**The evolutionary origin of the gut**](#) [周二, 12 9月 00:26]

How did the gut, the skin and musculature evolve? This question concerns scientists for more than a century. Through the investigation of the embryonic development of sea anemones, a very old animal lineage, researchers have now come to conclusions which challenge the 150-year-old hypothesis of the homology (common evolutionary origin) of the germ layers that form all later organs and tissues.

- [**USA threatened by more frequent flooding**](#) [周二, 12 9月 00:26]

The East Coast of the United States is threatened by more frequent flooding in the future. According to this study, the states of Virginia, North Carolina, and South Carolina are most at risk. Their coastal regions are being immersed by up to three millimeters per year -- among other things, due to human intervention.

- [**Half-a-billion-year-old fossils shed light animal evolution on Earth**](#) [周二, 12 9月 00:26]

Scientists have discovered traces of life more than half-a-billion years old that could change the way we think about how all animals evolved on Earth.

- [**Biodiversity just as powerful as climate change for healthy ecosystems**](#) [周二, 12 9月 00:26]

Biodiversity is proving to be one of humanity's best defenses against extreme weather. In past experiments, diversity has fostered healthier, more productive ecosystems, like shoreline vegetation that guards against hurricanes. However, many experts doubted whether these experiments would hold up in the real world. A study offers a decisive answer: biodiversity's power in the wild surpasses experimental predictions, in some cases topping even effects of climate.

- [**Fathers can influence the sex of their offspring, scientists show**](#) [周二, 12 9月 00:26]

It has traditionally been thought that in mammals only mothers are able to influence the sex of their offspring. But a new study in wild mice has shown that fathers can, in fact, influence sex ratios.

- [**Looking stressed can help keep the peace**](#) [周一, 11 9月 21:59]

Scratching may have evolved as a communication tool to help social cohesion, new research suggests for the first time.

- [**Fire ant venom compounds may lead to skin treatments**](#) [周一, 11 9月 21:59]

Solenopsins, the main toxic components of fire ant venom, chemically resemble ceramides, which are lipid-like molecules essential for

maintaining for the barrier function of the skin. Solenopsin analogs can reduce skin thickening and inflammation in a mouse model of psoriasis, scientists have shown.

- [**Ancient wetlands offer window into climate change**](#) [周一, 11 9月 21:59]

Environmental researchers have uncovered a wealth of information about a unique part of Australia that offers never-before-seen insights into climate change since the last ice age.

- [**Desert locusts: New risks in the light of climate change**](#) [周一, 11 9月 21:59]

The desert locust is an invasive species that is both well known and feared because of the large-scale agricultural damage it can cause. It is particularly closely monitored, to prevent the risks of outbreaks and invasions. Climate change could modify its distribution area, meaning a new threat to agriculture, according to a study.

- [**Biosensor detects adulteration of horse in beef meat within one hour**](#) [周一, 11 9月 21:59]

Fraud in meat products has become, in recent years, a battle of the food industry and public health. Although there are numerous strategies to detect it, they are not sufficiently selective and sensitive to differentiate close animal species. A collaboration of experts has developed an electrochemical biosensor capable of detecting, in just one hour, processes of adulteration of beef with horse meat.

- [**Do we need to reform international drug treaties as more countries legalize cannabis?**](#) [周六, 09 9月 08:55]

The future of international drug control treaties is in doubt because of recent treaty-violating decisions to legalize cannabis use in Canada, the United States and Uruguay. A professor, whose 2014 review of 20 years of cannabis research made world headlines, thinks so. If decriminalization is the way of the future, he advocates a cautious approach to policy reform that would involve trialing and evaluating the effects of incrementally more liberal drug policies.

- [**A-MUD: A method for automatically detecting mouse song**](#) [周六, 09 9月 08:55]

Mice produce a remarkable repertoire of vocalizations across five octaves, which they emit during mating and other contexts. Analyses of mice song can provide important information about their social behavior and for research into neuropsychiatric disorders. But their songs are in the ultrasonic range and inaudible for humans. Researchers have now developed a freely available method to automatically detect mouse vocalizations instead of manually.

- [**An officer and a gentlewoman from the Viking army in Birka**](#) [周六, 09 9月 08:55]

War was not an activity exclusive to males in the Viking world. A new study shows that women could be found in the higher ranks at the battlefield.

- [**Young birds suffer in the city**](#) [周六, 09 9月 08:54]

City life is tough for young birds. But if they survive their first year, they are less susceptible to the effects of stress, according to new research.

- [**Why it's difficult to predict evolutionary fate of a new trait**](#) [周六, 09 9月 08:54]

Scientists explain the vexing complexities that make it hard to predict whether a new genetic trait will take over a population or die out, a key challenge for many fields including infectious disease.

- [**Meeting a microbe in the morning or in the evening: Is it all the same?**](#) [周六, 09 9月 08:54]

Does the time of day matter when our body is infected by a parasite? According to new research, it matters a great deal.

- [**Animal welfare: Potential new indicator of chronic stress in horses**](#) [周六, 09 9月 08:54]

Cortisol is generally considered to be a stress hormone because its levels rise during episodes of acute stress. Yet its relationship to chronic stress

is less clear. Researchers have linked lower cortisol levels to states of chronically poor welfare in adult horses observed under their usual living conditions.

- [**Lazy ants make themselves useful in unexpected ways**](#) [周六, 09 9月 08:53]

They may look useless, but they're not: so-called lazy ants serve as new recruits ready to replace the top productive workers when the need arises. New research shows that these ants are far from useless.

- [**A sweeter way to make green products**](#) [周六, 09 9月 08:16]

A more efficient process has been created for extracting the sugars from wood chips, corn cobs and other organic waste from forests and farms. This biorenewable feedstock could serve as a cheaper, sustainable substitute for the petroleum used in manufacturing tons of consumer goods annually -- goods that consumers want to be greener.

- [**Extreme weather has limited effect on attitudes toward climate policies**](#) [周五, 08 9月 02:46]

People who recently experienced severe weather events such as floods, storms and drought are more likely to support policies to adapt to the effects of climate change, according to a new study.

- [**Are you barking up the wrong tree by sleeping with your dog?**](#) [周五, 08 9月 02:45]

Let sleeping dogs lie ... in the bedroom. That's according to a new study that's sure to set many tails wagging.

- [**Individuality drives collective behavior of schooling fish**](#) [周五, 08 9月 02:27]

New research sheds light on how 'animal personalities' -- inter-individual differences in animal behavior -- can drive the collective behavior and functioning of animal groups such as schools of fish, including their cohesion, leadership, movement dynamics, and group performance.

- [**Ship exhaust makes oceanic thunderstorms**](#)

[more intense](#) [周五, 08 9月 02:27]

Thunderstorms directly above two of the world's busiest shipping lanes are significantly more powerful than storms in areas of the ocean where ships don't travel, according to new research.

• [Why are fossilized hairs so rare?](#) [周五, 08 9月 02:27]

When it comes to preserving body parts, fossilized hair is rare--five times rarer than feathers--despite being an important tool for understanding ancient species. This finding has researchers trying to determine if the lack of hair in the fossil record has to do with physical traits that might make it more difficult for hair to fossilize, or an issue with scientists' collection techniques that could lead to them missing important finds.

• [Cilia: 'The bouncer' of bacteria](#) [周五, 08 9月 02:27]

A new paper elucidates the active role of cilia in regulating flow for bacteria filtering and enhancing chemical communication.

• [How tails help geckos and other vertebrates make great strides](#) [周五, 08 9月 02:27]

A wagging tail is often associated with dogs' emotions, but the side-to-side motion may also help them take longer strides and move faster, according to a study. The research was done on leopard geckos, which are ideal animals for the study of tail function because they naturally lose their tails as a defense mechanism against predators in a process called autotomy.

• [Eighteenth century nautical charts reveal coral loss](#) [周五, 08 9月 02:27]

Centuries-old nautical charts, mapped by long-deceased sailors to avoid shipwrecks, have been used by modern scientists to study loss of coral reefs. A new study compared early British charts to modern coral habitat maps to understand changes to reef environments.

• [The sand trap: Demand outpaces caution, knowledge](#) [周五, 08 9月 02:27]

Sand, spanning miles of beaches, carpeting vast oceans and deserts, is a visual metaphor for limitless resources. Yet seize another metaphor -- sand in an hourglass, marking time running out.

- [**Courts' critical, underappreciated role in climate policy**](#) [周五, 08 9月 02:26]

Both climate lawsuits and their reliance on scientific data have increased over the past decade, the most extensive study to date shows.

- [**Discovery of chromosome motor supports DNA loop extrusion**](#) [周五, 08 9月 02:26]

It is one of the mysteries in biology: how does a cell neatly distribute its replicated DNA between two daughter cells? Scientists are split into two camps: the first argues that condensing works like a hook, tying DNA together. The other camp thinks that the ring-shaped protein pulls the DNA inwards to create a loop. Now researchers from give the 'loop-extrusion camp' a boost: condensin does indeed have the putative 'motor power' on board.

- [**Curious properties: Researchers analyze flocking behavior on curved surfaces**](#) [周五, 08 9月 01:25]

A murmuration of starlings. The phrase reads like something from literature or the title of an arthouse film. In fact, it is meant to describe the phenomenon that results when hundreds, sometimes thousands, of these birds fly in swooping, intricately coordinated patterns through the sky.

- [**Direct evidence of sea level 'fingerprints' discovered**](#) [周五, 08 9月 00:02]

The first observation of sea level 'fingerprints' -- tell-tale differences in sea level rise around the world in response to changes in continental water and ice sheet mass -- has been reported by researchers.

- [**Smartphone screen technology used to trick harmful bacteria**](#) [周四, 07 9月 22:41]

Conducting plastics found in smartphone screens can be used to trick the

metabolism of pathogenic bacteria, report scientists. By adding or removing electrons from the plastic surface, bacteria may be tricked into growing more or less. The method may find widespread use in preventing bacterial infections in hospitals or improve effectiveness in wastewater management.

- [**Mixing and matching yeast DNA**](#) [周四, 07 9月 22:38]

Scientists show molecular factors that determine why some regions in yeast chromosomes are apt for remodeling, while other regions stay faithful during cell replication.

- [**Proteins keep a grip on cells**](#) [周四, 07 9月 22:38]

Scientists have revealed new structural information on the integrin-laminin interaction. These findings provide important insights on cellular interactions that promote cell growth, differentiation, and migration.

- [**New dental imaging method uses squid ink to fish for gum disease**](#) [周四, 07 9月 22:24]

Squid ink could one day make getting checked for gum disease at the dentist less tedious and even painless. By combining squid ink with light and ultrasound, a team led by engineers has developed a new dental imaging method to examine a patient's gums that is noninvasive, more comprehensive and more accurate than the state of the art.

- [**Hidden Inca treasure: Remarkable new tree genus discovered in the Andes**](#) [周四, 07 9月 22:24]

Hidden in plain sight -- that's how researchers describe their discovery of a new genus of large forest tree commonly found, yet previously scientifically unknown, in the tropical Andes.

- [**Algorithm reconstructs processes from individual images**](#) [周四, 07 9月 22:24]

Researchers have developed a new method for reconstructing continuous biological processes, such as disease progression, using image data.

- [**Australian Magpie 'dunks' its food before eating, researchers find**](#) [周四, 07 9月 22:23]

Scientists have shown that the Australian Magpie may 'dunk' its food in water before eating, a process that appears to be 'copied' by its offspring.

- [**Increasing effective decision-making for coastal marine ecosystems**](#) [周四, 07 9月 22:23]

Marine restoration, rather than protection, might be the most cost-effective solution for coastal marine ecosystems suffering from human activities, a new study has found. The study examined how to best benefit coastal marine ecosystems on limited conservation budgets, to help managers better understand the trade-offs.

- [**Breaking through the wall in bacterial membrane vesicle research**](#) [周四, 07 9月 21:36]

Researchers used advanced imaging techniques to investigate the formation of membrane vesicles in a Gram-positive bacterium, a process that is poorly understood, particularly in bacteria with thick cell walls. The consortium showed that membrane vesicle formation was triggered by an enzyme called endolysin that damages the cell wall to create holes that allow the release of membrane vesicles. This mechanism could be exploited for the mass production of bacterial vesicles.

- [**How monkey fights grow**](#) [周四, 07 9月 21:36]

New research finds evidence for a complicated structure behind primate conflict. It is not individuals who control the length of fights, but the relationships between pairs of individuals.

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- [**Earthquake triggers 'slow motion' quakes in New Zealand**](#) [周二, 12 9月 00:27]

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Both climate lawsuits and their reliance on scientific data have increased over the past decade, the most extensive study to date shows.

- [**SNAP benefits aren't enough to afford a healthy diet**](#) [周五, 08 9月 00:56]

A new study finds that the Supplemental Nutrition Assistance Program (SNAP), formerly known as Food Stamps, only covers 43-60 percent of what it costs to consume a diet consistent with federal dietary guidelines for what constitutes a healthy diet. The study highlights the challenges lower-income households face in trying to eat a healthy diet.

- [**Nutrition has benefits for brain network organization**](#) [周四, 07 9月 23:24]

Nutrition has been linked to cognitive performance, but researchers have not pinpointed what underlies the connection. A new study found that monounsaturated fatty acids -- a class of nutrients found in olive oils, nuts and avocados -- are linked to general intelligence, and that this relationship is driven by the correlation between MUFAs and the organization of the brain's attention network.

- [**Academic argues for changes in the laws governing modern warfare**](#) [周四, 07 9月 22:41]

Modern warfare and terrorist acts often sees the killing of innocent civilians which presents complex challenges for the international legal framework governing the conduct of armed conflicts, explains a new report.

- [**Children exposed to chemicals in 9/11 'dust' show early signs of risk of heart disease**](#) [周四, 07 9月 21:36]

Sixteen years after the collapse of the World Trade Center towers sent a

'cloud' of toxic debris across Lower Manhattan, children living nearby who likely breathed in the ash and fumes are showing early signs of risk for future heart disease.

- [**Study quantifies potential for water reuse in permian basin oil production**](#) [周四, 07 9月 05:01]

Hydraulic fracturing has once again made the Permian Basin one of the richest oil fields in the world. But the improved reserves come with some serious water management issues. Drilling for oil uses water upfront, and brings up large volumes of water that need to be managed. The study found that recycling the water produced during operations at other hydraulic fracturing sites could help reduce potential problems associated with the technology.

- [**Improved vaccine that protects against nine types of HPV is highly effective**](#) [周四, 07 9月 02:32]

Cervical cancer is the second most common cause of cancer-related death worldwide, with almost 300,000 deaths occurring each year. More than 80 percent of these deaths occur in developing nations. The advent of human papillomavirus (HPV) vaccines has significantly reduced the number of those who develop and die from cervical cancer.

- [**Realistic projections of economic growth and carbon emissions**](#) [周四, 07 9月 01:56]

Between 2008 and 2015, the United States was able to reduce carbon emissions while enjoying limited economic growth. But in a recent commentary, John Deutch, who has worked with the energy departments of several presidential administrations, urges cautious optimism. He explains the country experienced a short-term decoupling of emissions and economic growth that models suggest won't sustain in the future or be enough to prevent climate change.

- [**Predatory journals a global problem**](#) [周四, 07 9月 01:56]

Contrary to popular belief, a majority of papers in suspected biomedical predatory journals (57 percent) are from high or upper middle income countries, with many coming from prestigious institutions, a massive

investigation shows. Predatory journals provide scientists with a quick and inexpensive way to publish their findings, but do not provide quality controls and are not included in scientific databases.

• [**How retractions significantly hurt scientists**](#) [周三, 06 9月

23:46]

Life scientists who have published papers that are retracted by journals subsequently suffer a 10 percent drop in citations of their remaining work, compared to similar but unaffected scientists, according to a new study.

• [**Voting vulnerability**](#) [周三, 06 9月 22:38]

Online attackers may be able to purchase -- for as little as a few thousand dollars -- enough personal information to potentially alter voter registration information in as many as 36 states and the District of Columbia. Dubbed 'voter identity theft,' the vulnerability could be exploited by attackers to disenfranchise many voters where voter registration information can be changed online.

• [**Oregon's marijuana legalization prompted big drop in sales in Washington's border counties**](#) [周三,

06 9月 01:44]

Three days after recreational marijuana sales became legal in Oregon, sales across the border in Washington, where retail availability already existed, dropped by 41 percent, say economists. Their study also suggests that illegal cross-border movement, or diversion, of legally produced marijuana sold at retail outlets across state borders is a real concern but not occurring at alarming levels.

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [Looking stressed can help keep the peace](#) [周一, 11 9月 21:59]

Scratching may have evolved as a communication tool to help social cohesion, new research suggests for the first time.

- [Explosive birth of stars swells galactic cores](#) [周一, 11 9月 11:25]

Astronomers found that active star formation upswells galaxies, like yeast helps bread rise. Using three powerful telescopes on the ground and in orbit, they observed galaxies from 11 billion years ago and found explosive formation of stars in the cores of galaxies. This suggests that galaxies can change their own shape without interaction with other galaxies.

- [How to draw electricity from the bloodstream](#) [周六, 09 9月 08:54]

Men build dams and huge turbines to turn the energy of waterfalls and tides into electricity. To produce hydropower on a much smaller scale, scientists have now developed a lightweight power generator based on carbon nanotube fibers suitable to convert even the energy of flowing blood in blood vessels into electricity.

- [Climate change for aliens](#) [周四, 07 9月 23:24]

For more than 50 years, the Kardashev scale has been the gold standard for classifying hypothetical 'exo-civilizations' by their ability to harness energy. A team of researchers has devised a new system that takes into account the impacts of that energy use.

- [Australian Magpie 'dunks' its food before eating, researchers find](#) [周四, 07 9月 22:23]

Scientists have shown that the Australian Magpie may 'dunk' its food in water before eating, a process that appears to be 'copied' by its offspring.

- [**'Vampires' may have been real people with this blood disorder**](#) [周四, 07 9月 02:49]

A newly discovered genetic mutation triggers erythropoietic protoporphyria (EPP). This discovery illuminates a novel biological mechanism potentially responsible for stories of 'vampires' and identifies a potential therapeutic target for treating EPP.

- [**Giant bacterium contains genomes for an entire population**](#) [周四, 07 9月 02:26]

Achromatium oxaliferum is the largest (known) freshwater bacterium in the world. It is 30,000 times larger than its “normal” counterparts that live in water and owing to its calcite deposits it is visible to the naked eye. It has long been known – at least among bacteria fans – that some sulfur bacteria such as Achromatium can be extremely large and may contain several genome copies. But the fact that a single bacterial cell harbors hundreds of different genomes is new – also to bacteria aficionada...

- [**High-flying ducks cross Himalayas**](#) [周三, 06 9月 08:30]

A high-flying duck species reaches altitudes of up to 6,800 meters (22,000 feet) to cross the Himalayas, new research shows.

- [**Clever cockatoos bend hooks into straight wire to fish for food**](#) [周三, 06 9月 08:29]

Bending of a hook into wire to fish for the handle of a basket by crow Betty 15 years ago stunned the scientific world. Cognitive biologists studied tool making in an Indonesian cockatoo. Other than crows, cockatoos are not using tools in the wild. The birds manufactured hook tools out of straight wire without ever having seen or used a hook tool before.

- [**Something to sneeze about: Democratic voting in African wild dog packs**](#) [周三, 06 9月 08:29]

Scientists studying African wild dogs in Botswana have found members of this endangered species use sneezes to vote on when the pack will move off and start hunting.

• [**Cooling system works without electricity**](#) [周三, 06 9月 02:55]

Scientists cooled water without electricity by sending excess heat where it won't be noticed -- space. The specialized optical surfaces they developed are a major step toward applying this technology to air conditioning and refrigeration.

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ScienceDaily

周三, 13 9月 2017

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- [**Cold comfort: Fat-rich diets and adaptation among indigenous Siberian populations**](#) [周三, 13 9月 05:05]

Recently, scientists have been exploring the genetic signatures of adaptation in several indigenous cold-adapted human populations. Now, a new study has identified new signals of adaptation across multiple genes and exploring a rich demographic history. By performing extensive analyses on DNA sequencing data for two North-Central Siberian populations, the Nganasan (nomadic hunters) and Yakut (herders), they have been able to infer the most comprehensive demographic and adaptive history.

- [**Health benefits of olives and olive oil**](#) [周三, 13 9月 04:10]

A research team discovered that the olive-derived compound oleuropein helps prevent type 2 diabetes.

- [**Lay interventions for depression and drinking**](#) [周三, 13 9月 03:48]

Brief psychological interventions delivered by lay counselors in primary care were effective and cost-effective for patients with depression and harmful drinking in India, according to two new studies.

- [**Predicting atypical development in infants at high risk for autism?**](#) [周三, 13 9月 03:48]

New research identifies a potential biomarker that predicts atypical development in 1- to 2-month-old infants at high versus low familial risk for developing autism spectrum disorders (ASD).

- [**How hibernating ribosomes wake up**](#) [周三, 13 9月 01:48]

Scientists have uncovered the way a bacterial ribosome moves from an inactive to an active form, and how that 'wake up call' is key to its survival.

- [**'Superbug' bacteria gang up on us, fueled by antibiotic use, nursing home study suggests**](#) [周三, 13 9月 01:48]

What's worse than getting exposed to a kind of bacteria that modern antibiotics can't kill? Getting exposed to more than one -- because they may work together to cause an infection, new research suggests. And trying different antibiotics to control one such 'superbug' may only encourage others. The researchers say it's time to think about such bacteria as members of an antibiotic-resistant ecosystem in healthcare environments -- not as single species that act and respond alone.

- [**Microscope invented at marine biological laboratory illuminates chromosomal 'dark matter'**](#) [周三, 13 9月 01:48]

Biologists, instrument developers, and computational scientists have for the first time measured the density of a relatively inscrutable, highly condensed form of chromosomal material (heterochromatin) that appears in the cells of human beings and other eukaryotes.

- [**Forest regeneration experiment of 30 years yields results**](#) [周三, 13 9月 01:48]

A spruce forest regeneration experiment in Interior Alaska that spanned nearly 30 years demonstrates which forest management practices produce the best results. It looked at different combinations of ground treatments to reduce competition from other vegetation and of regeneration methods, such as planting spruce seedlings and broadcast seeding. The results show the environmental and management situations

in which different techniques work best and the situations in which they are unnecessary. Re...

- [**In mice, calorie restriction reduces fat but increases fur**](#) [周三, 13 9月 01:48]

Calorie restriction may help mice stay slim and live longer, but it also means less fat to keep their bodies warm. Researchers in Brazil have found that mouse skin responds to caloric restriction by stimulating fur growth, increasing blood flow, and altering cell metabolism to increase energy efficiency. The study reveals that animals may use this as an evolutionary adaptation to stay warm -- and alive -- in limited food conditions.

- [**'Missing link' explains how viruses trigger immunity**](#) [周三, 13 9月 01:48]

A new discovery has solved a longstanding mystery of how viruses trigger protective immunity within our body. The research team demonstrated a protein called SIDT2 was crucial for cells to detect viral components in their environment, and initiate an immune response to reduce the virus' spread.

- [**Reversing the negative effects of adolescent marijuana use**](#) [周三, 13 9月 01:48]

Researchers have identified a specific mechanism in the prefrontal cortex for some of the negative mental health risks associated with adolescent marijuana use. By demonstrating that adolescent THC exposure modulates the activity of a neurotransmitter called GABA in the prefrontal cortex region of the brain, they were also able to identify a mechanism to reverse those risks.

- [**New way to stabilize next-generation fusion plasmas**](#) [周三, 13 9月 01:48]

Recent experiments conducted on the DIII-D National Fusion Facility suggest that up to 40 percent of high-energy particles are lost during tokamak fusion reactions because of Alfvén waves.

- **[Magnetic cellular 'Legos' for the regenerative medicine of the future](#)** [周三, 13 9月 01:48]

By incorporating magnetic nanoparticles in cells and developing a system using miniaturized magnets, researchers have succeeded in creating cellular magnetic 'Legos.' They were able to aggregate cells using only magnets and without an external supporting matrix, with the cells then forming a tissue that can be deformed at will.

- **[Historic legacies affect climate change survival in Caribbean](#)** [周三, 13 9月 01:48]

Discussion of climate change has failed to pay enough attention to the social, political and historic factors which increase the vulnerability of Caribbean societies, and calls for a new approach focused on understanding and addressing these historic inequalities.

- **[Earthquake faults may have played key role in shaping the culture of ancient Greece](#)** [周二, 12 9月 22:35]

The Ancient Greeks may have built sacred sites deliberately on land affected by previous earthquake activity, according to a new study.

- **[AI -- Engineering: merging, morphing, mobile robots](#)** [周二, 12 9月 22:35]

Researchers have developed self-reconfiguring modular robots that can merge, split and even self-heal while retaining full sensorimotor control. The work may take us closer to producing robots that can autonomously change their size, shape and function.

- **[Father's environmental exposure affects sperm epigenetics, study shows](#)** [周二, 12 9月 22:28]

Authors of a new report believe that theirs is among the first human studies to investigate the influence of phthalate exposure on sperm epigenetics, embryo development and whether DNA methylation in sperm cells may be a path by which a father's environmental exposure influences these endpoints. DNA methylation, one mechanism of epigenetics, is a chemical tag on DNA that does not change the gene

sequence but is involved in controlling gene expression.

- [**Coffee and bees: New model of climate change effects**](#) [周二, 12 9月 22:28]

Areas in Latin America suitable for growing coffee face predicted declines of 73-88 percent by 2050. But bee species diversity may save the day, even if many species in cool highland regions are lost as the climate warms.

- [**Researchers identify potential biomarkers of age-related macular degeneration**](#) [周二, 12 9月 22:28]

Patients with any stage of age-related macular degeneration (AMD) carry signs of the disease in their blood that may be found through special laboratory tests, according to a new study.

- [**Cancer drug stimulates tripolar mode of mitosis**](#) [周二, 12 9月 22:28]

Taxanes inhibit cell division and make cancer cells sensitive to radiation therapy. A current study has investigated the underlying mechanisms of this action - and which biomarkers may be useful for predicting the success of therapy.

- [**Graphene based terahertz absorbers**](#) [周二, 12 9月 22:27]

A terahertz saturable absorber has been created using printable graphene inks with an order of magnitude higher absorption modulation than other devices produced to date.

- [**Explosion in number of known life forms**](#) [周二, 12 9月 21:31]

New research has helped increase the number of known genomes by almost 10 percent. Scientists have obtained 7,280 bacterial and 623 archaeal genomes (genetic materials from microorganisms) from environmental samples, explains a new article.

- [**Biding time could improve conservation outcomes**](#) [周二, 12 9月 21:31]

Strategic delays in conservation efforts could be the key to protecting more species according to researchers. The new study found instead of

spending project funds immediately, conservation organizations could use the right amount of delay to improve the benefits achieved from their funding by focusing first on investment, capacity building, or monitoring and research.

- [**Exposure to head impacts in youth football practice drills**](#) [周二, 12 9月 21:31]

Researchers have examined differences in the number, location, and magnitude of head impacts sustained by young athletes during various youth football practice drills. Such information could lead to recommendations for football practices, including modification of some high-intensity drills in order to reduce players' exposure to head impacts and, consequently, lessen the risks of injury.

- [**Air quality in 'green' housing affected by toxic chemicals in building materials**](#) [周二, 12 9月 21:31]

Indoor air pollution can be a problem in many homes, even in eco-friendly buildings. Thanks to a new innovative study, researchers have a better idea of where these pollutants come from -- which ones come from chemicals leaching out of building materials and which ones from the personal items people bring into their homes. The findings could inform the development of new green building standards and lead to healthier housing, especially for low-income communities.

- [**How should we handle boys who can't read?**](#) [周二, 12 9月 21:31]

Boys are much worse at reading than girls. The disparities have been quite consistent over 15 years. New insights may give hope -- if they're put to use.

- [**Sexually aroused male flies unable to sleep after close encounters with females**](#) [周二, 12 9月 21:31]

The urge to mate appears to override the need to sleep in flies, according to new research that hints at the importance of sleep for animals.

- [**Running group helps half its graduates quit smoking**](#) [周二, 12 9月 21:31]

Half the people who completed a 10-week community running program aimed at helping them quit smoking were successful in their attempt. Many others reduced their smoking, and saw their mental health improve.

• [**Your stools reveal whether you can lose weight**](#) [周二, 12 9月 21:31]

Something as simple as a feces sample reveals whether you can lose weight by following dietary recommendations characterized by a high content of fruit, vegetables, fibers and whole grains, report scientists.

• [**Explaining bursts of activity in brains of preterm babies**](#) [周二, 12 9月 21:31]

The source of spontaneous, high-amplitude bursts of activity seen in the brains of preterm babies, which are vital for healthy development, has been identified by a team of researchers.

• [**'Keep it local' approach more effective than government schemes at protecting rainforest**](#) [周二, 12 9月 21:31]

Conservation initiatives led by local and indigenous groups can be just as effective as schemes led by government, according to new research. In some cases in the Amazon rainforest, grassroots initiatives can be even more effective at protecting this vital ecosystem.

• [**Eye movements reveal temporal expectation deficits in ADHD**](#) [周二, 12 9月 21:31]

A technique that measures tiny movements of the eyes may help scientists better understand and perhaps eventually improve assessment of ADHD, according to research.

• [**Study sets new distance record for medical drone transport**](#) [周二, 12 9月 21:31]

Researchers have set a new delivery distance record for medical drones, successfully transporting human blood samples across 161 miles of Arizona desert. Throughout the three-hour flight, they report, the on-board payload system maintained temperature control, ensuring the samples were viable for laboratory analysis after landing.

- [**Researchers discover new, abundant enzyme that helps bacteria infect animals**](#) [周二, 12 9月 21:30]

A new class of enzymes has been discovered in hundreds of bacterial species, including some that cause disease in humans and animals. The discovery provides new insights into how bacteria invade their hosts.

- [**Ancient tree reveals cause of spike in Arctic temperature**](#) [周二, 12 9月 21:30]

A kauri tree trapped in a New Zealand swamp for 30,000 years may have overturned the idea that a slowdown in ocean currents in the North Atlantic may be entirely responsible for Dansgaard-Oeschger events and the characteristic bi-polar see-saw, which sees the Antarctica cool while the Arctic warms during glacial periods. The research reveals a mechanism that generates a 20,000 km long atmospheric bridge, reaching from Antarctica to the Arctic.

- [**Modeling the impact of green eggs and hens**](#) [周二, 12 9月 21:30]

Poultry given vegan organic chicken feed can help to produce eggs with a smaller environmental footprint than those fed non-organic feeds that contain animal by-products, new research shows.

- [**Rapid climate changes across northern hemisphere in the earliest Middle Pleistocene**](#) [周二, 12 9月 21:30]

By studying climate changes that took place thousands of years ago, we can better understand the global climate system and predict Earth's future climate. A multi-organization research team has discovered evidence of rapid climate changes on a millennial-to-centennial scale that occurred 780 to 760 thousand years ago.

- [**Astronauts don't develop anemia during spaceflight, NASA study suggests**](#) [周二, 12 9月 21:30]

Space flight anemia -- the reduction of circulating red blood cells during time spent in space -- is an established phenomenon, but it may not be a major concern during long-duration space missions, according to a study.

• **[Long sitting periods may be just as harmful as daily total](#)** [周二, 12 9月 06:00]

A new study finds that sitting around for 12 or more hours per day, particularly if accumulated during 60- to 90-minute periods, increased the risk of early death -- even in those who exercised.

• **[Study of circular DNA comes full circle with use of old technique](#)** [周二, 12 9月 04:32]

A 50-year-old lab technique is helping researchers better understand circular DNA, a lesser-known and poorly understood cousin of the linear version commonly associated with life's genetic blueprint. With the aid of a process called density gradient centrifugation, a research team recently published a study that for the first time characterizes all of the circular DNA in the worm *C. elegans*, as well as in three human cell types.

• **[When ancient fossil DNA isn't available, ancient glycans may help trace human evolution](#)** [周二, 12 9月 03:09]

Researchers have discovered a new kind of glycan (sugar chain) that survives even in a 4-million-year-old animal fossil from Kenya, under conditions where ancient DNA does not. While ancient hominin fossils are not yet available for glycan analysis, this proof-of-concept study sets the stage for unprecedented explorations of human origins and diet.

• **[Method controls whether freezing droplets bounce off or stick](#)** [周二, 12 9月 03:09]

Self-peeling droplets have been discovered, along with a new way to control adhesion of freezing droplets by adjusting the thermal properties of substrates. These findings could make everything from additive manufacturing to deicing more efficient.

• **[Research identifies causes and possible treatments for deadly diseases affecting children](#)** [周二, 12 9月 03:09]

Research has identified four pathogens that are responsible for the vast majority of diarrheal illnesses, leading the way for potential new

treatments.

- [**Why your ancestors would have aced the long jump**](#) [周二, 12 9月 03:09]

A 52-million-year-old ankle fossil suggests our prehuman ancestors were high-flying acrobats. For years, scientists thought the ancestors of today's humans, monkeys, lemurs and apes were relatively slow and deliberate animals, using their grasping hands and feet to creep along small twigs and branches. But a new study suggests the first primates were masters at leaping through the trees.

- [**Childhood maltreatment may change brain's response to threat**](#) [周二, 12 9月 01:25]

Neural activity associated with defensive responses in humans shifts between two brain regions depending on the proximity of a threat, suggests neuroimaging data from two independent samples of adults in the Netherlands. In one sample, the findings suggest that emotional abuse during childhood may shift the balance of activity between these regions.

- [**DNA looping architecture may lead to opportunities to treat brain tumors**](#) [周二, 12 9月 00:59]

The discovery of a mechanism by which normal brain cells regulate the expression of the NFIA gene, which is important for both normal brain development and brain tumor growth, might one day help improve therapies to treat brain tumors.

- [**Relationship science: How can couples keep moving forward?**](#) [周二, 12 9月 00:27]

Family studies researchers who study the science behind maintaining romantic relationships focus their work on the central organizing unit -- the relationship -- rather than on the individual. In a recent study, they discuss romantic relationship maintenance and the two primary motives behind a couple's attempts at staying together: threat mitigation and relationship enhancement.

- [**Earthquake triggers 'slow motion' quakes in New Zealand**](#) [周二, 12 9月 00:27]

Slow slip events, a type of slow motion earthquake that occurs over days to weeks, are thought to be capable of triggering larger, potentially damaging earthquakes. In a new study, scientists have documented the first clear-cut instance of the reverse -- a massive earthquake immediately triggering a series of large slow slip events.

- [**A new genetic marker for schizophrenia**](#) [周二, 12 9月 00:27]

Scientists find a rare genetic variant that shows strong association with schizophrenia.

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Health benefits of olives and olive oil: A Virginia Tech research team discovered that the olive-derived compound oleuropein helps the body secrete more insulin, a central signaling molecule in the body that controls metabolism. -- ScienceDaily

The health benefits of olives -- and associated natural products such as olive oil -- have long been recognized and touted by proponents of the Mediterranean diet.

However, little was previously known about what specific compounds and biochemical interactions in the fruit contribute to its medical and nutritional benefits such as weight loss and prevention of type 2 diabetes.

A Virginia Tech research team discovered that the olive-derived compound oleuropein helps the body secrete more insulin, a central signaling molecule in the body that controls metabolism. The same compound also detoxifies another signaling molecule called

amylin that over-produces and forms harmful aggregates in type 2 diabetes. In these two distinct ways, oleuropein helps prevent the onset of disease.

The findings were recently published in the journal *Biochemistry* as a Rapid Report, which is reserved for timely topics of unusual interest, according to the journal.

"Our work provides new mechanistic insights into the long-standing question of why olive products can be anti-diabetic," said Bin Xu, lead author, assistant professor of biochemistry in the College of Agriculture and Life Sciences, and a Fralin Life Science Institute affiliate. "We believe it will not only contribute to the biochemistry of the functions of the olive component oleuropein, but also have an impact on the general public to pay more attention to olive products in light of the current diabetes epidemic."

The discovery could help improve understanding of the scientific basis of health benefits of olive products and develop new, low-cost nutraceutical strategies to fight type 2 diabetes and related obesity.

Next steps include testing the compound in a diabetic

animal model and investigation of additional new functions of this compound, or its components, in metabolism and aging.

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Lay interventions for depression and drinking -- ScienceDaily

Brief psychological interventions delivered by lay counsellors in primary care were effective and cost-effective for patients with depression and harmful drinking in India, according to two studies in *PLOS Medicine* by Vikram Patel of Harvard Medical School, USA, and colleagues from the London School of Hygiene & Tropical Medicine, London, UK and Sangath, India. The authors have previously reported the effectiveness of the two interventions, Healthy Activity Programme (HAP) and Counselling for Alcohol Problems (CAP), at 3 months; however, the longer-term benefits of the interventions were previously unknown.

In the first trial, 493 adult primary health care attendees with moderately severe or severe depression were randomly assigned to either the HAP treatment plus enhanced usual care (EUC), or enhanced usual care (EUC) alone. The researchers found that HAP participants maintained the benefits they showed at the

end of treatment through the 12-month period, with significantly lower symptom severity scores (adjusted mean difference in BDI-II: -4.45) and higher rates of remission (PHQ-9 score < 5 : 63% versus 48%) than participants who received EUC alone.

In the second trial, 377 adult male primary health care attendees with harmful drinking were randomly assigned to either the CAP treatment plus EUC, or EUC alone. The researchers found that CAP participants maintained the gains they showed at the end of treatment through the 12-month period, with higher remission rates (AUDIT score < 8 : 54.3% versus 31.9%) and a greater proportion reporting no alcohol consumption in the past 14 days (45.1% versus 26.4%), compared with individuals who received EUC alone.

Both HAP and CAP were likely to be cost-effective, and could even save money if productivity costs were taken into account.

The authors say "We have provided the first evidence that two brief psychological therapies targeting the two leading mental health related causes of the global burden of disease, delivered by the same lay counsellor

in routine primary care, to patients who had never received such therapies before, can lead to sustained improvements in health over one year, and that the investments made in providing this intervention is excellent value for money. Given the enormous economic and social consequences of untreated depression and harmful drinking, the moral imperative is for governments to scale up these treatments globally."

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Predicting atypical development in infants at high risk for autism? -- ScienceDaily

New research from the Sackler Institute for Developmental Psychobiology at Columbia University Medical Center (CUMC) identifies a potential biomarker that predicts atypical development in 1- to 2-month-old infants at high versus low familial risk for developing autism spectrum disorders (ASD). The search for neurobiological markers that precede atypical trajectories is important in infants with a high risk for developing autism-related disorders because early recognition allows for early intervention and mitigation of difficulties later in life.

Using data from National Database for Autism Research (NDAR), lead author Kristina Denisova, PhD, Assistant Professor of Psychiatry at CUMC and Fellow at the Sackler Institute, studied 71 high and low risk infants who underwent two functional Magnetic Resonance imaging brain scans either at 1-2 months or at 9-10 months: one during a resting period of sleep

and a second while native language was presented to the infants. After extracting measures of head movements during the scans, the statistical characteristics of these movements were quantified.

The study found that infants at high risk for developing ASD have elevated levels of "noise" and increased randomness in their spontaneous head movements during sleep, a pattern possibly suggestive of problems with sleep. In addition, 1- to 2-month-old high risk infants showed more similar signatures while listening to native language and while sleeping while low risk infants showed distinct signatures during the two conditions.

Further, specific features of head movements during sleep at 1-2 months predicted future flatter (delayed) early learning developmental trajectories in the high-risk babies. The existence of generally atypical learning trajectories in the high risk group was verified in separate data sets from four representative high risk infant-sibling studies comprising a total of 1,445 infants with known ASD outcomes as children. These analyses showed that high risk infants -- even those without ASD diagnoses -- have significantly lower functioning in childhood relative to low risk infants.

The current study reveals a possible way to predict which 1-2 months-old infants will show atypical developmental trajectories as toddlers.

Dr. Denisova said, "The finding that head movement signatures are responsive to high context stimuli (native language speech) in low but not high risk infants is informative because it suggests that infants whose siblings were diagnosed with ASD are less attuned to evolutionarily important stimuli early in life." She added that this response pattern may underlie atypical information processing in individuals with neurodevelopmental disorders.

Dr. Jeremy Veenstra-VanderWeele, MD, an autism researcher who was not involved in this study, noted, "This study is a good example of how existing data can be mined for new insights. Additional work is needed to replicate the current findings and understand the underlying mechanisms, but this work suggests new ways to look at movement or motor function in infants at high risk of ASD."

Story Source:

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| [Section menu](#) | [主菜单](#) |

How hibernating ribosomes wake up -- ScienceDaily

Often described as a cell's protein factory, ribosomes translate messenger RNA and link amino acids together to form new proteins. Ribosomes catalyze proteins that are essential for all life.

In bacteria, ribosomes can take an inactive form called hibernating 100S ribosome. Because protein synthesis accounts for more than half of a cell's energy costs, the inactive ribosome form helps bacteria survive under stressful conditions. During limited nutrient access, antibiotic stress, host colonization, adaptation to the dark and biofilm formation, bacteria aim to conserve energy by shutting down the protein factory.

Scientists have observed that the hibernating form of the ribosome is not a permanent state and that if conditions are favorable, it can "wake up" and return to its active form, called 70S, and begin to initiate new cycles of protein synthesis.

"The 100S form is not held together forever," Yap said.

"However, until now, the disassociation of 100S ribosome has been a complete black box. We haven't known how ribosomes move from one form to the other."

Yap was looking for the protein factor that caused the 100S form to return to the intermediate 30S and 50S forms and subsequently into the active 70S form. Studying *Staphylococcus aureus*, commonly known as staph, Yap found that a GTP hydrolase enzyme called HflX is the wake-up call that will re-activate the ribosome.

"HflX is one way to break up the 100S ribosome structure so that it can return to the active 70S form," Yap said.

HflX GTPases are a family of enzymes that are evolutionarily conserved proteins, meaning they also exist in plants, humans and other bacteria. Yap is intrigued by this finding, because while there has been virtually no study of the protein in human cells, it appears in genetic sequencing mapped to cancer patients and those with neurological symptoms, including tic disorder-like syndromes. Scientists do not yet know what this connection means.

Thanks to a new five-year \$1.59 million grant from the National Institutes of Health, Yap will continue to explore these questions and others that surround hibernating ribosomes' role in cell survival.

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All Top News

Top science stories featured on ScienceDaily's home page.

- [**AI -- Engineering: merging, morphing, mobile robots**](#) [周二, 12 9月 22:35]

Researchers have developed self-reconfiguring modular robots that can merge, split and even self-heal while retaining full sensorimotor control. The work may take us closer to producing robots that can autonomously change their size, shape and function.

- [**Coffee and bees: New model of climate change effects**](#) [周二, 12 9月 22:28]

Areas in Latin America suitable for growing coffee face predicted declines of 73-88 percent by 2050. But bee species diversity may save the day, even if many species in cool highland regions are lost as the climate warms.

- [**Your stools reveal whether you can lose weight**](#) [周二, 12 9月 21:31]

Something as simple as a feces sample reveals whether you can lose weight by following dietary recommendations characterized by a high content of fruit, vegetables, fibers and whole grains, report scientists.

- [**When ancient fossil DNA isn't available, ancient glycans may help trace human evolution**](#) [周二, 12 9月 03:09]

Researchers have discovered a new kind of glycan (sugar chain) that survives even in a 4-million-year-old animal fossil from Kenya, under conditions where ancient DNA does not. While ancient hominin fossils are not yet available for glycan analysis, this proof-of-concept study sets the stage for unprecedented explorations of human origins and diet.

- [**Why your ancestors would have aced the long**](#)

[**jump**](#) [周二, 12 9月 03:09]

A 52-million-year-old ankle fossil suggests our prehuman ancestors were high-flying acrobats. For years, scientists thought the ancestors of today's humans, monkeys, lemurs and apes were relatively slow and deliberate animals, using their grasping hands and feet to creep along small twigs and branches. But a new study suggests the first primates were masters at leaping through the trees.

• [**Scientists track the brain-skull transition from dinosaurs to birds**](#) [周二, 12 9月 00:27]

The dramatic, dinosaur-to-bird transition that occurred in reptiles millions of years ago was accompanied by profound changes in the skull roof of those animals -- and holds important clues about the way the skull forms in response to changes in the brain -- according to a new study. It is the first time scientists have tracked the link between the brain's development and the roofing bones of the skull.

• [**How openings in Antarctic sea ice affect worldwide climate**](#) [周二, 12 9月 00:26]

In a new analysis of climate models, researchers reveal the significant global effects that seemingly anomalous polynyas, or openings in sea ice, can have. Their findings indicate that heat escaping from the ocean through these openings impacts sea and atmospheric temperatures and wind patterns around the globe and even rainfall around the tropics.

• [**Brain Composer: 'Thinking' melodies onto a musical score**](#) [周二, 12 9月 00:26]

A new brain-computer interface application that allows music to be composed by the power of thought has now been developed by scientists.

• [**Cold region 'tipping point' now inevitable**](#) [周二, 12 9月 00:26]

The decline of cold regions called periglacial zones is now inevitable due to climate change, researchers say.

• [**The evolutionary origin of the gut**](#) [周二, 12 9月 00:26]

How did the gut, the skin and musculature evolve? This question concerns scientists for more than a century. Through the investigation of the embryonic development of sea anemones, a very old animal lineage, researchers have now come to conclusions which challenge the 150-year-old hypothesis of the homology (common evolutionary origin) of the germ layers that form all later organs and tissues.

• [**USA threatened by more frequent flooding**](#) [周二, 12 9月 00:26]

The East Coast of the United States is threatened by more frequent flooding in the future. According to this study, the states of Virginia, North Carolina, and South Carolina are most at risk. Their coastal regions are being immersed by up to three millimeters per year -- among other things, due to human intervention.

• [**Half-a-billion-year-old fossils shed light animal evolution on Earth**](#) [周二, 12 9月 00:26]

Scientists have discovered traces of life more than half-a-billion years old that could change the way we think about how all animals evolved on Earth.

• [**Biodiversity just as powerful as climate change for healthy ecosystems**](#) [周二, 12 9月 00:26]

Biodiversity is proving to be one of humanity's best defenses against extreme weather. In past experiments, diversity has fostered healthier, more productive ecosystems, like shoreline vegetation that guards against hurricanes. However, many experts doubted whether these experiments would hold up in the real world. A study offers a decisive answer: biodiversity's power in the wild surpasses experimental predictions, in some cases topping even effects of climate.

• [**Looking stressed can help keep the peace**](#) [周一, 11 9月 21:59]

Scratching may have evolved as a communication tool to help social cohesion, new research suggests for the first time.

• [**Explosive birth of stars swells galactic cores**](#) [周一, 11 9月 11:25]

Astronomers found that active star formation upswells galaxies, like

yeast helps bread rise. Using three powerful telescopes on the ground and in orbit, they observed galaxies from 11 billion years ago and found explosive formation of stars in the cores of galaxies. This suggests that galaxies can change their own shape without interaction with other galaxies.

• [Scientist finds secret to thriving](#) [周六, 09 9月 08:55]

What it takes to thrive, rather than merely survive, could be as simple as feeling good about life and yourself and being good at something, according to new research.

• [Scientists make methanol using air around us](#) [周五, 08 9月 02:27]

Scientists have created methanol from methane using oxygen from the air. Methanol is currently produced by breaking down natural gas at high temperatures. But researchers have discovered they can produce methanol from methane through simple catalysis that allows methanol production at low temperatures using oxygen and hydrogen peroxide. The findings have major implications for cleaner, greener industrial processes worldwide.

• [Individuality drives collective behavior of schooling fish](#) [周五, 08 9月 02:27]

New research sheds light on how 'animal personalities' -- inter-individual differences in animal behavior -- can drive the collective behavior and functioning of animal groups such as schools of fish, including their cohesion, leadership, movement dynamics, and group performance.

• [Ship exhaust makes oceanic thunderstorms more intense](#) [周五, 08 9月 02:27]

Thunderstorms directly above two of the world's busiest shipping lanes are significantly more powerful than storms in areas of the ocean where ships don't travel, according to new research.

• [Listening to happy music may enhance divergent creativity](#) [周五, 08 9月 02:27]

Listening to happy music may help generate more, innovative solutions compared to listening to silence, according to a study.

- [**Human skin cells transformed directly into motor neurons**](#) [周五, 08 9月 01:28]

Scientists have converted skin cells from healthy adults directly into motor neurons without going through a stem cell state. The technique makes it possible to study motor neurons of the human central nervous system in the lab. Unlike commonly studied mouse motor neurons, human motor neurons growing in the lab would be a new tool since researchers can't take samples of these neurons from living people but can easily take skin samples.

- [**Direct evidence of sea level 'fingerprints' discovered**](#) [周五, 08 9月 00:02]

The first observation of sea level 'fingerprints' -- tell-tale differences in sea level rise around the world in response to changes in continental water and ice sheet mass -- has been reported by researchers.

- [**Pluto features given first official names**](#) [周四, 07 9月 23:24]

The Working Group for Planetary System Nomenclature of the International Astronomical Union has officially approved the naming of 14 features on the surface of Pluto. These are the first geological features on the planet to be named following the close flyby by the New Horizons spacecraft in July 2015.

- [**Nutrition has benefits for brain network organization**](#) [周四, 07 9月 23:24]

Nutrition has been linked to cognitive performance, but researchers have not pinpointed what underlies the connection. A new study found that monounsaturated fatty acids -- a class of nutrients found in olive oils, nuts and avocados -- are linked to general intelligence, and that this relationship is driven by the correlation between MUFAs and the organization of the brain's attention network.

- [**3-D-printed biomaterials that degrade on**](#)

demand [周四, 07 9月 23:24]

The temporary structures, which can be degraded away with a biocompatible chemical trigger, could be useful in fabricating microfluidic devices, creating biomaterials that respond dynamically to stimuli and in patterning artificial tissue.

• **Intermittent electrical brain stimulation**

improves memory [周四, 07 9月 22:23]

Intermittent electrical stimulation of an area deep inside the brain that degenerates in Alzheimer's appears to improve working memory, scientists report. Conversely, continuous deep brain stimulation, like the type used for Parkinson's and currently under study in humans with Alzheimer's, impairs memory, according to study.

• **How monkey fights grow** [周四, 07 9月 21:36]

New research finds evidence for a complicated structure behind primate conflict. It is not individuals who control the length of fights, but the relationships between pairs of individuals.

• **Emoji fans take heart: Scientists pinpoint 27 states of emotion** [周四, 07 9月 21:36]

The Emoji Movie, in which the protagonist can't help but express a wide variety of emotions instead of the one assigned to him, may have gotten something right. A new study challenges a long-held assumption in psychology that most human emotions fall within the universal categories of happiness, sadness, anger, surprise, fear and disgust.

• **Whole grains decrease colorectal cancer risk, processed meats increase the risk** [周四, 07 9月 21:36]

Major new report finds strong evidence of links between lifestyle and colorectal cancer risk. Physical activity and whole grains lowers risk of this cancer; too much alcohol and red meat, processed meats and obesity increase the risk. An estimated 47 percent of US colorectal cancers could be prevented each year with lifestyle changes.

• **Monkey sees ... monkey knows?** [周四, 07 9月 01:55]

Monkeys had higher confidence in their ability to remember an image when the visual contrast was high. These kinds of metacognitive illusions -- false beliefs about how we learn or remember best -- are shared by humans, leading brain and cognitive scientists to believe that metacognition could have an evolutionary basis.

- [One powerful cell makes or breaks your habits](#) [周四, 07 9月 01:55]

Neuroscientists have pinpointed a single type of neuron deep within the brain that serves as a 'master controller' of habits. The team found that habit formation boosts the activity of this influential cell, and that shutting it down is enough to break unhelpful habits in sugar-seeking mice. The findings may point towards new treatments for addiction or compulsive behavior in humans.

- [Researchers report new way to make dissolving electronics](#) [周四, 07 9月 01:55]

Researchers have reported a new type of electronic device that can be triggered to dissolve through exposure to water molecules in the atmosphere. The work holds promise for eco-friendly disposable personal electronics and biomedical devices that dissolve within the body.

- [Does the organic material of comets predate our solar system?](#) [周三, 06 9月 23:46]

The Rosetta space probe discovered a large amount of organic material in the nucleus of comet 'Chury.' Researchers now advance the theory that this matter has its origin in interstellar space and predates the birth of the solar system.

- [Accretion-powered pulsar reveals unique timing glitch](#) [周三, 06 9月 22:36]

The discovery of the largest timing irregularity yet observed in a pulsar is the first confirmation that pulsars in binary systems exhibit the strange phenomenon known as a 'glitch.'

- [Biologists slow aging, extend lifespan of fruit](#)

[flies](#) [周三, 06 9月 22:34]

In research that potentially could delay the onset of Parkinson's disease, Alzheimer's disease, cancer, stroke, cardiovascular disease, and other diseases of aging, biologists have produced a genetic one-two punch that significantly slowed aging and improved health in the middle-aged fruit flies they studied.

• **[Clever cockatoos bend hooks into straight wire to fish for food](#)** [周三, 06 9月 08:29]

Bending of a hook into wire to fish for the handle of a basket by crow Betty 15 years ago stunned the scientific world. Cognitive biologists studied tool making in an Indonesian cockatoo. Other than crows, cockatoos are not using tools in the wild. The birds manufactured hook tools out of straight wire without ever having seen or used a hook tool before.

• **[Newly-discovered semiconductor dynamics may help improve energy efficiency](#)** [周三, 06 9月 08:29]

Researchers examining the flow of electricity through semiconductors have uncovered another reason these materials seem to lose their ability to carry a charge as they become more densely 'doped.'

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

- [**Cold comfort: Fat-rich diets and adaptation among indigenous Siberian populations**](#) [周三, 13 9月 05:05]

Recently, scientists have been exploring the genetic signatures of adaptation in several indigenous cold-adapted human populations. Now, a new study has identified new signals of adaptation across multiple genes and exploring a rich demographic history. By performing extensive analyses on DNA sequencing data for two North-Central Siberian populations, the Nganasan (nomadic hunters) and Yakut (herders), they have been able to infer the most comprehensive demographic and adaptive history.

- [**Health benefits of olives and olive oil**](#) [周三, 13 9月 04:10]

A research team discovered that the olive-derived compound oleuropein helps prevent type 2 diabetes.

- [**Lay interventions for depression and drinking**](#) [周三, 13 9月 03:48]

Brief psychological interventions delivered by lay counselors in primary care were effective and cost-effective for patients with depression and harmful drinking in India, according to two new studies.

- [**Predicting atypical development in infants at high risk for autism?**](#) [周三, 13 9月 03:48]

New research identifies a potential biomarker that predicts atypical development in 1- to 2-month-old infants at high versus low familial risk for developing autism spectrum disorders (ASD).

- [**How hibernating ribosomes wake up**](#) [周三, 13 9月 01:48]

Scientists have uncovered the way a bacterial ribosome moves from an inactive to an active form, and how that 'wake up call' is key to its survival.

- ['Superbug' bacteria gang up on us, fueled by antibiotic use, nursing home study suggests](#) [周三, 13 9月 01:48]

What's worse than getting exposed to a kind of bacteria that modern antibiotics can't kill? Getting exposed to more than one -- because they may work together to cause an infection, new research suggests. And trying different antibiotics to control one such 'superbug' may only encourage others. The researchers say it's time to think about such bacteria as members of an antibiotic-resistant ecosystem in healthcare environments -- not as single species that act and respond alone.

- [In mice, calorie restriction reduces fat but increases fur](#) [周三, 13 9月 01:48]

Calorie restriction may help mice stay slim and live longer, but it also means less fat to keep their bodies warm. Researchers in Brazil have found that mouse skin responds to caloric restriction by stimulating fur growth, increasing blood flow, and altering cell metabolism to increase energy efficiency. The study reveals that animals may use this as an evolutionary adaptation to stay warm -- and alive -- in limited food conditions.

- ['Missing link' explains how viruses trigger immunity](#) [周三, 13 9月 01:48]

A new discovery has solved a longstanding mystery of how viruses trigger protective immunity within our body. The research team demonstrated a protein called SIDT2 was crucial for cells to detect viral components in their environment, and initiate an immune response to reduce the virus' spread.

- [Reversing the negative effects of adolescent marijuana use](#) [周三, 13 9月 01:48]

Researchers have identified a specific mechanism in the prefrontal

cortex for some of the negative mental health risks associated with adolescent marijuana use. By demonstrating that adolescent THC exposure modulates the activity of a neurotransmitter called GABA in the prefrontal cortex region of the brain, they were also able to identify a mechanism to reverse those risks.

- [**AI -- Engineering: merging, morphing, mobile robots**](#) [周二, 12 9月 22:35]

Researchers have developed self-reconfiguring modular robots that can merge, split and even self-heal while retaining full sensorimotor control. The work may take us closer to producing robots that can autonomously change their size, shape and function.

- [**Father's environmental exposure affects sperm epigenetics, study shows**](#) [周二, 12 9月 22:28]

Authors of a new report believe that theirs is among the first human studies to investigate the influence of phthalate exposure on sperm epigenetics, embryo development and whether DNA methylation in sperm cells may be a path by which a father's environmental exposure influences these endpoints. DNA methylation, one mechanism of epigenetics, is a chemical tag on DNA that does not change the gene sequence but is involved in controlling gene expression.

- [**Researchers identify potential biomarkers of age-related macular degeneration**](#) [周二, 12 9月 22:28]

Patients with any stage of age-related macular degeneration (AMD) carry signs of the disease in their blood that may be found through special laboratory tests, according to a new study.

- [**Cancer drug stimulates tripolar mode of mitosis**](#) [周二, 12 9月 22:28]

Taxanes inhibit cell division and make cancer cells sensitive to radiation therapy. A current study has investigated the underlying mechanisms of this action - and which biomarkers may be useful for predicting the success of therapy.

- [**Explosion in number of known life forms**](#) [周二, 12 9月 21:31]

New research has helped increase the number of known genomes by almost 10 percent. Scientists have obtained 7,280 bacterial and 623 archaeal genomes (genetic materials from microorganisms) from environmental samples, explains a new article.

- [**Exposure to head impacts in youth football practice drills**](#) [周二, 12 9月 21:31]

Researchers have examined differences in the number, location, and magnitude of head impacts sustained by young athletes during various youth football practice drills. Such information could lead to recommendations for football practices, including modification of some high-intensity drills in order to reduce players' exposure to head impacts and, consequently, lessen the risks of injury.

- [**Air quality in 'green' housing affected by toxic chemicals in building materials**](#) [周二, 12 9月 21:31]

Indoor air pollution can be a problem in many homes, even in eco-friendly buildings. Thanks to a new innovative study, researchers have a better idea of where these pollutants come from -- which ones come from chemicals leaching out of building materials and which ones from the personal items people bring into their homes. The findings could inform the development of new green building standards and lead to healthier housing, especially for low-income communities.

- [**How should we handle boys who can't read?**](#) [周二, 12 9月 21:31]

Boys are much worse at reading than girls. The disparities have been quite consistent over 15 years. New insights may give hope -- if they're put to use.

- [**Sexually aroused male flies unable to sleep after close encounters with females**](#) [周二, 12 9月 21:31]

The urge to mate appears to override the need to sleep in flies, according to new research that hints at the importance of sleep for animals.

- [**Running group helps half its graduates quit smoking**](#) [周二, 12 9月 21:31]

Half the people who completed a 10-week community running program aimed at helping them quit smoking were successful in their attempt. Many others reduced their smoking, and saw their mental health improve.

• [**Your stools reveal whether you can lose weight**](#) [周二, 12 9月 21:31]

Something as simple as a feces sample reveals whether you can lose weight by following dietary recommendations characterized by a high content of fruit, vegetables, fibers and whole grains, report scientists.

• [**Explaining bursts of activity in brains of preterm babies**](#) [周二, 12 9月 21:31]

The source of spontaneous, high-amplitude bursts of activity seen in the brains of preterm babies, which are vital for healthy development, has been identified by a team of researchers.

• [**Eye movements reveal temporal expectation deficits in ADHD**](#) [周二, 12 9月 21:31]

A technique that measures tiny movements of the eyes may help scientists better understand and perhaps eventually improve assessment of ADHD, according to research.

• [**Study sets new distance record for medical drone transport**](#) [周二, 12 9月 21:31]

Researchers have set a new delivery distance record for medical drones, successfully transporting human blood samples across 161 miles of Arizona desert. Throughout the three-hour flight, they report, the on-board payload system maintained temperature control, ensuring the samples were viable for laboratory analysis after landing.

• [**Researchers discover new, abundant enzyme that helps bacteria infect animals**](#) [周二, 12 9月 21:30]

A new class of enzymes has been discovered in hundreds of bacterial species, including some that cause disease in humans and animals. The discovery provides new insights into how bacteria invade their hosts.

- [**Astronauts don't develop anemia during spaceflight, NASA study suggests**](#) [周二, 12 9月 21:30]

Space flight anemia -- the reduction of circulating red blood cells during time spent in space -- is an established phenomenon, but it may not be a major concern during long-duration space missions, according to a study.

- [**Long sitting periods may be just as harmful as daily total**](#) [周二, 12 9月 06:00]

A new study finds that sitting around for 12 or more hours per day, particularly if accumulated during 60- to 90-minute periods, increased the risk of early death -- even in those who exercised.

- [**Study of circular DNA comes full circle with use of old technique**](#) [周二, 12 9月 04:32]

A 50-year-old lab technique is helping researchers better understand circular DNA, a lesser-known and poorly understood cousin of the linear version commonly associated with life's genetic blueprint. With the aid of a process called density gradient centrifugation, a research team recently published a study that for the first time characterizes all of the circular DNA in the worm *C. elegans*, as well as in three human cell types.

- [**Research identifies causes and possible treatments for deadly diseases affecting children**](#) [周二, 12 9月 03:09]

Research has identified four pathogens that are responsible for the vast majority of diarrheal illnesses, leading the way for potential new treatments.

- [**Why your ancestors would have aced the long jump**](#) [周二, 12 9月 03:09]

A 52-million-year-old ankle fossil suggests our prehuman ancestors were high-flying acrobats. For years, scientists thought the ancestors of today's humans, monkeys, lemurs and apes were relatively slow and deliberate animals, using their grasping hands and feet to creep along

small twigs and branches. But a new study suggests the first primates were masters at leaping through the trees.

- [**Childhood maltreatment may change brain's response to threat**](#) [周二, 12 9月 01:25]

Neural activity associated with defensive responses in humans shifts between two brain regions depending on the proximity of a threat, suggests neuroimaging data from two independent samples of adults in the Netherlands. In one sample, the findings suggest that emotional abuse during childhood may shift the balance of activity between these regions.

- [**DNA looping architecture may lead to opportunities to treat brain tumors**](#) [周二, 12 9月 00:59]

The discovery of a mechanism by which normal brain cells regulate the expression of the NFIA gene, which is important for both normal brain development and brain tumor growth, might one day help improve therapies to treat brain tumors.

- [**Relationship science: How can couples keep moving forward?**](#) [周二, 12 9月 00:27]

Family studies researchers who study the science behind maintaining romantic relationships focus their work on the central organizing unit -- the relationship -- rather than on the individual. In a recent study, they discuss romantic relationship maintenance and the two primary motives behind a couple's attempts at staying together: threat mitigation and relationship enhancement.

- [**A new genetic marker for schizophrenia**](#) [周二, 12 9月 00:27]

Scientists find a rare genetic variant that shows strong association with schizophrenia.

- [**Massachusetts off-road-vehicle law significantly reduces injuries, hospitalizations in children**](#) [周二, 12 9月 00:27]

The 2010 Massachusetts law restricting the use of off-road vehicles to those age 14 and older led to significant reductions in both emergency

department (ED) visits and hospital admissions resulting from ORV injuries in the following three years, research concludes.

- **[The turbulent healing powers of plasma](#)** [周二, 12 9月 00:27]

Non-equilibrium atmospheric pressure plasma can help heal wounds, destroy cancer cells and kill harmful bacteria. The jets of plasma that doctors might use, however, often become turbulent with the direction and velocity changing dramatically. Now, researchers have found this turbulence likely emerges from heat-induced sound waves generated at the plasma electrodes. This new insight is critical for more consistent and effective medical therapies.

- **[Brain Composer: 'Thinking' melodies onto a musical score](#)** [周二, 12 9月 00:26]

A new brain-computer interface application that allows music to be composed by the power of thought has now been developed by scientists.

- **[Revolutionary process could signal new era for gene synthesis](#)** [周二, 12 9月 00:26]

A team of scientists has demonstrated a groundbreaking new method of gene synthesis -- a vital research tool with real-world applications in everything from growing transplantable organs to developing treatments for cancer.

- **[The evolutionary origin of the gut](#)** [周二, 12 9月 00:26]

How did the gut, the skin and musculature evolve? This question concerns scientists for more than a century. Through the investigation of the embryonic development of sea anemones, a very old animal lineage, researchers have now come to conclusions which challenge the 150-year-old hypothesis of the homology (common evolutionary origin) of the germ layers that form all later organs and tissues.

- **[Cooperation driven by reciprocity, not conformity](#)** [周二, 12 9月 00:26]

From an evolutionary perspective, cooperating with others can yield benefits that increase chances of survival. But what are the conditions

that motivate us to cooperate? New research suggests that reciprocity -- cooperation under the assumption that we will receive benefits in return -- outweighs our desire to conform with group norms when we're deciding whether to cooperate with someone.

- [**New treatment option discovered for brain injury patients suffering from aggression**](#) [周二, 12 9月 00:26]

A drug originally developed in the 1960s as an antiviral medication is showing promise as a treatment option for people who suffer from increased feelings of aggression following traumatic brain injury, researchers have reported.

- [**Patients to benefit from new 3-D visualizations of the heart**](#) [周二, 12 9月 00:26]

In the future heart surgeons will have access to a new type of 3-D visualization of the cardiac conduction system. This technique could provide improved safety for patients and improve surgical outcomes in patients suffering from heart disease and cardiac malformations, explains a new report.

- [**Biophysics study makes exciting advancements for the future of DNA sequencing**](#) [周二, 12 9月 00:26]

New technology that optimizes DNA sequencing using nanophysics and electric currents has been developed by scientists. Their work offers a method for loading DNA into sequencing wells with orders of magnitude higher efficiencies.

- [**Scientists list 50 terms you may be confusing**](#) [周二, 12 9月 00:26]

A list of commonly used psychological terms that are often assumed to be similar, if not identical, but which refer to very different concepts has been revealed by new research.

- [**Scientists construct first predictive model of inflammatory bowel disease**](#) [周二, 12 9月 00:26]

An in-depth, multi-omics approach to characterizing the immune component of inflammatory bowel disease (IBD) has been revealed by

researchers. These results provide new insights into the biologic networks involved in IBD with potential to identify new targets and eventually novel interventions for the treatment of patients living with IBD.

- [**Fathers can influence the sex of their offspring, scientists show**](#) [周二, 12 9月 00:26]

It has traditionally been thought that in mammals only mothers are able to influence the sex of their offspring. But a new study in wild mice has shown that fathers can, in fact, influence sex ratios.

- [**Looking stressed can help keep the peace**](#) [周一, 11 9月 21:59]

Scratching may have evolved as a communication tool to help social cohesion, new research suggests for the first time.

- [**Fire ant venom compounds may lead to skin treatments**](#) [周一, 11 9月 21:59]

Solenopsins, the main toxic components of fire ant venom, chemically resemble ceramides, which are lipid-like molecules essential for maintaining for the barrier function of the skin. Solenopsin analogs can reduce skin thickening and inflammation in a mouse model of psoriasis, scientists have shown.

- [**Respiratory tract infections in young children linked to asthma and worse lung function**](#) [周一, 11 9月 11:25]

Respiratory tract infections in young children are linked to an increased risk of asthma and worse lung function in later life, according to new research.

- [**Abdominal fat a key cancer driver for postmenopausal women**](#) [周一, 11 9月 11:25]

Body fat distribution in the trunk is more important than body weight when it comes to cancer risk in postmenopausal women, according to a new study.

- [**Nurses' regular use of disinfectants is associated**](#)

with developing COPD [周一, 11 9月 11:25]

Regular use of disinfectants is linked to a higher risk of developing chronic obstructive pulmonary disease (COPD), according to new research looking at incidence of the disease in over 55,000 nurses in the USA.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

- [**Microscope invented at marine biological laboratory illuminates chromosomal 'dark matter'**](#) [周三, 13 9月 01:48]

Biologists, instrument developers, and computational scientists have for the first time measured the density of a relatively inscrutable, highly condensed form of chromosomal material (heterochromatin) that appears in the cells of human beings and other eukaryotes.

- [**New way to stabilize next-generation fusion plasmas**](#) [周三, 13 9月 01:48]

Recent experiments conducted on the DIII-D National Fusion Facility suggest that up to 40 percent of high-energy particles are lost during tokamak fusion reactions because of Alfvén waves.

- [**Magnetic cellular 'Legos' for the regenerative medicine of the future**](#) [周三, 13 9月 01:48]

By incorporating magnetic nanoparticles in cells and developing a system using miniaturized magnets, researchers have succeeded in creating cellular magnetic 'Legos.' They were able to aggregate cells using only magnets and without an external supporting matrix, with the cells then forming a tissue that can be deformed at will.

- [**AI -- Engineering: merging, morphing, mobile robots**](#) [周二, 12 9月 22:35]

Researchers have developed self-reconfiguring modular robots that can merge, split and even self-heal while retaining full sensorimotor control.

The work may take us closer to producing robots that can autonomously change their size, shape and function.

- [**Graphene based terahertz absorbers**](#) [周二, 12 9月 22:27]

A terahertz saturable absorber has been created using printable graphene inks with an order of magnitude higher absorption modulation than other devices produced to date.

- [**Study sets new distance record for medical drone transport**](#) [周二, 12 9月 21:31]

Researchers have set a new delivery distance record for medical drones, successfully transporting human blood samples across 161 miles of Arizona desert. Throughout the three-hour flight, they report, the on-board payload system maintained temperature control, ensuring the samples were viable for laboratory analysis after landing.

- [**Astronauts don't develop anemia during spaceflight, NASA study suggests**](#) [周二, 12 9月 21:30]

Space flight anemia -- the reduction of circulating red blood cells during time spent in space -- is an established phenomenon, but it may not be a major concern during long-duration space missions, according to a study.

- [**Method controls whether freezing droplets bounce off or stick**](#) [周二, 12 9月 03:09]

Self-peeling droplets have been discovered, along with a new way to control adhesion of freezing droplets by adjusting the thermal properties of substrates. These findings could make everything from additive manufacturing to deicing more efficient.

- [**The turbulent healing powers of plasma**](#) [周二, 12 9月 00:27]

Non-equilibrium atmospheric pressure plasma can help heal wounds, destroy cancer cells and kill harmful bacteria. The jets of plasma that doctors might use, however, often become turbulent with the direction and velocity changing dramatically. Now, researchers have found this turbulence likely emerges from heat-induced sound waves generated at the plasma electrodes. This new insight is critical for more consistent

and effective medical therapies.

- [**A novel and practical fab-route for superomniphobic liquid-free surfaces**](#) [周二, 12 9月 00:27]

Scientists have developed a fabrication technology that can inexpensively produce surfaces capable of repelling liquids, including water and oil.

- [**Connecting up the quantum internet**](#) [周二, 12 9月 00:27]

Major leap for practical building blocks of a quantum internet: New research demonstrates how to dramatically improve the storage time of a telecom-compatible quantum memory, a vital component of a global quantum network. The technology operates in the same 1550 nanometer band as today's telecommunications infrastructure. It can also be operated as a quantum light source or used as an optical link for solid-state quantum computing devices such as superconducting qubits and silicon qubits.

- [**Self-assembling nanoparticle arrays can switch between a mirror and a window**](#) [周二, 12 9月 00:27]

By finely tuning the distance between nanoparticles in a single layer, researchers have made a filter that can change between a mirror and a window.

- [**Brain Composer: 'Thinking' melodies onto a musical score**](#) [周二, 12 9月 00:26]

A new brain-computer interface application that allows music to be composed by the power of thought has now been developed by scientists.

- [**Hollow atoms: The consequences of an underestimated effect**](#) [周二, 12 9月 00:26]

In a 'hollow atom', electrons occupy high-energy states far away from the nucleus, it can get rid of their excess energy on a remarkably short timescale. The reason for this has been unknown. Researchers have now shown that this is due to a previously underestimated effect: the

'interatomic coulomb decay' allows the atom to transfer its energy to several other atoms simultaneously. This also explains why radiation therapy can be so effective.

- [**Patients to benefit from new 3-D visualizations of the heart**](#) [周二, 12 9月 00:26]

In the future heart surgeons will have access to a new type of 3-D visualization of the cardiac conduction system. This technique could provide improved safety for patients and improve surgical outcomes in patients suffering from heart disease and cardiac malformations, explains a new report.

- [**Study clarifies how neural nets 'think' when processing language**](#) [周二, 12 9月 00:26]

A new general-purpose technique has been developed for making sense of neural networks that are trained to perform natural-language-processing tasks, in which computers attempt to interpret freeform texts written in ordinary, or 'natural,' language (as opposed to a structured language, such as a database-query language).

- [**First on-chip nanoscale optical quantum memory developed**](#) [周二, 12 9月 00:26]

Engineers have built a chip capable of storing and retrieving individual photons of light, with all of their quantum properties left intact. The chip represents the first nanoscale optical quantum memory device, and could one day be used to create more secure Internet communications.

- [**Using mirrors to improve the quality of light particles**](#) [周一, 11 9月 21:59]

Scientists have succeeded in dramatically improving the quality of individual photons generated by a quantum system. The scientists have successfully put a 10-year-old theoretical prediction into practice. With their paper, they have taken an important step towards future applications in quantum information technology.

- [**Explosive birth of stars swells galactic cores**](#) [周一, 11 9月 11:25]

Astronomers found that active star formation upswells galaxies, like yeast helps bread rise. Using three powerful telescopes on the ground and in orbit, they observed galaxies from 11 billion years ago and found explosive formation of stars in the cores of galaxies. This suggests that galaxies can change their own shape without interaction with other galaxies.

- [**When electrons ride a wave**](#) [周六, 09 9月 08:55]

Conventional electron accelerators are an indispensable tool in modern research. But even smaller versions of these super microscopes are the size of a soccer field. Laser plasma acceleration could offer an alternative with a smaller footprint and higher peak currents. So far, the challenge with laser accelerators has been to create a reliable and stable electron beam, which is the prerequisite for applications. Physicists have developed a method to increase beam stability and quality.

- [**Scientists unravel new insights into promising semiconductor material**](#) [周六, 09 9月 08:55]

Researchers have established new findings on the properties of two-dimensional molybdenum disulfide, a widely studied semiconductor of the future.

- [**Are we being watched? Tens of other worlds could spot the Earth**](#) [周六, 09 9月 08:55]

Scientists have turned exoplanet-hunting on its head, in a study that instead looks at how an alien observer might be able to detect Earth using our own methods. They find that at least nine exoplanets are ideally placed to observe transits of Earth.

- [**High-speed quantum memory for photons**](#) [周六, 09 9月 08:54]

Physicists have developed a memory that can store photons. These quantum particles travel at the speed of light and are thus suitable for high-speed data transfer. The researchers were able to store them in an atomic vapor and read them out again later without altering their quantum mechanical properties too much. This memory technology is simple and fast and it could find application in a future quantum

Internet.

- [**How to draw electricity from the bloodstream**](#) [周六, 09 9月 08:54]

Men build dams and huge turbines to turn the energy of waterfalls and tides into electricity. To produce hydropower on a much smaller scale, scientists have now developed a lightweight power generator based on carbon nanotube fibers suitable to convert even the energy of flowing blood in blood vessels into electricity.

- [**New guidelines discourage use of brain imaging as a 'lie detector' for chronic pain**](#) [周六, 09 9月 08:54]

A task force consisting of researchers from around the world has released a set of recommendations that advise against the use of brain imaging as a test for chronic pain.

- [**A sweeter way to make green products**](#) [周六, 09 9月 08:16]

A more efficient process has been created for extracting the sugars from wood chips, corn cobs and other organic waste from forests and farms. This biorenewable feedstock could serve as a cheaper, sustainable substitute for the petroleum used in manufacturing tons of consumer goods annually -- goods that consumers want to be greener.

- [**Scientists make methanol using air around us**](#) [周五, 08 9月 02:27]

Scientists have created methanol from methane using oxygen from the air. Methanol is currently produced by breaking down natural gas at high temperatures. But researchers have discovered they can produce methanol from methane through simple catalysis that allows methanol production at low temperatures using oxygen and hydrogen peroxide. The findings have major implications for cleaner, greener industrial processes worldwide.

- [**Tweet life vs. street life: Exploring the gap between content, feelings**](#) [周五, 08 9月 02:27]

Twitter is an unreliable witness to the world's emotions, suggests a researcher, adding that online social life doesn't always reflect offline social reality.

- [**Quantum detectives in the hunt for the world's first quantum computer**](#) [周五, 08 9月 02:26]

A new paper is the latest confirmation of Majorana fermions -- a strange quasiparticle at the heart of the next generation of quantum machines being pursued by engineers.

- [**Streamlined security: Optimizing sensor placement with mathematics**](#) [周五, 08 9月 01:25]

Increasing reliance on heightened security in public and private settings calls for optimal sensor technology. However, placing security sensors to optimize resource management and system performance while simultaneously protecting people and products is undoubtedly challenging. In a new paper, experts propose a computational level set method to optimally position a sensor-based security system for maximum surveillance of a complex environment.

- [**New acid-free magnet recycling process created**](#) [周五, 08 9月 01:25]

A new rare-earth magnet recycling process dissolves magnets in an acid-free solution and recovers high purity rare earth elements.

- [**Curious properties: Researchers analyze flocking behavior on curved surfaces**](#) [周五, 08 9月 01:25]

A murmuration of starlings. The phrase reads like something from literature or the title of an arthouse film. In fact, it is meant to describe the phenomenon that results when hundreds, sometimes thousands, of these birds fly in swooping, intricately coordinated patterns through the sky.

- [**Lignin: Much more valuable than just as waste**](#) [周五, 08 9月 00:03]

Lignin, a substance considered as a waste product in biomass and ethanol production, will now reach its proper value as bio-oil in new products.

- [**Aspirin tablets help unravel basic physics**](#) [周五, 08 9月 00:03]

Aspirin in form of small crystallites provides new insight into delicate

motions of electrons and atomic nuclei. Set into molecular vibration by strong ultrashort far-infrared (terahertz) pulses, the nuclei oscillate much faster than for weak excitation. They gradually return to their intrinsic oscillation frequency, in parallel to the picosecond decay of electronic motions. An analysis of the terahertz waves radiated from the moving particles by in-depth theory reveals the strongly coupled chara...

- [**Scanning tunneling microscopy measurements identify active sites on catalyst surfaces**](#) [周五, 08 9月 00:02]

Chemistry live: using a scanning tunneling microscope, researchers were able for the very first time to witness in detail the activity of catalysts during an electrochemical reaction. The measurements show how the surface structure of the catalysts influences their activity. The new analysis method can now be used to improve catalysts for the electrochemical industry.

- [**'Rubber material' discovered that could lead to scratch-proof paint for car**](#) [周五, 08 9月 00:02]

A stretchy miracle material has been discovered that could be used to create highly resistant smart devices and scratch-proof paint for cars, report investigators.

- [**Climate change for aliens**](#) [周四, 07 9月 23:24]

For more than 50 years, the Kardashev scale has been the gold standard for classifying hypothetical 'exo-civilizations' by their ability to harness energy. A team of researchers has devised a new system that takes into account the impacts of that energy use.

- [**Pluto features given first official names**](#) [周四, 07 9月 23:24]

The Working Group for Planetary System Nomenclature of the International Astronomical Union has officially approved the naming of 14 features on the surface of Pluto. These are the first geological features on the planet to be named following the close flyby by the New Horizons spacecraft in July 2015.

- [**3-D-printed biomaterials that degrade on demand**](#) [周四, 07 9月 23:24]

The temporary structures, which can be degraded away with a biocompatible chemical trigger, could be useful in fabricating microfluidic devices, creating biomaterials that respond dynamically to stimuli and in patterning artificial tissue.

- [**Smartphone screen technology used to trick harmful bacteria**](#) [周四, 07 9月 22:41]

Conducting plastics found in smartphone screens can be used to trick the metabolism of pathogenic bacteria, report scientists. By adding or removing electrons from the plastic surface, bacteria may be tricked into growing more or less. The method may find widespread use in preventing bacterial infections in hospitals or improve effectiveness in wastewater management.

- [**New dental imaging method uses squid ink to fish for gum disease**](#) [周四, 07 9月 22:24]

Squid ink could one day make getting checked for gum disease at the dentist less tedious and even painless. By combining squid ink with light and ultrasound, a team led by engineers has developed a new dental imaging method to examine a patient's gums that is noninvasive, more comprehensive and more accurate than the state of the art.

- [**Ultraviolet light from superluminous supernova key to revealing explosion mechanism**](#) [周四, 07 9月 22:24]

An international team of researchers has discovered a way to use UV light from superluminous supernovae to uncover its explosion mechanism, and used it to identify Gaia16apd as a shock-interacting supernova, reports a new study.

- [**Fast magnetic writing of data**](#) [周四, 07 9月 22:24]

Magnetic data storage has long been considered too slow for use in the working memories of computers. Researchers have now investigated a technique by which magnetic data writing can be done considerably faster and using less energy.

- [**Intermittent electrical brain stimulation**](#)

improves memory [周四, 07 9月 22:23]

Intermittent electrical stimulation of an area deep inside the brain that degenerates in Alzheimer's appears to improve working memory, scientists report. Conversely, continuous deep brain stimulation, like the type used for Parkinson's and currently under study in humans with Alzheimer's, impairs memory, according to study.

• **A tiny device offers insights to how cancer spreads** [周四, 07 9月 21:36]

Researchers developed a new type of microfluidic device that can cultivate cells for longer periods of time, better reflecting how cancer cells to change over time. The device allowed them to capture the leader cells that would be first to break away and cause metastasis.

• **Drivers don't ignore a ringing phone but do ignore the risk** [周四, 07 9月 21:36]

Drivers find it difficult to ignore a ringing phone but do ignore the dangers, with a new study revealing almost 50 percent believe locating and answering a ringing phone is not as risky as talking and texting. Research has found locating a ringing phone, checking who's calling, and rejecting or answering the call, is the most frequent mobile phone task undertaken by drivers.

• **Water-based lithium-ion batteries that don't explode now created** [周四, 07 9月 05:01]

For the first time a lithium-ion battery has been developed that uses a water-salt solution as its electrolyte and reaches the 4.0 volt mark desired for household electronics, such as laptop computers, without the fire and explosive risks associated with some commercially available non-aqueous lithium-ion batteries.

• **Study quantifies potential for water reuse in permian basin oil production** [周四, 07 9月 05:01]

Hydraulic fracturing has once again made the Permian Basin one of the richest oil fields in the world. But the improved reserves come with

some serious water management issues. Drilling for oil uses water upfront, and brings up large volumes of water that need to be managed. The study found that recycling the water produced during operations at other hydraulic fracturing sites could help reduce potential problems associated with the technology.

[Researchers challenge status quo of battery commercialization](#) [周四, 07 9月 05:01]

Researchers are looking to the pharmaceutical industry to propose an updated model of US battery commercialization.

[New device accurately identifies cancer in seconds](#) [周四, 07 9月 02:49]

A team of scientists and engineers has invented a powerful tool that rapidly and accurately identifies cancerous tissue during surgery, delivering results in about 10 seconds. The MasSpec Pen is an innovative handheld instrument that gives surgeons precise diagnostic information about what tissue to cut or preserve, helping improve treatment and reduce the chances of cancer recurrence.

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Environment News

Top stories featured on ScienceDaily's Plants & Animals, Earth & Climate, and Fossils & Ruins sections.

- [Health benefits of olives and olive oil](#) [周三, 13 9月 04:10]
A research team discovered that the olive-derived compound oleuropein helps prevent type 2 diabetes.
- [How hibernating ribosomes wake up](#) [周三, 13 9月 01:48]
Scientists have uncovered the way a bacterial ribosome moves from an inactive to an active form, and how that 'wake up call' is key to its survival.
- ['Superbug' bacteria gang up on us, fueled by antibiotic use, nursing home study suggests](#) [周三, 13 9月 01:48]
What's worse than getting exposed to a kind of bacteria that modern antibiotics can't kill? Getting exposed to more than one -- because they may work together to cause an infection, new research suggests. And trying different antibiotics to control one such 'superbug' may only encourage others. The researchers say it's time to think about such bacteria as members of an antibiotic-resistant ecosystem in healthcare environments -- not as single species that act and respond alone.
- [Microscope invented at marine biological laboratory illuminates chromosomal 'dark matter'](#) [周三, 13 9月 01:48]
Biologists, instrument developers, and computational scientists have for the first time measured the density of a relatively inscrutable, highly condensed form of chromosomal material (heterochromatin) that appears in the cells of human beings and other eukaryotes.

- [**Forest regeneration experiment of 30 years yields results**](#) [周三, 13 9月 01:48]

A spruce forest regeneration experiment in Interior Alaska that spanned nearly 30 years demonstrates which forest management practices produce the best results. It looked at different combinations of ground treatments to reduce competition from other vegetation and of regeneration methods, such as planting spruce seedlings and broadcast seeding. The results show the environmental and management situations in which different techniques work best and the situations in which they are unnecessary. Re...

- [**In mice, calorie restriction reduces fat but increases fur**](#) [周三, 13 9月 01:48]

Calorie restriction may help mice stay slim and live longer, but it also means less fat to keep their bodies warm. Researchers in Brazil have found that mouse skin responds to caloric restriction by stimulating fur growth, increasing blood flow, and altering cell metabolism to increase energy efficiency. The study reveals that animals may use this as an evolutionary adaptation to stay warm -- and alive -- in limited food conditions.

- [**'Missing link' explains how viruses trigger immunity**](#) [周三, 13 9月 01:48]

A new discovery has solved a longstanding mystery of how viruses trigger protective immunity within our body. The research team demonstrated a protein called SIDT2 was crucial for cells to detect viral components in their environment, and initiate an immune response to reduce the virus' spread.

- [**Reversing the negative effects of adolescent marijuana use**](#) [周三, 13 9月 01:48]

Researchers have identified a specific mechanism in the prefrontal cortex for some of the negative mental health risks associated with adolescent marijuana use. By demonstrating that adolescent THC exposure modulates the activity of a neurotransmitter called GABA in

the prefrontal cortex region of the brain, they were also able to identify a mechanism to reverse those risks.

- [**Historic legacies affect climate change survival in Caribbean**](#) [周三, 13 9月 01:48]

Discussion of climate change has failed to pay enough attention to the social, political and historic factors which increase the vulnerability of Caribbean societies, and calls for a new approach focused on understanding and addressing these historic inequalities.

- [**Earthquake faults may have played key role in shaping the culture of ancient Greece**](#) [周二, 12 9月 22:35]

The Ancient Greeks may have built sacred sites deliberately on land affected by previous earthquake activity, according to a new study.

- [**Coffee and bees: New model of climate change effects**](#) [周二, 12 9月 22:28]

Areas in Latin America suitable for growing coffee face predicted declines of 73-88 percent by 2050. But bee species diversity may save the day, even if many species in cool highland regions are lost as the climate warms.

- [**Explosion in number of known life forms**](#) [周二, 12 9月 21:31]

New research has helped increase the number of known genomes by almost 10 percent. Scientists have obtained 7,280 bacterial and 623 archaeal genomes (genetic materials from microorganisms) from environmental samples, explains a new article.

- [**Biding time could improve conservation outcomes**](#) [周二, 12 9月 21:31]

Strategic delays in conservation efforts could be the key to protecting more species according to researchers. The new study found instead of spending project funds immediately, conservation organizations could use the right amount of delay to improve the benefits achieved from their funding by focusing first on investment, capacity building, or monitoring and research.

• **['Keep it local' approach more effective than government schemes at protecting rainforest](#)** [周二, 12 9月 21:31]

Conservation initiatives led by local and indigenous groups can be just as effective as schemes led by government, according to new research. In some cases in the Amazon rainforest, grassroots initiatives can be even more effective at protecting this vital ecosystem.

• **[Researchers discover new, abundant enzyme that helps bacteria infect animals](#)** [周二, 12 9月 21:30]

A new class of enzymes has been discovered in hundreds of bacterial species, including some that cause disease in humans and animals. The discovery provides new insights into how bacteria invade their hosts.

• **[Ancient tree reveals cause of spike in Arctic temperature](#)** [周二, 12 9月 21:30]

A kauri tree trapped in a New Zealand swamp for 30,000 years may have overturned the idea that a slowdown in ocean currents in the North Atlantic may be entirely responsible for Dansgaard-Oeschger events and the characteristic bi-polar see-saw, which sees the Antarctica cool while the Arctic warms during glacial periods. The research reveals a mechanism that generates a 20,000 km long atmospheric bridge, reaching from Antarctica to the Arctic.

• **[Modeling the impact of green eggs and hens](#)** [周二, 12 9月 21:30]

Poultry given vegan organic chicken feed can help to produce eggs with a smaller environmental footprint than those fed non-organic feeds that contain animal by-products, new research shows.

• **[Rapid climate changes across northern hemisphere in the earliest Middle Pleistocene](#)** [周二, 12 9月 21:30]

By studying climate changes that took place thousands of years ago, we can better understand the global climate system and predict Earth's future climate. A multi-organization research team has discovered evidence of rapid climate changes on a millennial-to-centennial scale

that occurred 780 to 760 thousand years ago.

- [**Rising CO2 leading to changes in land plant photosynthesis**](#) [周二, 12 9月 05:04]

Researchers have determined that major changes in plant behavior have occurred over the past 40 years, using measurements of subtle changes in the carbon dioxide (CO₂) currently found in the atmosphere.

- [**Study of circular DNA comes full circle with use of old technique**](#) [周二, 12 9月 04:32]

A 50-year-old lab technique is helping researchers better understand circular DNA, a lesser-known and poorly understood cousin of the linear version commonly associated with life's genetic blueprint. With the aid of a process called density gradient centrifugation, a research team recently published a study that for the first time characterizes all of the circular DNA in the worm *C. elegans*, as well as in three human cell types.

- [**When ancient fossil DNA isn't available, ancient glycans may help trace human evolution**](#) [周二, 12 9月 03:09]

Researchers have discovered a new kind of glycan (sugar chain) that survives even in a 4-million-year-old animal fossil from Kenya, under conditions where ancient DNA does not. While ancient hominin fossils are not yet available for glycan analysis, this proof-of-concept study sets the stage for unprecedented explorations of human origins and diet.

- [**Why your ancestors would have aced the long jump**](#) [周二, 12 9月 03:09]

A 52-million-year-old ankle fossil suggests our prehuman ancestors were high-flying acrobats. For years, scientists thought the ancestors of today's humans, monkeys, lemurs and apes were relatively slow and deliberate animals, using their grasping hands and feet to creep along small twigs and branches. But a new study suggests the first primates were masters at leaping through the trees.

- [**Earthquake triggers 'slow motion' quakes in**](#)

[**New Zealand**](#) [周二, 12 9月 00:27]

Slow slip events, a type of slow motion earthquake that occurs over days to weeks, are thought to be capable of triggering larger, potentially damaging earthquakes. In a new study, scientists have documented the first clear-cut instance of the reverse -- a massive earthquake immediately triggering a series of large slow slip events.

[**Scientists track the brain-skull transition from dinosaurs to birds**](#) [周二, 12 9月 00:27]

The dramatic, dinosaur-to-bird transition that occurred in reptiles millions of years ago was accompanied by profound changes in the skull roof of those animals -- and holds important clues about the way the skull forms in response to changes in the brain -- according to a new study. It is the first time scientists have tracked the link between the brain's development and the roofing bones of the skull.

[**How openings in Antarctic sea ice affect worldwide climate**](#) [周二, 12 9月 00:26]

In a new analysis of climate models, researchers reveal the significant global effects that seemingly anomalous polynyas, or openings in sea ice, can have. Their findings indicate that heat escaping from the ocean through these openings impacts sea and atmospheric temperatures and wind patterns around the globe and even rainfall around the tropics.

[**Muscle nuclei: May the force be with you**](#) [周二, 12 9月 00:26]

A group of researchers has revealed the mechanism by which cellular nuclei reach their position within muscle cells. This discovery can have important implications in therapeutic strategies to treat muscular diseases.

[**Cold region 'tipping point' now inevitable**](#) [周二, 12 9月 00:26]

The decline of cold regions called periglacial zones is now inevitable due to climate change, researchers say.

[**The evolutionary origin of the gut**](#) [周二, 12 9月 00:26]

How did the gut, the skin and musculature evolve? This question

concerns scientists for more than a century. Through the investigation of the embryonic development of sea anemones, a very old animal lineage, researchers have now come to conclusions which challenge the 150-year-old hypothesis of the homology (common evolutionary origin) of the germ layers that form all later organs and tissues.

• [**USA threatened by more frequent flooding**](#) [周二, 12 9月 00:26]

The East Coast of the United States is threatened by more frequent flooding in the future. According to this study, the states of Virginia, North Carolina, and South Carolina are most at risk. Their coastal regions are being immersed by up to three millimeters per year -- among other things, due to human intervention.

• [**Half-a-billion-year-old fossils shed light animal evolution on Earth**](#) [周二, 12 9月 00:26]

Scientists have discovered traces of life more than half-a-billion years old that could change the way we think about how all animals evolved on Earth.

• [**Biodiversity just as powerful as climate change for healthy ecosystems**](#) [周二, 12 9月 00:26]

Biodiversity is proving to be one of humanity's best defenses against extreme weather. In past experiments, diversity has fostered healthier, more productive ecosystems, like shoreline vegetation that guards against hurricanes. However, many experts doubted whether these experiments would hold up in the real world. A study offers a decisive answer: biodiversity's power in the wild surpasses experimental predictions, in some cases topping even effects of climate.

• [**Fathers can influence the sex of their offspring, scientists show**](#) [周二, 12 9月 00:26]

It has traditionally been thought that in mammals only mothers are able to influence the sex of their offspring. But a new study in wild mice has shown that fathers can, in fact, influence sex ratios.

• [**Looking stressed can help keep the peace**](#) [周一, 11 9月 21:59]

Scratching may have evolved as a communication tool to help social cohesion, new research suggests for the first time.

- [**Fire ant venom compounds may lead to skin treatments**](#) [周一, 11 9月 21:59]

Solenopsins, the main toxic components of fire ant venom, chemically resemble ceramides, which are lipid-like molecules essential for maintaining for the barrier function of the skin. Solenopsin analogs can reduce skin thickening and inflammation in a mouse model of psoriasis, scientists have shown.

- [**Ancient wetlands offer window into climate change**](#) [周一, 11 9月 21:59]

Environmental researchers have uncovered a wealth of information about a unique part of Australia that offers never-before-seen insights into climate change since the last ice age.

- [**Desert locusts: New risks in the light of climate change**](#) [周一, 11 9月 21:59]

The desert locust is an invasive species that is both well known and feared because of the large-scale agricultural damage it can cause. It is particularly closely monitored, to prevent the risks of outbreaks and invasions. Climate change could modify its distribution area, meaning a new threat to agriculture, according to a study.

- [**Biosensor detects adulteration of horse in beef meat within one hour**](#) [周一, 11 9月 21:59]

Fraud in meat products has become, in recent years, a battle of the food industry and public health. Although there are numerous strategies to detect it, they are not sufficiently selective and sensitive to differentiate close animal species. A collaboration of experts has developed an electrochemical biosensor capable of detecting, in just one hour, processes of adulteration of beef with horse meat.

- [**Do we need to reform international drug treaties as more countries legalize cannabis?**](#) [周六, 09 9月 08:55]

The future of international drug control treaties is in doubt because of recent treaty-violating decisions to legalize cannabis use in Canada, the United States and Uruguay. A professor, whose 2014 review of 20 years of cannabis research made world headlines, thinks so. If decriminalization is the way of the future, he advocates a cautious approach to policy reform that would involve trialing and evaluating the effects of incrementally more liberal drug policies.

- [**A-MUD: A method for automatically detecting mouse song**](#) [周六, 09 9月 08:55]

Mice produce a remarkable repertoire of vocalizations across five octaves, which they emit during mating and other contexts. Analyses of mice song can provide important information about their social behavior and for research into neuropsychiatric disorders. But their songs are in the ultrasonic range and inaudible for humans. Researchers have now developed a freely available method to automatically detect mouse vocalizations instead of manually.

- [**An officer and a gentlewoman from the Viking army in Birka**](#) [周六, 09 9月 08:55]

War was not an activity exclusive to males in the Viking world. A new study shows that women could be found in the higher ranks at the battlefield.

- [**Young birds suffer in the city**](#) [周六, 09 9月 08:54]

City life is tough for young birds. But if they survive their first year, they are less susceptible to the effects of stress, according to new research.

- [**Why it's difficult to predict evolutionary fate of a new trait**](#) [周六, 09 9月 08:54]

Scientists explain the vexing complexities that make it hard to predict whether a new genetic trait will take over a population or die out, a key challenge for many fields including infectious disease.

- [**Meeting a microbe in the morning or in the**](#)

evening: Is it all the same? [周六, 09 9月 08:54]

Does the time of day matter when our body is infected by a parasite? According to new research, it matters a great deal.

• **Animal welfare: Potential new indicator of chronic stress in horses** [周六, 09 9月 08:54]

Cortisol is generally considered to be a stress hormone because its levels rise during episodes of acute stress. Yet its relationship to chronic stress is less clear. Researchers have linked lower cortisol levels to states of chronically poor welfare in adult horses observed under their usual living conditions.

• **Lazy ants make themselves useful in unexpected ways** [周六, 09 9月 08:53]

They may look useless, but they're not: so-called lazy ants serve as new recruits ready to replace the top productive workers when the need arises. New research shows that these ants are far from useless.

• **A sweeter way to make green products** [周六, 09 9月 08:16]

A more efficient process has been created for extracting the sugars from wood chips, corn cobs and other organic waste from forests and farms. This biorenewable feedstock could serve as a cheaper, sustainable substitute for the petroleum used in manufacturing tons of consumer goods annually -- goods that consumers want to be greener.

• **Extreme weather has limited effect on attitudes toward climate policies** [周五, 08 9月 02:46]

People who recently experienced severe weather events such as floods, storms and drought are more likely to support policies to adapt to the effects of climate change, according to a new study.

• **Are you barking up the wrong tree by sleeping with your dog?** [周五, 08 9月 02:45]

Let sleeping dogs lie ... in the bedroom. That's according to a new study that's sure to set many tails wagging.

. [Individuality drives collective behavior of schooling fish](#) [周五, 08 9月 02:27]

New research sheds light on how 'animal personalities' -- inter-individual differences in animal behavior -- can drive the collective behavior and functioning of animal groups such as schools of fish, including their cohesion, leadership, movement dynamics, and group performance.

. [Ship exhaust makes oceanic thunderstorms more intense](#) [周五, 08 9月 02:27]

Thunderstorms directly above two of the world's busiest shipping lanes are significantly more powerful than storms in areas of the ocean where ships don't travel, according to new research.

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- [**Historic legacies affect climate change survival in Caribbean**](#) [周三, 13 9月 01:48]

Discussion of climate change has failed to pay enough attention to the social, political and historic factors which increase the vulnerability of Caribbean societies, and calls for a new approach focused on understanding and addressing these historic inequalities.

- [**How should we handle boys who can't read?**](#) [周二, 12 9月 21:31]

Boys are much worse at reading than girls. The disparities have been quite consistent over 15 years. New insights may give hope -- if they're put to use.

- [**'Keep it local' approach more effective than government schemes at protecting rainforest**](#) [周二, 12 9月 21:31]

Conservation initiatives led by local and indigenous groups can be just as effective as schemes led by government, according to new research. In some cases in the Amazon rainforest, grassroots initiatives can be even more effective at protecting this vital ecosystem.

- [**Earthquake triggers 'slow motion' quakes in New Zealand**](#) [周二, 12 9月 00:27]

Slow slip events, a type of slow motion earthquake that occurs over days to weeks, are thought to be capable of triggering larger, potentially damaging earthquakes. In a new study, scientists have documented the first clear-cut instance of the reverse -- a massive earthquake immediately triggering a series of large slow slip events.

- [**Do we need to reform international drug treaties as more countries legalize cannabis?**](#) [周六, 09 9月 08:55]

The future of international drug control treaties is in doubt because of recent treaty-violating decisions to legalize cannabis use in Canada, the United States and Uruguay. A professor, whose 2014 review of 20 years of cannabis research made world headlines, thinks so. If decriminalization is the way of the future, he advocates a cautious approach to policy reform that would involve trialing and evaluating the effects of incrementally more liberal drug policies.

- [**Extreme weather has limited effect on attitudes toward climate policies**](#) [周五, 08 9月 02:46]

People who recently experienced severe weather events such as floods, storms and drought are more likely to support policies to adapt to the effects of climate change, according to a new study.

- [**Ship exhaust makes oceanic thunderstorms more intense**](#) [周五, 08 9月 02:27]

Thunderstorms directly above two of the world's busiest shipping lanes are significantly more powerful than storms in areas of the ocean where ships don't travel, according to new research.

- [**Courts' critical, underappreciated role in climate policy**](#) [周五, 08 9月 02:26]

Both climate lawsuits and their reliance on scientific data have increased over the past decade, the most extensive study to date shows.

- [**SNAP benefits aren't enough to afford a healthy diet**](#) [周五, 08 9月 00:56]

A new study finds that the Supplemental Nutrition Assistance Program (SNAP), formerly known as Food Stamps, only covers 43-60 percent of what it costs to consume a diet consistent with federal dietary guidelines for what constitutes a healthy diet. The study highlights the challenges lower-income households face in trying to eat a healthy diet.

- [**Nutrition has benefits for brain network**](#)

[organization](#) [周四, 07 9月 23:24]

Nutrition has been linked to cognitive performance, but researchers have not pinpointed what underlies the connection. A new study found that monounsaturated fatty acids -- a class of nutrients found in olive oils, nuts and avocados -- are linked to general intelligence, and that this relationship is driven by the correlation between MUFAs and the organization of the brain's attention network.

• [Academic argues for changes in the laws governing modern warfare](#) [周四, 07 9月 22:41]

Modern warfare and terrorist acts often sees the killing of innocent civilians which presents complex challenges for the international legal framework governing the conduct of armed conflicts, explains a new report.

• [Children exposed to chemicals in 9/11 'dust' show early signs of risk of heart disease](#) [周四, 07 9月 21:36]

Sixteen years after the collapse of the World Trade Center towers sent a 'cloud' of toxic debris across Lower Manhattan, children living nearby who likely breathed in the ash and fumes are showing early signs of risk for future heart disease.

• [Study quantifies potential for water reuse in permian basin oil production](#) [周四, 07 9月 05:01]

Hydraulic fracturing has once again made the Permian Basin one of the richest oil fields in the world. But the improved reserves come with some serious water management issues. Drilling for oil uses water upfront, and brings up large volumes of water that need to be managed. The study found that recycling the water produced during operations at other hydraulic fracturing sites could help reduce potential problems associated with the technology.

• [Improved vaccine that protects against nine types of HPV is highly effective](#) [周四, 07 9月 02:32]

Cervical cancer is the second most common cause of cancer-related

death worldwide, with almost 300,000 deaths occurring each year. More than 80 percent of these deaths occur in developing nations. The advent of human papillomavirus (HPV) vaccines has significantly reduced the number of those who develop and die from cervical cancer.

- [**Realistic projections of economic growth and carbon emissions**](#) [周四, 07 9月 01:56]

Between 2008 and 2015, the United States was able to reduce carbon emissions while enjoying limited economic growth. But in a recent commentary, John Deutch, who has worked with the energy departments of several presidential administrations, urges cautious optimism. He explains the country experienced a short-term decoupling of emissions and economic growth that models suggest won't sustain in the future or be enough to prevent climate change.

- [**Predatory journals a global problem**](#) [周四, 07 9月 01:56]

Contrary to popular belief, a majority of papers in suspected biomedical predatory journals (57 percent) are from high or upper middle income countries, with many coming from prestigious institutions, a massive investigation shows. Predatory journals provide scientists with a quick and inexpensive way to publish their findings, but do not provide quality controls and are not included in scientific databases.

- [**How retractions significantly hurt scientists**](#) [周三, 06 9月 23:46]

Life scientists who have published papers that are retracted by journals subsequently suffer a 10 percent drop in citations of their remaining work, compared to similar but unaffected scientists, according to a new study.

- [**Fuel economy standards cheaper, more beneficial than previously believed**](#) [周三, 06 9月 23:46]

The regulations that set fuel-economy and greenhouse-gas emission goals for cars and trucks have lower costs and higher benefits than previous analyses report, a new study shows.

- [**Voting vulnerability**](#) [周三, 06 9月 22:38]

Online attackers may be able to purchase -- for as little as a few

thousand dollars -- enough personal information to potentially alter voter registration information in as many as 36 states and the District of Columbia. Dubbed 'voter identity theft,' the vulnerability could be exploited by attackers to disenfranchise many voters where voter registration information can be changed online.

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [Earthquake faults may have played key role in shaping the culture of ancient Greece](#) [周二, 12 9月 22:35]

The Ancient Greeks may have built sacred sites deliberately on land affected by previous earthquake activity, according to a new study.

- [AI -- Engineering: merging, morphing, mobile robots](#) [周二, 12 9月 22:35]

Researchers have developed self-reconfiguring modular robots that can merge, split and even self-heal while retaining full sensorimotor control. The work may take us closer to producing robots that can autonomously change their size, shape and function.

- [Looking stressed can help keep the peace](#) [周一, 11 9月 21:59]

Scratching may have evolved as a communication tool to help social cohesion, new research suggests for the first time.

- [Explosive birth of stars swells galactic cores](#) [周一, 11 9月 11:25]

Astronomers found that active star formation upswells galaxies, like yeast helps bread rise. Using three powerful telescopes on the ground and in orbit, they observed galaxies from 11 billion years ago and found explosive formation of stars in the cores of galaxies. This suggests that galaxies can change their own shape without interaction with other galaxies.

- [How to draw electricity from the bloodstream](#) [周六, 09 9月 08:54]

Men build dams and huge turbines to turn the energy of waterfalls and

tides into electricity. To produce hydropower on a much smaller scale, scientists have now developed a lightweight power generator based on carbon nanotube fibers suitable to convert even the energy of flowing blood in blood vessels into electricity.

- [**Climate change for aliens**](#) [周四, 07 9月 23:24]

For more than 50 years, the Kardashev scale has been the gold standard for classifying hypothetical 'exo-civilizations' by their ability to harness energy. A team of researchers has devised a new system that takes into account the impacts of that energy use.

- [**Australian Magpie 'dunks' its food before eating, researchers find**](#) [周四, 07 9月 22:23]

Scientists have shown that the Australian Magpie may 'dunk' its food in water before eating, a process that appears to be 'copied' by its offspring.

- [**'Vampires' may have been real people with this blood disorder**](#) [周四, 07 9月 02:49]

A newly discovered genetic mutation triggers erythropoietic protoporphyria (EPP). This discovery illuminates a novel biological mechanism potentially responsible for stories of 'vampires' and identifies a potential therapeutic target for treating EPP.

- [**Giant bacterium contains genomes for an entire population**](#) [周四, 07 9月 02:26]

Achromatium oxaliferum is the largest (known) freshwater bacterium in the world. It is 30,000 times larger than its “normal” counterparts that live in water and owing to its calcite deposits it is visible to the naked eye. It has long been known – at least among bacteria fans – that some sulfur bacteria such as *Achromatium* can be extremely large and may contain several genome copies. But the fact that a single bacterial cell harbors hundreds of different genomes is new – also to bacteria aficiona...

- [**High-flying ducks cross Himalayas**](#) [周三, 06 9月 08:30]

A high-flying duck species reaches altitudes of up to 6,800 meters (22,000 feet) to cross the Himalayas, new research shows.

. [Clever cockatoos bend hooks into straight wire to fish for food](#) [周三, 06 9月 08:29]

Bending of a hook into wire to fish for the handle of a basket by crow Betty 15 years ago stunned the scientific world. Cognitive biologists studied tool making in an Indonesian cockatoo. Other than crows, cockatoos are not using tools in the wild. The birds manufactured hook tools out of straight wire without ever having seen or used a hook tool before.

. [Something to sneeze about: Democratic voting in African wild dog packs](#) [周三, 06 9月 08:29]

Scientists studying African wild dogs in Botswana have found members of this endangered species use sneezes to vote on when the pack will move off and start hunting.

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- [**Bird songs isolate species, new research suggests**](#)

[周三, 13 9月 22:45]

Two birds that look the same, but have songs so different they can't recognize each other, should be considered distinct species, suggests new research. Among 72 related populations of Central and South American birds the researchers tested, they found evidence for 21 new species.

- [**Popular bottle-breaking trick is giving insight to brain injuries**](#)

[周三, 13 9月 22:45]

As many YouTube videos show, striking the top of a liquid-filled bottle can shatter the bottom. Researchers are hoping to use new knowledge of that party trick to help fill a gap in something much more serious: brain research.

- [**The beam of invisibility**](#)

[周三, 13 9月 22:45]

A new idea for a cloaking technology has been created by scientists. A completely opaque material is irradiated from above with a specific wave pattern -- with the effect that light waves from the left can now pass through the material without any obstruction. This surprising result opens up completely new possibilities for active camouflage.

- [**New hope for 'bubble baby disease'**](#)

[周三, 13 9月 22:45]

If untreated, severe combined immune deficiency (SCID) syndrome --

or 'bubble baby disease' -- is often fatal within the first year of a infant's life. A checklist of SCID markers could make diagnosis faster, allowing more babies to receive treatment within a critical timeframe, say researchers.

- [**Multifunctional nano-sized drug carriers based on reactive polypept\(o\)ides**](#) [周三, 13 9月 22:44]

Researchers have been able to demonstrate that reactive polypept(o)ides constitute ideal building blocks to control morphology and function of carrier systems in a simple but precise manner.

- [**Teens' ability to consider the intentions of others linked to structural changes in the brain**](#) [周三, 13 9月 20:44]

When it comes to the concept of fairness, teenagers' ability to consider the intentions of others appears to be linked to structural changes underway in the brain, according to a study. The study is the first to provide evidence linking structural changes with behavioral changes within this context. Understanding the intentions of others is fundamental to human cooperation and how we exist as social beings.

- [**Paper-based tuberculosis test could boost diagnoses in developing countries**](#) [周三, 13 9月 20:44]

Diagnosing tuberculosis early can allow patients to receive the medicine they need and also help prevent the disease from spreading. But in resource-limited areas, equipment requirements and long wait times for results are obstacles to diagnosis and treatment. To tackle this problem, scientists report the development of a fast, paper-based tuberculosis test that can be read with a smartphone.

- [**Systems analysis points to links between Toxoplasma infection and common brain diseases**](#) [周三, 13 9月 20:44]

Nearly one out of every three humans on earth has a lifelong infection with the brain-dwelling parasite *Toxoplasma gondii*. In a new report, researchers from multiple institutions describe efforts to learn how

infection with the parasite *Toxoplasma gondii* may alter, and in some cases amplify, several brain disorders, including epilepsy, Alzheimer's and Parkinson's diseases as well as some cancers.

• [**As 'flesh-eating' Leishmania come closer, a vaccine against them does, too**](#) [周三, 13 9月 20:44]

Boils the size of sand dollars, facial damage reminiscent of acid wounds, death by maiming of the liver and spleen. *Leishmania* parasites inflict suffering around the world that is the stuff of parables. They are the second-deadliest parasites after malaria, and global warming is slowly pushing them north toward the United States. Can a new experimental vaccine someday stop them? The vaccine has worked in humanized mice, as detailed in a new study.

• [**New research on probiotics in the prevention and treatment of colon cancer**](#) [周三, 13 9月 20:44]

In an innovative approach to colorectal cancer (CRC) prevention and treatment, scientists are studying ways to replace missing metabolites in patients prone to gut inflammation and CRC. A new study describes how administration of histamine-producing gut microbes to mice lacking the enzyme histidine decarboxylase (HDC) reduced inflammation and tumor formation. These results suggest that alteration of the gut microbiome with probiotics may become a new preventative or therapeutic strategy for patie...

• [**Science spin prevalent, researchers warn**](#) [周三, 13 9月 05:05]

More than a quarter of biomedical scientific papers may utilize practices that distort the interpretation of results or mislead readers so that results are viewed more favorably, a new study suggests.

• [**Cold comfort: Fat-rich diets and adaptation among indigenous Siberian populations**](#) [周三, 13 9月 05:05]

Recently, scientists have been exploring the genetic signatures of adaptation in several indigenous cold-adapted human populations. Now, a new study has identified new signals of adaptation across multiple genes and exploring a rich demographic history. By performing

extensive analyses on DNA sequencing data for two North-Central Siberian populations, the Nganasan (nomadic hunters) and Yakut (herders), they have been able to infer the most comprehensive demographic and adaptive history.

- [**Health benefits of olives and olive oil**](#) [周三, 13 9月 04:10]

A research team discovered that the olive-derived compound oleuropein helps prevent type 2 diabetes.

- [**Lay interventions for depression and drinking**](#) [周三, 13 9月 03:48]

Brief psychological interventions delivered by lay counselors in primary care were effective and cost-effective for patients with depression and harmful drinking in India, according to two new studies.

- [**Predicting atypical development in infants at high risk for autism?**](#) [周三, 13 9月 03:48]

New research identifies a potential biomarker that predicts atypical development in 1- to 2-month-old infants at high versus low familial risk for developing autism spectrum disorders (ASD).

- [**How hibernating ribosomes wake up**](#) [周三, 13 9月 01:48]

Scientists have uncovered the way a bacterial ribosome moves from an inactive to an active form, and how that 'wake up call' is key to its survival.

- [**'Superbug' bacteria gang up on us, fueled by antibiotic use, nursing home study suggests**](#) [周三, 13 9月 01:48]

What's worse than getting exposed to a kind of bacteria that modern antibiotics can't kill? Getting exposed to more than one -- because they may work together to cause an infection, new research suggests. And trying different antibiotics to control one such 'superbug' may only encourage others. The researchers say it's time to think about such bacteria as members of an antibiotic-resistant ecosystem in healthcare environments -- not as single species that act and respond alone.

- [**Microscope invented at marine biological**](#)

[laboratory illuminates chromosomal 'dark matter'](#) [周三, 13 9月 01:48]

Biologists, instrument developers, and computational scientists have for the first time measured the density of a relatively inscrutable, highly condensed form of chromosomal material (heterochromatin) that appears in the cells of human beings and other eukaryotes.

• [Forest regeneration experiment of 30 years yields results](#) [周三, 13 9月 01:48]

A spruce forest regeneration experiment in Interior Alaska that spanned nearly 30 years demonstrates which forest management practices produce the best results. It looked at different combinations of ground treatments to reduce competition from other vegetation and of regeneration methods, such as planting spruce seedlings and broadcast seeding. The results show the environmental and management situations in which different techniques work best and the situations in which they are unnecessary. Re...

• [In mice, calorie restriction reduces fat but increases fur](#) [周三, 13 9月 01:48]

Calorie restriction may help mice stay slim and live longer, but it also means less fat to keep their bodies warm. Researchers in Brazil have found that mouse skin responds to caloric restriction by stimulating fur growth, increasing blood flow, and altering cell metabolism to increase energy efficiency. The study reveals that animals may use this as an evolutionary adaptation to stay warm -- and alive -- in limited food conditions.

• ['Missing link' explains how viruses trigger immunity](#) [周三, 13 9月 01:48]

A new discovery has solved a longstanding mystery of how viruses trigger protective immunity within our body. The research team demonstrated a protein called SIDT2 was crucial for cells to detect viral components in their environment, and initiate an immune response to reduce the virus' spread.

- **[Reversing the negative effects of adolescent marijuana use](#)** [周三, 13 9月 01:48]

Researchers have identified a specific mechanism in the prefrontal cortex for some of the negative mental health risks associated with adolescent marijuana use. By demonstrating that adolescent THC exposure modulates the activity of a neurotransmitter called GABA in the prefrontal cortex region of the brain, they were also able to identify a mechanism to reverse those risks.

- **[New way to stabilize next-generation fusion plasmas](#)** [周三, 13 9月 01:48]

Recent experiments conducted on the DIII-D National Fusion Facility suggest that up to 40 percent of high-energy particles are lost during tokamak fusion reactions because of Alfvén waves.

- **[Magnetic cellular 'Legos' for the regenerative medicine of the future](#)** [周三, 13 9月 01:48]

By incorporating magnetic nanoparticles in cells and developing a system using miniaturized magnets, researchers have succeeded in creating cellular magnetic 'Legos.' They were able to aggregate cells using only magnets and without an external supporting matrix, with the cells then forming a tissue that can be deformed at will.

- **[Historic legacies affect climate change survival in Caribbean](#)** [周三, 13 9月 01:48]

Discussion of climate change has failed to pay enough attention to the social, political and historic factors which increase the vulnerability of Caribbean societies, and calls for a new approach focused on understanding and addressing these historic inequalities.

- **[Earthquake faults may have played key role in shaping the culture of ancient Greece](#)** [周二, 12 9月 22:35]

The Ancient Greeks may have built sacred sites deliberately on land affected by previous earthquake activity, according to a new study.

- **[AI -- Engineering: merging, morphing, mobile](#)**

robots [周二, 12 9月 22:35]

Researchers have developed self-reconfiguring modular robots that can merge, split and even self-heal while retaining full sensorimotor control. The work may take us closer to producing robots that can autonomously change their size, shape and function.

• **Father's environmental exposure affects sperm epigenetics, study shows** [周二, 12 9月 22:28]

Authors of a new report believe that theirs is among the first human studies to investigate the influence of phthalate exposure on sperm epigenetics, embryo development and whether DNA methylation in sperm cells may be a path by which a father's environmental exposure influences these endpoints. DNA methylation, one mechanism of epigenetics, is a chemical tag on DNA that does not change the gene sequence but is involved in controlling gene expression.

• **Coffee and bees: New model of climate change effects** [周二, 12 9月 22:28]

Areas in Latin America suitable for growing coffee face predicted declines of 73-88 percent by 2050. But bee species diversity may save the day, even if many species in cool highland regions are lost as the climate warms.

• **Researchers identify potential biomarkers of age-related macular degeneration** [周二, 12 9月 22:28]

Patients with any stage of age-related macular degeneration (AMD) carry signs of the disease in their blood that may be found through special laboratory tests, according to a new study.

• **Cancer drug stimulates tripolar mode of mitosis** [周二, 12 9月 22:28]

Taxanes inhibit cell division and make cancer cells sensitive to radiation therapy. A current study has investigated the underlying mechanisms of this action - and which biomarkers may be useful for predicting the success of therapy.

• **Graphene based terahertz absorbers** [周二, 12 9月 22:27]

A terahertz saturable absorber has been created using printable graphene inks with an order of magnitude higher absorption modulation than other devices produced to date.

- [**Explosion in number of known life forms**](#) [周二, 12 9月 21:31]

New research has helped increase the number of known genomes by almost 10 percent. Scientists have obtained 7,280 bacterial and 623 archaeal genomes (genetic materials from microorganisms) from environmental samples, explains a new article.

- [**Biding time could improve conservation outcomes**](#) [周二, 12 9月 21:31]

Strategic delays in conservation efforts could be the key to protecting more species according to researchers. The new study found instead of spending project funds immediately, conservation organizations could use the right amount of delay to improve the benefits achieved from their funding by focusing first on investment, capacity building, or monitoring and research.

- [**Exposure to head impacts in youth football practice drills**](#) [周二, 12 9月 21:31]

Researchers have examined differences in the number, location, and magnitude of head impacts sustained by young athletes during various youth football practice drills. Such information could lead to recommendations for football practices, including modification of some high-intensity drills in order to reduce players' exposure to head impacts and, consequently, lessen the risks of injury.

- [**Air quality in 'green' housing affected by toxic chemicals in building materials**](#) [周二, 12 9月 21:31]

Indoor air pollution can be a problem in many homes, even in eco-friendly buildings. Thanks to a new innovative study, researchers have a better idea of where these pollutants come from -- which ones come from chemicals leaching out of building materials and which ones from the personal items people bring into their homes. The findings could inform the development of new green building standards and lead to

healthier housing, especially for low-income communities.

• [**How should we handle boys who can't read?**](#) [周二, 12 9月 21:31]

Boys are much worse at reading than girls. The disparities have been quite consistent over 15 years. New insights may give hope -- if they're put to use.

• [**Sexually aroused male flies unable to sleep after close encounters with females**](#) [周二, 12 9月 21:31]

The urge to mate appears to override the need to sleep in flies, according to new research that hints at the importance of sleep for animals.

• [**Running group helps half its graduates quit smoking**](#) [周二, 12 9月 21:31]

Half the people who completed a 10-week community running program aimed at helping them quit smoking were successful in their attempt. Many others reduced their smoking, and saw their mental health improve.

• [**Your stools reveal whether you can lose weight**](#) [周二, 12 9月 21:31]

Something as simple as a feces sample reveals whether you can lose weight by following dietary recommendations characterized by a high content of fruit, vegetables, fibers and whole grains, report scientists.

• [**Explaining bursts of activity in brains of preterm babies**](#) [周二, 12 9月 21:31]

The source of spontaneous, high-amplitude bursts of activity seen in the brains of preterm babies, which are vital for healthy development, has been identified by a team of researchers.

• [**'Keep it local' approach more effective than government schemes at protecting rainforest**](#) [周二, 12 9月 21:31]

Conservation initiatives led by local and indigenous groups can be just as effective as schemes led by government, according to new research. In some cases in the Amazon rainforest, grassroots initiatives can be even more effective at protecting this vital ecosystem.

- [**Eye movements reveal temporal expectation deficits in ADHD**](#) [周二, 12 9月 21:31]

A technique that measures tiny movements of the eyes may help scientists better understand and perhaps eventually improve assessment of ADHD, according to research.

- [**Study sets new distance record for medical drone transport**](#) [周二, 12 9月 21:31]

Researchers have set a new delivery distance record for medical drones, successfully transporting human blood samples across 161 miles of Arizona desert. Throughout the three-hour flight, they report, the on-board payload system maintained temperature control, ensuring the samples were viable for laboratory analysis after landing.

- [**Researchers discover new, abundant enzyme that helps bacteria infect animals**](#) [周二, 12 9月 21:30]

A new class of enzymes has been discovered in hundreds of bacterial species, including some that cause disease in humans and animals. The discovery provides new insights into how bacteria invade their hosts.

- [**Ancient tree reveals cause of spike in Arctic temperature**](#) [周二, 12 9月 21:30]

A kauri tree trapped in a New Zealand swamp for 30,000 years may have overturned the idea that a slowdown in ocean currents in the North Atlantic may be entirely responsible for Dansgaard-Oeschger events and the characteristic bi-polar see-saw, which sees the Antarctica cool while the Arctic warms during glacial periods. The research reveals a mechanism that generates a 20,000 km long atmospheric bridge, reaching from Antarctica to the Arctic.

- [**Modeling the impact of green eggs and hens**](#) [周二, 12 9月 21:30]

Poultry given vegan organic chicken feed can help to produce eggs with a smaller environmental footprint than those fed non-organic feeds that contain animal by-products, new research shows.

- [**Rapid climate changes across northern**](#)

[hemisphere in the earliest Middle Pleistocene](#) [周二, 12 9月 21:30]

9月 21:30]

By studying climate changes that took place thousands of years ago, we can better understand the global climate system and predict Earth's future climate. A multi-organization research team has discovered evidence of rapid climate changes on a millennial-to-centennial scale that occurred 780 to 760 thousand years ago.

· [Astronauts don't develop anemia during spaceflight, NASA study suggests](#) [周二, 12 9月 21:30]

Space flight anemia -- the reduction of circulating red blood cells during time spent in space -- is an established phenomenon, but it may not be a major concern during long-duration space missions, according to a study.

· [Long sitting periods may be just as harmful as daily total](#) [周二, 12 9月 06:00]

A new study finds that sitting around for 12 or more hours per day, particularly if accumulated during 60- to 90-minute periods, increased the risk of early death -- even in those who exercised.

Bird songs isolate species, new research suggests -- ScienceDaily

Two birds that look the same, but have songs so different they can't recognize each other, should be considered distinct species, suggests new University of British Columbia (UBC) research.

"Songs are important for birds and who they choose to mate with," said Benjamin Freeman, a Banting postdoctoral fellow in the department of zoology at UBC. "Birds evolve different songs and we wanted to find out which populations are so different in song that they should be considered different species."

Among the 72 related populations of Central and South American birds the researchers tested, they found evidence for 21 new species.

Organisms that mate and create an offspring that can go on to reproduce are considered to be part of the same species but there are a number of naturally occurring barriers, like geographic location or behaviour, that can prevent similar organisms from

mingling. In the study, UBC and Cornell University biologists examined how different populations of birds respond to each other's songs.

In the tropical forests of Central and South America where the vegetation is dense, birds rely heavily on song to claim their territory and let other birds know where they are. For this experiment, the researchers conducted playback experiments by hanging wireless speakers in the trees and broadcasting songs from related subspecies and then observing how the birds responded.

If the birds continued on with their natural behaviour and ignored the speaker and sound, it indicated that they distinguished the songs. They did not feel like another bird was encroaching on their territory and trying to mate with their partner. If the bird got angry and started to try and kick the "intruder" out, it indicated they recognized the song.

Historically, scientists have identified new species by finding birds that look different enough or occupy different geographic locations.

"It's interesting that with one study in one year, we

came up with good evidence that there are 21 new species that authorities should recognize," said Freeman. "We know so much about birds but this demonstrates that we still have a lot to learn."

This research is part of a larger pursuit to learn about the evolution of bird songs and why birds develop different songs.

"As a birdwatcher in tropical forests, you have no choice but to get interested in songs," said Freeman.

"As you walk through the forest, you hear 25 birds for every one you see. As a biologist, I wanted to know -- is it important that the birds sing differently and is it a little important or a lot important?"

Freeman and his colleagues will submit these findings to a committee of ornithologists who are responsible for naming and recognizing bird species of South America.

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Popular bottle-breaking trick is giving insight to brain injuries: Cavitation makes bottles shatter; the same thing could be happening brain trauma -- ScienceDaily

As many YouTube videos show, striking the top of a liquid-filled bottle can shatter the bottom. Now researchers are hoping to use new knowledge of that party trick to help fill a gap in something much more serious: brain research.

A study by engineering professors from Brigham Young University, Utah State University and the Tokyo University of Agriculture and Technology details exactly what happens when a liquid at rest -- like the water in a bottle -- is suddenly put into motion. Using high-speed photography, the team shows how the swift acceleration causes small bubbles to form in the liquid and then rapidly collapse, releasing a destructive shockwave.

The proper term for the phenomenon is called

cavitation, a process well known to engineers for causing damage in pipes and marine propellers. The new study, published in the *Proceedings of the National Academy of Sciences*, details an alternative formula that more accurately predicts when cavitation will happen.

While the finding has immediate implications for many industrial processes interrupted by cavitation-induced damage, there's also growing evidence linking cavitation to brain trauma.

"The brain is surrounded by fluid, and when you have impact, it's possible you are experiencing cavitation within that fluid," said study co-author Scott Thomson, associate professor of mechanical engineering at BYU.

Fluid dynamics experts know how to predict when cavitation will occur in a fluid already in motion, but their formula doesn't work so well when a resting fluid is rapidly accelerated. The new study fixes that problem by finalizing a new equation that considers a fluid's depth and acceleration.

For the brain, knowing this alternative cavitation formula could be used to better predict brain injuries

caused by high-velocity impact. "And once we're able to predict when that will happen, we can better design safety devices to help prevent serious brain damage," Thomson said.

Those safety devices could be for athletic applications, such as football helmets, or even military applications.

"If a blast wave is above a certain magnitude, there may not be much we can do to prevent brain injury for a soldier," said study author Tadd Truscott, associate professor of mechanical engineering at Utah State University. "But maybe a helmet can be developed to detect when that trauma has happened so a soldier can be removed from the front line and be saved from repeat exposure to blasts."

Story Source:

[Materials](#) provided by [Brigham Young University](#).

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The beam of invisibility: A new cloaking technology has been developed -- ScienceDaily

How do we make an object invisible? Researchers from TU Wien (Vienna), together with colleagues from Greece and the USA, have now developed a new idea for a cloaking technology. A completely opaque material is irradiated from above with a specific wave pattern -- with the effect that light waves from the left can now pass through the material without any obstruction. This surprising result opens up completely new possibilities for active camouflage. The idea can be applied to different kinds of waves, it should work with sound waves just as well as with light waves. Experiments are already in the planning.

Outwitting the Scattering of Light

"Complex materials such as a sugar cube are opaque, because light waves inside them are scattered multiple times," says Professor Stefan Rotter (TU Wien). "A light wave can enter and exit the object, but will never

pass through the medium on a straight line. Instead, it is scattered into all possible directions."

For years many different attempts have been made to outwit this kind of scattering, creating a "cloak of invisibility." Special materials have been worked out, for example, which are able to guide light waves around an object. Alternatively, also experiments have been performed with objects that can emit light by themselves. When an electronic display sends out exactly the same light as it absorbs in the back, it can appear invisible, at least when looked at in the right angle.

At TU Wien a more fundamental approach has now been chosen. "We did not want to reroute the light waves, nor did we want to restore them with additional displays. Our goal was to guide the original light wave through the object, as if the object was not there at all," says Andre Brandstötter, one of the authors of the study. "This sounds strange, but with certain materials and using our special wave technology, it is indeed possible."

The Laser Material

The team at TU Wien has spent years working on optically active materials, which are used for building lasers. To make the laser shine, energy has to be supplied by means of a pump beam. Otherwise, the laser material behaves just like any other material -- it absorbs part of the incident light.

"The crucial point is to pump energy into the material in a spatially tailored way such that light is amplified in exactly the right places, while allowing for absorption at other parts of the material," says Professor Konstantinos Makris from the University of Crete (previously TU Wien). "To achieve this, a beam with exactly the right pattern has to be projected onto the material from above -- like from a standard video projector, except with much higher resolution."

If this pattern perfectly corresponds to the inner irregularities of the material which usually scatter the light, then the projection from above can effectively switch off the scattering, and another beam of light travelling through the material from one side can pass without any obstruction, scattering or loss.

"Mathematically, it is not immediately obvious that it is at all possible to find such a pattern," says Rotter.

"Every object we want to make transparent has to be irradiated with its own specific pattern -- depending on the microscopic details of the scattering process inside. The method we developed now allows us to calculate the right pattern for any arbitrary scattering medium."

Light or Sound

Computer simulations have shown that the method works. Now the idea should be confirmed in experiments. Stefan Rotter is confident that this will be successful: "We are already discussing with experimentalists how this could be done. As a first step, we may test this technology with sound instead of light waves. Experimentally, they are easier to handle, and from a mathematical point of view, the difference does not matter significantly."

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New hope for 'bubble baby disease' -- ScienceDaily

Babies born with Severe Combined Immune Deficiency (SCID) syndrome are defenceless against bacterial and viral infections that would be virtually harmless to most healthy people. If untreated, SCID is often fatal within a baby's first year of life.

Research led by the University of Hong Kong has resulted in a new testing regime that could speed up the diagnosis of SCID, allowing more infants to receive life-saving treatment within a critical timeframe.

For the best chance of survival, infants with SCID should be treated as soon after birth as possible, and preferably within three-and-a-half months. However, poor recognition of SCID by front-line doctors is leading to delays in diagnosis, later treatments and poorer outcomes.

The authors of a recent study, published in open-access journal *Frontiers in Immunology*, have developed a "checklist" of potential SCID markers: a family history

of early infant death, persistent candidiasis (often presenting as persistent thrush), Bacillus Calmette-Guérin (BCG) infections, and low absolute lymphocyte counts. "Flagging" an infant showing any one of these four factors would allow potential SCID patients to be fast-tracked for further tests and treatment.

Many countries -- including much of Asia and the UK -- do not test for SCID in their newborn health-screening programmes, with front-line doctors often left to diagnose the fatal condition. By using this checklist, the authors believe that identification, and hence treatment, of SCID patients will be possible much sooner.

Without a working immune system, newborns with SCID are highly vulnerable, and many will repeatedly visit doctors with serious and recurring infections before being diagnosed.

"The recognition of SCID by doctors is poor in Asia, resulting in delayed diagnoses that jeopardize the chance of treatment success," explains lead author Professor Yu Lung Lau, who focused his research on Asian and North African patients. "We wanted to see if we could identify any clinical features that would help

doctors to diagnose SCID earlier."

The study of 147 patients looked at how long it took for doctors to diagnose SCID, relative to the age the babies were first brought to their doctors, and what symptoms they had.

They found that it took an average of two months for babies to be diagnosed, and that the average age at diagnosis was four months old -- beyond the critical age for treatment (which is usually stem cell transplants or gene therapy) to begin.

As the researchers examined the data, four SCID "markers" emerged. Taken in isolation, none helped reduce the time taken for a diagnosis. However, 94% of the patients studied showed at least one of the four factors.

"Family history of early infant death due to infection was useful to aid earlier diagnosis, but it was not due to doctors realizing the importance of the family history, but rather due to the family taking the child to see the doctors earlier," says Lau. "This demonstrates the failure of our medical training and systems in using family history to aid earlier SCID diagnosis."

Candidiasis emerged as one of the most common infections. Unfortunately, as thrush is relatively common in all infants, its presence actually slowed down the time to diagnosis.

Complications from the BCG vaccination also appeared frequently, and over 88% of the patients in the study had a very low absolute lymphocyte counts (ALC).

"Our main recommendation is to perform lymphocyte subsets for any infant with one or more of the following clinical features: family history, persistent candidiasis, BCG infections and ALC less than $3 \times 10^9/L$," explains Lau. "This would confirm the diagnosis of SCID, if present."

For the time being, newborn screening remains out of reach in much of Asia, so education of front-line doctors and parents is key.

"Our recommendations may help earlier diagnosis of SCID, and need to be communicated to doctors as well as to ordinary citizens, who can then urge the doctors along our recommendation," concludes Lau.

Story Source:

Materials provided by [Frontiers](#). *Note: Content may be edited for style and length.*

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Multifunctional nano-sized drug carriers based on reactive polypept(o)ides: Secondary structure formation enables morphology control -- ScienceDaily

Nano-sized carrier systems find medical application to improve pharmacologic properties of bioactive agents. For many therapeutic approaches, it is important that the carrier system can stably incorporate the cargo during circulation without inducing aggregation, while cargo should ideally only be released after successful cellular uptake. These requirements have thus far only been met by chemistry approaches with nanoparticles that are difficult to characterize. Consequently, clinical translation of these systems has been very difficult to achieve.

In cooperation with researchers from the University of Tokyo and Gutenberg Research Awardee Prof. Kazunori Kataoka, Chemists from Mainz have been able to demonstrate that reactive polypept(o)ides

constitute ideal building blocks to control morphology and function of carrier systems in a simple but precise manner. Polypept(o)ides (polysarcosine-block-polypeptide copolymers) have emerged as interesting hybrid materials for drug carrier systems since they combine protein-resistance and high water-solubility of polysarcosine with the stimuli-responsiveness, intrinsic multifunctionality, and secondary structure formation of polypeptides.

In this cooperative work, the researchers could show for the first time that the formation of β -sheets by the synthetic polypeptide segment can be exploited to deliberately manipulate the morphology of polymeric micelles (Klinker K et al. *Angew. Chem. Int. Ed.* 2017, 56 (32), 9608-9613 & *Angew. Chem.* 2017, 129 (32), 9737-9742), which enables the synthesis of either spherical or worm-like micelles from the same block copolymer. By employing reactive groups in the polypeptide segment of the block copolymer, micelles can be core cross-linked by dithiols, resulting in bio-reversible disulfide bonds. Due a difference in redox potential, disulfides are considered stable extracellularly, while they are rapidly reduced to free dithiols intracellularly, which leads to a disintegration of the carrier system and release of the cargo.

"In this way, a variety of different nanocarriers with different functions becomes readily accessible from one single block copolymer and a very selective post-polymerization step. This modular approach to nanoparticles with different function and morphology bears the advantage to address important questions with good comparability, such as the influence of size and shape on in vivo circulation times, biodistribution, tumor accumulation, cell uptake and therapeutic response since the same starting material is used" comments Matthias Barz.

First in vivo experiments have already demonstrated that these core-stabilized micellar nanocarriers exhibit stable circulation behavior, thus indicating that interactions with serum components or blood vessels are absent. Only by ensuring that no unspecific interactions occur within the complex biological setting, cellular uptake in desired specific cell populations seems feasible. The therapeutic potential of the described nanoparticle platform will be further investigated with regards to immunotherapy of malignant melanoma within the SFB 1066.

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All Top News

Top science stories featured on ScienceDaily's home page.

- [**AI -- Engineering: merging, morphing, mobile robots**](#) [周二, 12 9月 22:35]

Researchers have developed self-reconfiguring modular robots that can merge, split and even self-heal while retaining full sensorimotor control. The work may take us closer to producing robots that can autonomously change their size, shape and function.

- [**Coffee and bees: New model of climate change effects**](#) [周二, 12 9月 22:28]

Areas in Latin America suitable for growing coffee face predicted declines of 73-88 percent by 2050. But bee species diversity may save the day, even if many species in cool highland regions are lost as the climate warms.

- [**Your stools reveal whether you can lose weight**](#) [周二, 12 9月 21:31]

Something as simple as a feces sample reveals whether you can lose weight by following dietary recommendations characterized by a high content of fruit, vegetables, fibers and whole grains, report scientists.

- [**Why your ancestors would have aced the long jump**](#) [周二, 12 9月 03:09]

A 52-million-year-old ankle fossil suggests our prehuman ancestors were high-flying acrobats. For years, scientists thought the ancestors of today's humans, monkeys, lemurs and apes were relatively slow and deliberate animals, using their grasping hands and feet to creep along small twigs and branches. But a new study suggests the first primates were masters at leaping through the trees.

- [**Scientists track the brain-skull transition from dinosaurs to birds**](#) [周二, 12 9月 00:27]

The dramatic, dinosaur-to-bird transition that occurred in reptiles millions of years ago was accompanied by profound changes in the skull roof of those animals -- and holds important clues about the way the skull forms in response to changes in the brain -- according to a new study. It is the first time scientists have tracked the link between the brain's development and the roofing bones of the skull.

- [**How openings in Antarctic sea ice affect worldwide climate**](#) [周二, 12 9月 00:26]

In a new analysis of climate models, researchers reveal the significant global effects that seemingly anomalous polynyas, or openings in sea ice, can have. Their findings indicate that heat escaping from the ocean through these openings impacts sea and atmospheric temperatures and wind patterns around the globe and even rainfall around the tropics.

- [**Brain Composer: 'Thinking' melodies onto a musical score**](#) [周二, 12 9月 00:26]

A new brain-computer interface application that allows music to be composed by the power of thought has now been developed by scientists.

- [**Cold region 'tipping point' now inevitable**](#) [周二, 12 9月 00:26]

The decline of cold regions called periglacial zones is now inevitable due to climate change, researchers say.

- [**The evolutionary origin of the gut**](#) [周二, 12 9月 00:26]

How did the gut, the skin and musculature evolve? This question concerns scientists for more than a century. Through the investigation of the embryonic development of sea anemones, a very old animal lineage, researchers have now come to conclusions which challenge the 150-year-old hypothesis of the homology (common evolutionary origin) of the germ layers that form all later organs and tissues.

- [**USA threatened by more frequent flooding**](#) [周二, 12 9月 00:26]

The East Coast of the United States is threatened by more frequent flooding in the future. According to this study, the states of Virginia, North Carolina, and South Carolina are most at risk. Their coastal regions are being immersed by up to three millimeters per year -- among other things, due to human intervention.

- [**Half-a-billion-year-old fossils shed light animal evolution on Earth**](#) [周二, 12 9月 00:26]

Scientists have discovered traces of life more than half-a-billion years old that could change the way we think about how all animals evolved on Earth.

- [**Biodiversity just as powerful as climate change for healthy ecosystems**](#) [周二, 12 9月 00:26]

Biodiversity is proving to be one of humanity's best defenses against extreme weather. In past experiments, diversity has fostered healthier, more productive ecosystems, like shoreline vegetation that guards against hurricanes. However, many experts doubted whether these experiments would hold up in the real world. A study offers a decisive answer: biodiversity's power in the wild surpasses experimental predictions, in some cases topping even effects of climate.

- [**Looking stressed can help keep the peace**](#) [周一, 11 9月 21:59]

Scratching may have evolved as a communication tool to help social cohesion, new research suggests for the first time.

- [**Explosive birth of stars swells galactic cores**](#) [周一, 11 9月 11:25]

Astronomers found that active star formation upswells galaxies, like yeast helps bread rise. Using three powerful telescopes on the ground and in orbit, they observed galaxies from 11 billion years ago and found explosive formation of stars in the cores of galaxies. This suggests that galaxies can change their own shape without interaction with other galaxies.

- [**Scientist finds secret to thriving**](#) [周六, 09 9月 08:55]

What it takes to thrive, rather than merely survive, could be as simple as

feeling good about life and yourself and being good at something, according to new research.

- **[Scientists make methanol using air around us](#)** [周五, 08 9月 02:27]

Scientists have created methanol from methane using oxygen from the air. Methanol is currently produced by breaking down natural gas at high temperatures. But researchers have discovered they can produce methanol from methane through simple catalysis that allows methanol production at low temperatures using oxygen and hydrogen peroxide. The findings have major implications for cleaner, greener industrial processes worldwide.

- **[Individuality drives collective behavior of schooling fish](#)** [周五, 08 9月 02:27]

New research sheds light on how 'animal personalities' -- inter-individual differences in animal behavior -- can drive the collective behavior and functioning of animal groups such as schools of fish, including their cohesion, leadership, movement dynamics, and group performance.

- **[Ship exhaust makes oceanic thunderstorms more intense](#)** [周五, 08 9月 02:27]

Thunderstorms directly above two of the world's busiest shipping lanes are significantly more powerful than storms in areas of the ocean where ships don't travel, according to new research.

- **[Listening to happy music may enhance divergent creativity](#)** [周五, 08 9月 02:27]

Listening to happy music may help generate more, innovative solutions compared to listening to silence, according to a study.

- **[Human skin cells transformed directly into motor neurons](#)** [周五, 08 9月 01:28]

Scientists have converted skin cells from healthy adults directly into motor neurons without going through a stem cell state. The technique makes it possible to study motor neurons of the human central nervous

system in the lab. Unlike commonly studied mouse motor neurons, human motor neurons growing in the lab would be a new tool since researchers can't take samples of these neurons from living people but can easily take skin samples.

- [**Direct evidence of sea level 'fingerprints' discovered**](#) [周五, 08 9月 00:02]

The first observation of sea level 'fingerprints' -- tell-tale differences in sea level rise around the world in response to changes in continental water and ice sheet mass -- has been reported by researchers.

- [**Pluto features given first official names**](#) [周四, 07 9月 23:24]

The Working Group for Planetary System Nomenclature of the International Astronomical Union has officially approved the naming of 14 features on the surface of Pluto. These are the first geological features on the planet to be named following the close flyby by the New Horizons spacecraft in July 2015.

- [**Nutrition has benefits for brain network organization**](#) [周四, 07 9月 23:24]

Nutrition has been linked to cognitive performance, but researchers have not pinpointed what underlies the connection. A new study found that monounsaturated fatty acids -- a class of nutrients found in olive oils, nuts and avocados -- are linked to general intelligence, and that this relationship is driven by the correlation between MUFAs and the organization of the brain's attention network.

- [**3-D-printed biomaterials that degrade on demand**](#) [周四, 07 9月 23:24]

The temporary structures, which can be degraded away with a biocompatible chemical trigger, could be useful in fabricating microfluidic devices, creating biomaterials that respond dynamically to stimuli and in patterning artificial tissue.

- [**Intermittent electrical brain stimulation improves memory**](#) [周四, 07 9月 22:23]

Intermittent electrical stimulation of an area deep inside the brain that degenerates in Alzheimer's appears to improve working memory, scientists report. Conversely, continuous deep brain stimulation, like the type used for Parkinson's and currently under study in humans with Alzheimer's, impairs memory, according to study.

- [**How monkey fights grow**](#) [周四, 07 9月 21:36]

New research finds evidence for a complicated structure behind primate conflict. It is not individuals who control the length of fights, but the relationships between pairs of individuals.

- [**Emoji fans take heart: Scientists pinpoint 27 states of emotion**](#) [周四, 07 9月 21:36]

The Emoji Movie, in which the protagonist can't help but express a wide variety of emotions instead of the one assigned to him, may have gotten something right. A new study challenges a long-held assumption in psychology that most human emotions fall within the universal categories of happiness, sadness, anger, surprise, fear and disgust.

- [**Whole grains decrease colorectal cancer risk, processed meats increase the risk**](#) [周四, 07 9月 21:36]

Major new report finds strong evidence of links between lifestyle and colorectal cancer risk. Physical activity and whole grains lowers risk of this cancer; too much alcohol and red meat, processed meats and obesity increase the risk. An estimated 47 percent of US colorectal cancers could be prevented each year with lifestyle changes.

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

- [**Popular bottle-breaking trick is giving insight to brain injuries**](#) [周三, 13 9月 22:45]

As many YouTube videos show, striking the top of a liquid-filled bottle can shatter the bottom. Researchers are hoping to use new knowledge of that party trick to help fill a gap in something much more serious: brain research.

- [**New hope for 'bubble baby disease'**](#) [周三, 13 9月 22:45]

If untreated, severe combined immune deficiency (SCID) syndrome -- or 'bubble baby disease' -- is often fatal within the first year of a infant's life. A checklist of SCID markers could make diagnosis faster, allowing more babies to receive treatment within a critical timeframe, say researchers.

- [**Multifunctional nano-sized drug carriers based on reactive polypept\(o\)ides**](#) [周三, 13 9月 22:44]

Researchers have been able to demonstrate that reactive polypept(o)ides constitute ideal building blocks to control morphology and function of carrier systems in a simple but precise manner.

- [**Teens' ability to consider the intentions of others linked to structural changes in the brain**](#) [周三, 13 9月 20:44]

When it comes to the concept of fairness, teenagers' ability to consider the intentions of others appears to be linked to structural changes underway in the brain, according to a study. The study is the first to provide evidence linking structural changes with behavioral changes within this context. Understanding the intentions of others is

fundamental to human cooperation and how we exist as social beings.

- [**Paper-based tuberculosis test could boost diagnoses in developing countries**](#) [周三, 13 9月 20:44]

Diagnosing tuberculosis early can allow patients to receive the medicine they need and also help prevent the disease from spreading. But in resource-limited areas, equipment requirements and long wait times for results are obstacles to diagnosis and treatment. To tackle this problem, scientists report the development of a fast, paper-based tuberculosis test that can be read with a smartphone.

- [**Systems analysis points to links between Toxoplasma infection and common brain diseases**](#) [周三, 13 9月 20:44]

Nearly one out of every three humans on earth has a lifelong infection with the brain-dwelling parasite *Toxoplasma gondii*. In a new report, researchers from multiple institutions describe efforts to learn how infection with the parasite *Toxoplasma gondii* may alter, and in some cases amplify, several brain disorders, including epilepsy, Alzheimer's and Parkinson's diseases as well as some cancers.

- [**As 'flesh-eating' Leishmania come closer, a vaccine against them does, too**](#) [周三, 13 9月 20:44]

Boils the size of sand dollars, facial damage reminiscent of acid wounds, death by maiming of the liver and spleen. Leishmania parasites inflict suffering around the world that is the stuff of parables. They are the second-deadliest parasites after malaria, and global warming is slowly pushing them north toward the United States. Can a new experimental vaccine someday stop them? The vaccine has worked in humanized mice, as detailed in a new study.

- [**New research on probiotics in the prevention and treatment of colon cancer**](#) [周三, 13 9月 20:44]

In an innovative approach to colorectal cancer (CRC) prevention and treatment, scientists are studying ways to replace missing metabolites in

patients prone to gut inflammation and CRC. A new study describes how administration of histamine-producing gut microbes to mice lacking the enzyme histidine decarboxylase (HDC) reduced inflammation and tumor formation. These results suggest that alteration of the gut microbiome with probiotics may become a new preventative or therapeutic strategy for patie...

• **[Science spin prevalent, researchers warn](#)** [周三, 13 9月 05:05]

More than a quarter of biomedical scientific papers may utilize practices that distort the interpretation of results or mislead readers so that results are viewed more favorably, a new study suggests.

• **[Cold comfort: Fat-rich diets and adaptation among indigenous Siberian populations](#)** [周三, 13 9月 05:05]

Recently, scientists have been exploring the genetic signatures of adaptation in several indigenous cold-adapted human populations. Now, a new study has identified new signals of adaptation across multiple genes and exploring a rich demographic history. By performing extensive analyses on DNA sequencing data for two North-Central Siberian populations, the Nganasan (nomadic hunters) and Yakut (herders), they have been able to infer the most comprehensive demographic and adaptive history.

• **[Health benefits of olives and olive oil](#)** [周三, 13 9月 04:10]

A research team discovered that the olive-derived compound oleuropein helps prevent type 2 diabetes.

• **[Lay interventions for depression and drinking](#)** [周三, 13 9月 03:48]

Brief psychological interventions delivered by lay counselors in primary care were effective and cost-effective for patients with depression and harmful drinking in India, according to two new studies.

• **[Predicting atypical development in infants at high risk for autism?](#)** [周三, 13 9月 03:48]

New research identifies a potential biomarker that predicts atypical development in 1- to 2-month-old infants at high versus low familial risk for developing autism spectrum disorders (ASD).

- [**How hibernating ribosomes wake up**](#) [周三, 13 9月 01:48]

Scientists have uncovered the way a bacterial ribosome moves from an inactive to an active form, and how that 'wake up call' is key to its survival.

- [**'Superbug' bacteria gang up on us, fueled by antibiotic use, nursing home study suggests**](#) [周三, 13 9月 01:48]

What's worse than getting exposed to a kind of bacteria that modern antibiotics can't kill? Getting exposed to more than one -- because they may work together to cause an infection, new research suggests. And trying different antibiotics to control one such 'superbug' may only encourage others. The researchers say it's time to think about such bacteria as members of an antibiotic-resistant ecosystem in healthcare environments -- not as single species that act and respond alone.

- [**In mice, calorie restriction reduces fat but increases fur**](#) [周三, 13 9月 01:48]

Calorie restriction may help mice stay slim and live longer, but it also means less fat to keep their bodies warm. Researchers in Brazil have found that mouse skin responds to caloric restriction by stimulating fur growth, increasing blood flow, and altering cell metabolism to increase energy efficiency. The study reveals that animals may use this as an evolutionary adaptation to stay warm -- and alive -- in limited food conditions.

- [**'Missing link' explains how viruses trigger immunity**](#) [周三, 13 9月 01:48]

A new discovery has solved a longstanding mystery of how viruses trigger protective immunity within our body. The research team demonstrated a protein called SIDT2 was crucial for cells to detect viral components in their environment, and initiate an immune response to reduce the virus' spread.

- [**Reversing the negative effects of adolescent marijuana use**](#) [周三, 13 9月 01:48]

Researchers have identified a specific mechanism in the prefrontal cortex for some of the negative mental health risks associated with adolescent marijuana use. By demonstrating that adolescent THC exposure modulates the activity of a neurotransmitter called GABA in the prefrontal cortex region of the brain, they were also able to identify a mechanism to reverse those risks.

- [**AI -- Engineering: merging, morphing, mobile robots**](#) [周二, 12 9月 22:35]

Researchers have developed self-reconfiguring modular robots that can merge, split and even self-heal while retaining full sensorimotor control. The work may take us closer to producing robots that can autonomously change their size, shape and function.

- [**Father's environmental exposure affects sperm epigenetics, study shows**](#) [周二, 12 9月 22:28]

Authors of a new report believe that theirs is among the first human studies to investigate the influence of phthalate exposure on sperm epigenetics, embryo development and whether DNA methylation in sperm cells may be a path by which a father's environmental exposure influences these endpoints. DNA methylation, one mechanism of epigenetics, is a chemical tag on DNA that does not change the gene sequence but is involved in controlling gene expression.

- [**Researchers identify potential biomarkers of age-related macular degeneration**](#) [周二, 12 9月 22:28]

Patients with any stage of age-related macular degeneration (AMD) carry signs of the disease in their blood that may be found through special laboratory tests, according to a new study.

- [**Cancer drug stimulates tripolar mode of mitosis**](#) [周二, 12 9月 22:28]

Taxanes inhibit cell division and make cancer cells sensitive to radiation therapy. A current study has investigated the underlying mechanisms of this action - and which biomarkers may be useful for predicting the success of therapy.

- [**Explosion in number of known life forms**](#) [周二, 12 9月 21:31]

New research has helped increase the number of known genomes by almost 10 percent. Scientists have obtained 7,280 bacterial and 623 archaeal genomes (genetic materials from microorganisms) from environmental samples, explains a new article.

- [**Exposure to head impacts in youth football practice drills**](#) [周二, 12 9月 21:31]

Researchers have examined differences in the number, location, and magnitude of head impacts sustained by young athletes during various youth football practice drills. Such information could lead to recommendations for football practices, including modification of some high-intensity drills in order to reduce players' exposure to head impacts and, consequently, lessen the risks of injury.

- [**Air quality in 'green' housing affected by toxic chemicals in building materials**](#) [周二, 12 9月 21:31]

Indoor air pollution can be a problem in many homes, even in eco-friendly buildings. Thanks to a new innovative study, researchers have a better idea of where these pollutants come from -- which ones come from chemicals leaching out of building materials and which ones from the personal items people bring into their homes. The findings could inform the development of new green building standards and lead to healthier housing, especially for low-income communities.

- [**How should we handle boys who can't read?**](#) [周二, 12 9月 21:31]

Boys are much worse at reading than girls. The disparities have been quite consistent over 15 years. New insights may give hope -- if they're put to use.

- [**Sexually aroused male flies unable to sleep after close encounters with females**](#) [周二, 12 9月 21:31]

The urge to mate appears to override the need to sleep in flies, according to new research that hints at the importance of sleep for animals.

- [**Running group helps half its graduates quit**](#)

smoking [周二, 12 9月 21:31]

Half the people who completed a 10-week community running program aimed at helping them quit smoking were successful in their attempt. Many others reduced their smoking, and saw their mental health improve.

• **Your stools reveal whether you can lose weight** [周二, 12 9月 21:31]

Something as simple as a feces sample reveals whether you can lose weight by following dietary recommendations characterized by a high content of fruit, vegetables, fibers and whole grains, report scientists.

• **Explaining bursts of activity in brains of preterm babies** [周二, 12 9月 21:31]

The source of spontaneous, high-amplitude bursts of activity seen in the brains of preterm babies, which are vital for healthy development, has been identified by a team of researchers.

• **Eye movements reveal temporal expectation deficits in ADHD** [周二, 12 9月 21:31]

A technique that measures tiny movements of the eyes may help scientists better understand and perhaps eventually improve assessment of ADHD, according to research.

• **Study sets new distance record for medical drone transport** [周二, 12 9月 21:31]

Researchers have set a new delivery distance record for medical drones, successfully transporting human blood samples across 161 miles of Arizona desert. Throughout the three-hour flight, they report, the on-board payload system maintained temperature control, ensuring the samples were viable for laboratory analysis after landing.

• **Researchers discover new, abundant enzyme that helps bacteria infect animals** [周二, 12 9月 21:30]

A new class of enzymes has been discovered in hundreds of bacterial species, including some that cause disease in humans and animals. The discovery provides new insights into how bacteria invade their hosts.

- [**Astronauts don't develop anemia during spaceflight, NASA study suggests**](#) [周二, 12 9月 21:30]

Space flight anemia -- the reduction of circulating red blood cells during time spent in space -- is an established phenomenon, but it may not be a major concern during long-duration space missions, according to a study.

- [**Long sitting periods may be just as harmful as daily total**](#) [周二, 12 9月 06:00]

A new study finds that sitting around for 12 or more hours per day, particularly if accumulated during 60- to 90-minute periods, increased the risk of early death -- even in those who exercised.

- [**Study of circular DNA comes full circle with use of old technique**](#) [周二, 12 9月 04:32]

A 50-year-old lab technique is helping researchers better understand circular DNA, a lesser-known and poorly understood cousin of the linear version commonly associated with life's genetic blueprint. With the aid of a process called density gradient centrifugation, a research team recently published a study that for the first time characterizes all of the circular DNA in the worm *C. elegans*, as well as in three human cell types.

- [**Research identifies causes and possible treatments for deadly diseases affecting children**](#) [周二, 12 9月 03:09]

Research has identified four pathogens that are responsible for the vast majority of diarrheal illnesses, leading the way for potential new treatments.

- [**Why your ancestors would have aced the long jump**](#) [周二, 12 9月 03:09]

A 52-million-year-old ankle fossil suggests our prehuman ancestors were high-flying acrobats. For years, scientists thought the ancestors of today's humans, monkeys, lemurs and apes were relatively slow and deliberate animals, using their grasping hands and feet to creep along

small twigs and branches. But a new study suggests the first primates were masters at leaping through the trees.

- [**Childhood maltreatment may change brain's response to threat**](#) [周二, 12 9月 01:25]

Neural activity associated with defensive responses in humans shifts between two brain regions depending on the proximity of a threat, suggests neuroimaging data from two independent samples of adults in the Netherlands. In one sample, the findings suggest that emotional abuse during childhood may shift the balance of activity between these regions.

- [**DNA looping architecture may lead to opportunities to treat brain tumors**](#) [周二, 12 9月 00:59]

The discovery of a mechanism by which normal brain cells regulate the expression of the NFIA gene, which is important for both normal brain development and brain tumor growth, might one day help improve therapies to treat brain tumors.

- [**Relationship science: How can couples keep moving forward?**](#) [周二, 12 9月 00:27]

Family studies researchers who study the science behind maintaining romantic relationships focus their work on the central organizing unit -- the relationship -- rather than on the individual. In a recent study, they discuss romantic relationship maintenance and the two primary motives behind a couple's attempts at staying together: threat mitigation and relationship enhancement.

- [**A new genetic marker for schizophrenia**](#) [周二, 12 9月 00:27]

Scientists find a rare genetic variant that shows strong association with schizophrenia.

- [**Massachusetts off-road-vehicle law significantly reduces injuries, hospitalizations in children**](#) [周二, 12 9月 00:27]

The 2010 Massachusetts law restricting the use of off-road vehicles to those age 14 and older led to significant reductions in both emergency

department (ED) visits and hospital admissions resulting from ORV injuries in the following three years, research concludes.

- **[The turbulent healing powers of plasma](#)** [周二, 12 9月 00:27]

Non-equilibrium atmospheric pressure plasma can help heal wounds, destroy cancer cells and kill harmful bacteria. The jets of plasma that doctors might use, however, often become turbulent with the direction and velocity changing dramatically. Now, researchers have found this turbulence likely emerges from heat-induced sound waves generated at the plasma electrodes. This new insight is critical for more consistent and effective medical therapies.

- **[Brain Composer: 'Thinking' melodies onto a musical score](#)** [周二, 12 9月 00:26]

A new brain-computer interface application that allows music to be composed by the power of thought has now been developed by scientists.

- **[Revolutionary process could signal new era for gene synthesis](#)** [周二, 12 9月 00:26]

A team of scientists has demonstrated a groundbreaking new method of gene synthesis -- a vital research tool with real-world applications in everything from growing transplantable organs to developing treatments for cancer.

- **[The evolutionary origin of the gut](#)** [周二, 12 9月 00:26]

How did the gut, the skin and musculature evolve? This question concerns scientists for more than a century. Through the investigation of the embryonic development of sea anemones, a very old animal lineage, researchers have now come to conclusions which challenge the 150-year-old hypothesis of the homology (common evolutionary origin) of the germ layers that form all later organs and tissues.

- **[Cooperation driven by reciprocity, not conformity](#)** [周二, 12 9月 00:26]

From an evolutionary perspective, cooperating with others can yield benefits that increase chances of survival. But what are the conditions

that motivate us to cooperate? New research suggests that reciprocity -- cooperation under the assumption that we will receive benefits in return -- outweighs our desire to conform with group norms when we're deciding whether to cooperate with someone.

• [**New treatment option discovered for brain injury patients suffering from aggression**](#) [周二, 12 9月 00:26]

A drug originally developed in the 1960s as an antiviral medication is showing promise as a treatment option for people who suffer from increased feelings of aggression following traumatic brain injury, researchers have reported.

• [**Patients to benefit from new 3-D visualizations of the heart**](#) [周二, 12 9月 00:26]

In the future heart surgeons will have access to a new type of 3-D visualization of the cardiac conduction system. This technique could provide improved safety for patients and improve surgical outcomes in patients suffering from heart disease and cardiac malformations, explains a new report.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

- [**Microscope invented at marine biological laboratory illuminates chromosomal 'dark matter'**](#) [周三, 13 9月 01:48]

Biologists, instrument developers, and computational scientists have for the first time measured the density of a relatively inscrutable, highly condensed form of chromosomal material (heterochromatin) that appears in the cells of human beings and other eukaryotes.

- [**New way to stabilize next-generation fusion plasmas**](#) [周三, 13 9月 01:48]

Recent experiments conducted on the DIII-D National Fusion Facility suggest that up to 40 percent of high-energy particles are lost during tokamak fusion reactions because of Alfvén waves.

- [**Magnetic cellular 'Legos' for the regenerative medicine of the future**](#) [周三, 13 9月 01:48]

By incorporating magnetic nanoparticles in cells and developing a system using miniaturized magnets, researchers have succeeded in creating cellular magnetic 'Legos.' They were able to aggregate cells using only magnets and without an external supporting matrix, with the cells then forming a tissue that can be deformed at will.

- [**AI -- Engineering: merging, morphing, mobile robots**](#) [周二, 12 9月 22:35]

Researchers have developed self-reconfiguring modular robots that can merge, split and even self-heal while retaining full sensorimotor control.

The work may take us closer to producing robots that can autonomously change their size, shape and function.

- [**Graphene based terahertz absorbers**](#) [周二, 12 9月 22:27]

A terahertz saturable absorber has been created using printable graphene inks with an order of magnitude higher absorption modulation than other devices produced to date.

- [**Study sets new distance record for medical drone transport**](#) [周二, 12 9月 21:31]

Researchers have set a new delivery distance record for medical drones, successfully transporting human blood samples across 161 miles of Arizona desert. Throughout the three-hour flight, they report, the on-board payload system maintained temperature control, ensuring the samples were viable for laboratory analysis after landing.

- [**Astronauts don't develop anemia during spaceflight, NASA study suggests**](#) [周二, 12 9月 21:30]

Space flight anemia -- the reduction of circulating red blood cells during time spent in space -- is an established phenomenon, but it may not be a major concern during long-duration space missions, according to a study.

- [**Method controls whether freezing droplets bounce off or stick**](#) [周二, 12 9月 03:09]

Self-peeling droplets have been discovered, along with a new way to control adhesion of freezing droplets by adjusting the thermal properties of substrates. These findings could make everything from additive manufacturing to deicing more efficient.

- [**The turbulent healing powers of plasma**](#) [周二, 12 9月 00:27]

Non-equilibrium atmospheric pressure plasma can help heal wounds, destroy cancer cells and kill harmful bacteria. The jets of plasma that doctors might use, however, often become turbulent with the direction and velocity changing dramatically. Now, researchers have found this turbulence likely emerges from heat-induced sound waves generated at the plasma electrodes. This new insight is critical for more consistent

and effective medical therapies.

- [**A novel and practical fab-route for superomniphobic liquid-free surfaces**](#) [周二, 12 9月 00:27]

Scientists have developed a fabrication technology that can inexpensively produce surfaces capable of repelling liquids, including water and oil.

- [**Connecting up the quantum internet**](#) [周二, 12 9月 00:27]

Major leap for practical building blocks of a quantum internet: New research demonstrates how to dramatically improve the storage time of a telecom-compatible quantum memory, a vital component of a global quantum network. The technology operates in the same 1550 nanometer band as today's telecommunications infrastructure. It can also be operated as a quantum light source or used as an optical link for solid-state quantum computing devices such as superconducting qubits and silicon qubits.

- [**Self-assembling nanoparticle arrays can switch between a mirror and a window**](#) [周二, 12 9月 00:27]

By finely tuning the distance between nanoparticles in a single layer, researchers have made a filter that can change between a mirror and a window.

- [**Brain Composer: 'Thinking' melodies onto a musical score**](#) [周二, 12 9月 00:26]

A new brain-computer interface application that allows music to be composed by the power of thought has now been developed by scientists.

- [**Hollow atoms: The consequences of an underestimated effect**](#) [周二, 12 9月 00:26]

In a 'hollow atom', electrons occupy high-energy states far away from the nucleus, it can get rid of their excess energy on a remarkably short timescale. The reason for this has been unknown. Researchers have now shown that this is due to a previously underestimated effect: the

'interatomic coulomb decay' allows the atom to transfer its energy to several other atoms simultaneously. This also explains why radiation therapy can be so effective.

- [**Patients to benefit from new 3-D visualizations of the heart**](#) [周二, 12 9月 00:26]

In the future heart surgeons will have access to a new type of 3-D visualization of the cardiac conduction system. This technique could provide improved safety for patients and improve surgical outcomes in patients suffering from heart disease and cardiac malformations, explains a new report.

- [**Study clarifies how neural nets 'think' when processing language**](#) [周二, 12 9月 00:26]

A new general-purpose technique has been developed for making sense of neural networks that are trained to perform natural-language-processing tasks, in which computers attempt to interpret freeform texts written in ordinary, or 'natural,' language (as opposed to a structured language, such as a database-query language).

- [**First on-chip nanoscale optical quantum memory developed**](#) [周二, 12 9月 00:26]

Engineers have built a chip capable of storing and retrieving individual photons of light, with all of their quantum properties left intact. The chip represents the first nanoscale optical quantum memory device, and could one day be used to create more secure Internet communications.

- [**Using mirrors to improve the quality of light particles**](#) [周一, 11 9月 21:59]

Scientists have succeeded in dramatically improving the quality of individual photons generated by a quantum system. The scientists have successfully put a 10-year-old theoretical prediction into practice. With their paper, they have taken an important step towards future applications in quantum information technology.

- [**Explosive birth of stars swells galactic cores**](#) [周一, 11 9月 11:25]

Astronomers found that active star formation upswells galaxies, like yeast helps bread rise. Using three powerful telescopes on the ground and in orbit, they observed galaxies from 11 billion years ago and found explosive formation of stars in the cores of galaxies. This suggests that galaxies can change their own shape without interaction with other galaxies.

- [**New software can detect when people text and drive**](#) [周六, 09 9月 08:55]

Computer algorithms developed by engineering researchers can accurately determine when drivers are texting or engaged in other distracting activities.

- [**When electrons ride a wave**](#) [周六, 09 9月 08:55]

Conventional electron accelerators are an indispensable tool in modern research. But even smaller versions of these super microscopes are the size of a soccer field. Laser plasma acceleration could offer an alternative with a smaller footprint and higher peak currents. So far, the challenge with laser accelerators has been to create a reliable and stable electron beam, which is the prerequisite for applications. Physicists have developed a method to increase beam stability and quality.

- [**Scientists unravel new insights into promising semiconductor material**](#) [周六, 09 9月 08:55]

Researchers have established new findings on the properties of two-dimensional molybdenum disulfide, a widely studied semiconductor of the future.

- [**Are we being watched? Tens of other worlds could spot the Earth**](#) [周六, 09 9月 08:55]

Scientists have turned exoplanet-hunting on its head, in a study that instead looks at how an alien observer might be able to detect Earth using our own methods. They find that at least nine exoplanets are ideally placed to observe transits of Earth.

- [**High-speed quantum memory for photons**](#) [周六, 09 9月 08:54]

Physicists have developed a memory that can store photons. These quantum particles travel at the speed of light and are thus suitable for high-speed data transfer. The researchers were able to store them in an atomic vapor and read them out again later without altering their quantum mechanical properties too much. This memory technology is simple and fast and it could find application in a future quantum Internet.

• [**How to draw electricity from the bloodstream**](#) [周六, 09 9月 08:54]

Men build dams and huge turbines to turn the energy of waterfalls and tides into electricity. To produce hydropower on a much smaller scale, scientists have now developed a lightweight power generator based on carbon nanotube fibers suitable to convert even the energy of flowing blood in blood vessels into electricity.

• [**New guidelines discourage use of brain imaging as a 'lie detector' for chronic pain**](#) [周六, 09 9月 08:54]

A task force consisting of researchers from around the world has released a set of recommendations that advise against the use of brain imaging as a test for chronic pain.

• [**A sweeter way to make green products**](#) [周六, 09 9月 08:16]

A more efficient process has been created for extracting the sugars from wood chips, corn cobs and other organic waste from forests and farms. This biorenewable feedstock could serve as a cheaper, sustainable substitute for the petroleum used in manufacturing tons of consumer goods annually -- goods that consumers want to be greener.

• [**Scientists make methanol using air around us**](#) [周五, 08 9月 02:27]

Scientists have created methanol from methane using oxygen from the air. Methanol is currently produced by breaking down natural gas at high temperatures. But researchers have discovered they can produce methanol from methane through simple catalysis that allows methanol production at low temperatures using oxygen and hydrogen peroxide. The findings have major implications for cleaner, greener industrial processes worldwide.

• [**New way to directly convert methane to methanol using gold-palladium nanoparticles**](#) [周五, 08 9月 02:27]

Scientists have used colloidal gold-palladium (Au-Pd) nanoparticles to directly oxidize methane to methanol with high selectivity in aqueous solution at low temperatures.

• [**Tweet life vs. street life: Exploring the gap between content, feelings**](#) [周五, 08 9月 02:27]

Twitter is an unreliable witness to the world's emotions, suggests a researcher, adding that online social life doesn't always reflect offline social reality.

• [**Quantum detectives in the hunt for the world's first quantum computer**](#) [周五, 08 9月 02:26]

A new paper is the latest confirmation of Majorana fermions -- a strange quasiparticle at the heart of the next generation of quantum machines being pursued by engineers.

• [**Streamlined security: Optimizing sensor placement with mathematics**](#) [周五, 08 9月 01:25]

Increasing reliance on heightened security in public and private settings calls for optimal sensor technology. However, placing security sensors to optimize resource management and system performance while simultaneously protecting people and products is undoubtedly challenging. In a new paper, experts propose a computational level set method to optimally position a sensor-based security system for maximum surveillance of a complex environment.

• [**New acid-free magnet recycling process created**](#) [周五, 08 9月 01:25]

A new rare-earth magnet recycling process dissolves magnets in an acid-free solution and recovers high purity rare earth elements.

• [**Curious properties: Researchers analyze flocking behavior on curved surfaces**](#) [周五, 08 9月 01:25]

A murmuration of starlings. The phrase reads like something from

literature or the title of an arthouse film. In fact, it is meant to describe the phenomenon that results when hundreds, sometimes thousands, of these birds fly in swooping, intricately coordinated patterns through the sky.

- [**Lignin: Much more valuable than just as waste**](#) [周五, 08 9月 00:03]

Lignin, a substance considered as a waste product in biomass and ethanol production, will now reach its proper value as bio-oil in new products.

- [**Aspirin tablets help unravel basic physics**](#) [周五, 08 9月 00:03]

Aspirin in form of small crystallites provides new insight into delicate motions of electrons and atomic nuclei. Set into molecular vibration by strong ultrashort far-infrared (terahertz) pulses, the nuclei oscillate much faster than for weak excitation. They gradually return to their intrinsic oscillation frequency, in parallel to the picosecond decay of electronic motions. An analysis of the terahertz waves radiated from the moving particles by in-depth theory reveals the strongly coupled chara...

- [**Scanning tunneling microscopy measurements identify active sites on catalyst surfaces**](#) [周五, 08 9月 00:02]

Chemistry live: using a scanning tunneling microscope, researchers were able for the very first time to witness in detail the activity of catalysts during an electrochemical reaction. The measurements show how the surface structure of the catalysts influences their activity. The new analysis method can now be used to improve catalysts for the electrochemical industry.

- [**'Rubber material' discovered that could lead to scratch-proof paint for car**](#) [周五, 08 9月 00:02]

A stretchy miracle material has been discovered that could be used to create highly resistant smart devices and scratch-proof paint for cars, report investigators.

- [**Climate change for aliens**](#) [周四, 07 9月 23:24]

For more than 50 years, the Kardashev scale has been the gold standard

for classifying hypothetical 'exo-civilizations' by their ability to harness energy. A team of researchers has devised a new system that takes into account the impacts of that energy use.

- [**Pluto features given first official names**](#) [周四, 07 9月 23:24]

The Working Group for Planetary System Nomenclature of the International Astronomical Union has officially approved the naming of 14 features on the surface of Pluto. These are the first geological features on the planet to be named following the close flyby by the New Horizons spacecraft in July 2015.

- [**3-D-printed biomaterials that degrade on demand**](#) [周四, 07 9月 23:24]

The temporary structures, which can be degraded away with a biocompatible chemical trigger, could be useful in fabricating microfluidic devices, creating biomaterials that respond dynamically to stimuli and in patterning artificial tissue.

- [**Smartphone screen technology used to trick harmful bacteria**](#) [周四, 07 9月 22:41]

Conducting plastics found in smartphone screens can be used to trick the metabolism of pathogenic bacteria, report scientists. By adding or removing electrons from the plastic surface, bacteria may be tricked into growing more or less. The method may find widespread use in preventing bacterial infections in hospitals or improve effectiveness in wastewater management.

- [**New dental imaging method uses squid ink to fish for gum disease**](#) [周四, 07 9月 22:24]

Squid ink could one day make getting checked for gum disease at the dentist less tedious and even painless. By combining squid ink with light and ultrasound, a team led by engineers has developed a new dental imaging method to examine a patient's gums that is noninvasive, more comprehensive and more accurate than the state of the art.

- [**Ultraviolet light from superluminous supernova**](#)

[key to revealing explosion mechanism](#) [周四, 07 9月 22:24]

An international team of researchers has discovered a way to use UV light from superluminous supernovae to uncover its explosion mechanism, and used it to identify Gaia16apd as a shock-interacting supernova, reports a new study.

• [Fast magnetic writing of data](#) [周四, 07 9月 22:24]

Magnetic data storage has long been considered too slow for use in the working memories of computers. Researchers have now investigated a technique by which magnetic data writing can be done considerably faster and using less energy.

• [Intermittent electrical brain stimulation improves memory](#) [周四, 07 9月 22:23]

Intermittent electrical stimulation of an area deep inside the brain that degenerates in Alzheimer's appears to improve working memory, scientists report. Conversely, continuous deep brain stimulation, like the type used for Parkinson's and currently under study in humans with Alzheimer's, impairs memory, according to study.

• [A tiny device offers insights to how cancer spreads](#) [周四, 07 9月 21:36]

Researchers developed a new type of microfluidic device that can cultivate cells for longer periods of time, better reflecting how cancer cells to change over time. The device allowed them to capture the leader cells that would be first to break away and cause metastasis.

• [Drivers don't ignore a ringing phone but do ignore the risk](#) [周四, 07 9月 21:36]

Drivers find it difficult to ignore a ringing phone but do ignore the dangers, with a new study revealing almost 50 percent believe locating and answering a ringing phone is not as risky as talking and texting. Research has found locating a ringing phone, checking who's calling, and rejecting or answering the call, is the most frequent mobile phone task undertaken by drivers.

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Environment News

Top stories featured on ScienceDaily's Plants & Animals, Earth & Climate, and Fossils & Ruins sections.

- [Bird songs isolate species, new research suggests](#)

[周三, 13 9月 22:45]

Two birds that look the same, but have songs so different they can't recognize each other, should be considered distinct species, suggests new research. Among 72 related populations of Central and South American birds the researchers tested, they found evidence for 21 new species.

- [Science spin prevalent, researchers warn](#)

[周三, 13 9月 05:05]

More than a quarter of biomedical scientific papers may utilize practices that distort the interpretation of results or mislead readers so that results are viewed more favorably, a new study suggests.

- [Health benefits of olives and olive oil](#)

[周三, 13 9月 04:10]

A research team discovered that the olive-derived compound oleuropein helps prevent type 2 diabetes.

- [How hibernating ribosomes wake up](#)

[周三, 13 9月 01:48]

Scientists have uncovered the way a bacterial ribosome moves from an inactive to an active form, and how that 'wake up call' is key to its survival.

- ['Superbug' bacteria gang up on us, fueled by antibiotic use, nursing home study suggests](#)

[周三, 13 9月 01:48]

What's worse than getting exposed to a kind of bacteria that modern antibiotics can't kill? Getting exposed to more than one -- because they may work together to cause an infection, new research suggests. And trying different antibiotics to control one such 'superbug' may only

encourage others. The researchers say it's time to think about such bacteria as members of an antibiotic-resistant ecosystem in healthcare environments -- not as single species that act and respond alone.

- [**Microscope invented at marine biological laboratory illuminates chromosomal 'dark matter'**](#) [周三, 13 9月 01:48]

Biologists, instrument developers, and computational scientists have for the first time measured the density of a relatively inscrutable, highly condensed form of chromosomal material (heterochromatin) that appears in the cells of human beings and other eukaryotes.

- [**Forest regeneration experiment of 30 years yields results**](#) [周三, 13 9月 01:48]

A spruce forest regeneration experiment in Interior Alaska that spanned nearly 30 years demonstrates which forest management practices produce the best results. It looked at different combinations of ground treatments to reduce competition from other vegetation and of regeneration methods, such as planting spruce seedlings and broadcast seeding. The results show the environmental and management situations in which different techniques work best and the situations in which they are unnecessary. Re...

- [**In mice, calorie restriction reduces fat but increases fur**](#) [周三, 13 9月 01:48]

Calorie restriction may help mice stay slim and live longer, but it also means less fat to keep their bodies warm. Researchers in Brazil have found that mouse skin responds to caloric restriction by stimulating fur growth, increasing blood flow, and altering cell metabolism to increase energy efficiency. The study reveals that animals may use this as an evolutionary adaptation to stay warm -- and alive -- in limited food conditions.

- [**'Missing link' explains how viruses trigger immunity**](#) [周三, 13 9月 01:48]

A new discovery has solved a longstanding mystery of how viruses trigger protective immunity within our body. The research team demonstrated a protein called SIDT2 was crucial for cells to detect viral components in their environment, and initiate an immune response to reduce the virus' spread.

- [**Reversing the negative effects of adolescent marijuana use**](#) [周三, 13 9月 01:48]

Researchers have identified a specific mechanism in the prefrontal cortex for some of the negative mental health risks associated with adolescent marijuana use. By demonstrating that adolescent THC exposure modulates the activity of a neurotransmitter called GABA in the prefrontal cortex region of the brain, they were also able to identify a mechanism to reverse those risks.

- [**Historic legacies affect climate change survival in Caribbean**](#) [周三, 13 9月 01:48]

Discussion of climate change has failed to pay enough attention to the social, political and historic factors which increase the vulnerability of Caribbean societies, and calls for a new approach focused on understanding and addressing these historic inequalities.

- [**Earthquake faults may have played key role in shaping the culture of ancient Greece**](#) [周二, 12 9月 22:35]

The Ancient Greeks may have built sacred sites deliberately on land affected by previous earthquake activity, according to a new study.

- [**Coffee and bees: New model of climate change effects**](#) [周二, 12 9月 22:28]

Areas in Latin America suitable for growing coffee face predicted declines of 73-88 percent by 2050. But bee species diversity may save the day, even if many species in cool highland regions are lost as the climate warms.

- [**Explosion in number of known life forms**](#) [周二, 12 9月 21:31]

New research has helped increase the number of known genomes by

almost 10 percent. Scientists have obtained 7,280 bacterial and 623 archaeal genomes (genetic materials from microorganisms) from environmental samples, explains a new article.

- [**Biding time could improve conservation outcomes**](#) [周二, 12 9月 21:31]

Strategic delays in conservation efforts could be the key to protecting more species according to researchers. The new study found instead of spending project funds immediately, conservation organizations could use the right amount of delay to improve the benefits achieved from their funding by focusing first on investment, capacity building, or monitoring and research.

- [**'Keep it local' approach more effective than government schemes at protecting rainforest**](#) [周二, 12 9月 21:31]

Conservation initiatives led by local and indigenous groups can be just as effective as schemes led by government, according to new research. In some cases in the Amazon rainforest, grassroots initiatives can be even more effective at protecting this vital ecosystem.

- [**Researchers discover new, abundant enzyme that helps bacteria infect animals**](#) [周二, 12 9月 21:30]

A new class of enzymes has been discovered in hundreds of bacterial species, including some that cause disease in humans and animals. The discovery provides new insights into how bacteria invade their hosts.

- [**Ancient tree reveals cause of spike in Arctic temperature**](#) [周二, 12 9月 21:30]

A kauri tree trapped in a New Zealand swamp for 30,000 years may have overturned the idea that a slowdown in ocean currents in the North Atlantic may be entirely responsible for Dansgaard-Oeschger events and the characteristic bi-polar see-saw, which sees the Antarctica cool while the Arctic warms during glacial periods. The research reveals a mechanism that generates a 20,000 km long atmospheric bridge, reaching from Antarctica to the Arctic.

- [**Modeling the impact of green eggs and hens**](#) [周二, 12 9月 21:30]

Poultry given vegan organic chicken feed can help to produce eggs with a smaller environmental footprint than those fed non-organic feeds that contain animal by-products, new research shows.

- [**Rapid climate changes across northern hemisphere in the earliest Middle Pleistocene**](#) [周二, 12 9月 21:30]

By studying climate changes that took place thousands of years ago, we can better understand the global climate system and predict Earth's future climate. A multi-organization research team has discovered evidence of rapid climate changes on a millennial-to-centennial scale that occurred 780 to 760 thousand years ago.

- [**Rising CO2 leading to changes in land plant photosynthesis**](#) [周二, 12 9月 05:04]

Researchers have determined that major changes in plant behavior have occurred over the past 40 years, using measurements of subtle changes in the carbon dioxide (CO2) currently found in the atmosphere.

- [**Study of circular DNA comes full circle with use of old technique**](#) [周二, 12 9月 04:32]

A 50-year-old lab technique is helping researchers better understand circular DNA, a lesser-known and poorly understood cousin of the linear version commonly associated with life's genetic blueprint. With the aid of a process called density gradient centrifugation, a research team recently published a study that for the first time characterizes all of the circular DNA in the worm *C. elegans*, as well as in three human cell types.

- [**When ancient fossil DNA isn't available, ancient glycans may help trace human evolution**](#) [周二, 12 9月 03:09]

Researchers have discovered a new kind of glycan (sugar chain) that survives even in a 4-million-year-old animal fossil from Kenya, under conditions where ancient DNA does not. While ancient hominin fossils are not yet available for glycan analysis, this proof-of-concept study sets

the stage for unprecedented explorations of human origins and diet.

- [**Why your ancestors would have aced the long jump**](#) [周二, 12 9月 03:09]

A 52-million-year-old ankle fossil suggests our prehuman ancestors were high-flying acrobats. For years, scientists thought the ancestors of today's humans, monkeys, lemurs and apes were relatively slow and deliberate animals, using their grasping hands and feet to creep along small twigs and branches. But a new study suggests the first primates were masters at leaping through the trees.

- [**Earthquake triggers 'slow motion' quakes in New Zealand**](#) [周二, 12 9月 00:27]

Slow slip events, a type of slow motion earthquake that occurs over days to weeks, are thought to be capable of triggering larger, potentially damaging earthquakes. In a new study, scientists have documented the first clear-cut instance of the reverse -- a massive earthquake immediately triggering a series of large slow slip events.

- [**Scientists track the brain-skull transition from dinosaurs to birds**](#) [周二, 12 9月 00:27]

The dramatic, dinosaur-to-bird transition that occurred in reptiles millions of years ago was accompanied by profound changes in the skull roof of those animals -- and holds important clues about the way the skull forms in response to changes in the brain -- according to a new study. It is the first time scientists have tracked the link between the brain's development and the roofing bones of the skull.

- [**How openings in Antarctic sea ice affect worldwide climate**](#) [周二, 12 9月 00:26]

In a new analysis of climate models, researchers reveal the significant global effects that seemingly anomalous polynyas, or openings in sea ice, can have. Their findings indicate that heat escaping from the ocean through these openings impacts sea and atmospheric temperatures and wind patterns around the globe and even rainfall around the tropics.

• [**Muscle nuclei: May the force be with you**](#) [周二, 12 9月 00:26]

A group of researchers has revealed the mechanism by which cellular nuclei reach their position within muscle cells. This discovery can have important implications in therapeutic strategies to treat muscular diseases.

• [**Cold region 'tipping point' now inevitable**](#) [周二, 12 9月 00:26]

The decline of cold regions called periglacial zones is now inevitable due to climate change, researchers say.

• [**The evolutionary origin of the gut**](#) [周二, 12 9月 00:26]

How did the gut, the skin and musculature evolve? This question concerns scientists for more than a century. Through the investigation of the embryonic development of sea anemones, a very old animal lineage, researchers have now come to conclusions which challenge the 150-year-old hypothesis of the homology (common evolutionary origin) of the germ layers that form all later organs and tissues.

• [**USA threatened by more frequent flooding**](#) [周二, 12 9月 00:26]

The East Coast of the United States is threatened by more frequent flooding in the future. According to this study, the states of Virginia, North Carolina, and South Carolina are most at risk. Their coastal regions are being immersed by up to three millimeters per year -- among other things, due to human intervention.

• [**Half-a-billion-year-old fossils shed light animal evolution on Earth**](#) [周二, 12 9月 00:26]

Scientists have discovered traces of life more than half-a-billion years old that could change the way we think about how all animals evolved on Earth.

• [**Biodiversity just as powerful as climate change for healthy ecosystems**](#) [周二, 12 9月 00:26]

Biodiversity is proving to be one of humanity's best defenses against extreme weather. In past experiments, diversity has fostered healthier, more productive ecosystems, like shoreline vegetation that guards

against hurricanes. However, many experts doubted whether these experiments would hold up in the real world. A study offers a decisive answer: biodiversity's power in the wild surpasses experimental predictions, in some cases topping even effects of climate.

• [**Fathers can influence the sex of their offspring, scientists show**](#) [周二, 12 9月 00:26]

It has traditionally been thought that in mammals only mothers are able to influence the sex of their offspring. But a new study in wild mice has shown that fathers can, in fact, influence sex ratios.

• [**Looking stressed can help keep the peace**](#) [周一, 11 9月 21:59]

Scratching may have evolved as a communication tool to help social cohesion, new research suggests for the first time.

• [**Fire ant venom compounds may lead to skin treatments**](#) [周一, 11 9月 21:59]

Solenopsins, the main toxic components of fire ant venom, chemically resemble ceramides, which are lipid-like molecules essential for maintaining for the barrier function of the skin. Solenopsin analogs can reduce skin thickening and inflammation in a mouse model of psoriasis, scientists have shown.

• [**Ancient wetlands offer window into climate change**](#) [周一, 11 9月 21:59]

Environmental researchers have uncovered a wealth of information about a unique part of Australia that offers never-before-seen insights into climate change since the last ice age.

• [**Desert locusts: New risks in the light of climate change**](#) [周一, 11 9月 21:59]

The desert locust is an invasive species that is both well known and feared because of the large-scale agricultural damage it can cause. It is particularly closely monitored, to prevent the risks of outbreaks and invasions. Climate change could modify its distribution area, meaning a new threat to agriculture, according to a study.

- [**Biosensor detects adulteration of horse in beef meat within one hour**](#) [周一, 11 9月 21:59]

Fraud in meat products has become, in recent years, a battle of the food industry and public health. Although there are numerous strategies to detect it, they are not sufficiently selective and sensitive to differentiate close animal species. A collaboration of experts has developed an electrochemical biosensor capable of detecting, in just one hour, processes of adulteration of beef with horse meat.

- [**Do we need to reform international drug treaties as more countries legalize cannabis?**](#) [周六, 09 9月 08:55]

The future of international drug control treaties is in doubt because of recent treaty-violating decisions to legalize cannabis use in Canada, the United States and Uruguay. A professor, whose 2014 review of 20 years of cannabis research made world headlines, thinks so. If decriminalization is the way of the future, he advocates a cautious approach to policy reform that would involve trialing and evaluating the effects of incrementally more liberal drug policies.

- [**A-MUD: A method for automatically detecting mouse song**](#) [周六, 09 9月 08:55]

Mice produce a remarkable repertoire of vocalizations across five octaves, which they emit during mating and other contexts. Analyses of mice song can provide important information about their social behavior and for research into neuropsychiatric disorders. But their songs are in the ultrasonic range and inaudible for humans. Researchers have now developed a freely available method to automatically detect mouse vocalizations instead of manually.

- [**An officer and a gentlewoman from the Viking army in Birka**](#) [周六, 09 9月 08:55]

War was not an activity exclusive to males in the Viking world. A new study shows that women could be found in the higher ranks at the battlefield.

• [**Young birds suffer in the city**](#) [周六, 09 9月 08:54]

City life is tough for young birds. But if they survive their first year, they are less susceptible to the effects of stress, according to new research.

• [**Why it's difficult to predict evolutionary fate of a new trait**](#) [周六, 09 9月 08:54]

Scientists explain the vexing complexities that make it hard to predict whether a new genetic trait will take over a population or die out, a key challenge for many fields including infectious disease.

• [**NASA flights map summer melt of Greenland ice sheet**](#) [周六, 09 9月 08:54]

Operation IceBridge is flying in Greenland to measure how much ice has melted over the course of the summer from the ice sheet. The flights, which began on Aug. 25 and will go on until Sept. 21, repeat paths flown this spring and aim to monitor seasonal changes in the elevation of the ice sheet.

• [**Meeting a microbe in the morning or in the evening: Is it all the same?**](#) [周六, 09 9月 08:54]

Does the time of day matter when our body is infected by a parasite? According to new research, it matters a great deal.

• [**Animal welfare: Potential new indicator of chronic stress in horses**](#) [周六, 09 9月 08:54]

Cortisol is generally considered to be a stress hormone because its levels rise during episodes of acute stress. Yet its relationship to chronic stress is less clear. Researchers have linked lower cortisol levels to states of chronically poor welfare in adult horses observed under their usual living conditions.

• [**Lazy ants make themselves useful in unexpected ways**](#) [周六, 09 9月 08:53]

They may look useless, but they're not: so-called lazy ants serve as new recruits ready to replace the top productive workers when the need

arises. New research shows that these ants are far from useless.

• [**A sweeter way to make green products**](#) [周六, 09 9月 08:16]

A more efficient process has been created for extracting the sugars from wood chips, corn cobs and other organic waste from forests and farms. This biorenewable feedstock could serve as a cheaper, sustainable substitute for the petroleum used in manufacturing tons of consumer goods annually -- goods that consumers want to be greener.

• [**Extreme weather has limited effect on attitudes toward climate policies**](#) [周五, 08 9月 02:46]

People who recently experienced severe weather events such as floods, storms and drought are more likely to support policies to adapt to the effects of climate change, according to a new study.

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- [**Historic legacies affect climate change survival in Caribbean**](#) [周三, 13 9月 01:48]

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- [**How should we handle boys who can't read?**](#) [周二, 12 9月 21:31]

Boys are much worse at reading than girls. The disparities have been quite consistent over 15 years. New insights may give hope -- if they're put to use.

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- [**Ship exhaust makes oceanic thunderstorms more intense**](#) [周五, 08 9月 02:27]

Thunderstorms directly above two of the world's busiest shipping lanes are significantly more powerful than storms in areas of the ocean where ships don't travel, according to new research.

- [**Courts' critical, underappreciated role in climate policy**](#) [周五, 08 9月 02:26]

Both climate lawsuits and their reliance on scientific data have increased over the past decade, the most extensive study to date shows.

- [**SNAP benefits aren't enough to afford a healthy diet**](#) [周五, 08 9月 00:56]

A new study finds that the Supplemental Nutrition Assistance Program (SNAP), formerly known as Food Stamps, only covers 43-60 percent of what it costs to consume a diet consistent with federal dietary guidelines for what constitutes a healthy diet. The study highlights the challenges lower-income households face in trying to eat a healthy diet.

- [**Nutrition has benefits for brain network**](#)

[**organization**](#) [周四, 07 9月 23:24]

Nutrition has been linked to cognitive performance, but researchers have not pinpointed what underlies the connection. A new study found that monounsaturated fatty acids -- a class of nutrients found in olive oils, nuts and avocados -- are linked to general intelligence, and that this relationship is driven by the correlation between MUFAs and the organization of the brain's attention network.

• [**Academic argues for changes in the laws governing modern warfare**](#) [周四, 07 9月 22:41]

Modern warfare and terrorist acts often sees the killing of innocent civilians which presents complex challenges for the international legal framework governing the conduct of armed conflicts, explains a new report.

• [**Children exposed to chemicals in 9/11 'dust' show early signs of risk of heart disease**](#) [周四, 07 9月 21:36]

Sixteen years after the collapse of the World Trade Center towers sent a 'cloud' of toxic debris across Lower Manhattan, children living nearby who likely breathed in the ash and fumes are showing early signs of risk for future heart disease.

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [The beam of invisibility](#) [周三, 13 9月 22:45]
A new idea for a cloaking technology has been created by scientists. A completely opaque material is irradiated from above with a specific wave pattern -- with the effect that light waves from the left can now pass through the material without any obstruction. This surprising result opens up completely new possibilities for active camouflage.
- [Earthquake faults may have played key role in shaping the culture of ancient Greece](#) [周二, 12 9月 22:35]
The Ancient Greeks may have built sacred sites deliberately on land affected by previous earthquake activity, according to a new study.
- [AI -- Engineering: merging, morphing, mobile robots](#) [周二, 12 9月 22:35]
Researchers have developed self-reconfiguring modular robots that can merge, split and even self-heal while retaining full sensorimotor control. The work may take us closer to producing robots that can autonomously change their size, shape and function.
- [Looking stressed can help keep the peace](#) [周一, 11 9月 21:59]
Scratching may have evolved as a communication tool to help social cohesion, new research suggests for the first time.
- [Explosive birth of stars swells galactic cores](#) [周一, 11 9月 11:25]
Astronomers found that active star formation upswells galaxies, like yeast helps bread rise. Using three powerful telescopes on the ground and in orbit, they observed galaxies from 11 billion years ago and found

explosive formation of stars in the cores of galaxies. This suggests that galaxies can change their own shape without interaction with other galaxies.

· [**How to draw electricity from the bloodstream**](#) [周六,

09 9月 08:54]

Men build dams and huge turbines to turn the energy of waterfalls and tides into electricity. To produce hydropower on a much smaller scale, scientists have now developed a lightweight power generator based on carbon nanotube fibers suitable to convert even the energy of flowing blood in blood vessels into electricity.

· [**Climate change for aliens**](#) [周四, 07 9月 23:24]

For more than 50 years, the Kardashev scale has been the gold standard for classifying hypothetical 'exo-civilizations' by their ability to harness energy. A team of researchers has devised a new system that takes into account the impacts of that energy use.

· [**Australian Magpie 'dunks' its food before eating, researchers find**](#) [周四, 07 9月 22:23]

Scientists have shown that the Australian Magpie may 'dunk' its food in water before eating, a process that appears to be 'copied' by its offspring.

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ScienceDaily

周五, 15 9月 2017

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[周五, 15 9月 2017]

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- [**In step toward controlling chemistry, physicists create a new molecule, atom by atom**](#) [周五, 15 9月 03:24]

Physicists have discovered a unique new molecule that could lead to many useful applications, and show how chemical reactions can be studied on a microscopic scale using tools of physics.

- [**Biomarkers in the blood prove strong role of food for type 2 diabetes**](#) [周五, 15 9月 03:24]

A pioneering method has demonstrated its potential in a large study, showing that metabolic fingerprints from blood samples could render important new knowledge on the connection between food and health. The study finds that diet is one of the strongest predictors of type 2 diabetes risk in older women.

- [**Sorting molecules with DNA robots**](#) [周五, 15 9月 03:24]

Scientists have programmed a 'robot' made of DNA to pick up and sort molecules into predetermined locations.

- [**Rare genetic cause of peritoneal mesothelioma points to targeted therapy**](#) [周五, 15 9月 03:23]

Investigators have uncovered a new genetic cause of mesothelioma: a genetic rearrangement in the ALK gene, observed in three patients with

peritoneal mesothelioma. Unlike previously known causes, this new discovery points to a potential therapeutic approach for those few patients whose tumors harbor the mutation.

- [**Huge genetic diversity among Papuan New Guinean peoples revealed**](#) [周五, 15 9月 03:23]

The first large-scale genetic study of people in Papua New Guinea has shown that different groups within the country are genetically highly different from each other. Scientists reveal that the people there have remained genetically independent from Europe and Asia for most of the last 50,000 years, and that people from the country's isolated highlands region have been completely independent even until the present day.

- [**Insulin therapy initially declined and delayed by an average of two years**](#) [周五, 15 9月 03:23]

Thirty percent of type 2 diabetic patients don't begin insulin when it's initially recommended, with the average start time being two years later.

- [**Synaptic receptor mobility: Discovery of a new mechanism for controlling memory**](#) [周五, 15 9月 03:23]

A new mechanism has been discovered for storing information in synapses and a means of controlling the storage process. The breakthrough moves science closer to unveiling the mystery of the molecular mechanisms of memory and learning processes.

- [**The return of the comet-like exoplanet**](#) [周五, 15 9月 03:23]

Astronomers have focused the Hubble Space Telescope on an exoplanet that had already been seen losing its atmosphere, which forms an enormous cloud of hydrogen, giving the planet the appearance of a giant comet. During earlier observations, it was not possible to cover the whole cloud, whose shape was predicted by numerical simulations. Thanks to these new observations, the scientists have finally been able to confirm the initial predictions.

- [**'Handedness' in scale-eating fish: Nature and nurture**](#) [周五, 15 9月 03:23]

Lateralized behaviors are thought to be strengthened during development. However, little is known about how they are acquired during development. In the scale-eating cichlid model, researchers demonstrated the attack side preference of juveniles was developed with scale-eating experience, regardless of age. They also found that kinetics of attack behavior is superior on one side by nature. Therefore, they concluded that the fish learn to use the naturally dominant side through experience.

- [**Could interstellar ice provide the answer to birth of DNA?**](#) [周五, 15 9月 03:22]

Molecules brought to Earth in meteorite strikes could potentially be converted into the building blocks of DNA, researchers have shown.

- [**'Mysterious' ancient creature was definitely an animal, research confirms**](#) [周五, 15 9月 03:22]

It lived well over 550 million years ago, is known only through fossils and has variously been described as looking a bit like a jellyfish, a worm, a fungus and lichen. But was the 'mysterious' Dickinsonia an animal, or was it something else? A new study provides strong proof that Dickinsonia was an animal.

- [**Hydrogen power moves a step closer**](#) [周五, 15 9月 03:22]

Physicists are developing methods of creating renewable fuel from water using quantum technology. Renewable hydrogen can already be produced by photoelectrolysis where solar power is used to split water molecules into oxygen and hydrogen. But fundamental problems remain before this can be adopted commercially due to inefficiency. A new study demonstrates that the novel use of nanostructures could increase the maximum photovoltage generated in a photoelectrochemical cell, increasing the productivi...

- [**Premature infants may get metabolic boost from mom's breast milk**](#) [周四, 14 9月 20:40]

The breast milk of mothers with premature babies has different amounts of microRNA than that of mothers with babies born at term, which may

help premature babies catch up in growth and development, according to researchers.

- **[Chronic pain common in people living with HIV](#)**

[周四, 14 9月 20:40]

All people living with HIV should be screened for chronic pain, which affects 39 to 85 percent of people with the condition, recommend new HIVMA guidelines. Those who have chronic pain should be treated using a multidisciplinary approach focused on non-drug options ranging from yoga to physical therapy, note the guidelines. Opioids should never be a first-line treatment.

- **[Mechanism behind calorie restriction, lengthened lifespan revealed](#)**

[周四, 14 9月 20:40]

Almost a century ago, scientists discovered that cutting calorie intake could dramatically extend lifespan in certain animal species. Despite numerous studies since, however, researchers have been unable to explain precisely why. Now, investigators have broken past that barrier.

- **[Social media helps students learn scientific argumentation better](#)**

[周四, 14 9月 07:31]

Students who took part in a program that taught scientific argumentation learned the concepts better than their peers who did not, a study concludes.

- **[New supernova analysis reframes dark energy debate](#)**

[周四, 14 9月 07:31]

The accelerating expansion of the Universe may not be real, but could just be an apparent effect, according to new research. The new study finds the fit of Type Ia supernovae to a model universe with no dark energy to be very slightly better than the fit to the standard dark energy model.

- **[How well electron transport works in furfural biogas](#)**

[周四, 14 9月 07:31]

Furfural is a promising candidate in the quest for alternative biofuels.

- [**Evolution of 'true frogs' defies long-held expectations of science**](#) [周四, 14 9月 07:31]

New research shows, in contrast to expectations, 'the rapid global range expansion of true frogs was not associated with increased net-diversification.'

- [**Artificial 'skin' gives robotic hand a sense of touch**](#) [周四, 14 9月 07:30]

A team of researchers from the University of Houston has reported a breakthrough in stretchable electronics that can serve as an artificial skin, allowing a robotic hand to sense the difference between hot and cold, while also offering advantages for a wide range of biomedical devices.

- [**In-utero treatment reverses cleft palate in mice**](#) [周四, 14 9月 07:30]

Researchers clarified a molecular pathway responsible for the formation of cleft palate and identified a new treatment to reverse this defect in mouse pups in utero.

- [**'Peel-and-go' printable structures fold themselves**](#) [周四, 14 9月 07:30]

Researchers have created a printable structure that begins to fold itself up as soon as it's peeled off the printing platform.

- [**First global map of water in moon's soil**](#) [周四, 14 9月 07:30]

A new study maps the trace concentrations of water implanted in the lunar soil by the solar wind, a water source that could be used as resource in future lunar exploration.

- [**Marijuana may produce psychotic-like effects in high-risk individuals**](#) [周四, 14 9月 07:30]

Marijuana may bring on temporary paranoia and other psychosis-related effects in individuals at high risk of developing a psychotic disorder, finds a preliminary study.

- [**New gravity map suggests Mars has a porous**](#)

[crust](#) [周四, 14 9月 07:30]

Scientists have found evidence that Mars' crust is not as dense as previously thought, a clue that could help researchers better understand the Red Planet's interior structure and evolution.

. ['The dark side' of quantum computers](#) [周四, 14 9月 07:29]

The era of fully fledged quantum computers threatens to destroy internet security as we know it. Researchers are in a race against time to prepare new cryptographic techniques before the arrival of quantum computers, as cryptographers now describe.

. [Squirrels use 'chunking' to organize their favorite nuts](#) [周四, 14 9月 07:29]

Like trick-or-treaters sorting their Halloween candy haul, fox squirrels apparently organize their stashes of nuts by variety, quality and possibly even preference, according to new research.

. [Climate change challenges the survival of fish across the world](#) [周四, 14 9月 07:29]

Researchers have published the first analysis looking at how vulnerable the world's freshwater and marine fishes are to climate change. Their study used physiological data to predict how nearly 3,000 fish species living in oceans and rivers will respond to warming water temperatures in different regions.

. [Self-folding electronics could enable advanced robotics](#) [周三, 13 9月 22:45]

As demand grows for more versatile, advanced robotics and other technologies, the need for components that can enable these applications also increases. Producing such components en masse has been a major challenge. But now, researchers report that they have developed a way to help meet this need by printing electronics that can fold themselves into a desired shape.

. [Bird songs isolate species, new research suggests](#)

[周三, 13 9月 22:45]

Two birds that look the same, but have songs so different they can't

recognize each other, should be considered distinct species, suggests new research. Among 72 related populations of Central and South American birds the researchers tested, they found evidence for 21 new species.

- [Popular bottle-breaking trick is giving insight to brain injuries](#) [周三, 13 9月 22:45]

As many YouTube videos show, striking the top of a liquid-filled bottle can shatter the bottom. Researchers are hoping to use new knowledge of that party trick to help fill a gap in something much more serious: brain research.

- [The beam of invisibility](#) [周三, 13 9月 22:45]

A new idea for a cloaking technology has been created by scientists. A completely opaque material is irradiated from above with a specific wave pattern -- with the effect that light waves from the left can now pass through the material without any obstruction. This surprising result opens up completely new possibilities for active camouflage.

- [New hope for 'bubble baby disease'](#) [周三, 13 9月 22:45]

If untreated, severe combined immune deficiency (SCID) syndrome -- or 'bubble baby disease' -- is often fatal within the first year of a infant's life. A checklist of SCID markers could make diagnosis faster, allowing more babies to receive treatment within a critical timeframe, say researchers.

- [Multifunctional nano-sized drug carriers based on reactive polypept\(o\)ides](#) [周三, 13 9月 22:44]

Researchers have been able to demonstrate that reactive polypept(o)ides constitute ideal building blocks to control morphology and function of carrier systems in a simple but precise manner.

- [Teens' ability to consider the intentions of others linked to structural changes in the brain](#) [周三, 13 9月 20:44]

When it comes to the concept of fairness, teenagers' ability to consider the intentions of others appears to be linked to structural changes underway in the brain, according to a study. The study is the first to

provide evidence linking structural changes with behavioral changes within this context. Understanding the intentions of others is fundamental to human cooperation and how we exist as social beings.

- [**Paper-based tuberculosis test could boost diagnoses in developing countries**](#) [周三, 13 9月 20:44]

Diagnosing tuberculosis early can allow patients to receive the medicine they need and also help prevent the disease from spreading. But in resource-limited areas, equipment requirements and long wait times for results are obstacles to diagnosis and treatment. To tackle this problem, scientists report the development of a fast, paper-based tuberculosis test that can be read with a smartphone.

- [**Systems analysis points to links between Toxoplasma infection and common brain diseases**](#) [周三, 13 9月 20:44]

Nearly one out of every three humans on earth has a lifelong infection with the brain-dwelling parasite *Toxoplasma gondii*. In a new report, researchers from multiple institutions describe efforts to learn how infection with the parasite *Toxoplasma gondii* may alter, and in some cases amplify, several brain disorders, including epilepsy, Alzheimer's and Parkinson's diseases as well as some cancers.

- [**As 'flesh-eating' Leishmania come closer, a vaccine against them does, too**](#) [周三, 13 9月 20:44]

Boils the size of sand dollars, facial damage reminiscent of acid wounds, death by maiming of the liver and spleen. *Leishmania* parasites inflict suffering around the world that is the stuff of parables. They are the second-deadliest parasites after malaria, and global warming is slowly pushing them north toward the United States. Can a new experimental vaccine someday stop them? The vaccine has worked in humanized mice, as detailed in a new study.

- [**New research on probiotics in the prevention and treatment of colon cancer**](#) [周三, 13 9月 20:44]

In an innovative approach to colorectal cancer (CRC) prevention and treatment, scientists are studying ways to replace missing metabolites in patients prone to gut inflammation and CRC. A new study describes how administration of histamine-producing gut microbes to mice lacking the enzyme histidine decarboxylase (HDC) reduced inflammation and tumor formation. These results suggest that alteration of the gut microbiome with probiotics may become a new preventative or therapeutic strategy for patie...

• [**A hair-trigger for cells fighting infection**](#) [周三, 13 9月 20:44]

In response to infection the immune system produces unique antibodies to target each illness. To make these new antibodies, cells in the immune system must intentionally damage their own genes, meaning they run the risk of becoming cancer cells. New research reveals how a proteins called Tia1 acts as a hair-trigger for DNA repair, allowing the immune system to walk the line between health and harm.

• [**Science spin prevalent, researchers warn**](#) [周三, 13 9月 05:05]

More than a quarter of biomedical scientific papers may utilize practices that distort the interpretation of results or mislead readers so that results are viewed more favorably, a new study suggests.

• [**Cold comfort: Fat-rich diets and adaptation among indigenous Siberian populations**](#) [周三, 13 9月 05:05]

Recently, scientists have been exploring the genetic signatures of adaptation in several indigenous cold-adapted human populations. Now, a new study has identified new signals of adaptation across multiple genes and exploring a rich demographic history. By performing extensive analyses on DNA sequencing data for two North-Central Siberian populations, the Nganasan (nomadic hunters) and Yakut (herders), they have been able to infer the most comprehensive demographic and adaptive history.

• [**Health benefits of olives and olive oil**](#) [周三, 13 9月 04:10]

A research team discovered that the olive-derived compound oleuropein helps prevent type 2 diabetes.

• [**Lay interventions for depression and drinking**](#) [周三, 13 9月 03:48]

Brief psychological interventions delivered by lay counselors in primary care were effective and cost-effective for patients with depression and harmful drinking in India, according to two new studies.

• [**A one-of-a-kind star found to change over decades**](#) [周三, 13 9月 03:48]

Researchers recently found new evidence that lends support to an existing theory of how the unusual star emits energy.

• [**Predicting atypical development in infants at high risk for autism?**](#) [周三, 13 9月 03:48]

New research identifies a potential biomarker that predicts atypical development in 1- to 2-month-old infants at high versus low familial risk for developing autism spectrum disorders (ASD).

• [**How hibernating ribosomes wake up**](#) [周三, 13 9月 01:48]

Scientists have uncovered the way a bacterial ribosome moves from an inactive to an active form, and how that 'wake up call' is key to its survival.

• [**'Superbug' bacteria gang up on us, fueled by antibiotic use, nursing home study suggests**](#) [周三, 13 9月 01:48]

What's worse than getting exposed to a kind of bacteria that modern antibiotics can't kill? Getting exposed to more than one -- because they may work together to cause an infection, new research suggests. And trying different antibiotics to control one such 'superbug' may only encourage others. The researchers say it's time to think about such bacteria as members of an antibiotic-resistant ecosystem in healthcare environments -- not as single species that act and respond alone.

• [**Queens control worker reproduction without castration in stingless bee species**](#) [周三, 13 9月 01:48]

Study contradicts the view that worker bees are forcibly castrated by the queen among the 600-odd species of stingless bees widely distributed in

tropical and subtropical regions of the world.

. [**Microscope invented at marine biological laboratory illuminates chromosomal 'dark matter'**](#) [周三, 13 9月 01:48]

Biologists, instrument developers, and computational scientists have for the first time measured the density of a relatively inscrutable, highly condensed form of chromosomal material (heterochromatin) that appears in the cells of human beings and other eukaryotes.

In step toward controlling chemistry, physicists create a new molecule, atom by atom: Study paves the way for creating on, off buttons for chemical reactions -- ScienceDaily

UCLA physicists have pioneered a method for creating a unique new molecule that could eventually have applications in medicine, food science and other fields. Their research, which also shows how chemical reactions can be studied on a microscopic scale using tools of physics, is reported in the journal *Science*.

For the past 200 years, scientists have developed rules to describe chemical reactions that they've observed, including reactions in food, vitamins, medications and living organisms. One of the most ubiquitous is the "octet rule," which states that each atom in a molecule that is produced by a chemical reaction will have eight outer orbiting electrons. (Scientists have found exceptions to the rule, but those exceptions are rare.)

But the molecule created by UCLA professor Eric

Hudson and colleagues violates that rule. Barium-oxygen-calcium, or BaOCa^+ , is the first molecule ever observed by scientists that is composed of an oxygen atom bonded to two different metal atoms.

Normally, one metal atom (either barium or calcium) can react with an oxygen atom to produce a stable molecule. However, when the UCLA scientists added a second metal atom to the mix, a new molecule, BaOCa^+ , which no longer satisfied the octet rule, had been formed.

Other molecules that violate the octet rule have been observed before, but the UCLA study is among the first to observe such a molecule using tools from physics -- namely lasers, ion traps and ultra-cold atom traps.

Hudson's laboratory used laser light to cool tiny amounts of the reactant atoms and molecules to an extremely low temperature -- one one-thousandth of a degree above absolute zero -- and then levitate them in a space smaller than the width of a human hair, inside of a vacuum chamber. Under these highly controlled conditions, the scientists could observe properties of the atoms and molecules that are otherwise hidden from view, and the "physics tools" they used enabled

them to hold a sample of atoms and observe chemical reactions one molecule at a time.

The ultra-cold temperatures used in the experiment can also be used to simulate the reaction as it would occur in outer space. That could help scientists understand how certain complex molecules, including some that could be precursors to life, came to exist in space, Hudson said.

The researchers found that when they brought together calcium and barium methoxide inside of their system under normal conditions, they would not react because the atoms could not find a way to rearrange themselves to form a stable molecule. However, when the scientists used a laser to change the distribution of the electrons in the calcium atom, the reaction quickly proceeded, producing a new molecule, CaOBa^+ .

The approach is part of a new physics-inspired subfield of chemistry that uses the tools of ultra-cold physics, such as lasers and electromagnetism, to observe and control how and when single-particle reactions occur.

UCLA graduate student Prateek Puri, the project's lead researcher, said the experiment demonstrates not only

how these techniques can be used to create exotic molecules, but also how they can be used to engineer important reactions. The discovery could ultimately be used to create new methods for preserving food (by preventing unwanted chemical reactions between food and the environment) or developing safer medications (by eliminating the chemical reactions that cause negative side effects).

"Experiments like these pave the way for developing new methods for controlling chemistry," Puri said. "We're essentially creating 'on buttons' for reactions."

Hudson said he hopes the work will encourage other scientists to further narrow the gap between physics and chemistry, and to demonstrate that increasingly complex molecules can be studied and controlled. He added that one key to the success of the new study was the involvement of experts from various fields: experimental physicists, theoretical physicists and a physical chemist.

A key player in the research is already making a name for itself in Hollywood. A device called the integrated ion-trap-time-of-flight mass spectrometer, which was invented by Hudson's lab and which was used to

discover the reaction -- was featured on a recent episode of the sitcom "The Big Bang Theory."

"The device enables us to detect and identify the products of reactions on the single-particle level, and for us, it has really been a bridge between chemistry and physics," said Michael Mills, a UCLA graduate student who worked on the project. "We were delighted to see it picked up by the show."

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Biomarkers in the blood prove strong role of food for type 2 diabetes -- ScienceDaily

A pioneering method, developed at Chalmers University of Technology, has demonstrated its potential in a large study, showing that metabolic fingerprints from blood samples could render important new knowledge on the connection between food and health. The study finds that diet is one of the strongest predictors of type 2 diabetes risk in older women.

Researchers from Chalmers University of Technology and Sahlgrenska Academy, University of Gothenburg, have found that several diet and nutrient biomarkers -- molecules that can be measured in blood that are related to diet -- are linked with both risk to have type 2 diabetes and future risk of developing diabetes.

The study, published in the leading nutrition research journal *American Journal of Clinical Nutrition*, was carried out on 600 women from Gothenburg where diagnosis of diabetes was made at the start of the study,

at their age 64, and again after 5 ½ years.

The results underline that diet is an important factor when it comes to risk for developing type 2 diabetes, with fish, whole grains, vegetable oils and good vitamin E status found to be protective against type 2 diabetes, while red meat and saturated fat increased the risk for developing the disease.

"What is really important is that we were able to reach these conclusions without having any additional information on diet from the subjects," said lead author Doctor Otto Savolainen, who works at the Division of Food and Nutrition Science and the Chalmers Mass Spectrometry Infrastructure at Chalmers University of Technology.

The blood samples were analysed at Chalmers, where a unique metabolic fingerprint, including many different diet biomarkers, could be linked to each woman at the specific time the sample was taken. Using this method it was possible for the first time to objectively determine the impact of key dietary components on future type 2 diabetes risk, as well as to find differences in dietary patterns between women with and without type 2 diabetes.

"Collecting information about diet can be complicated and time consuming, and is always biased by what people remember and think they should report. Dietary biomarkers don't have this problem, and highlight that dietary recommendations to avoid red meat and saturated fat and increase intake of plant-based oils and whole grains do seem to hold true, at least in this group of women," says Associate Professor Alastair Ross, responsible senior researcher at Chalmers, at the Division of Food and Nutrition Science.

"The new method has allowed us to measure several markers of diet and nutrient status at the same time in a large number of people, which we believe is the first time this has been done," he says.

Although the role of diet is often discussed as a preventative measure for developing type 2 diabetes, this new research provides strong support for dietary guidelines, and underlines the importance of changing diet to improve health.

"New methods such as ours will help to improve how we measure diet and understand in more detail how dietary patterns relate to disease," says Alastair Ross.

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Rare genetic cause of peritoneal mesothelioma points to targeted therapy: Genetic rearrangement in the ALK gene found in young women with mesothelioma may be targetable with FDA-approved drugs -- ScienceDaily

Mesothelioma is a rare and aggressive tumor that, in many cases, results from exposure to asbestos. But over the last several decades, other causes of the disease have emerged, including treatment with high-intensity therapeutic radiation and, more recently, an inherited genetic mutation. Now, through an unexpected observation and a meticulous study of patients seen at Brigham and Women's Hospital, BWH investigators have added a fourth cause to the list: a genetic rearrangement in the ALK gene, observed in three patients with peritoneal mesothelioma. Unlike previously known causes, this new discovery points to a potential therapeutic approach for those few patients whose tumors harbor the mutation.

The team's findings are published in *JAMA Oncology*.

"Mesothelioma is highly lethal and has no cure. Often, it is not diagnosed until at a late stage, when many tumors have already formed," said principal investigator Lucian Chirieac, MD, a thoracic oncology pathologist in the Department of Pathology at BWH and associate professor at Harvard Medical School.

"Although this mutation only exists in a small percentage of cases, this discovery points to a potential therapeutic avenue for these patients."

There are about 3,000 new cases of mesothelioma each year in the U.S., and only about 300 of those are peritoneal mesothelioma, which forms in the lining of the abdomen. Most cases of mesothelioma result decades after exposure to asbestos or radiation therapy. But in rare cases, young patients who have never been exposed to either risk factor are diagnosed with the disease. One such case led Chirieac and his colleagues to their unexpected finding.

"This was a serendipitous discovery. We had a young patient with peritoneal mesothelioma that was difficult to diagnose. We extended our molecular diagnostics to test for a genetic rearrangement that had been reported

in lymphoma and lung cancer, but never in mesothelioma. When it came back positive, we were intrigued," said first author Yin (Rex) Hung, MD, PhD, the Corson Thoracic Pathology Fellow in the Department of Pathology at BWH and HMS.

Hung and Chirieac collaborated with other physicians and scientists at BWH and Massachusetts General Hospital to confirm their observation. They carefully examined samples from 88 consecutive patients with peritoneal mesothelioma who had been seen at BWH between 2005 and 2015. They identified ALK-positive mesotheliomas by immunohistochemistry; confirmed with fluorescence in situ hybridization; and performed targeted next-generation sequencing of tumor DNA and RNA to get a full picture of the exact genetic rearrangement underpinning the disease.

Three patient samples were positive for ALK -- these patients with peritoneal mesothelioma were women with no history of asbestos or radiation therapy exposure. They also looked in samples collected from patients with pleural mesothelioma -- the more common form of the diseases -- but none of those samples were positive for ALK.

The ALK gene is important during embryonic development of the nervous system but should be inactive later in life. Previous studies of genetic alterations in lymphoma and lung cancer have found that certain genetic mutations -- specifically when part of a gene breaks off and gets fused to another -- can inappropriately switch on ALK, driving cancer cells to grow and divide. Targeting ALK with therapeutic drugs can turn that switch back off, blocking cancer progression -- at least temporarily -- without harming healthy cells. The FDA has approved several ALK inhibitors for treating non-small cell lung cancer. While the costs of targeted therapy may remain high, the cost of diagnostic testing for such genetic rearrangements is low.

Chirieac and colleagues hope to extend their study of ALK-positive mesotheliomas in a global patient population. In his own practice, Chirieac is routinely examining for the presence of ALK rearrangements for patients with mesothelioma and educating his residents about this new finding. "When I teach my residents about the causes of mesothelioma, I talk to them about asbestos, radiation therapy and an inherited mutation," said Chirieac. "We believe this paper adds a fourth cause to that list -- one that is potentially clinically

actionable."

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Huge genetic diversity among Papuan New Guinean peoples revealed: Genetic diversity found to mirror linguistic and cultural diversity among Papuan New Guinean people -- ScienceDaily

The first large-scale genetic study of people in Papua New Guinea has shown that different groups within the country are genetically highly different from each other. Scientists at the Wellcome Trust Sanger Institute and their colleagues at the University of Oxford and the Papua New Guinea Institute of Medical Research reveal that the people there have remained genetically independent from Europe and Asia for most of the last 50,000 years, and that people from the country's isolated highlands region have been completely independent even until the present day.

Reported in *Science*, the study also gives insights into how the development of agriculture and cultural events such as the Bronze or Iron Age could affect the genetic

structure of human societies.

Papua New Guinea is a country in the southwestern Pacific with some of the earliest archaeological evidence of human existence outside Africa. Largely free from Western influence and with fascinating cultural diversity, it has been of enormous interest to anthropologists and other scientists seeking to understand human cultures and evolution.

With approximately 850 domestic languages, which account for over 10 per cent of the world's total, Papua New Guinea is the most linguistically diverse country in the world. To discover if the linguistic and cultural diversity was echoed in the genetic structure of the population, researchers studied the genomes of 381 Papuan New Guinean people from 85 different language groups within the country.

The researchers looked at more than a million genetic positions in the genome of each individual, and compared them to investigate genetic similarities and differences. They found that groups of people speaking different languages were surprisingly genetically distinct from each other.

Anders Bergström, the first author on the paper from the Wellcome Trust Sanger Institute, said: "This is the first large-scale study of genetic diversity and population history in Papua New Guinea. Our study revealed that the genetic differences between groups of people there are generally very strong, often much stronger even than between major populations within all of Europe or all of East Asia."

Professor Stephen J. Oppenheimer, second author of the paper from the Wellcome Trust Centre for Human Genetics, University of Oxford, said: "We found a striking difference between the groups of people who live in the mountainous highlands and those in the lowlands, with genetic separation dating back 10,000-20,000 years between the two. This makes sense culturally, as the highland groups historically have kept to themselves, but such a strong genetic barrier between otherwise geographically close groups is still very unusual and fascinating."

Human evolution in Europe and Asia has been greatly influenced by the development of agriculture around 10,000 years ago. When small bands of hunter-gatherers settled into villages and started farming, they expanded and over time gave rise to more genetically

homogenous (similar) societies. However, despite the independent development of agriculture in Papua New Guinea at about the same time, the same process of homogenization did not occur here. This may indicate that other historical processes in Europe and Asia, such as the later Bronze and Iron Ages, were the key events that shaped the current genetic structure of those populations.

Dr Chris Tyler-Smith, corresponding author on the paper from the Wellcome Trust Sanger Institute, said: "Using genetics, we were able to see that people on the island of New Guinea evolved independently from rest of the world for much of the last 50,000 years. This study allows us to glimpse a different version of human evolution from that in Europe and Asia, one in which there was agriculture but no later Bronze Age or Iron Age. Papua New Guinea might show the genetic, cultural and linguistic diversity that many settled human societies would have had before these technological transformations."

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All Top News

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- [**In step toward controlling chemistry, physicists create a new molecule, atom by atom**](#) [周五, 15 9月 03:24]

Physicists have discovered a unique new molecule that could lead to many useful applications, and show how chemical reactions can be studied on a microscopic scale using tools of physics.

- [**Biomarkers in the blood prove strong role of food for type 2 diabetes**](#) [周五, 15 9月 03:24]

A pioneering method has demonstrated its potential in a large study, showing that metabolic fingerprints from blood samples could render important new knowledge on the connection between food and health. The study finds that diet is one of the strongest predictors of type 2 diabetes risk in older women.

- [**Sorting molecules with DNA robots**](#) [周五, 15 9月 03:24]

Scientists have programmed a 'robot' made of DNA to pick up and sort molecules into predetermined locations.

- [**Huge genetic diversity among Papuan New Guinean peoples revealed**](#) [周五, 15 9月 03:23]

The first large-scale genetic study of people in Papua New Guinea has shown that different groups within the country are genetically highly different from each other. Scientists reveal that the people there have remained genetically independent from Europe and Asia for most of the last 50,000 years, and that people from the country's isolated highlands region have been completely independent even until the present day.

- [**The return of the comet-like exoplanet**](#) [周五, 15 9月 03:23]

Astronomers have focused the Hubble Space Telescope on an exoplanet that had already been seen losing its atmosphere, which forms an enormous cloud of hydrogen, giving the planet the appearance of a giant comet. During earlier observations, it was not possible to cover the whole cloud, whose shape was predicted by numerical simulations. Thanks to these new observations, the scientists have finally been able to confirm the initial predictions.

• ['Handedness' in scale-eating fish: Nature and nurture](#) [周五, 15 9月 03:23]

Lateralized behaviors are thought to be strengthened during development. However, little is known about how they are acquired during development. In the scale-eating cichlid model, researchers demonstrated the attack side preference of juveniles was developed with scale-eating experience, regardless of age. They also found that kinetics of attack behavior is superior on one side by nature. Therefore, they concluded that the fish learn to use the naturally dominant side through experience.

• [Could interstellar ice provide the answer to birth of DNA?](#) [周五, 15 9月 03:22]

Molecules brought to Earth in meteorite strikes could potentially be converted into the building blocks of DNA, researchers have shown.

• [New supernova analysis reframes dark energy debate](#) [周四, 14 9月 07:31]

The accelerating expansion of the Universe may not be real, but could just be an apparent effect, according to new research. The new study finds the fit of Type Ia supernovae to a model universe with no dark energy to be very slightly better than the fit to the standard dark energy model.

• [Evolution of 'true frogs' defies long-held expectations of science](#) [周四, 14 9月 07:31]

New research shows, in contrast to expectations, 'the rapid global range expansion of true frogs was not associated with increased net-

diversification.'

- [**Artificial 'skin' gives robotic hand a sense of touch**](#) [周四, 14 9月 07:30]

A team of researchers from the University of Houston has reported a breakthrough in stretchable electronics that can serve as an artificial skin, allowing a robotic hand to sense the difference between hot and cold, while also offering advantages for a wide range of biomedical devices.

- [**In-utero treatment reverses cleft palate in mice**](#) [周四, 14 9月 07:30]

Researchers clarified a molecular pathway responsible for the formation of cleft palate and identified a new treatment to reverse this defect in mouse pups in utero.

- [**'Peel-and-go' printable structures fold themselves**](#) [周四, 14 9月 07:30]

Researchers have created a printable structure that begins to fold itself up as soon as it's peeled off the printing platform.

- [**First global map of water in moon's soil**](#) [周四, 14 9月 07:30]

A new study maps the trace concentrations of water implanted in the lunar soil by the solar wind, a water source that could be used as resource in future lunar exploration.

- [**New gravity map suggests Mars has a porous crust**](#) [周四, 14 9月 07:30]

Scientists have found evidence that Mars' crust is not as dense as previously thought, a clue that could help researchers better understand the Red Planet's interior structure and evolution.

- [**Squirrels use 'chunking' to organize their favorite nuts**](#) [周四, 14 9月 07:29]

Like trick-or-treaters sorting their Halloween candy haul, fox squirrels apparently organize their stashes of nuts by variety, quality and possibly even preference, according to new research.

- [**Climate change challenges the survival of fish across the world**](#) [周四, 14 9月 07:29]

Researchers have published the first analysis looking at how vulnerable the world's freshwater and marine fishes are to climate change. Their study used physiological data to predict how nearly 3,000 fish species living in oceans and rivers will respond to warming water temperatures in different regions.

- [**A one-of-a-kind star found to change over decades**](#) [周三, 13 9月 03:48]

Researchers recently found new evidence that lends support to an existing theory of how the unusual star emits energy.

- [**AI -- Engineering: merging, morphing, mobile robots**](#) [周二, 12 9月 22:35]

Researchers have developed self-reconfiguring modular robots that can merge, split and even self-heal while retaining full sensorimotor control. The work may take us closer to producing robots that can autonomously change their size, shape and function.

- [**Coffee and bees: New model of climate change effects**](#) [周二, 12 9月 22:28]

Areas in Latin America suitable for growing coffee face predicted declines of 73-88 percent by 2050. But bee species diversity may save the day, even if many species in cool highland regions are lost as the climate warms.

- [**Your stools reveal whether you can lose weight**](#) [周二, 12 9月 21:31]

Something as simple as a feces sample reveals whether you can lose weight by following dietary recommendations characterized by a high content of fruit, vegetables, fibers and whole grains, report scientists.

- [**When ancient fossil DNA isn't available, ancient glycans may help trace human evolution**](#) [周二, 12 9月 03:09]

Researchers have discovered a new kind of glycan (sugar chain) that

survives even in a 4-million-year-old animal fossil from Kenya, under conditions where ancient DNA does not. While ancient hominin fossils are not yet available for glycan analysis, this proof-of-concept study sets the stage for unprecedented explorations of human origins and diet.

- [**Urban climate change**](#) [周二, 12 9月 03:09]

Southern cities such as Houston and Tampa -- which faced the wrath of hurricanes Harvey and Irma, respectively -- may not be the only urban environments vulnerable to extreme weather. Northern cities also face the potential for flooding as global temperatures continue to warm.

- [**Why your ancestors would have aced the long jump**](#) [周二, 12 9月 03:09]

A 52-million-year-old ankle fossil suggests our prehuman ancestors were high-flying acrobats. For years, scientists thought the ancestors of today's humans, monkeys, lemurs and apes were relatively slow and deliberate animals, using their grasping hands and feet to creep along small twigs and branches. But a new study suggests the first primates were masters at leaping through the trees.

- [**Scientists track the brain-skull transition from dinosaurs to birds**](#) [周二, 12 9月 00:27]

The dramatic, dinosaur-to-bird transition that occurred in reptiles millions of years ago was accompanied by profound changes in the skull roof of those animals -- and holds important clues about the way the skull forms in response to changes in the brain -- according to a new study. It is the first time scientists have tracked the link between the brain's development and the roofing bones of the skull.

- [**How openings in Antarctic sea ice affect worldwide climate**](#) [周二, 12 9月 00:26]

In a new analysis of climate models, researchers reveal the significant global effects that seemingly anomalous polynyas, or openings in sea ice, can have. Their findings indicate that heat escaping from the ocean through these openings impacts sea and atmospheric temperatures and wind patterns around the globe and even rainfall around the tropics.

- **[Brain Composer: 'Thinking' melodies onto a musical score](#)** [周二, 12 9月 00:26]

A new brain-computer interface application that allows music to be composed by the power of thought has now been developed by scientists.

- **[Cold region 'tipping point' now inevitable](#)** [周二, 12 9月 00:26]

The decline of cold regions called periglacial zones is now inevitable due to climate change, researchers say.

- **[The evolutionary origin of the gut](#)** [周二, 12 9月 00:26]

How did the gut, the skin and musculature evolve? This question concerns scientists for more than a century. Through the investigation of the embryonic development of sea anemones, a very old animal lineage, researchers have now come to conclusions which challenge the 150-year-old hypothesis of the homology (common evolutionary origin) of the germ layers that form all later organs and tissues.

- **[USA threatened by more frequent flooding](#)** [周二, 12 9月 00:26]

The East Coast of the United States is threatened by more frequent flooding in the future. According to this study, the states of Virginia, North Carolina, and South Carolina are most at risk. Their coastal regions are being immersed by up to three millimeters per year -- among other things, due to human intervention.

- **[Half-a-billion-year-old fossils shed light animal evolution on Earth](#)** [周二, 12 9月 00:26]

Scientists have discovered traces of life more than half-a-billion years old that could change the way we think about how all animals evolved on Earth.

- **[Biodiversity just as powerful as climate change for healthy ecosystems](#)** [周二, 12 9月 00:26]

Biodiversity is proving to be one of humanity's best defenses against extreme weather. In past experiments, diversity has fostered healthier, more productive ecosystems, like shoreline vegetation that guards

against hurricanes. However, many experts doubted whether these experiments would hold up in the real world. A study offers a decisive answer: biodiversity's power in the wild surpasses experimental predictions, in some cases topping even effects of climate.

• [**Looking stressed can help keep the peace**](#) [周一, 11 9月 21:59]

Scratching may have evolved as a communication tool to help social cohesion, new research suggests for the first time.

• [**Explosive birth of stars swells galactic cores**](#) [周一, 11 9月 11:25]

Astronomers found that active star formation upswells galaxies, like yeast helps bread rise. Using three powerful telescopes on the ground and in orbit, they observed galaxies from 11 billion years ago and found explosive formation of stars in the cores of galaxies. This suggests that galaxies can change their own shape without interaction with other galaxies.

• [**Scientist finds secret to thriving**](#) [周六, 09 9月 08:55]

What it takes to thrive, rather than merely survive, could be as simple as feeling good about life and yourself and being good at something, according to new research.

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

- [**Biomarkers in the blood prove strong role of food for type 2 diabetes**](#) [周五, 15 9月 03:24]

A pioneering method has demonstrated its potential in a large study, showing that metabolic fingerprints from blood samples could render important new knowledge on the connection between food and health. The study finds that diet is one of the strongest predictors of type 2 diabetes risk in older women.

- [**Sorting molecules with DNA robots**](#) [周五, 15 9月 03:24]

Scientists have programmed a 'robot' made of DNA to pick up and sort molecules into predetermined locations.

- [**Rare genetic cause of peritoneal mesothelioma points to targeted therapy**](#) [周五, 15 9月 03:23]

Investigators have uncovered a new genetic cause of mesothelioma: a genetic rearrangement in the ALK gene, observed in three patients with peritoneal mesothelioma. Unlike previously known causes, this new discovery points to a potential therapeutic approach for those few patients whose tumors harbor the mutation.

- [**Huge genetic diversity among Papuan New Guinean peoples revealed**](#) [周五, 15 9月 03:23]

The first large-scale genetic study of people in Papua New Guinea has shown that different groups within the country are genetically highly different from each other. Scientists reveal that the people there have remained genetically independent from Europe and Asia for most of the last 50,000 years, and that people from the country's isolated highlands

region have been completely independent even until the present day.

- [**Insulin therapy initially declined and delayed by an average of two years**](#) [周五, 15 9月 03:23]

Thirty percent of type 2 diabetic patients don't begin insulin when it's initially recommended, with the average start time being two years later.

- [**Synaptic receptor mobility: Discovery of a new mechanism for controlling memory**](#) [周五, 15 9月 03:23]

A new mechanism has been discovered for storing information in synapses and a means of controlling the storage process. The breakthrough moves science closer to unveiling the mystery of the molecular mechanisms of memory and learning processes.

- [**Could interstellar ice provide the answer to birth of DNA?**](#) [周五, 15 9月 03:22]

Molecules brought to Earth in meteorite strikes could potentially be converted into the building blocks of DNA, researchers have shown.

- [**Premature infants may get metabolic boost from mom's breast milk**](#) [周四, 14 9月 20:40]

The breast milk of mothers with premature babies has different amounts of microRNA than that of mothers with babies born at term, which may help premature babies catch up in growth and development, according to researchers.

- [**Chronic pain common in people living with HIV**](#) [周四, 14 9月 20:40]

All people living with HIV should be screened for chronic pain, which affects 39 to 85 percent of people with the condition, recommend new HIVMA guidelines. Those who have chronic pain should be treated using a multidisciplinary approach focused on non-drug options ranging from yoga to physical therapy, note the guidelines. Opioids should never be a first-line treatment.

- [**Mechanism behind calorie restriction, lengthened lifespan revealed**](#) [周四, 14 9月 20:40]

Almost a century ago, scientists discovered that cutting calorie intake could dramatically extend lifespan in certain animal species. Despite numerous studies since, however, researchers have been unable to explain precisely why. Now, investigators have broken past that barrier.

- [**Social media helps students learn scientific argumentation better**](#) [周四, 14 9月 07:31]

Students who took part in a program that taught scientific argumentation learned the concepts better than their peers who did not, a study concludes.

- [**In-utero treatment reverses cleft palate in mice**](#) [周四, 14 9月 07:30]

Researchers clarified a molecular pathway responsible for the formation of cleft palate and identified a new treatment to reverse this defect in mouse pups in utero.

- [**Marijuana may produce psychotic-like effects in high-risk individuals**](#) [周四, 14 9月 07:30]

Marijuana may bring on temporary paranoia and other psychosis-related effects in individuals at high risk of developing a psychotic disorder, finds a preliminary study.

- [**Popular bottle-breaking trick is giving insight to brain injuries**](#) [周三, 13 9月 22:45]

As many YouTube videos show, striking the top of a liquid-filled bottle can shatter the bottom. Researchers are hoping to use new knowledge of that party trick to help fill a gap in something much more serious: brain research.

- [**New hope for 'bubble baby disease'**](#) [周三, 13 9月 22:45]

If untreated, severe combined immune deficiency (SCID) syndrome -- or 'bubble baby disease' -- is often fatal within the first year of a infant's life. A checklist of SCID markers could make diagnosis faster, allowing more babies to receive treatment within a critical timeframe, say researchers.

- [**Multifunctional nano-sized drug carriers based**](#)

[on reactive polypept\(o\)ides](#) [周三, 13 9月 22:44]

Researchers have been able to demonstrate that reactive polypept(o)ides constitute ideal building blocks to control morphology and function of carrier systems in a simple but precise manner.

[Teens' ability to consider the intentions of others linked to structural changes in the brain](#) [周三, 13 9月 20:44]

When it comes to the concept of fairness, teenagers' ability to consider the intentions of others appears to be linked to structural changes underway in the brain, according to a study. The study is the first to provide evidence linking structural changes with behavioral changes within this context. Understanding the intentions of others is fundamental to human cooperation and how we exist as social beings.

[Paper-based tuberculosis test could boost diagnoses in developing countries](#) [周三, 13 9月 20:44]

Diagnosing tuberculosis early can allow patients to receive the medicine they need and also help prevent the disease from spreading. But in resource-limited areas, equipment requirements and long wait times for results are obstacles to diagnosis and treatment. To tackle this problem, scientists report the development of a fast, paper-based tuberculosis test that can be read with a smartphone.

[Systems analysis points to links between Toxoplasma infection and common brain diseases](#) [周三, 13 9月 20:44]

Nearly one out of every three humans on earth has a lifelong infection with the brain-dwelling parasite *Toxoplasma gondii*. In a new report, researchers from multiple institutions describe efforts to learn how infection with the parasite *Toxoplasma gondii* may alter, and in some cases amplify, several brain disorders, including epilepsy, Alzheimer's and Parkinson's diseases as well as some cancers.

[As 'flesh-eating' Leishmania come closer, a vaccine against them does, too](#) [周三, 13 9月 20:44]

Boils the size of sand dollars, facial damage reminiscent of acid wounds, death by maiming of the liver and spleen. Leishmania parasites inflict suffering around the world that is the stuff of parables. They are the second-deadliest parasites after malaria, and global warming is slowly pushing them north toward the United States. Can a new experimental vaccine someday stop them? The vaccine has worked in humanized mice, as detailed in a new study.

- [**New research on probiotics in the prevention and treatment of colon cancer**](#) [周三, 13 9月 20:44]

In an innovative approach to colorectal cancer (CRC) prevention and treatment, scientists are studying ways to replace missing metabolites in patients prone to gut inflammation and CRC. A new study describes how administration of histamine-producing gut microbes to mice lacking the enzyme histidine decarboxylase (HDC) reduced inflammation and tumor formation. These results suggest that alteration of the gut microbiome with probiotics may become a new preventative or therapeutic strategy for patie...

- [**A hair-trigger for cells fighting infection**](#) [周三, 13 9月 20:44]

In response to infection the immune system produces unique antibodies to target each illness. To make these new antibodies, cells in the immune system must intentionally damage their own genes, meaning they run the risk of becoming cancer cells. New research reveals how a proteins called Tia1 acts as a hair-trigger for DNA repair, allowing the immune system to walk the line between health and harm.

- [**Science spin prevalent, researchers warn**](#) [周三, 13 9月 05:05]

More than a quarter of biomedical scientific papers may utilize practices that distort the interpretation of results or mislead readers so that results are viewed more favorably, a new study suggests.

- [**Cold comfort: Fat-rich diets and adaptation among indigenous Siberian populations**](#) [周三, 13 9月 05:05]

Recently, scientists have been exploring the genetic signatures of adaptation in several indigenous cold-adapted human populations. Now, a new study has identified new signals of adaptation across multiple

genes and exploring a rich demographic history. By performing extensive analyses on DNA sequencing data for two North-Central Siberian populations, the Nganasan (nomadic hunters) and Yakut (herders), they have been able to infer the most comprehensive demographic and adaptive history.

- [**Health benefits of olives and olive oil**](#) [周三, 13 9月 04:10]

A research team discovered that the olive-derived compound oleuropein helps prevent type 2 diabetes.

- [**Lay interventions for depression and drinking**](#) [周三, 13 9月 03:48]

Brief psychological interventions delivered by lay counselors in primary care were effective and cost-effective for patients with depression and harmful drinking in India, according to two new studies.

- [**Predicting atypical development in infants at high risk for autism?**](#) [周三, 13 9月 03:48]

New research identifies a potential biomarker that predicts atypical development in 1- to 2-month-old infants at high versus low familial risk for developing autism spectrum disorders (ASD).

- [**How hibernating ribosomes wake up**](#) [周三, 13 9月 01:48]

Scientists have uncovered the way a bacterial ribosome moves from an inactive to an active form, and how that 'wake up call' is key to its survival.

- [**'Superbug' bacteria gang up on us, fueled by antibiotic use, nursing home study suggests**](#) [周三, 13 9月 01:48]

What's worse than getting exposed to a kind of bacteria that modern antibiotics can't kill? Getting exposed to more than one -- because they may work together to cause an infection, new research suggests. And trying different antibiotics to control one such 'superbug' may only encourage others. The researchers say it's time to think about such bacteria as members of an antibiotic-resistant ecosystem in healthcare environments -- not as single species that act and respond alone.

- [**In mice, calorie restriction reduces fat but**](#)

increases fur [周三, 13 9月 01:48]

Calorie restriction may help mice stay slim and live longer, but it also means less fat to keep their bodies warm. Researchers in Brazil have found that mouse skin responds to caloric restriction by stimulating fur growth, increasing blood flow, and altering cell metabolism to increase energy efficiency. The study reveals that animals may use this as an evolutionary adaptation to stay warm -- and alive -- in limited food conditions.

• **'Missing link' explains how viruses trigger immunity** [周三, 13 9月 01:48]

A new discovery has solved a longstanding mystery of how viruses trigger protective immunity within our body. The research team demonstrated a protein called SIDT2 was crucial for cells to detect viral components in their environment, and initiate an immune response to reduce the virus' spread.

• **Reversing the negative effects of adolescent marijuana use** [周三, 13 9月 01:48]

Researchers have identified a specific mechanism in the prefrontal cortex for some of the negative mental health risks associated with adolescent marijuana use. By demonstrating that adolescent THC exposure modulates the activity of a neurotransmitter called GABA in the prefrontal cortex region of the brain, they were also able to identify a mechanism to reverse those risks.

• **AI -- Engineering: merging, morphing, mobile robots** [周二, 12 9月 22:35]

Researchers have developed self-reconfiguring modular robots that can merge, split and even self-heal while retaining full sensorimotor control. The work may take us closer to producing robots that can autonomously change their size, shape and function.

• **Father's environmental exposure affects sperm epigenetics, study shows** [周二, 12 9月 22:28]

Authors of a new report believe that theirs is among the first human studies to investigate the influence of phthalate exposure on sperm epigenetics, embryo development and whether DNA methylation in sperm cells may be a path by which a father's environmental exposure influences these endpoints. DNA methylation, one mechanism of epigenetics, is a chemical tag on DNA that does not change the gene sequence but is involved in controlling gene expression.

- [**Researchers identify potential biomarkers of age-related macular degeneration**](#) [周二, 12 9月 22:28]

Patients with any stage of age-related macular degeneration (AMD) carry signs of the disease in their blood that may be found through special laboratory tests, according to a new study.

- [**Cancer drug stimulates tripolar mode of mitosis**](#) [周二, 12 9月 22:28]

Taxanes inhibit cell division and make cancer cells sensitive to radiation therapy. A current study has investigated the underlying mechanisms of this action - and which biomarkers may be useful for predicting the success of therapy.

- [**Explosion in number of known life forms**](#) [周二, 12 9月 21:31]

New research has helped increase the number of known genomes by almost 10 percent. Scientists have obtained 7,280 bacterial and 623 archaeal genomes (genetic materials from microorganisms) from environmental samples, explains a new article.

- [**Exposure to head impacts in youth football practice drills**](#) [周二, 12 9月 21:31]

Researchers have examined differences in the number, location, and magnitude of head impacts sustained by young athletes during various youth football practice drills. Such information could lead to recommendations for football practices, including modification of some high-intensity drills in order to reduce players' exposure to head impacts and, consequently, lessen the risks of injury.

- [**Air quality in 'green' housing affected by toxic**](#)

[chemicals in building materials](#) [周二, 12 9月 21:31]

Indoor air pollution can be a problem in many homes, even in eco-friendly buildings. Thanks to a new innovative study, researchers have a better idea of where these pollutants come from -- which ones come from chemicals leaching out of building materials and which ones from the personal items people bring into their homes. The findings could inform the development of new green building standards and lead to healthier housing, especially for low-income communities.

• [How should we handle boys who can't read?](#) [周二, 12 9月 21:31]

Boys are much worse at reading than girls. The disparities have been quite consistent over 15 years. New insights may give hope -- if they're put to use.

• [Sexually aroused male flies unable to sleep after close encounters with females](#) [周二, 12 9月 21:31]

The urge to mate appears to override the need to sleep in flies, according to new research that hints at the importance of sleep for animals.

• [Running group helps half its graduates quit smoking](#) [周二, 12 9月 21:31]

Half the people who completed a 10-week community running program aimed at helping them quit smoking were successful in their attempt. Many others reduced their smoking, and saw their mental health improve.

• [Your stools reveal whether you can lose weight](#) [周二, 12 9月 21:31]

Something as simple as a feces sample reveals whether you can lose weight by following dietary recommendations characterized by a high content of fruit, vegetables, fibers and whole grains, report scientists.

• [Explaining bursts of activity in brains of preterm babies](#) [周二, 12 9月 21:31]

The source of spontaneous, high-amplitude bursts of activity seen in the brains of preterm babies, which are vital for healthy development, has been identified by a team of researchers.

- [**Eye movements reveal temporal expectation deficits in ADHD**](#) [周二, 12 9月 21:31]

A technique that measures tiny movements of the eyes may help scientists better understand and perhaps eventually improve assessment of ADHD, according to research.

- [**Study sets new distance record for medical drone transport**](#) [周二, 12 9月 21:31]

Researchers have set a new delivery distance record for medical drones, successfully transporting human blood samples across 161 miles of Arizona desert. Throughout the three-hour flight, they report, the on-board payload system maintained temperature control, ensuring the samples were viable for laboratory analysis after landing.

- [**Researchers discover new, abundant enzyme that helps bacteria infect animals**](#) [周二, 12 9月 21:30]

A new class of enzymes has been discovered in hundreds of bacterial species, including some that cause disease in humans and animals. The discovery provides new insights into how bacteria invade their hosts.

- [**Astronauts don't develop anemia during spaceflight, NASA study suggests**](#) [周二, 12 9月 21:30]

Space flight anemia -- the reduction of circulating red blood cells during time spent in space -- is an established phenomenon, but it may not be a major concern during long-duration space missions, according to a study.

- [**Long sitting periods may be just as harmful as daily total**](#) [周二, 12 9月 06:00]

A new study finds that sitting around for 12 or more hours per day, particularly if accumulated during 60- to 90-minute periods, increased the risk of early death -- even in those who exercised.

- [**Study of circular DNA comes full circle with use of old technique**](#) [周二, 12 9月 04:32]

A 50-year-old lab technique is helping researchers better understand circular DNA, a lesser-known and poorly understood cousin of the linear version commonly associated with life's genetic blueprint. With the aid of a process called density gradient centrifugation, a research team recently published a study that for the first time characterizes all of the circular DNA in the worm *C. elegans*, as well as in three human cell types.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

- [**In step toward controlling chemistry, physicists create a new molecule, atom by atom**](#) [周五, 15 9月 03:24]

Physicists have discovered a unique new molecule that could lead to many useful applications, and show how chemical reactions can be studied on a microscopic scale using tools of physics.

- [**Sorting molecules with DNA robots**](#) [周五, 15 9月 03:24]

Scientists have programmed a 'robot' made of DNA to pick up and sort molecules into predetermined locations.

- [**The return of the comet-like exoplanet**](#) [周五, 15 9月 03:23]

Astronomers have focused the Hubble Space Telescope on an exoplanet that had already been seen losing its atmosphere, which forms an enormous cloud of hydrogen, giving the planet the appearance of a giant comet. During earlier observations, it was not possible to cover the whole cloud, whose shape was predicted by numerical simulations. Thanks to these new observations, the scientists have finally been able to confirm the initial predictions.

- [**Could interstellar ice provide the answer to birth of DNA?**](#) [周五, 15 9月 03:22]

Molecules brought to Earth in meteorite strikes could potentially be converted into the building blocks of DNA, researchers have shown.

- [**Hydrogen power moves a step closer**](#) [周五, 15 9月 03:22]

Physicists are developing methods of creating renewable fuel from water using quantum technology. Renewable hydrogen can already be produced by photoelectrolysis where solar power is used to split water

molecules into oxygen and hydrogen. But fundamental problems remain before this can be adopted commercially due to inefficiency. A new study demonstrates that the novel use of nanostructures could increase the maximum photovoltage generated in a photoelectrochemical cell, increasing the productivi...

- [**Social media helps students learn scientific argumentation better**](#) [周四, 14 9月 07:31]

Students who took part in a program that taught scientific argumentation learned the concepts better than their peers who did not, a study concludes.

- [**New supernova analysis reframes dark energy debate**](#) [周四, 14 9月 07:31]

The accelerating expansion of the Universe may not be real, but could just be an apparent effect, according to new research. The new study finds the fit of Type Ia supernovae to a model universe with no dark energy to be very slightly better than the fit to the standard dark energy model.

- [**Artificial 'skin' gives robotic hand a sense of touch**](#) [周四, 14 9月 07:30]

A team of researchers from the University of Houston has reported a breakthrough in stretchable electronics that can serve as an artificial skin, allowing a robotic hand to sense the difference between hot and cold, while also offering advantages for a wide range of biomedical devices.

- [**'Peel-and-go' printable structures fold themselves**](#) [周四, 14 9月 07:30]

Researchers have created a printable structure that begins to fold itself up as soon as it's peeled off the printing platform.

- [**First global map of water in moon's soil**](#) [周四, 14 9月 07:30]

A new study maps the trace concentrations of water implanted in the lunar soil by the solar wind, a water source that could be used as

resource in future lunar exploration.

- [**New gravity map suggests Mars has a porous crust**](#) [周四, 14 9月 07:30]

Scientists have found evidence that Mars' crust is not as dense as previously thought, a clue that could help researchers better understand the Red Planet's interior structure and evolution.

- [**'The dark side' of quantum computers**](#) [周四, 14 9月 07:29]

The era of fully fledged quantum computers threatens to destroy internet security as we know it. Researchers are in a race against time to prepare new cryptographic techniques before the arrival of quantum computers, as cryptographers now describe.

- [**Self-folding electronics could enable advanced robotics**](#) [周三, 13 9月 22:45]

As demand grows for more versatile, advanced robotics and other technologies, the need for components that can enable these applications also increases. Producing such components en masse has been a major challenge. But now, researchers report that they have developed a way to help meet this need by printing electronics that can fold themselves into a desired shape.

- [**The beam of invisibility**](#) [周三, 13 9月 22:45]

A new idea for a cloaking technology has been created by scientists. A completely opaque material is irradiated from above with a specific wave pattern -- with the effect that light waves from the left can now pass through the material without any obstruction. This surprising result opens up completely new possibilities for active camouflage.

- [**A one-of-a-kind star found to change over decades**](#) [周三, 13 9月 03:48]

Researchers recently found new evidence that lends support to an existing theory of how the unusual star emits energy.

- [**Microscope invented at marine biological laboratory illuminates chromosomal 'dark**](#)

[matter'](#) [周三, 13 9月 01:48]

Biologists, instrument developers, and computational scientists have for the first time measured the density of a relatively inscrutable, highly condensed form of chromosomal material (heterochromatin) that appears in the cells of human beings and other eukaryotes.

• **[New way to stabilize next-generation fusion plasmas](#)** [周三, 13 9月 01:48]

Recent experiments conducted on the DIII-D National Fusion Facility suggest that up to 40 percent of high-energy particles are lost during tokamak fusion reactions because of Alfvén waves.

• **[Magnetic cellular 'Legos' for the regenerative medicine of the future](#)** [周三, 13 9月 01:48]

By incorporating magnetic nanoparticles in cells and developing a system using miniaturized magnets, researchers have succeeded in creating cellular magnetic 'Legos.' They were able to aggregate cells using only magnets and without an external supporting matrix, with the cells then forming a tissue that can be deformed at will.

• **[AI -- Engineering: merging, morphing, mobile robots](#)** [周二, 12 9月 22:35]

Researchers have developed self-reconfiguring modular robots that can merge, split and even self-heal while retaining full sensorimotor control. The work may take us closer to producing robots that can autonomously change their size, shape and function.

• **[Graphene based terahertz absorbers](#)** [周二, 12 9月 22:27]

A terahertz saturable absorber has been created using printable graphene inks with an order of magnitude higher absorption modulation than other devices produced to date.

• **[Study sets new distance record for medical drone transport](#)** [周二, 12 9月 21:31]

Researchers have set a new delivery distance record for medical drones, successfully transporting human blood samples across 161 miles of

Arizona desert. Throughout the three-hour flight, they report, the on-board payload system maintained temperature control, ensuring the samples were viable for laboratory analysis after landing.

- [**Astronauts don't develop anemia during spaceflight, NASA study suggests**](#) [周二, 12 9月 21:30]

Space flight anemia -- the reduction of circulating red blood cells during time spent in space -- is an established phenomenon, but it may not be a major concern during long-duration space missions, according to a study.

- [**Method controls whether freezing droplets bounce off or stick**](#) [周二, 12 9月 03:09]

Self-peeling droplets have been discovered, along with a new way to control adhesion of freezing droplets by adjusting the thermal properties of substrates. These findings could make everything from additive manufacturing to deicing more efficient.

- [**Airline industry could fly thousands of miles on biofuel from a new promising feedstock**](#) [周二, 12 9月 00:59]

A Boeing 747 burns one gallon of jet fuel each second. A recent analysis estimates that this aircraft could fly for 10 hours on bio-jet fuel produced on 54 acres of specially engineered sugarcane.

- [**Sunscreen protects skin without seeping in**](#) [周二, 12 9月 00:27]

A non-penetrating sunscreen invented by its researchers has been licensed to a major aloe verde supplier. The sunscreen will appeal to consumers concerned about chemicals exposure.

- [**Core solutions reach optimally extreme light pulses**](#) [周二, 12 9月 00:27]

A new hollow-core photonic crystal fiber system demonstrates high energy, single-cycle IR pulses at an extraordinary repetition rate, suitable for hard X-ray production and real-time investigations of atomic dynamics.

- [**The turbulent healing powers of plasma**](#) [周二, 12 9月 00:27]

Non-equilibrium atmospheric pressure plasma can help heal wounds, destroy cancer cells and kill harmful bacteria. The jets of plasma that doctors might use, however, often become turbulent with the direction and velocity changing dramatically. Now, researchers have found this turbulence likely emerges from heat-induced sound waves generated at the plasma electrodes. This new insight is critical for more consistent and effective medical therapies.

- [**A novel and practical fab-route for superomniphobic liquid-free surfaces**](#) [周二, 12 9月 00:27]

Scientists have developed a fabrication technology that can inexpensively produce surfaces capable of repelling liquids, including water and oil.

- [**Connecting up the quantum internet**](#) [周二, 12 9月 00:27]

Major leap for practical building blocks of a quantum internet: New research demonstrates how to dramatically improve the storage time of a telecom-compatible quantum memory, a vital component of a global quantum network. The technology operates in the same 1550 nanometer band as today's telecommunications infrastructure. It can also be operated as a quantum light source or used as an optical link for solid-state quantum computing devices such as superconducting qubits and silicon qubits.

- [**Self-assembling nanoparticle arrays can switch between a mirror and a window**](#) [周二, 12 9月 00:27]

By finely tuning the distance between nanoparticles in a single layer, researchers have made a filter that can change between a mirror and a window.

- [**Hints from hemoglobin lead to better carbon monoxide storage**](#) [周二, 12 9月 00:26]

Highly porous metal-organic frameworks have proved ideal for storing many chemicals, from carbon dioxide and hydrogen to water. A new tweak to MOFs has now produced a highly selective material for

adsorbing carbon monoxide, which is used in many industrial processes, including as a component of syngas. Using only one-third the energy of a common process for capturing and reusing CO, it holds promise for more efficient recycling of CO in the steel industry.

• [Brain Composer: 'Thinking' melodies onto a musical score](#) [周二, 12 9月 00:26]

A new brain-computer interface application that allows music to be composed by the power of thought has now been developed by scientists.

• [Astronomers spun up by galaxy-shape finding](#) [周二, 12 9月 00:26]

For the first time astronomers have measured how a galaxy's spin affects its shape -- something scientists have tried to do for 90 years -- using a sample of 845 galaxies. Because a galaxy's shape is the result of past events such as merging with other galaxies, knowing its shape also tells us about the galaxy's history. The team made its findings with SAMI (the Sydney-AAO Multi-object Integral field unit), a game-changing instrument.

• [Hollow atoms: The consequences of an underestimated effect](#) [周二, 12 9月 00:26]

In a 'hollow atom', electrons occupy high-energy states far away from the nucleus, it can get rid of their excess energy on a remarkably short timescale. The reason for this has been unknown. Researchers have now shown that this is due to a previously underestimated effect: the 'interatomic coulomb decay' allows the atom to transfer its energy to several other atoms simultaneously. This also explains why radiation therapy can be so effective.

• [Patients to benefit from new 3-D visualizations of the heart](#) [周二, 12 9月 00:26]

In the future heart surgeons will have access to a new type of 3-D visualization of the cardiac conduction system. This technique could provide improved safety for patients and improve surgical outcomes in patients suffering from heart disease and cardiac malformations,

explains a new report.

- [**Study clarifies how neural nets 'think' when processing language**](#) [周二, 12 9月 00:26]

A new general-purpose technique has been developed for making sense of neural networks that are trained to perform natural-language-processing tasks, in which computers attempt to interpret freeform texts written in ordinary, or 'natural,' language (as opposed to a structured language, such as a database-query language).

- [**First on-chip nanoscale optical quantum memory developed**](#) [周二, 12 9月 00:26]

Engineers have built a chip capable of storing and retrieving individual photons of light, with all of their quantum properties left intact. The chip represents the first nanoscale optical quantum memory device, and could one day be used to create more secure Internet communications.

- [**Using mirrors to improve the quality of light particles**](#) [周一, 11 9月 21:59]

Scientists have succeeded in dramatically improving the quality of individual photons generated by a quantum system. The scientists have successfully put a 10-year-old theoretical prediction into practice. With their paper, they have taken an important step towards future applications in quantum information technology.

- [**Explosive birth of stars swells galactic cores**](#) [周一, 11 9月 11:25]

Astronomers found that active star formation upswells galaxies, like yeast helps bread rise. Using three powerful telescopes on the ground and in orbit, they observed galaxies from 11 billion years ago and found explosive formation of stars in the cores of galaxies. This suggests that galaxies can change their own shape without interaction with other galaxies.

- [**First imaging of free nanoparticles in laboratory experiment using a high-intensity laser source**](#) [周日, 10 9月 06:38]

In a joint research project, scientists have managed for the first time to

image free nanoparticles in a laboratory experiment using a high-intensity laser source. Previously, the structural analysis of these extremely small objects via single-shot diffraction was only possible at large-scale research facilities using so-called XUV and x-ray free electron lasers.

- [**How safe are critical infrastructures from hacker attacks?**](#) [周日, 10 9月 06:37]

Critical infrastructures such as wind power stations are partially controlled via mobile phone networks. Using state-of-the-art tests, researchers are investigating how well protected that form of communication is from external attacks. The team is aiming to make critical infrastructures in Europe able to withstand hacker attacks.

- [**New software can detect when people text and drive**](#) [周六, 09 9月 08:55]

Computer algorithms developed by engineering researchers can accurately determine when drivers are texting or engaged in other distracting activities.

- [**When electrons ride a wave**](#) [周六, 09 9月 08:55]

Conventional electron accelerators are an indispensable tool in modern research. But even smaller versions of these super microscopes are the size of a soccer field. Laser plasma acceleration could offer an alternative with a smaller footprint and higher peak currents. So far, the challenge with laser accelerators has been to create a reliable and stable electron beam, which is the prerequisite for applications. Physicists have developed a method to increase beam stability and quality.

- [**Scientists unravel new insights into promising semiconductor material**](#) [周六, 09 9月 08:55]

Researchers have established new findings on the properties of two-dimensional molybdenum disulfide, a widely studied semiconductor of the future.

- [**Are we being watched? Tens of other worlds**](#)

[could spot the Earth](#) [周六, 09 9月 08:55]

Scientists have turned exoplanet-hunting on its head, in a study that instead looks at how an alien observer might be able to detect Earth using our own methods. They find that at least nine exoplanets are ideally placed to observe transits of Earth.

• [High-speed quantum memory for photons](#) [周六, 09 9月 08:54]

Physicists have developed a memory that can store photons. These quantum particles travel at the speed of light and are thus suitable for high-speed data transfer. The researchers were able to store them in an atomic vapor and read them out again later without altering their quantum mechanical properties too much. This memory technology is simple and fast and it could find application in a future quantum Internet.

• [How to draw electricity from the bloodstream](#) [周六, 09 9月 08:54]

Men build dams and huge turbines to turn the energy of waterfalls and tides into electricity. To produce hydropower on a much smaller scale, scientists have now developed a lightweight power generator based on carbon nanotube fibers suitable to convert even the energy of flowing blood in blood vessels into electricity.

• [New guidelines discourage use of brain imaging as a 'lie detector' for chronic pain](#) [周六, 09 9月 08:54]

A task force consisting of researchers from around the world has released a set of recommendations that advise against the use of brain imaging as a test for chronic pain.

• [A sweeter way to make green products](#) [周六, 09 9月 08:16]

A more efficient process has been created for extracting the sugars from wood chips, corn cobs and other organic waste from forests and farms. This biorenewable feedstock could serve as a cheaper, sustainable substitute for the petroleum used in manufacturing tons of consumer goods annually -- goods that consumers want to be greener.

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Environment News

Top stories featured on ScienceDaily's Plants & Animals, Earth & Climate, and Fossils & Ruins sections.

- [**'Handedness' in scale-eating fish: Nature and nurture**](#) [周五, 15 9月 03:23]

Lateralized behaviors are thought to be strengthened during development. However, little is known about how they are acquired during development. In the scale-eating cichlid model, researchers demonstrated the attack side preference of juveniles was developed with scale-eating experience, regardless of age. They also found that kinetics of attack behavior is superior on one side by nature. Therefore, they concluded that the fish learn to use the naturally dominant side through experience.

- [**Could interstellar ice provide the answer to birth of DNA?**](#) [周五, 15 9月 03:22]

Molecules brought to Earth in meteorite strikes could potentially be converted into the building blocks of DNA, researchers have shown.

- [**'Mysterious' ancient creature was definitely an animal, research confirms**](#) [周五, 15 9月 03:22]

It lived well over 550 million years ago, is known only through fossils and has variously been described as looking a bit like a jellyfish, a worm, a fungus and lichen. But was the 'mysterious' Dickinsonia an animal, or was it something else? A new study provides strong proof that Dickinsonia was an animal.

- [**Hydrogen power moves a step closer**](#) [周五, 15 9月 03:22]

Physicists are developing methods of creating renewable fuel from water using quantum technology. Renewable hydrogen can already be

produced by photoelectrolysis where solar power is used to split water molecules into oxygen and hydrogen. But fundamental problems remain before this can be adopted commercially due to inefficiency. A new study demonstrates that the novel use of nanostructures could increase the maximum photovoltage generated in a photoelectrochemical cell, increasing the productivi...

- [**How well electron transport works in furfural biogas**](#) [周四, 14 9月 07:31]

Furfural is a promising candidate in the quest for alternative biofuels.

- [**Evolution of 'true frogs' defies long-held expectations of science**](#) [周四, 14 9月 07:31]

New research shows, in contrast to expectations, 'the rapid global range expansion of true frogs was not associated with increased net-diversification.'

- [**Marijuana may produce psychotic-like effects in high-risk individuals**](#) [周四, 14 9月 07:30]

Marijuana may bring on temporary paranoia and other psychosis-related effects in individuals at high risk of developing a psychotic disorder, finds a preliminary study.

- [**Squirrels use 'chunking' to organize their favorite nuts**](#) [周四, 14 9月 07:29]

Like trick-or-treaters sorting their Halloween candy haul, fox squirrels apparently organize their stashes of nuts by variety, quality and possibly even preference, according to new research.

- [**Climate change challenges the survival of fish across the world**](#) [周四, 14 9月 07:29]

Researchers have published the first analysis looking at how vulnerable the world's freshwater and marine fishes are to climate change. Their study used physiological data to predict how nearly 3,000 fish species living in oceans and rivers will respond to warming water temperatures in different regions.

- [**Bird songs isolate species, new research suggests**](#)

[周三, 13 9月 22:45]

Two birds that look the same, but have songs so different they can't recognize each other, should be considered distinct species, suggests new research. Among 72 related populations of Central and South American birds the researchers tested, they found evidence for 21 new species.

- [**Science spin prevalent, researchers warn**](#) [周三, 13 9月 05:05]

More than a quarter of biomedical scientific papers may utilize practices that distort the interpretation of results or mislead readers so that results are viewed more favorably, a new study suggests.

- [**Health benefits of olives and olive oil**](#) [周三, 13 9月 04:10]

A research team discovered that the olive-derived compound oleuropein helps prevent type 2 diabetes.

- [**How hibernating ribosomes wake up**](#) [周三, 13 9月 01:48]

Scientists have uncovered the way a bacterial ribosome moves from an inactive to an active form, and how that 'wake up call' is key to its survival.

- [**'Superbug' bacteria gang up on us, fueled by antibiotic use, nursing home study suggests**](#) [周三, 13 9月 01:48]

What's worse than getting exposed to a kind of bacteria that modern antibiotics can't kill? Getting exposed to more than one -- because they may work together to cause an infection, new research suggests. And trying different antibiotics to control one such 'superbug' may only encourage others. The researchers say it's time to think about such bacteria as members of an antibiotic-resistant ecosystem in healthcare environments -- not as single species that act and respond alone.

- [**Queens control worker reproduction without castration in stingless bee species**](#) [周三, 13 9月 01:48]

Study contradicts the view that worker bees are forcibly castrated by the queen among the 600-odd species of stingless bees widely distributed in tropical and subtropical regions of the world.

• [**Microscope invented at marine biological laboratory illuminates chromosomal 'dark matter'**](#) [周三, 13 9月 01:48]

Biologists, instrument developers, and computational scientists have for the first time measured the density of a relatively inscrutable, highly condensed form of chromosomal material (heterochromatin) that appears in the cells of human beings and other eukaryotes.

• [**Forest regeneration experiment of 30 years yields results**](#) [周三, 13 9月 01:48]

A spruce forest regeneration experiment in Interior Alaska that spanned nearly 30 years demonstrates which forest management practices produce the best results. It looked at different combinations of ground treatments to reduce competition from other vegetation and of regeneration methods, such as planting spruce seedlings and broadcast seeding. The results show the environmental and management situations in which different techniques work best and the situations in which they are unnecessary. Re...

• [**In mice, calorie restriction reduces fat but increases fur**](#) [周三, 13 9月 01:48]

Calorie restriction may help mice stay slim and live longer, but it also means less fat to keep their bodies warm. Researchers in Brazil have found that mouse skin responds to caloric restriction by stimulating fur growth, increasing blood flow, and altering cell metabolism to increase energy efficiency. The study reveals that animals may use this as an evolutionary adaptation to stay warm -- and alive -- in limited food conditions.

• [**'Missing link' explains how viruses trigger immunity**](#) [周三, 13 9月 01:48]

A new discovery has solved a longstanding mystery of how viruses trigger protective immunity within our body. The research team demonstrated a protein called SIDT2 was crucial for cells to detect viral components in their environment, and initiate an immune response to

reduce the virus' spread.

- [**Reversing the negative effects of adolescent marijuana use**](#) [周三, 13 9月 01:48]

Researchers have identified a specific mechanism in the prefrontal cortex for some of the negative mental health risks associated with adolescent marijuana use. By demonstrating that adolescent THC exposure modulates the activity of a neurotransmitter called GABA in the prefrontal cortex region of the brain, they were also able to identify a mechanism to reverse those risks.

- [**Historic legacies affect climate change survival in Caribbean**](#) [周三, 13 9月 01:48]

Discussion of climate change has failed to pay enough attention to the social, political and historic factors which increase the vulnerability of Caribbean societies, and calls for a new approach focused on understanding and addressing these historic inequalities.

- [**Earthquake faults may have played key role in shaping the culture of ancient Greece**](#) [周二, 12 9月 22:35]

The Ancient Greeks may have built sacred sites deliberately on land affected by previous earthquake activity, according to a new study.

- [**Coffee and bees: New model of climate change effects**](#) [周二, 12 9月 22:28]

Areas in Latin America suitable for growing coffee face predicted declines of 73-88 percent by 2050. But bee species diversity may save the day, even if many species in cool highland regions are lost as the climate warms.

- [**Explosion in number of known life forms**](#) [周二, 12 9月 21:31]

New research has helped increase the number of known genomes by almost 10 percent. Scientists have obtained 7,280 bacterial and 623 archaeal genomes (genetic materials from microorganisms) from environmental samples, explains a new article.

• [**Biding time could improve conservation outcomes**](#) [周二, 12 9月 21:31]

Strategic delays in conservation efforts could be the key to protecting more species according to researchers. The new study found instead of spending project funds immediately, conservation organizations could use the right amount of delay to improve the benefits achieved from their funding by focusing first on investment, capacity building, or monitoring and research.

• [**'Keep it local' approach more effective than government schemes at protecting rainforest**](#) [周二, 12 9月 21:31]

Conservation initiatives led by local and indigenous groups can be just as effective as schemes led by government, according to new research. In some cases in the Amazon rainforest, grassroots initiatives can be even more effective at protecting this vital ecosystem.

• [**Researchers discover new, abundant enzyme that helps bacteria infect animals**](#) [周二, 12 9月 21:30]

A new class of enzymes has been discovered in hundreds of bacterial species, including some that cause disease in humans and animals. The discovery provides new insights into how bacteria invade their hosts.

• [**Ancient tree reveals cause of spike in Arctic temperature**](#) [周二, 12 9月 21:30]

A kauri tree trapped in a New Zealand swamp for 30,000 years may have overturned the idea that a slowdown in ocean currents in the North Atlantic may be entirely responsible for Dansgaard-Oeschger events and the characteristic bi-polar see-saw, which sees the Antarctica cool while the Arctic warms during glacial periods. The research reveals a mechanism that generates a 20,000 km long atmospheric bridge, reaching from Antarctica to the Arctic.

• [**Modeling the impact of green eggs and hens**](#) [周二, 12 9月 21:30]

Poultry given vegan organic chicken feed can help to produce eggs with a smaller environmental footprint than those fed non-organic feeds that

contain animal by-products, new research shows.

- [**Rapid climate changes across northern hemisphere in the earliest Middle Pleistocene**](#) [周二, 12 9月 21:30]

By studying climate changes that took place thousands of years ago, we can better understand the global climate system and predict Earth's future climate. A multi-organization research team has discovered evidence of rapid climate changes on a millennial-to-centennial scale that occurred 780 to 760 thousand years ago.

- [**Rising CO2 leading to changes in land plant photosynthesis**](#) [周二, 12 9月 05:04]

Researchers have determined that major changes in plant behavior have occurred over the past 40 years, using measurements of subtle changes in the carbon dioxide (CO2) currently found in the atmosphere.

- [**Study of circular DNA comes full circle with use of old technique**](#) [周二, 12 9月 04:32]

A 50-year-old lab technique is helping researchers better understand circular DNA, a lesser-known and poorly understood cousin of the linear version commonly associated with life's genetic blueprint. With the aid of a process called density gradient centrifugation, a research team recently published a study that for the first time characterizes all of the circular DNA in the worm *C. elegans*, as well as in three human cell types.

- [**Air pollution cuts 3 years off lifespans in Northern China**](#) [周二, 12 9月 03:09]

A Chinese policy is unintentionally causing people in northern China to live 3.1 years less than people in the south due to air pollution concentrations that are 46 percent higher. These findings imply that every additional 10 micrograms per cubic meter of particulate matter pollution (PM10) reduces life expectancy by 0.6 years.

- [**'Internal clock' found within live human cells**](#) [周二, 12 9月 03:09]

An internal clock has been discovered within live human cells, a finding

that creates new opportunities for understanding the building blocks of life and the onset of disease.

- [**When ancient fossil DNA isn't available, ancient glycans may help trace human evolution**](#) [周二, 12 9月 03:09]

Researchers have discovered a new kind of glycan (sugar chain) that survives even in a 4-million-year-old animal fossil from Kenya, under conditions where ancient DNA does not. While ancient hominin fossils are not yet available for glycan analysis, this proof-of-concept study sets the stage for unprecedented explorations of human origins and diet.

- [**Clouds like honeycomb**](#) [周二, 12 9月 03:09]

An innovative network approach to explain polygonal patterns in clouds could help scientists find more accurate descriptions of clouds in computer models of weather and climate change.

- [**Urban climate change**](#) [周二, 12 9月 03:09]

Southern cities such as Houston and Tampa -- which faced the wrath of hurricanes Harvey and Irma, respectively -- may not be the only urban environments vulnerable to extreme weather. Northern cities also face the potential for flooding as global temperatures continue to warm.

- [**Why your ancestors would have aced the long jump**](#) [周二, 12 9月 03:09]

A 52-million-year-old ankle fossil suggests our prehuman ancestors were high-flying acrobats. For years, scientists thought the ancestors of today's humans, monkeys, lemurs and apes were relatively slow and deliberate animals, using their grasping hands and feet to creep along small twigs and branches. But a new study suggests the first primates were masters at leaping through the trees.

- [**Earthquake triggers 'slow motion' quakes in New Zealand**](#) [周二, 12 9月 00:27]

Slow slip events, a type of slow motion earthquake that occurs over days to weeks, are thought to be capable of triggering larger, potentially damaging earthquakes. In a new study, scientists have documented the first clear-cut instance of the reverse -- a massive earthquake

immediately triggering a series of large slow slip events.

- [**Scientists track the brain-skull transition from dinosaurs to birds**](#) [周二, 12 9月 00:27]

The dramatic, dinosaur-to-bird transition that occurred in reptiles millions of years ago was accompanied by profound changes in the skull roof of those animals -- and holds important clues about the way the skull forms in response to changes in the brain -- according to a new study. It is the first time scientists have tracked the link between the brain's development and the roofing bones of the skull.

- [**How openings in Antarctic sea ice affect worldwide climate**](#) [周二, 12 9月 00:26]

In a new analysis of climate models, researchers reveal the significant global effects that seemingly anomalous polynyas, or openings in sea ice, can have. Their findings indicate that heat escaping from the ocean through these openings impacts sea and atmospheric temperatures and wind patterns around the globe and even rainfall around the tropics.

- [**Muscle nuclei: May the force be with you**](#) [周二, 12 9月 00:26]

A group of researchers has revealed the mechanism by which cellular nuclei reach their position within muscle cells. This discovery can have important implications in therapeutic strategies to treat muscular diseases.

- [**Cold region 'tipping point' now inevitable**](#) [周二, 12 9月 00:26]

The decline of cold regions called periglacial zones is now inevitable due to climate change, researchers say.

- [**The evolutionary origin of the gut**](#) [周二, 12 9月 00:26]

How did the gut, the skin and musculature evolve? This question concerns scientists for more than a century. Through the investigation of the embryonic development of sea anemones, a very old animal lineage, researchers have now come to conclusions which challenge the 150-year-old hypothesis of the homology (common evolutionary origin) of the germ layers that form all later organs and tissues.

• [**USA threatened by more frequent flooding**](#) [周二, 12 9月 00:26]

The East Coast of the United States is threatened by more frequent flooding in the future. According to this study, the states of Virginia, North Carolina, and South Carolina are most at risk. Their coastal regions are being immersed by up to three millimeters per year -- among other things, due to human intervention.

• [**Half-a-billion-year-old fossils shed light animal evolution on Earth**](#) [周二, 12 9月 00:26]

Scientists have discovered traces of life more than half-a-billion years old that could change the way we think about how all animals evolved on Earth.

• [**Biodiversity just as powerful as climate change for healthy ecosystems**](#) [周二, 12 9月 00:26]

Biodiversity is proving to be one of humanity's best defenses against extreme weather. In past experiments, diversity has fostered healthier, more productive ecosystems, like shoreline vegetation that guards against hurricanes. However, many experts doubted whether these experiments would hold up in the real world. A study offers a decisive answer: biodiversity's power in the wild surpasses experimental predictions, in some cases topping even effects of climate.

• [**Fathers can influence the sex of their offspring, scientists show**](#) [周二, 12 9月 00:26]

It has traditionally been thought that in mammals only mothers are able to influence the sex of their offspring. But a new study in wild mice has shown that fathers can, in fact, influence sex ratios.

• [**Looking stressed can help keep the peace**](#) [周一, 11 9月 21:59]

Scratching may have evolved as a communication tool to help social cohesion, new research suggests for the first time.

• [**Fire ant venom compounds may lead to skin treatments**](#) [周一, 11 9月 21:59]

Solenopsins, the main toxic components of fire ant venom, chemically resemble ceramides, which are lipid-like molecules essential for maintaining for the barrier function of the skin. Solenopsin analogs can reduce skin thickening and inflammation in a mouse model of psoriasis, scientists have shown.

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- [**Historic legacies affect climate change survival in Caribbean**](#) [周三, 13 9月 01:48]

Discussion of climate change has failed to pay enough attention to the social, political and historic factors which increase the vulnerability of Caribbean societies, and calls for a new approach focused on understanding and addressing these historic inequalities.

- [**How should we handle boys who can't read?**](#) [周二, 12 9月 21:31]

Boys are much worse at reading than girls. The disparities have been quite consistent over 15 years. New insights may give hope -- if they're put to use.

- [**'Keep it local' approach more effective than government schemes at protecting rainforest**](#) [周二, 12 9月 21:31]

Conservation initiatives led by local and indigenous groups can be just as effective as schemes led by government, according to new research. In some cases in the Amazon rainforest, grassroots initiatives can be even more effective at protecting this vital ecosystem.

- [**Air pollution cuts 3 years off lifespans in Northern China**](#) [周二, 12 9月 03:09]

A Chinese policy is unintentionally causing people in northern China to live 3.1 years less than people in the south due to air pollution concentrations that are 46 percent higher. These findings imply that every additional 10 micrograms per cubic meter of particulate matter pollution (PM10) reduces life expectancy by 0.6 years.

• [**Urban climate change**](#) [周二, 12 9月 03:09]

Southern cities such as Houston and Tampa -- which faced the wrath of hurricanes Harvey and Irma, respectively -- may not be the only urban environments vulnerable to extreme weather. Northern cities also face the potential for flooding as global temperatures continue to warm.

• [**Earthquake triggers 'slow motion' quakes in New Zealand**](#) [周二, 12 9月 00:27]

Slow slip events, a type of slow motion earthquake that occurs over days to weeks, are thought to be capable of triggering larger, potentially damaging earthquakes. In a new study, scientists have documented the first clear-cut instance of the reverse -- a massive earthquake immediately triggering a series of large slow slip events.

• [**Do we need to reform international drug treaties as more countries legalize cannabis?**](#) [周六, 09 9月 08:55]

The future of international drug control treaties is in doubt because of recent treaty-violating decisions to legalize cannabis use in Canada, the United States and Uruguay. A professor, whose 2014 review of 20 years of cannabis research made world headlines, thinks so. If decriminalization is the way of the future, he advocates a cautious approach to policy reform that would involve trialing and evaluating the effects of incrementally more liberal drug policies.

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [Sorting molecules with DNA robots](#) [周五, 15 9月 03:24]

Scientists have programmed a 'robot' made of DNA to pick up and sort molecules into predetermined locations.

- [The return of the comet-like exoplanet](#) [周五, 15 9月 03:23]

Astronomers have focused the Hubble Space Telescope on an exoplanet that had already been seen losing its atmosphere, which forms an enormous cloud of hydrogen, giving the planet the appearance of a giant comet. During earlier observations, it was not possible to cover the whole cloud, whose shape was predicted by numerical simulations. Thanks to these new observations, the scientists have finally been able to confirm the initial predictions.

- ['Handedness' in scale-eating fish: Nature and nurture](#) [周五, 15 9月 03:23]

Lateralized behaviors are thought to be strengthened during development. However, little is known about how they are acquired during development. In the scale-eating cichlid model, researchers demonstrated the attack side preference of juveniles was developed with scale-eating experience, regardless of age. They also found that kinetics of attack behavior is superior on one side by nature. Therefore, they concluded that the fish learn to use the naturally dominant side through experience.

- [Could interstellar ice provide the answer to birth of DNA?](#) [周五, 15 9月 03:22]

Molecules brought to Earth in meteorite strikes could potentially be

converted into the building blocks of DNA, researchers have shown.

- [**Artificial 'skin' gives robotic hand a sense of touch**](#) [周四, 14 9月 07:30]

A team of researchers from the University of Houston has reported a breakthrough in stretchable electronics that can serve as an artificial skin, allowing a robotic hand to sense the difference between hot and cold, while also offering advantages for a wide range of biomedical devices.

- [**'Peel-and-go' printable structures fold themselves**](#) [周四, 14 9月 07:30]

Researchers have created a printable structure that begins to fold itself up as soon as it's peeled off the printing platform.

- [**Marijuana may produce psychotic-like effects in high-risk individuals**](#) [周四, 14 9月 07:30]

Marijuana may bring on temporary paranoia and other psychosis-related effects in individuals at high risk of developing a psychotic disorder, finds a preliminary study.

- [**'The dark side' of quantum computers**](#) [周四, 14 9月 07:29]

The era of fully fledged quantum computers threatens to destroy internet security as we know it. Researchers are in a race against time to prepare new cryptographic techniques before the arrival of quantum computers, as cryptographers now describe.

- [**Squirrels use 'chunking' to organize their favorite nuts**](#) [周四, 14 9月 07:29]

Like trick-or-treaters sorting their Halloween candy haul, fox squirrels apparently organize their stashes of nuts by variety, quality and possibly even preference, according to new research.

- [**The beam of invisibility**](#) [周三, 13 9月 22:45]

A new idea for a cloaking technology has been created by scientists. A completely opaque material is irradiated from above with a specific wave pattern -- with the effect that light waves from the left can now

pass through the material without any obstruction. This surprising result opens up completely new possibilities for active camouflage.

- [**A one-of-a-kind star found to change over decades**](#) [周三, 13 9月 03:48]

Researchers recently found new evidence that lends support to an existing theory of how the unusual star emits energy.

- [**Earthquake faults may have played key role in shaping the culture of ancient Greece**](#) [周二, 12 9月 22:35]

The Ancient Greeks may have built sacred sites deliberately on land affected by previous earthquake activity, according to a new study.

- [**AI -- Engineering: merging, morphing, mobile robots**](#) [周二, 12 9月 22:35]

Researchers have developed self-reconfiguring modular robots that can merge, split and even self-heal while retaining full sensorimotor control. The work may take us closer to producing robots that can autonomously change their size, shape and function.

- [**Looking stressed can help keep the peace**](#) [周一, 11 9月 21:59]

Scratching may have evolved as a communication tool to help social cohesion, new research suggests for the first time.

- [**Explosive birth of stars swells galactic cores**](#) [周一, 11 9月 11:25]

Astronomers found that active star formation upswells galaxies, like yeast helps bread rise. Using three powerful telescopes on the ground and in orbit, they observed galaxies from 11 billion years ago and found explosive formation of stars in the cores of galaxies. This suggests that galaxies can change their own shape without interaction with other galaxies.

- [**How to draw electricity from the bloodstream**](#) [周六, 09 9月 08:54]

Men build dams and huge turbines to turn the energy of waterfalls and tides into electricity. To produce hydropower on a much smaller scale, scientists have now developed a lightweight power generator based on

carbon nanotube fibers suitable to convert even the energy of flowing blood in blood vessels into electricity.

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- [**Tough stuff: Spider silk enhanced with graphene-based materials**](#) [周六, 16 9月 04:52]

Natural spider silk has excellent mechanical properties. Researchers have now found a way to boost the strength of spider's silk using graphene-based materials, paving the way for a novel class of high-performance bionic composites.

- [**Magnetic fields to alleviate anxiety**](#) [周六, 16 9月 04:52]

It is possible to unlearn fears. And this works even better when a specific region of the brain has previously been stimulated magnetically.

- [**Delayed weaning reduces behavioural problems in cats**](#) [周六, 16 9月 04:52]

Early weaning increases aggression and stereotypic behavior in cats. Based on the study, the recommended weaning age of 12 weeks should be raised by at least two weeks. Delaying weaning is an easy and cost-efficient way of improving the quality of life of cats.

- [**Ultrafast snapshots of relaxing electrons in solids**](#) [周六, 16 9月 04:37]

A team of scientists has been able to capture the dynamics of core-excited electrons in solids in real-time.

- [**Black Sea water temperatures may buck global trend**](#) [周六, 16 9月 04:29]

Scientists have successfully simulated the Black Sea's long term currents, salt water content and temperature for the first time.

- [**Ancient amphibian had mouthful of teeth ready to grab you**](#) [周六, 16 9月 03:58]

The idea of being bitten by a nearly toothless modern frog or salamander sounds laughable, but their ancient ancestors had a full array of teeth, large fangs and thousands of tiny hook-like structures called denticles on the roofs of their mouths that would snare prey, according to paleontologists.

- [**The body's own fat-metabolism protects against the harmful effects of sugar**](#) [周六, 16 9月 02:41]

Researchers have discovered that the fat-metabolism in the cells takes place simultaneously with a detoxification of the harmful substances from the blood sugar, which can avert the damage that can in turn lead to age-related diseases such as diabetes, Alzheimer's and cancer. This indicates that we have a detoxification system which we were not previously aware of.

- [**Scientists question study about plastic-eating caterpillars**](#) [周六, 16 9月 02:41]

Do the larvae of the wax moth really solve the world's plastic problem? Sensational report of biochemical degradation of polyethylene by caterpillars not confirmed.

- [**'Exciting' discovery on path to develop new type of vaccine to treat global viruses**](#) [周六, 16 9月 02:41]

Scientists have made a significant discovery in efforts to develop a vaccine against Zika, dengue and Hepatitis C viruses that affect millions of people around the world.

- [**Why we did not evolve to live forever: Unveiling**](#)

[the mystery of why we age](#) [周六, 16 9月 02:41]

Researchers have made a breakthrough in understanding the origin of the ageing process. They have identified that genes belonging to a process called autophagy -- one of the cells most critical survival processes -- promote health and fitness in young worms but drive the process of ageing later in life.

• [Immune system linked to alcohol drinking behavior](#) [周六, 16 9月 02:41]

Researchers have found a new link between the brain's immune system and the desire to drink alcohol in the evening.

• [Time to dial back on diabetes treatment in older patients? Study finds 11 percent are overtreated](#)

[周六, 16 9月 02:41]

Almost 11 percent of Medicare participants with diabetes had very low blood sugar levels that suggested they were being over-treated, a new study finds. But only 14 percent of these patients had a reduction in blood sugar medication refills in the next six months.

• [Couples weather bickering with a little help from their friends](#) [周六, 16 9月 02:41]

New research finds that having good friends and family members to turn to alleviates the stress of everyday conflict between marital partners. Social networks may help provide protection against health problems brought about by ordinary tension between spouses.

• [Arctic sea ice once again shows considerable melting](#) [周五, 15 9月 22:36]

This September, the extent of Arctic sea ice shrank to roughly 4.7 million square kilometres, scientists have determined.

• [Star formation influenced by local environmental conditions](#) [周五, 15 9月 22:36]

Three scientists have carried out extensive computer simulations related to star formation. They conclude that the present idealized models are

lacking when it comes to describing details in the star formation process.

- [**Discovery can pave the way for more effective cholesterol medicine**](#) [周五, 15 9月 22:35]

Research sheds new light on how the body converts the bad kind of cholesterol. The discovery could lead to new and potentially more effective medicine.

- [**Celebrity fossil reveals all for science**](#) [周五, 15 9月 22:35]

With the help of an artist, a geology professor has figuratively speaking breathed life into one of science's most well-known fossil species; *Agnostus pisiformis*. The trilobite-like arthropod lived in huge numbers in Scandinavia a half-billion years ago. Today, this extinct species provides important clues for science in several ways.

- [**Humans no longer have ancient defense mechanism against viruses**](#) [周五, 15 9月 21:53]

Insects and plants have an important ancient defense mechanism that helps them to fight viruses. This is encoded in their DNA. Scientists have long assumed that vertebrates -- including humans -- also had this same mechanism. But researchers have found that vertebrates lost this particular asset in the course of their evolution.

- [**Golf carts causing serious injuries to children**](#) [周五, 15 9月 21:52]

As golf carts become increasingly popular in communities beyond the fairway, new research shows, a significant number of children are being seriously injured while using them.

- [**Riding a slide while on a parent's lap increases the risk of injury**](#) [周五, 15 9月 21:52]

Going down a slide on a parent's lap can lead to a broken leg for small children. An estimated 352,698 children less than 6 years of age were injured on slides in the United States from 2002 through 2015, and many of those injuries were leg fractures.

- [**People with schizophrenia left out of longevity**](#)

[**revolution**](#) [周五, 15 9月 21:52]

A team of researchers has analyzed all eight published longitudinal studies of mortality in schizophrenia that met their strict research criteria and found that the mean standardized mortality ratio -- a measure of the mortality rate in schizophrenia -- has increased 37 percent from pre-1970s studies to post-1970s studies.

• [**Carbohydrates may be the key to a better malaria vaccine**](#) [周五, 15 9月 21:52]

An international research team has shown for the first time that carbohydrates on the surface of malaria parasites play a critical role in malaria's ability to infect mosquito and human hosts. The discovery also suggests steps that may improve the only malaria vaccine approved to protect people against Plasmodium falciparum malaria -- the most deadly form of the disease.

• [**Life-saving post-ER suicide prevention strategies are cost effective**](#) [周五, 15 9月 21:52]

Three interventions designed for follow up of patients who are identified with suicide risk in hospital emergency departments save lives and are cost effective relative to usual care. A study has modeled the use of the approaches in emergency departments and found that all three interventions compare favorably with a standard benchmark of cost-effectiveness used in evaluating healthcare costs.

• [**Skin patch dissolves 'love handles' in mice**](#) [周五, 15 9月 21:52]

Researchers have developed a medicated skin patch that can turn energy-storing white fat into energy-burning brown fat locally while raising the body's metabolism. The patch could be used to burn off pockets of unwanted fat and treat metabolic disorders like obesity and diabetes.

• [**New Orleans greenery post-Katrina reflects social demographics more than hurricane impact**](#) [周五, 15 9月 21:51]

Popular portrayals of "nature reclaiming civilization" in flood-damaged New Orleans, Louisiana, neighborhoods romanticize an urban ecology shaped by policy-driven socioecological disparities in redevelopment investment, ecologists argue.

- [**A subtler sexism now frames TV coverage of women in sports**](#) [周五, 15 9月 09:06]

An ongoing longitudinal study tracking national coverage of women's sports finds that coverage is still lacking and the sexism of women's sports is less overt but remains a problem.

- [**New climate risk classification created to account for potential 'existential' threats**](#) [周五, 15 9月 09:06]

A new study evaluating models of future climate scenarios has led to the creation of the new risk categories 'catastrophic' and 'unknown' to characterize the range of threats posed by rapid global warming. Researchers propose that unknown risks imply existential threats to the survival of humanity.

- [**In step toward controlling chemistry, physicists create a new molecule, atom by atom**](#) [周五, 15 9月 03:24]

Physicists have discovered a unique new molecule that could lead to many useful applications, and show how chemical reactions can be studied on a microscopic scale using tools of physics.

- [**Biomarkers in the blood prove strong role of food for type 2 diabetes**](#) [周五, 15 9月 03:24]

A pioneering method has demonstrated its potential in a large study, showing that metabolic fingerprints from blood samples could render important new knowledge on the connection between food and health. The study finds that diet is one of the strongest predictors of type 2 diabetes risk in older women.

- [**Electric eels leap to deliver painful, Taser-like jolt**](#) [周五, 15 9月 03:24]

The electric eel has always been noted for its impressive ability to shock

and subdue its prey. It's recently become clear that electric eels also use a clever trick to deliver an intense, Taser-like jolt to potential predators: they leap from the water to target threatening animals, humans included, above water. Now, a researcher has measured (and experienced) just how strong that jolt can be.

- [**Sorting molecules with DNA robots**](#) [周五, 15 9月 03:24]

Scientists have programmed a 'robot' made of DNA to pick up and sort molecules into predetermined locations.

- [**Engineered therapy for blood clotting disorder shows early promise**](#) [周五, 15 9月 03:24]

An investigational treatment that mimics a key clotting enzyme is effective, safe, and may one day eliminate the need for blood products for people with the rare, life-threatening blood disease hereditary thrombotic thrombocytopenic purpura (TTP), according to a study.

- [**Rare genetic cause of peritoneal mesothelioma points to targeted therapy**](#) [周五, 15 9月 03:23]

Investigators have uncovered a new genetic cause of mesothelioma: a genetic rearrangement in the ALK gene, observed in three patients with peritoneal mesothelioma. Unlike previously known causes, this new discovery points to a potential therapeutic approach for those few patients whose tumors harbor the mutation.

- [**One vaccine injection could carry many doses**](#) [周五, 15 9月 03:23]

A new 3-D fabrication method has been developed that can create a new type of drug-carrying particle that could allow several doses of a drug or vaccine to be delivered over an extended time period with just one injection.

- [**Huge genetic diversity among Papuan New Guinean peoples revealed**](#) [周五, 15 9月 03:23]

The first large-scale genetic study of people in Papua New Guinea has shown that different groups within the country are genetically highly different from each other. Scientists reveal that the people there have

remained genetically independent from Europe and Asia for most of the last 50,000 years, and that people from the country's isolated highlands region have been completely independent even until the present day.

- [**Synaptic receptor mobility: Discovery of a new mechanism for controlling memory**](#) [周五, 15 9月 03:23]

A new mechanism has been discovered for storing information in synapses and a means of controlling the storage process. The breakthrough moves science closer to unveiling the mystery of the molecular mechanisms of memory and learning processes.

- [**The return of the comet-like exoplanet**](#) [周五, 15 9月 03:23]

Astronomers have focused the Hubble Space Telescope on an exoplanet that had already been seen losing its atmosphere, which forms an enormous cloud of hydrogen, giving the planet the appearance of a giant comet. During earlier observations, it was not possible to cover the whole cloud, whose shape was predicted by numerical simulations. Thanks to these new observations, the scientists have finally been able to confirm the initial predictions.

- [**'Handedness' in scale-eating fish: Nature and nurture**](#) [周五, 15 9月 03:23]

Lateralized behaviors are thought to be strengthened during development. However, little is known about how they are acquired during development. In the scale-eating cichlid model, researchers demonstrated the attack side preference of juveniles was developed with scale-eating experience, regardless of age. They also found that kinetics of attack behavior is superior on one side by nature. Therefore, they concluded that the fish learn to use the naturally dominant side through experience.

- [**Could interstellar ice provide the answer to birth of DNA?**](#) [周五, 15 9月 03:22]

Molecules brought to Earth in meteorite strikes could potentially be converted into the building blocks of DNA, researchers have shown.

- [**'Mysterious' ancient creature was definitely an**](#)

[animal, research confirms](#) [周五, 15 9月 03:22]

It lived well over 550 million years ago, is known only through fossils and has variously been described as looking a bit like a jellyfish, a worm, a fungus and lichen. But was the 'mysterious' Dickinsonia an animal, or was it something else? A new study provides strong proof that Dickinsonia was an animal.

• [Hubble observes pitch black planet](#) [周五, 15 9月 03:22]

Astronomers have discovered that the well-studied exoplanet WASP-12b reflects almost no light, making it appear essentially pitch black. This discovery sheds new light on the atmospheric composition of the planet and also refutes previous hypotheses about WASP-12b's atmosphere. The results are also in stark contrast to observations of another similarly sized exoplanet.

• [Hydrogen power moves a step closer](#) [周五, 15 9月 03:22]

Physicists are developing methods of creating renewable fuel from water using quantum technology. Renewable hydrogen can already be produced by photoelectrolysis where solar power is used to split water molecules into oxygen and hydrogen. But fundamental problems remain before this can be adopted commercially due to inefficiency. A new study demonstrates that the novel use of nanostructures could increase the maximum photovoltage generated in a photoelectrochemical cell, increasing the productivi...

• [Premature infants may get metabolic boost from mom's breast milk](#) [周四, 14 9月 20:40]

The breast milk of mothers with premature babies has different amounts of microRNA than that of mothers with babies born at term, which may help premature babies catch up in growth and development, according to researchers.

• [Chronic pain common in people living with HIV](#)

[周四, 14 9月 20:40]

All people living with HIV should be screened for chronic pain, which affects 39 to 85 percent of people with the condition, recommend new HIVMA guidelines. Those who have chronic pain should be treated

using a multidisciplinary approach focused on non-drug options ranging from yoga to physical therapy, note the guidelines. Opioids should never be a first-line treatment.

- [**Mechanism behind calorie restriction, lengthened lifespan revealed**](#) [周四, 14 9月 20:40]

Almost a century ago, scientists discovered that cutting calorie intake could dramatically extend lifespan in certain animal species. Despite numerous studies since, however, researchers have been unable to explain precisely why. Now, investigators have broken past that barrier.

- [**Social media helps students learn scientific argumentation better**](#) [周四, 14 9月 07:31]

Students who took part in a program that taught scientific argumentation learned the concepts better than their peers who did not, a study concludes.

- [**New supernova analysis reframes dark energy debate**](#) [周四, 14 9月 07:31]

The accelerating expansion of the Universe may not be real, but could just be an apparent effect, according to new research. The new study finds the fit of Type Ia supernovae to a model universe with no dark energy to be very slightly better than the fit to the standard dark energy model.

- [**How well electron transport works in furfural biogas**](#) [周四, 14 9月 07:31]

Furfural is a promising candidate in the quest for alternative biofuels.

- [**Evolution of 'true frogs' defies long-held expectations of science**](#) [周四, 14 9月 07:31]

New research shows, in contrast to expectations, 'the rapid global range expansion of true frogs was not associated with increased net-diversification.'

Tough stuff: Spider silk enhanced with graphene-based materials -- ScienceDaily

Natural spider silk has excellent mechanical properties. Researchers from the Graphene Flagship have found a way to boost the strength of spider's silk using graphene-based materials, paving the way for a novel class of high-performance bionic composites.

Researchers from the Graphene Flagship have demonstrated that graphene-based materials can be used to boost the properties of spider's silk. The silk -- produced naturally by the spiders, incorporating graphene and carbon nanotubes (rolled up graphene sheets) introduced in their environment -- had enhanced mechanical properties of up to three times the strength and ten times the toughness of the unmodified silks. The work is published in *2D Materials* and was a collaboration between the University of Trento, Italy and the Cambridge Graphene Centre at the University of Cambridge, UK, within the Graphene Flagship's Polymer Composites

Work Package.

Artificially modified biological materials are an expanding area of research. Natural materials can have properties that cannot be achieved with lab-produced materials, and taking inspiration from nature is an effective research tool

To enhance the spider's silk, the researchers prepared solutions of graphene and carbon nanotubes (CNTs) which were sprayed within the enclosure the spiders were kept in. After allowing the spiders to ingest the graphene and CNT dispersions from their environment, silk was collected from the spiders and tested for graphene/CNT content and mechanical properties.

The silks showed enhanced mechanical properties compared to reference silks collected from the same spiders, with significant increases in the strength, toughness and elasticity of the biocomposite silk threads. The strongest silk threads had a fracture strength of up to 5.4 GPa, over 3 times as strong as the unmodified silks, as well as a tenfold increase of toughness modulus up to 2.1 GPa.

This study opens up new potentials for tailoring the

properties of biological materials to enhance their properties for use in novel applications. For example, these artificially modified silks could find use in high-performance or biodegradable textiles such as parachutes or medical dressings.

"Humans have used silkworm silks widely for thousands of years, but recently research has focussed on spider silk, as it has promising mechanical properties. It is among the best spun polymer fibres in terms of tensile strength, ultimate strain, and especially toughness, even when compared to synthetic fibres such as Kevlar," said Nicola Pugno, of the University of Trento.

"We already know that there are biominerals present in the protein matrices and hard tissues of insects, which gives them high strength and hardness in their jaws, mandibles and teeth, for example. So our study looked at whether spider silk's properties could be 'enhanced' by artificially incorporating various different nanomaterials into the silk's biological protein structures," said Pugno.

"This is the highest fibre toughness reported to date, and a strength comparable to that of the strongest

carbon fibres or limpet teeth," said Pugno. "These are still early days, but our results are a proof of concept that paves the way to exploiting the naturally efficient spider spinning process to produce reinforced bionic silk fibres, thus further improving one of the most promising strong materials."

Andrea Ferrari, director of the Cambridge Graphene Centre, Science and Technology Officer of the Graphene Flagship, and Chair of the Flagship's management panel, added "The interaction between graphene and related materials and bio-materials is key to broaden their possible applications. This is one of many examples showing potential in this area. This work can help us to design novel composites with enhanced properties, taking inspiration from nature"

Story Source:

[Materials](#) provided by [Graphene Flagship](#). Original written by Sophia Lloyd. *Note: Content may be edited for style and length.*

| [Section menu](#) | [主菜单](#) |

Magnetic fields to alleviate anxiety -- ScienceDaily

It is possible to unlearn fears. And this works even better when a specific region of the brain has previously been stimulated magnetically. This has been shown by researchers from the Würzburg University Hospital in a new study.

Nearly one in seven Germans suffer from an anxiety disorder. Some panic upon boarding an aircraft, others find it impossible to enter a room with a spider on the wall and again others prefer the staircase over the elevator -- even to get to the tenth floor -- because riding in elevators elevates their heart rate.

What sounds like funny anecdotes is often debilitating for the sufferers. Sometimes their anxiety can affect them to a point that they are unable to follow a normal daily routine. But help is available: "Cognitive behavioural therapy is an excellent treatment option," says Professor Martin J. Herrmann, a psychologist at the Center of Mental Health of the Würzburg University Hospital. This form of therapy deliberately

exposes anxiety patients to the situations they feel threatened by -- under the individual psychological supervision of an expert.

Brain stimulation improves response

However, current studies have shown that this type of intervention does not benefit all persons in equal measure. This is why Herrmann and researchers from the Department of Clinical Psychology of the University of Würzburg have been looking for ways to improve the patients' response to cognitive behavioural therapy -- by using the so-called transcranial magnetic stimulation. In fact, a positive effect was found on the study participants treated with this method.

"We knew from previous studies that a specific region in the frontal lobe of the human brain is important for unlearning anxiety," Martin J. Herrmann explains the work of the Würzburg scientists. He goes on to say that initial studies have shown that magnetically stimulating this brain region can improve the effectiveness of unlearning anxiety responses in the laboratory. In its recently published study, the team investigated whether this also works for treating a fear of heights.

To this end, 39 participants with a pronounced fear of heights were taken to dizzying heights during two sessions -- however not in real life but using virtual reality. It does not matter that the environment is not real: "The people feel actual fear also in a virtual reality -- although they know that they are not really in a dangerous situation," Herrmann explains.

The scientists stimulated the frontal lobe of some of the anxiety patients for about 20 minutes before entering the virtual world; the other group was only administered a pseudo stimulation. The result: "The findings demonstrate that all participants benefit considerably from the therapy in virtual reality and the positive effects of the intervention are still clearly visible even after three months," Herrmann explains. And what is more: By stimulating the frontal lobe, the therapy response is accelerated.

Next the researchers want to study whether this method is also suitable to treat other forms of anxiety by conducting a further virtual reality therapy study for arachnophobic patients.

The study was performed within the scope of Collaborative Research Center / Transregio 58 "Fear,

Anxiety and Anxiety Disorders."

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| [Section menu](#) | [主菜单](#) |

Delayed weaning reduces behavioural problems in cats -- ScienceDaily

Early weaning increases aggression and stereotypic behaviour in cats, shows a new study from Professor Hannes Lohi's research group. Based on the study conducted at the University of Helsinki, the recommended weaning age of 12 weeks should be raised by at least two weeks. Delaying weaning is an easy and cost-efficient way of improving the quality of life of cats.

The cat is the most popular companion animal, and people are increasingly interested in its wellbeing. One of the topics under international debate is the weaning age, i.e., the age at which kittens are separated from their mother and siblings and brought to a new home. In Finland, the recommended minimum age of weaning is 12 weeks, but in many other countries, such as the United States, weaning of kittens as young as 8 weeks is common.

It has previously been thought that the critical period of socialisation in cats ends by 8 weeks of age, after

which social experiences have little impact on behaviour.

"We found that positive changes in the cat's behaviour can occur after the currently recommended age of weaning, 12 weeks. I'm a cat lover myself, and this study supports my own previous experiences on the importance of the weaning age on the wellbeing of cats. I think raising the recommended age of weaning would be the animal welfare act of the year," says doctoral student Milla Ahola.

While the detrimental effects of early weaning have been studied in some other animal species, no studies on the topic have been conducted on cats, despite suspicions of its connection to feline behavioural problems.

"We found an easy way to improve cat welfare: we propose that the recommended age of weaning be increased by two weeks. The number of cats in the world is immense, and behavioural problems are very common. This could have a significant positive impact on the wellbeing of both cats and their owners on a global scale," says Professor Hannes Lohi.

The study used the results from the health and behaviour survey Professor Lohi's group had previously conducted on nearly 6,000 cats, currently the most extensive cat behaviour database in the world. According to the survey, many behavioural problems are more common than expected. More than 80% of cats were reported as exhibiting mild behavioural problems, while serious behavioural problems were reported for 25% of all cats. Feline behavioural problems can include shyness, stereotypic wool sucking, excessive grooming and aggression.

"The age of weaning has an impact on the cat's later behaviour. Cats weaned under the age of 8 weeks displayed more aggression and stereotypic behaviour. Cats weaned in adulthood had fewer such problems than other cats. Cats weaned at 14 weeks of age had fewer behavioural problems than cats weaned earlier," explains Ahola.

Studies on other animal species have produced similar results. For example, among rodents, monkeys and minks, early separation from the mother leads to a higher prevalence of stereotypic behaviour and aggression. A similar phenomenon has been found in humans.

"These behavioural changes are also linked. We found that increased aggression correlated with increased stereotypic behaviour. The impacts of early weaning seem to manifest specifically as aggression and stereotypic behaviour, which suggests changes in the neurotransmitters of the basal ganglia," states Professor Lohi.

Professor Hannes Lohi's research group works in the University of Helsinki's Faculty of Veterinary Medicine and Faculty of Medicine as well as at the Folkhälsan Research Centre. Professor Lohi's research has received support from Kissaliitto, the Jane and Aatos Erkkö Foundation, and the ERANET-NEURON network under the European Commission.

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| [Section menu](#) | [主菜单](#) |

Ultrafast snapshots of relaxing electrons in solids -- ScienceDaily

A team of scientists at the Max Planck Institute of Quantum Optics, Garching, Germany has been able to capture the dynamics of core-excited electrons in solids in real-time.

Using ultrafast flashes of laser and x-ray radiation, scientists at the Max Planck Institute of Quantum Optics (Garching, Germany) took snapshots of the briefest electron motion inside a solid material to date. The electron motion lasted only 750 billionths of the billionth of a second before it faded, setting a new record of human capability to capture ultrafast processes inside solids!

When x-rays shine onto solid materials or large molecules, an electron is pushed away from its original place near the nucleus of the atom, leaving a hole behind. For a long time, scientists have suspected that the liberated electron and the positively charged hole form a new kind of quasiparticle -- known as 'core-excited electron-hole pair'. But so far, there has not yet been a real proof

of its existence. Scientists have a wide range of tools to track excitons in semiconductors in real-time. Those are generated by ordinary light, and can be employed in various applications in optoelectronics and microelectronics. On the contrary, core-excitons are extremely short-lived, and up to now, no technique was available to track their motion and deduce their properties.

A team of scientists led by Dr. Eleftherios Goulielmakis, head of the research group "Attoselectronics" at the Max Planck Institute of Quantum Optics, have been able to capture the dynamics of core-excitons in solids in real-time. Using flashes of x-ray radiation lasting only few hundreds attoseconds (1 attosecond = 0.0000000000000000001 seconds) followed by optical light flashes of similar duration (a tool developed by the group last year) the scientists obtain an ultrafast camera which allowed them to take snapshots of the short-lived excitons in silicon dioxide for the first time.

"Core-excitons live for a very short time because their interactions with other particles in the solid quickly stops their motion," said Antoine Moulet, leading author in this work. "In quantum mechanics we say that

the exciton loses its coherence," he adds.

A key tool to track the dynamics of core-excitons has been the development of attosecond light flashes in the optical range. The work was published by the Attoselectronics group last year.

"In our experiment we use x-ray flashes to light up core-excitons in solids, whereas the optical attosecond pulses provide the possibility to resolve this motion in real-time," says Julien Bertrand, a former researcher in the group of Goulielmakis, at present assistant professor at Laval University, Canada. "The combination of both allowed us to take snapshots of the motion of core-excitons which lived for approximately 750 attoseconds."

But the study was not limited to capturing these fleeting motions inside solids. "We were able to acquire quantitative information about the properties of core-excitons such as their miniature dimension which were merely bigger than that of a single atom, or how easily they are polarized by visible light," says Goulielmakis. "Our technique advances excitonics, i.e. the measurement, the control and the application of excitons in the x-ray regime. But at the same time, it is

a general tool for studying ultrafast x-ray initiated processes in solids on their natural time scales. Such a capability has never before been possible in x-ray science."

The team now envisages applications of their technique for studying ultrafast processes at interfaces of solids, and new routes to realize ultrafast switches for x-ray radiation based on optical light fields. "With x-ray free electron lasers rapidly proliferating around the world, the capability of controlling x-rays with visible light becomes increasingly important," says Goulielmakis.

Story Source:

[Materials](#) provided by [Max Planck Institute of Quantum Optics](#). *Note: Content may be edited for style and length.*

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Black Sea water temperatures may buck global trend -- ScienceDaily

Using a model developed at the JRC, scientists have successfully simulated the Black Sea's long term currents, salt water content and temperature for the first time.

Average surface temperatures of the Black Sea may not have risen, according to the surprising results of a new study from the JRC.

The study used a model to simulate possible temperature changes and predict long term trends in the Black Sea's hydrodynamics.

While the surface showed no long term warming trend, the same simulations also indicated that average temperatures at 50 metres below the surface may be rising.

The Black Sea has unique natural conditions like a positive net freshwater balance and very specific local currents. Observational data on temperature change is

varied and scarce. As such it is not clear what the impacts of climate change have been on Black Sea water temperatures.

The Sea has undergone significant ecological degradation since the 1970s, due largely to pollution, overfishing and natural climatic variations. Mapping trends in its ecosystem and simulating future scenarios is vital to understand how the Sea's properties may develop in the future as a result of climate change and policy decisions.

Main findings

The simulations in this study, covering five decades, show no significant long-term trend in the Black Sea's average surface water temperature. This lack of a trend is an entirely new result based on a long term simulation that had not previously been successfully conducted.

The simulation was run for the full period from 1960 -- 2015 and the results were checked against known data, both from satellite information available over the last twenty years and less complete data from earlier decades.

Prior to the completion of this study, scientists had relied on sparse surface temperature data from ship cruises to understand the Sea's properties in the earlier decades.

However, the few data points that do exist for this period have not been enough to prove a decisive trend. In fact, in the decade between 1966 and 1975 there is practically no observational data available at all.

The results of the simulation, while filling in the gaps, also came as a surprise to scientists who were expecting to see at least some warming trend between 1960 and 2015. The results also come in direct contrast to previous simulations of the nearby Mediterranean Sea, which is getting warmer.

Scientists were also surprised to find a significant decreasing trend in surface salt content of 0.02 % per year, again in direct contrast to the increasing surface salinity found in the Mediterranean. The simulations found no individual correlation between salinity and wind speed/direction, or indeed with an increase in fresh water input from the many rivers running into the Black Sea.

This suggests that combinations of weather conditions are responsible for the trend.

Furthermore, the study identifies three distinct periods in which there was a significant shift in the salt water and temperature properties of the Black Sea -- 1960-1970, 1970-1995 and 1995-2015. This may be related to changes in the Sea's currents, as the periods were also characterised by significant changes from a weak and disintegrated current circulation in the first period, to a strong main 'Rim Current' circulation in the second and third periods.

Over the full simulation period, the strengthening of this circulation can be seen, accompanied by intensified formation of small, localised eddies running against the current.

The bigger picture

The Earth is getting warmer, but this isn't happening uniformly across the planet and some regions are heating faster than others. So whilst the Black Sea might not be strongly affected, this is likely compensated by other regions which are warming at a faster rate than the globe as a whole.

For example, the sea-surface waters near Texas when Hurricane Harvey roared toward Houston were among the Earth's warmest.

While it might sound like good news that there has been no long-term increase in the surface water temperatures of the Black Sea, this does not mean that it is unaffected by global warming. These effects may be hidden or mitigated by the fact that air temperature in the region is warming.

Indeed, the study also looked at average temperature trends at specific depths and found a positive trend at 50 metres below the surface, which suggests a warming of the deeper waters prior to the surface layer.

Background

Several unique natural conditions of the Black Sea are well known: the so-called 'Rim Current' of strong water circulation around the perimeter of the Sea; the Cold Intermediate Layer (CIL) of waters below surface level; and the high level of anoxic water, which makes up over 90% of the basin's deep water volume.

However, current knowledge about the spatial and

temporal dynamics of the Black Sea's salt content and temperature characteristics is far more limited, due to a lack of data and sparse distribution of existing measurements.

With this knowledge gap in mind, researchers at the JRC sought to develop a model able to reproduce the Black Sea's temperature and salt-water content over the long term.

During the study, carried out as part of the EU's Scenario simulations of the changing Black Sea ecosystem (SIMSEA) project, continuous simulations covering the period 1960-2015 were performed.

The researchers used a high-resolution General Estuarine Transport Model (GETM) with specific equations designed to accurately reproduce the main physical features of the Black Sea without relying on scarce observational and climatological data.

The study is the first successful Black Sea model based on GETM and has been published in the Journal of Geophysical Research. The successful validation and long-term application of the model used will be incorporated into future forecasts and simulations.

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| [Section menu](#) | [主菜单](#) |

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All Top News

Top science stories featured on ScienceDaily's home page.

- [**Tough stuff: Spider silk enhanced with graphene-based materials**](#) [周六, 16 9月 04:52]

Natural spider silk has excellent mechanical properties. Researchers have now found a way to boost the strength of spider's silk using graphene-based materials, paving the way for a novel class of high-performance bionic composites.

- [**Ultrafast snapshots of relaxing electrons in solids**](#) [周六, 16 9月 04:37]

A team of scientists has been able to capture the dynamics of core-excited excitons in solids in real-time.

- [**Ancient amphibian had mouthful of teeth ready to grab you**](#) [周六, 16 9月 03:58]

The idea of being bitten by a nearly toothless modern frog or salamander sounds laughable, but their ancient ancestors had a full array of teeth, large fangs and thousands of tiny hook-like structures called denticles on the roofs of their mouths that would snare prey, according to paleontologists.

- [**Why we did not evolve to live forever: Unveiling the mystery of why we age**](#) [周六, 16 9月 02:41]

Researchers have made a breakthrough in understanding the origin of the ageing process. They have identified that genes belonging to a process called autophagy -- one of the cells most critical survival processes -- promote health and fitness in young worms but drive the process of ageing later in life.

• [**Skin patch dissolves 'love handles' in mice**](#) [周五, 15 9月 21:52]

Researchers have developed a medicated skin patch that can turn energy-storing white fat into energy-burning brown fat locally while raising the body's metabolism. The patch could be used to burn off pockets of unwanted fat and treat metabolic disorders like obesity and diabetes.

• [**In step toward controlling chemistry, physicists create a new molecule, atom by atom**](#) [周五, 15 9月 03:24]

Physicists have discovered a unique new molecule that could lead to many useful applications, and show how chemical reactions can be studied on a microscopic scale using tools of physics.

• [**Biomarkers in the blood prove strong role of food for type 2 diabetes**](#) [周五, 15 9月 03:24]

A pioneering method has demonstrated its potential in a large study, showing that metabolic fingerprints from blood samples could render important new knowledge on the connection between food and health. The study finds that diet is one of the strongest predictors of type 2 diabetes risk in older women.

• [**Electric eels leap to deliver painful, Taser-like jolt**](#) [周五, 15 9月 03:24]

The electric eel has always been noted for its impressive ability to shock and subdue its prey. It's recently become clear that electric eels also use a clever trick to deliver an intense, Taser-like jolt to potential predators: they leap from the water to target threatening animals, humans included, above water. Now, a researcher has measured (and experienced) just how strong that jolt can be.

• [**Sorting molecules with DNA robots**](#) [周五, 15 9月 03:24]

Scientists have programmed a 'robot' made of DNA to pick up and sort molecules into predetermined locations.

• [**Huge genetic diversity among Papuan New Guinean peoples revealed**](#) [周五, 15 9月 03:23]

The first large-scale genetic study of people in Papua New Guinea has shown that different groups within the country are genetically highly different from each other. Scientists reveal that the people there have remained genetically independent from Europe and Asia for most of the last 50,000 years, and that people from the country's isolated highlands region have been completely independent even until the present day.

- [**The return of the comet-like exoplanet**](#) [周五, 15 9月 03:23]

Astronomers have focused the Hubble Space Telescope on an exoplanet that had already been seen losing its atmosphere, which forms an enormous cloud of hydrogen, giving the planet the appearance of a giant comet. During earlier observations, it was not possible to cover the whole cloud, whose shape was predicted by numerical simulations. Thanks to these new observations, the scientists have finally been able to confirm the initial predictions.

- [**'Handedness' in scale-eating fish: Nature and nurture**](#) [周五, 15 9月 03:23]

Lateralized behaviors are thought to be strengthened during development. However, little is known about how they are acquired during development. In the scale-eating cichlid model, researchers demonstrated the attack side preference of juveniles was developed with scale-eating experience, regardless of age. They also found that kinetics of attack behavior is superior on one side by nature. Therefore, they concluded that the fish learn to use the naturally dominant side through experience.

- [**Could interstellar ice provide the answer to birth of DNA?**](#) [周五, 15 9月 03:22]

Molecules brought to Earth in meteorite strikes could potentially be converted into the building blocks of DNA, researchers have shown.

- [**Hubble observes pitch black planet**](#) [周五, 15 9月 03:22]

Astronomers have discovered that the well-studied exoplanet WASP-12b reflects almost no light, making it appear essentially pitch black. This discovery sheds new light on the atmospheric composition of the planet and also refutes previous hypotheses about WASP-12b's

atmosphere. The results are also in stark contrast to observations of another similarly sized exoplanet.

- [**New supernova analysis reframes dark energy debate**](#) [周四, 14 9月 07:31]

The accelerating expansion of the Universe may not be real, but could just be an apparent effect, according to new research. The new study finds the fit of Type Ia supernovae to a model universe with no dark energy to be very slightly better than the fit to the standard dark energy model.

- [**Evolution of 'true frogs' defies long-held expectations of science**](#) [周四, 14 9月 07:31]

New research shows, in contrast to expectations, 'the rapid global range expansion of true frogs was not associated with increased net-diversification.'

- [**Artificial 'skin' gives robotic hand a sense of touch**](#) [周四, 14 9月 07:30]

A team of researchers from the University of Houston has reported a breakthrough in stretchable electronics that can serve as an artificial skin, allowing a robotic hand to sense the difference between hot and cold, while also offering advantages for a wide range of biomedical devices.

- [**In-utero treatment reverses cleft palate in mice**](#) [周四, 14 9月 07:30]

Researchers clarified a molecular pathway responsible for the formation of cleft palate and identified a new treatment to reverse this defect in mouse pups in utero.

- [**'Peel-and-go' printable structures fold themselves**](#) [周四, 14 9月 07:30]

Researchers have created a printable structure that begins to fold itself up as soon as it's peeled off the printing platform.

- [**First global map of water in moon's soil**](#) [周四, 14 9月 07:30]

A new study maps the trace concentrations of water implanted in the lunar soil by the solar wind, a water source that could be used as resource in future lunar exploration.

- [**New gravity map suggests Mars has a porous crust**](#) [周四, 14 9月 07:30]

Scientists have found evidence that Mars' crust is not as dense as previously thought, a clue that could help researchers better understand the Red Planet's interior structure and evolution.

- [**Squirrels use 'chunking' to organize their favorite nuts**](#) [周四, 14 9月 07:29]

Like trick-or-treaters sorting their Halloween candy haul, fox squirrels apparently organize their stashes of nuts by variety, quality and possibly even preference, according to new research.

- [**Climate change challenges the survival of fish across the world**](#) [周四, 14 9月 07:29]

Researchers have published the first analysis looking at how vulnerable the world's freshwater and marine fishes are to climate change. Their study used physiological data to predict how nearly 3,000 fish species living in oceans and rivers will respond to warming water temperatures in different regions.

- [**A one-of-a-kind star found to change over decades**](#) [周三, 13 9月 03:48]

Researchers recently found new evidence that lends support to an existing theory of how the unusual star emits energy.

- [**AI -- Engineering: merging, morphing, mobile robots**](#) [周二, 12 9月 22:35]

Researchers have developed self-reconfiguring modular robots that can merge, split and even self-heal while retaining full sensorimotor control. The work may take us closer to producing robots that can autonomously change their size, shape and function.

- [**Coffee and bees: New model of climate change effects**](#) [周二, 12 9月 22:28]

Areas in Latin America suitable for growing coffee face predicted declines of 73-88 percent by 2050. But bee species diversity may save the day, even if many species in cool highland regions are lost as the climate warms.

- [**Your stools reveal whether you can lose weight**](#) [周二, 12 9月 21:31]

Something as simple as a feces sample reveals whether you can lose weight by following dietary recommendations characterized by a high content of fruit, vegetables, fibers and whole grains, report scientists.

- [**Nanoparticles from tattoos travel inside the body, scientists find**](#) [周二, 12 9月 21:31]

The elements that make up the ink in tattoos travel inside the body in micro and nanoparticle forms and reach the lymph nodes according to a new study. It is the first time that there is analytical evidence of the transport of various organic, inorganic pigments and toxic element impurities as well as in depth characterization of the pigments ex vivo in tattooed tissues.

- [**Octopuses aren't loners, new evidence suggests**](#) [周二, 12 9月 05:04]

Octopuses are usually solitary creatures, but a new site in the waters off the east coast of Australia is the home of up to 15 gloomy octopuses (*Octopus tetricus*) that have been observed communicating -- either directly as in den evictions or indirectly through posturing, chasing or color changes, according to new research findings.

- [**When ancient fossil DNA isn't available, ancient glycans may help trace human evolution**](#) [周二, 12 9月 03:09]

Researchers have discovered a new kind of glycan (sugar chain) that survives even in a 4-million-year-old animal fossil from Kenya, under conditions where ancient DNA does not. While ancient hominin fossils are not yet available for glycan analysis, this proof-of-concept study sets the stage for unprecedented explorations of human origins and diet.

- [**Urban climate change**](#) [周二, 12 9月 03:09]

Southern cities such as Houston and Tampa -- which faced the wrath of hurricanes Harvey and Irma, respectively -- may not be the only urban environments vulnerable to extreme weather. Northern cities also face the potential for flooding as global temperatures continue to warm.

- [**Why your ancestors would have aced the long jump**](#) [周二, 12 9月 03:09]

A 52-million-year-old ankle fossil suggests our prehuman ancestors were high-flying acrobats. For years, scientists thought the ancestors of today's humans, monkeys, lemurs and apes were relatively slow and deliberate animals, using their grasping hands and feet to creep along small twigs and branches. But a new study suggests the first primates were masters at leaping through the trees.

- [**Scientists track the brain-skull transition from dinosaurs to birds**](#) [周二, 12 9月 00:27]

The dramatic, dinosaur-to-bird transition that occurred in reptiles millions of years ago was accompanied by profound changes in the skull roof of those animals -- and holds important clues about the way the skull forms in response to changes in the brain -- according to a new study. It is the first time scientists have tracked the link between the brain's development and the roofing bones of the skull.

- [**How openings in Antarctic sea ice affect worldwide climate**](#) [周二, 12 9月 00:26]

In a new analysis of climate models, researchers reveal the significant global effects that seemingly anomalous polynyas, or openings in sea ice, can have. Their findings indicate that heat escaping from the ocean through these openings impacts sea and atmospheric temperatures and wind patterns around the globe and even rainfall around the tropics.

- [**Brain Composer: 'Thinking' melodies onto a musical score**](#) [周二, 12 9月 00:26]

A new brain-computer interface application that allows music to be

composed by the power of thought has now been developed by scientists.

- [**Cold region 'tipping point' now inevitable**](#) [周二, 12 9月 00:26]

The decline of cold regions called periglacial zones is now inevitable due to climate change, researchers say.

- [**The evolutionary origin of the gut**](#) [周二, 12 9月 00:26]

How did the gut, the skin and musculature evolve? This question concerns scientists for more than a century. Through the investigation of the embryonic development of sea anemones, a very old animal lineage, researchers have now come to conclusions which challenge the 150-year-old hypothesis of the homology (common evolutionary origin) of the germ layers that form all later organs and tissues.

- [**USA threatened by more frequent flooding**](#) [周二, 12 9月 00:26]

The East Coast of the United States is threatened by more frequent flooding in the future. According to this study, the states of Virginia, North Carolina, and South Carolina are most at risk. Their coastal regions are being immersed by up to three millimeters per year -- among other things, due to human intervention.

- [**Half-a-billion-year-old fossils shed light animal evolution on Earth**](#) [周二, 12 9月 00:26]

Scientists have discovered traces of life more than half-a-billion years old that could change the way we think about how all animals evolved on Earth.

- [**Biodiversity just as powerful as climate change for healthy ecosystems**](#) [周二, 12 9月 00:26]

Biodiversity is proving to be one of humanity's best defenses against extreme weather. In past experiments, diversity has fostered healthier, more productive ecosystems, like shoreline vegetation that guards against hurricanes. However, many experts doubted whether these experiments would hold up in the real world. A study offers a decisive answer: biodiversity's power in the wild surpasses experimental

predictions, in some cases topping even effects of climate.

• [**Looking stressed can help keep the peace**](#) [周一, 11 9月 21:59]

Scratching may have evolved as a communication tool to help social cohesion, new research suggests for the first time.

• [**Explosive birth of stars swells galactic cores**](#) [周一, 11 9月 11:25]

Astronomers found that active star formation upswells galaxies, like yeast helps bread rise. Using three powerful telescopes on the ground and in orbit, they observed galaxies from 11 billion years ago and found explosive formation of stars in the cores of galaxies. This suggests that galaxies can change their own shape without interaction with other galaxies.

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

- [**Magnetic fields to alleviate anxiety**](#) [周六, 16 9月 04:52]

It is possible to unlearn fears. And this works even better when a specific region of the brain has previously been stimulated magnetically.
- [**The body's own fat-metabolism protects against the harmful effects of sugar**](#) [周六, 16 9月 02:41]

Researchers have discovered that the fat-metabolism in the cells takes place simultaneously with a detoxification of the harmful substances from the blood sugar, which can avert the damage that can in turn lead to age-related diseases such as diabetes, Alzheimer's and cancer. This indicates that we have a detoxification system which we were not previously aware of.
- [**'Exciting' discovery on path to develop new type of vaccine to treat global viruses**](#) [周六, 16 9月 02:41]

Scientists have made a significant discovery in efforts to develop a vaccine against Zika, dengue and Hepatitis C viruses that affect millions of people around the world.
- [**Why we did not evolve to live forever: Unveiling the mystery of why we age**](#) [周六, 16 9月 02:41]

Researchers have made a breakthrough in understanding the origin of the ageing process. They have identified that genes belonging to a process called autophagy -- one of the cells most critical survival processes -- promote health and fitness in young worms but drive the process of ageing later in life.

- [**Immune system linked to alcohol drinking behavior**](#) [周六, 16 9月 02:41]

Researchers have found a new link between the brain's immune system and the desire to drink alcohol in the evening.

- [**Time to dial back on diabetes treatment in older patients? Study finds 11 percent are overtreated**](#) [周六, 16 9月 02:41]

Almost 11 percent of Medicare participants with diabetes had very low blood sugar levels that suggested they were being over-treated, a new study finds. But only 14 percent of these patients had a reduction in blood sugar medication refills in the next six months.

- [**Couples weather bickering with a little help from their friends**](#) [周六, 16 9月 02:41]

New research finds that having good friends and family members to turn to alleviates the stress of everyday conflict between marital partners. Social networks may help provide protection against health problems brought about by ordinary tension between spouses.

- [**Discovery can pave the way for more effective cholesterol medicine**](#) [周五, 15 9月 22:35]

Research sheds new light on how the body converts the bad kind of cholesterol. The discovery could lead to new and potentially more effective medicine.

- [**Golf carts causing serious injuries to children**](#) [周五, 15 9月 21:52]

As golf carts become increasingly popular in communities beyond the fairway, new research shows, a significant number of children are being seriously injured while using them.

- [**Riding a slide while on a parent's lap increases the risk of injury**](#) [周五, 15 9月 21:52]

Going down a slide on a parent's lap can lead to a broken leg for small children. An estimated 352,698 children less than 6 years of age were injured on slides in the United States from 2002 through 2015, and many

of those injuries were leg fractures.

- **[People with schizophrenia left out of longevity revolution](#)** [周五, 15 9月 21:52]

A team of researchers has analyzed all eight published longitudinal studies of mortality in schizophrenia that met their strict research criteria and found that the mean standardized mortality ratio -- a measure of the mortality rate in schizophrenia -- has increased 37 percent from pre-1970s studies to post-1970s studies.

- **[Carbohydrates may be the key to a better malaria vaccine](#)** [周五, 15 9月 21:52]

An international research team has shown for the first time that carbohydrates on the surface of malaria parasites play a critical role in malaria's ability to infect mosquito and human hosts. The discovery also suggests steps that may improve the only malaria vaccine approved to protect people against Plasmodium falciparum malaria -- the most deadly form of the disease.

- **[Life-saving post-ER suicide prevention strategies are cost effective](#)** [周五, 15 9月 21:52]

Three interventions designed for follow up of patients who are identified with suicide risk in hospital emergency departments save lives and are cost effective relative to usual care. A study has modeled the use of the approaches in emergency departments and found that all three interventions compare favorably with a standard benchmark of cost-effectiveness used in evaluating healthcare costs.

- **[Skin patch dissolves 'love handles' in mice](#)** [周五, 15 9月 21:52]

Researchers have developed a medicated skin patch that can turn energy-storing white fat into energy-burning brown fat locally while raising the body's metabolism. The patch could be used to burn off pockets of unwanted fat and treat metabolic disorders like obesity and diabetes.

- **[A subtler sexism now frames TV coverage of](#)**

women in sports [周五, 15 9月 09:06]

An ongoing longitudinal study tracking national coverage of women's sports finds that coverage is still lacking and the sexism of women's sports is less overt but remains a problem.

• **Biomarkers in the blood prove strong role of food for type 2 diabetes** [周五, 15 9月 03:24]

A pioneering method has demonstrated its potential in a large study, showing that metabolic fingerprints from blood samples could render important new knowledge on the connection between food and health. The study finds that diet is one of the strongest predictors of type 2 diabetes risk in older women.

• **Sorting molecules with DNA robots** [周五, 15 9月 03:24]

Scientists have programmed a 'robot' made of DNA to pick up and sort molecules into predetermined locations.

• **Engineered therapy for blood clotting disorder shows early promise** [周五, 15 9月 03:24]

An investigational treatment that mimics a key clotting enzyme is effective, safe, and may one day eliminate the need for blood products for people with the rare, life-threatening blood disease hereditary thrombotic thrombocytopenic purpura (TTP), according to a study.

• **Rare genetic cause of peritoneal mesothelioma points to targeted therapy** [周五, 15 9月 03:23]

Investigators have uncovered a new genetic cause of mesothelioma: a genetic rearrangement in the ALK gene, observed in three patients with peritoneal mesothelioma. Unlike previously known causes, this new discovery points to a potential therapeutic approach for those few patients whose tumors harbor the mutation.

• **One vaccine injection could carry many doses** [周五, 15 9月 03:23]

A new 3-D fabrication method has been developed that can create a new type of drug-carrying particle that could allow several doses of a drug or vaccine to be delivered over an extended time period with just one

injection.

- [**Huge genetic diversity among Papuan New Guinean peoples revealed**](#) [周五, 15 9月 03:23]

The first large-scale genetic study of people in Papua New Guinea has shown that different groups within the country are genetically highly different from each other. Scientists reveal that the people there have remained genetically independent from Europe and Asia for most of the last 50,000 years, and that people from the country's isolated highlands region have been completely independent even until the present day.

- [**Insulin therapy initially declined and delayed by an average of two years**](#) [周五, 15 9月 03:23]

Thirty percent of type 2 diabetic patients don't begin insulin when it's initially recommended, with the average start time being two years later.

- [**Synaptic receptor mobility: Discovery of a new mechanism for controlling memory**](#) [周五, 15 9月 03:23]

A new mechanism has been discovered for storing information in synapses and a means of controlling the storage process. The breakthrough moves science closer to unveiling the mystery of the molecular mechanisms of memory and learning processes.

- [**Could interstellar ice provide the answer to birth of DNA?**](#) [周五, 15 9月 03:22]

Molecules brought to Earth in meteorite strikes could potentially be converted into the building blocks of DNA, researchers have shown.

- [**Premature infants may get metabolic boost from mom's breast milk**](#) [周四, 14 9月 20:40]

The breast milk of mothers with premature babies has different amounts of microRNA than that of mothers with babies born at term, which may help premature babies catch up in growth and development, according to researchers.

- [**Chronic pain common in people living with HIV**](#) [周四, 14 9月 20:40]

All people living with HIV should be screened for chronic pain, which affects 39 to 85 percent of people with the condition, recommend new HIVMA guidelines. Those who have chronic pain should be treated using a multidisciplinary approach focused on non-drug options ranging from yoga to physical therapy, note the guidelines. Opioids should never be a first-line treatment.

- [**Mechanism behind calorie restriction, lengthened lifespan revealed**](#) [周四, 14 9月 20:40]

Almost a century ago, scientists discovered that cutting calorie intake could dramatically extend lifespan in certain animal species. Despite numerous studies since, however, researchers have been unable to explain precisely why. Now, investigators have broken past that barrier.

- [**Social media helps students learn scientific argumentation better**](#) [周四, 14 9月 07:31]

Students who took part in a program that taught scientific argumentation learned the concepts better than their peers who did not, a study concludes.

- [**In-utero treatment reverses cleft palate in mice**](#) [周四, 14 9月 07:30]

Researchers clarified a molecular pathway responsible for the formation of cleft palate and identified a new treatment to reverse this defect in mouse pups in utero.

- [**Marijuana may produce psychotic-like effects in high-risk individuals**](#) [周四, 14 9月 07:30]

Marijuana may bring on temporary paranoia and other psychosis-related effects in individuals at high risk of developing a psychotic disorder, finds a preliminary study.

- [**Popular bottle-breaking trick is giving insight to brain injuries**](#) [周三, 13 9月 22:45]

As many YouTube videos show, striking the top of a liquid-filled bottle can shatter the bottom. Researchers are hoping to use new knowledge of that party trick to help fill a gap in something much more serious: brain

research.

- [**New hope for 'bubble baby disease'**](#) [周三, 13 9月 22:45]

If untreated, severe combined immune deficiency (SCID) syndrome -- or 'bubble baby disease' -- is often fatal within the first year of a infant's life. A checklist of SCID markers could make diagnosis faster, allowing more babies to receive treatment within a critical timeframe, say researchers.

- [**Multifunctional nano-sized drug carriers based on reactive polypept\(o\)ides**](#) [周三, 13 9月 22:44]

Researchers have been able to demonstrate that reactive polypept(o)ides constitute ideal building blocks to control morphology and function of carrier systems in a simple but precise manner.

- [**Teens' ability to consider the intentions of others linked to structural changes in the brain**](#) [周三, 13 9月 20:44]

When it comes to the concept of fairness, teenagers' ability to consider the intentions of others appears to be linked to structural changes underway in the brain, according to a study. The study is the first to provide evidence linking structural changes with behavioral changes within this context. Understanding the intentions of others is fundamental to human cooperation and how we exist as social beings.

- [**Paper-based tuberculosis test could boost diagnoses in developing countries**](#) [周三, 13 9月 20:44]

Diagnosing tuberculosis early can allow patients to receive the medicine they need and also help prevent the disease from spreading. But in resource-limited areas, equipment requirements and long wait times for results are obstacles to diagnosis and treatment. To tackle this problem, scientists report the development of a fast, paper-based tuberculosis test that can be read with a smartphone.

- [**Systems analysis points to links between Toxoplasma infection and common brain diseases**](#) [周三, 13 9月 20:44]

Nearly one out of every three humans on earth has a lifelong infection with the brain-dwelling parasite *Toxoplasma gondii*. In a new report, researchers from multiple institutions describe efforts to learn how infection with the parasite *Toxoplasma gondii* may alter, and in some cases amplify, several brain disorders, including epilepsy, Alzheimer's and Parkinson's diseases as well as some cancers.

- [**As 'flesh-eating' Leishmania come closer, a vaccine against them does, too**](#) [周三, 13 9月 20:44]

Boils the size of sand dollars, facial damage reminiscent of acid wounds, death by maiming of the liver and spleen. *Leishmania* parasites inflict suffering around the world that is the stuff of parables. They are the second-deadliest parasites after malaria, and global warming is slowly pushing them north toward the United States. Can a new experimental vaccine someday stop them? The vaccine has worked in humanized mice, as detailed in a new study.

- [**New research on probiotics in the prevention and treatment of colon cancer**](#) [周三, 13 9月 20:44]

In an innovative approach to colorectal cancer (CRC) prevention and treatment, scientists are studying ways to replace missing metabolites in patients prone to gut inflammation and CRC. A new study describes how administration of histamine-producing gut microbes to mice lacking the enzyme histidine decarboxylase (HDC) reduced inflammation and tumor formation. These results suggest that alteration of the gut microbiome with probiotics may become a new preventative or therapeutic strategy for patie...

- [**A hair-trigger for cells fighting infection**](#) [周三, 13 9月 20:44]

In response to infection the immune system produces unique antibodies to target each illness. To make these new antibodies, cells in the immune system must intentionally damage their own genes, meaning they run the risk of becoming cancer cells. New research reveals how a proteins called Tia1 acts as a hair-trigger for DNA repair, allowing the immune system to walk the line between health and harm.

- [**Science spin prevalent, researchers warn**](#) [周三, 13 9月 05:05]

More than a quarter of biomedical scientific papers may utilize practices that distort the interpretation of results or mislead readers so that results are viewed more favorably, a new study suggests.

- [**Cold comfort: Fat-rich diets and adaptation among indigenous Siberian populations**](#) [周三, 13 9月 05:05]

Recently, scientists have been exploring the genetic signatures of adaptation in several indigenous cold-adapted human populations. Now, a new study has identified new signals of adaptation across multiple genes and exploring a rich demographic history. By performing extensive analyses on DNA sequencing data for two North-Central Siberian populations, the Nganasan (nomadic hunters) and Yakut (herders), they have been able to infer the most comprehensive demographic and adaptive history.

- [**Health benefits of olives and olive oil**](#) [周三, 13 9月 04:10]

A research team discovered that the olive-derived compound oleuropein helps prevent type 2 diabetes.

- [**Lay interventions for depression and drinking**](#) [周三, 13 9月 03:48]

Brief psychological interventions delivered by lay counselors in primary care were effective and cost-effective for patients with depression and harmful drinking in India, according to two new studies.

- [**Predicting atypical development in infants at high risk for autism?**](#) [周三, 13 9月 03:48]

New research identifies a potential biomarker that predicts atypical development in 1- to 2-month-old infants at high versus low familial risk for developing autism spectrum disorders (ASD).

- [**How hibernating ribosomes wake up**](#) [周三, 13 9月 01:48]

Scientists have uncovered the way a bacterial ribosome moves from an inactive to an active form, and how that 'wake up call' is key to its survival.

- [**'Superbug' bacteria gang up on us, fueled by antibiotic use, nursing home study suggests**](#) [周三, 13 9月]

01:48]

What's worse than getting exposed to a kind of bacteria that modern antibiotics can't kill? Getting exposed to more than one -- because they may work together to cause an infection, new research suggests. And trying different antibiotics to control one such 'superbug' may only encourage others. The researchers say it's time to think about such bacteria as members of an antibiotic-resistant ecosystem in healthcare environments -- not as single species that act and respond alone.

• [In mice, calorie restriction reduces fat but increases fur](#) [周三, 13 9月 01:48]

Calorie restriction may help mice stay slim and live longer, but it also means less fat to keep their bodies warm. Researchers in Brazil have found that mouse skin responds to caloric restriction by stimulating fur growth, increasing blood flow, and altering cell metabolism to increase energy efficiency. The study reveals that animals may use this as an evolutionary adaptation to stay warm -- and alive -- in limited food conditions.

• ['Missing link' explains how viruses trigger immunity](#) [周三, 13 9月 01:48]

A new discovery has solved a longstanding mystery of how viruses trigger protective immunity within our body. The research team demonstrated a protein called SIDT2 was crucial for cells to detect viral components in their environment, and initiate an immune response to reduce the virus' spread.

• [Reversing the negative effects of adolescent marijuana use](#) [周三, 13 9月 01:48]

Researchers have identified a specific mechanism in the prefrontal cortex for some of the negative mental health risks associated with adolescent marijuana use. By demonstrating that adolescent THC exposure modulates the activity of a neurotransmitter called GABA in the prefrontal cortex region of the brain, they were also able to identify a mechanism to reverse those risks.

• [AI -- Engineering: merging, morphing, mobile](#)

robots [周二, 12 9月 22:35]

Researchers have developed self-reconfiguring modular robots that can merge, split and even self-heal while retaining full sensorimotor control. The work may take us closer to producing robots that can autonomously change their size, shape and function.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

- [**Tough stuff: Spider silk enhanced with graphene-based materials**](#) [周六, 16 9月 04:52]

Natural spider silk has excellent mechanical properties. Researchers have now found a way to boost the strength of spider's silk using graphene-based materials, paving the way for a novel class of high-performance bionic composites.

- [**Ultrafast snapshots of relaxing electrons in solids**](#) [周六, 16 9月 04:37]

A team of scientists has been able to capture the dynamics of core-excited excitons in solids in real-time.

- [**Star formation influenced by local environmental conditions**](#) [周五, 15 9月 22:36]

Three scientists have carried out extensive computer simulations related to star formation. They conclude that the present idealized models are lacking when it comes to describing details in the star formation process.

- [**Golf carts causing serious injuries to children**](#) [周五, 15 9月 21:52]

As golf carts become increasingly popular in communities beyond the fairway, new research shows, a significant number of children are being seriously injured while using them.

- [**Skin patch dissolves 'love handles' in mice**](#) [周五, 15 9月 21:52]

Researchers have developed a medicated skin patch that can turn energy-storing white fat into energy-burning brown fat locally while

raising the body's metabolism. The patch could be used to burn off pockets of unwanted fat and treat metabolic disorders like obesity and diabetes.

- [**A subtler sexism now frames TV coverage of women in sports**](#) [周五, 15 9月 09:06]

An ongoing longitudinal study tracking national coverage of women's sports finds that coverage is still lacking and the sexism of women's sports is less overt but remains a problem.

- [**In step toward controlling chemistry, physicists create a new molecule, atom by atom**](#) [周五, 15 9月 03:24]

Physicists have discovered a unique new molecule that could lead to many useful applications, and show how chemical reactions can be studied on a microscopic scale using tools of physics.

- [**Sorting molecules with DNA robots**](#) [周五, 15 9月 03:24]

Scientists have programmed a 'robot' made of DNA to pick up and sort molecules into predetermined locations.

- [**The return of the comet-like exoplanet**](#) [周五, 15 9月 03:23]

Astronomers have focused the Hubble Space Telescope on an exoplanet that had already been seen losing its atmosphere, which forms an enormous cloud of hydrogen, giving the planet the appearance of a giant comet. During earlier observations, it was not possible to cover the whole cloud, whose shape was predicted by numerical simulations. Thanks to these new observations, the scientists have finally been able to confirm the initial predictions.

- [**Could interstellar ice provide the answer to birth of DNA?**](#) [周五, 15 9月 03:22]

Molecules brought to Earth in meteorite strikes could potentially be converted into the building blocks of DNA, researchers have shown.

- [**Hubble observes pitch black planet**](#) [周五, 15 9月 03:22]

Astronomers have discovered that the well-studied exoplanet WASP-12b reflects almost no light, making it appear essentially pitch black.

This discovery sheds new light on the atmospheric composition of the planet and also refutes previous hypotheses about WASP-12b's atmosphere. The results are also in stark contrast to observations of another similarly sized exoplanet.

• [**Hydrogen power moves a step closer**](#) [周五, 15 9月 03:22]

Physicists are developing methods of creating renewable fuel from water using quantum technology. Renewable hydrogen can already be produced by photoelectrolysis where solar power is used to split water molecules into oxygen and hydrogen. But fundamental problems remain before this can be adopted commercially due to inefficiency. A new study demonstrates that the novel use of nanostructures could increase the maximum photovoltage generated in a photoelectrochemical cell, increasing the productivi...

• [**Social media helps students learn scientific argumentation better**](#) [周四, 14 9月 07:31]

Students who took part in a program that taught scientific argumentation learned the concepts better than their peers who did not, a study concludes.

• [**New supernova analysis reframes dark energy debate**](#) [周四, 14 9月 07:31]

The accelerating expansion of the Universe may not be real, but could just be an apparent effect, according to new research. The new study finds the fit of Type Ia supernovae to a model universe with no dark energy to be very slightly better than the fit to the standard dark energy model.

• [**Artificial 'skin' gives robotic hand a sense of touch**](#) [周四, 14 9月 07:30]

A team of researchers from the University of Houston has reported a breakthrough in stretchable electronics that can serve as an artificial skin, allowing a robotic hand to sense the difference between hot and cold, while also offering advantages for a wide range of biomedical devices.

- **['Peel-and-go' printable structures fold themselves](#)** [周四, 14 9月 07:30]

Researchers have created a printable structure that begins to fold itself up as soon as it's peeled off the printing platform.

- **[First global map of water in moon's soil](#)** [周四, 14 9月 07:30]

A new study maps the trace concentrations of water implanted in the lunar soil by the solar wind, a water source that could be used as resource in future lunar exploration.

- **[New gravity map suggests Mars has a porous crust](#)** [周四, 14 9月 07:30]

Scientists have found evidence that Mars' crust is not as dense as previously thought, a clue that could help researchers better understand the Red Planet's interior structure and evolution.

- **['The dark side' of quantum computers](#)** [周四, 14 9月 07:29]

The era of fully fledged quantum computers threatens to destroy internet security as we know it. Researchers are in a race against time to prepare new cryptographic techniques before the arrival of quantum computers, as cryptographers now describe.

- **[Self-folding electronics could enable advanced robotics](#)** [周三, 13 9月 22:45]

As demand grows for more versatile, advanced robotics and other technologies, the need for components that can enable these applications also increases. Producing such components en masse has been a major challenge. But now, researchers report that they have developed a way to help meet this need by printing electronics that can fold themselves into a desired shape.

- **[The beam of invisibility](#)** [周三, 13 9月 22:45]

A new idea for a cloaking technology has been created by scientists. A completely opaque material is irradiated from above with a specific wave pattern -- with the effect that light waves from the left can now pass through the material without any obstruction. This surprising result

opens up completely new possibilities for active camouflage.

- [**A one-of-a-kind star found to change over decades**](#) [周三, 13 9月 03:48]

Researchers recently found new evidence that lends support to an existing theory of how the unusual star emits energy.

- [**Microscope invented at marine biological laboratory illuminates chromosomal 'dark matter'**](#) [周三, 13 9月 01:48]

Biologists, instrument developers, and computational scientists have for the first time measured the density of a relatively inscrutable, highly condensed form of chromosomal material (heterochromatin) that appears in the cells of human beings and other eukaryotes.

- [**New way to stabilize next-generation fusion plasmas**](#) [周三, 13 9月 01:48]

Recent experiments conducted on the DIII-D National Fusion Facility suggest that up to 40 percent of high-energy particles are lost during tokamak fusion reactions because of Alfvén waves.

- [**Magnetic cellular 'Legos' for the regenerative medicine of the future**](#) [周三, 13 9月 01:48]

By incorporating magnetic nanoparticles in cells and developing a system using miniaturized magnets, researchers have succeeded in creating cellular magnetic 'Legos.' They were able to aggregate cells using only magnets and without an external supporting matrix, with the cells then forming a tissue that can be deformed at will.

- [**AI -- Engineering: merging, morphing, mobile robots**](#) [周二, 12 9月 22:35]

Researchers have developed self-reconfiguring modular robots that can merge, split and even self-heal while retaining full sensorimotor control. The work may take us closer to producing robots that can autonomously change their size, shape and function.

- [**Graphene based terahertz absorbers**](#) [周二, 12 9月 22:27]

A terahertz saturable absorber has been created using printable graphene inks with an order of magnitude higher absorption modulation than other devices produced to date.

- [**Study sets new distance record for medical drone transport**](#) [周二, 12 9月 21:31]

Researchers have set a new delivery distance record for medical drones, successfully transporting human blood samples across 161 miles of Arizona desert. Throughout the three-hour flight, they report, the on-board payload system maintained temperature control, ensuring the samples were viable for laboratory analysis after landing.

- [**Astronauts don't develop anemia during spaceflight, NASA study suggests**](#) [周二, 12 9月 21:30]

Space flight anemia -- the reduction of circulating red blood cells during time spent in space -- is an established phenomenon, but it may not be a major concern during long-duration space missions, according to a study.

- [**Apparent macroscopic violation of the second law of thermodynamics in a quantum system is discovered**](#) [周二, 12 9月 03:46]

Researchers have encountered a partial violation of the second law of thermodynamics in a quantum system known as Hofstadter lattice. This partial violation has no place within the framework of classical physics.

- [**Advanced material developed for ultra-stable, high capacity rechargeable batteries**](#) [周二, 12 9月 03:42]

A novel organic material of superior electrical conductivity and energy retention capability for use in battery applications has been developed by scientists. This invention paves the way for the development of ultra-stable, high capacity and environmental friendly rechargeable batteries.

- [**To improve health monitoring, simply trip the**](#)

['nanoswitch'](#) [周二, 12 9月 03:09]

A team of researchers has adapted their DNA nanoswitch technology -- previously demonstrated to aid drug discovery and the measure of biochemical interactions -- into a new platform that they call the nanoswitch-linked immunosorbent assay (NLISA) for fast, sensitive and specific protein detection.

[Method controls whether freezing droplets bounce off or stick](#) [周二, 12 9月 03:09]

Self-peeling droplets have been discovered, along with a new way to control adhesion of freezing droplets by adjusting the thermal properties of substrates. These findings could make everything from additive manufacturing to deicing more efficient.

[Airline industry could fly thousands of miles on biofuel from a new promising feedstock](#) [周二, 12 9月 00:59]

A Boeing 747 burns one gallon of jet fuel each second. A recent analysis estimates that this aircraft could fly for 10 hours on bio-jet fuel produced on 54 acres of specially engineered sugarcane.

[Sunscreen protects skin without seeping in](#) [周二, 12 9月 00:27]

A non-penetrating sunscreen invented by its researchers has been licensed to a major aloe verde supplier. The sunscreen will appeal to consumers concerned about chemicals exposure.

[Core solutions reach optimally extreme light pulses](#) [周二, 12 9月 00:27]

A new hollow-core photonic crystal fiber system demonstrates high energy, single-cycle IR pulses at an extraordinary repetition rate, suitable for hard X-ray production and real-time investigations of atomic dynamics.

[The turbulent healing powers of plasma](#) [周二, 12 9月 00:27]

Non-equilibrium atmospheric pressure plasma can help heal wounds, destroy cancer cells and kill harmful bacteria. The jets of plasma that doctors might use, however, often become turbulent with the direction

and velocity changing dramatically. Now, researchers have found this turbulence likely emerges from heat-induced sound waves generated at the plasma electrodes. This new insight is critical for more consistent and effective medical therapies.

- [**A novel and practical fab-route for superomniphobic liquid-free surfaces**](#) [周二, 12 9月 00:27]

Scientists have developed a fabrication technology that can inexpensively produce surfaces capable of repelling liquids, including water and oil.

- [**Connecting up the quantum internet**](#) [周二, 12 9月 00:27]

Major leap for practical building blocks of a quantum internet: New research demonstrates how to dramatically improve the storage time of a telecom-compatible quantum memory, a vital component of a global quantum network. The technology operates in the same 1550 nanometer band as today's telecommunications infrastructure. It can also be operated as a quantum light source or used as an optical link for solid-state quantum computing devices such as superconducting qubits and silicon qubits.

- [**Self-assembling nanoparticle arrays can switch between a mirror and a window**](#) [周二, 12 9月 00:27]

By finely tuning the distance between nanoparticles in a single layer, researchers have made a filter that can change between a mirror and a window.

- [**Hints from hemoglobin lead to better carbon monoxide storage**](#) [周二, 12 9月 00:26]

Highly porous metal-organic frameworks have proved ideal for storing many chemicals, from carbon dioxide and hydrogen to water. A new tweak to MOFs has now produced a highly selective material for adsorbing carbon monoxide, which is used in many industrial processes, including as a component of syngas. Using only one-third the energy of a common process for capturing and reusing CO, it holds promise for more efficient recycling of CO in the steel industry.

- **[Brain Composer: 'Thinking' melodies onto a musical score](#)** [周二, 12 9月 00:26]

A new brain-computer interface application that allows music to be composed by the power of thought has now been developed by scientists.

- **[Astronomers spun up by galaxy-shape finding](#)** [周二, 12 9月 00:26]

For the first time astronomers have measured how a galaxy's spin affects its shape -- something scientists have tried to do for 90 years -- using a sample of 845 galaxies. Because a galaxy's shape is the result of past events such as merging with other galaxies, knowing its shape also tells us about the galaxy's history. The team made its findings with SAMI (the Sydney-AAO Multi-object Integral field unit), a game-changing instrument.

- **[Hollow atoms: The consequences of an underestimated effect](#)** [周二, 12 9月 00:26]

In a 'hollow atom', electrons occupy high-energy states far away from the nucleus, it can get rid of their excess energy on a remarkably short timescale. The reason for this has been unknown. Researchers have now shown that this is due to a previously underestimated effect: the 'interatomic coulomb decay' allows the atom to transfer its energy to several other atoms simultaneously. This also explains why radiation therapy can be so effective.

- **[Patients to benefit from new 3-D visualizations of the heart](#)** [周二, 12 9月 00:26]

In the future heart surgeons will have access to a new type of 3-D visualization of the cardiac conduction system. This technique could provide improved safety for patients and improve surgical outcomes in patients suffering from heart disease and cardiac malformations, explains a new report.

- **[Study clarifies how neural nets 'think' when processing language](#)** [周二, 12 9月 00:26]

A new general-purpose technique has been developed for making sense of neural networks that are trained to perform natural-language-processing tasks, in which computers attempt to interpret freeform texts written in ordinary, or 'natural,' language (as opposed to a structured language, such as a database-query language).

• [First on-chip nanoscale optical quantum memory developed](#) [周二, 12 9月 00:26]

Engineers have built a chip capable of storing and retrieving individual photons of light, with all of their quantum properties left intact. The chip represents the first nanoscale optical quantum memory device, and could one day be used to create more secure Internet communications.

• [Using mirrors to improve the quality of light particles](#) [周一, 11 9月 21:59]

Scientists have succeeded in dramatically improving the quality of individual photons generated by a quantum system. The scientists have successfully put a 10-year-old theoretical prediction into practice. With their paper, they have taken an important step towards future applications in quantum information technology.

• [Explosive birth of stars swells galactic cores](#) [周一, 11 9月 11:25]

Astronomers found that active star formation upswells galaxies, like yeast helps bread rise. Using three powerful telescopes on the ground and in orbit, they observed galaxies from 11 billion years ago and found explosive formation of stars in the cores of galaxies. This suggests that galaxies can change their own shape without interaction with other galaxies.

• [First imaging of free nanoparticles in laboratory experiment using a high-intensity laser source](#) [周日, 10 9月 06:38]

In a joint research project, scientists have managed for the first time to image free nanoparticles in a laboratory experiment using a high-intensity laser source. Previously, the structural analysis of these extremely small objects via single-shot diffraction was only possible at

large-scale research facilities using so-called XUV and x-ray free electron lasers.

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Environment News

Top stories featured on ScienceDaily's Plants & Animals, Earth & Climate, and Fossils & Ruins sections.

- [**Tough stuff: Spider silk enhanced with graphene-based materials**](#) [周六, 16 9月 04:52]

Natural spider silk has excellent mechanical properties. Researchers have now found a way to boost the strength of spider's silk using graphene-based materials, paving the way for a novel class of high-performance bionic composites.

- [**Delayed weaning reduces behavioural problems in cats**](#) [周六, 16 9月 04:52]

Early weaning increases aggression and stereotypic behavior in cats. Based on the study, the recommended weaning age of 12 weeks should be raised by at least two weeks. Delaying weaning is an easy and cost-efficient way of improving the quality of life of cats.

- [**Black Sea water temperatures may buck global trend**](#) [周六, 16 9月 04:29]

Scientists have successfully simulated the Black Sea's long term currents, salt water content and temperature for the first time.

- [**Ancient amphibian had mouthful of teeth ready to grab you**](#) [周六, 16 9月 03:58]

The idea of being bitten by a nearly toothless modern frog or salamander sounds laughable, but their ancient ancestors had a full array of teeth, large fangs and thousands of tiny hook-like structures called denticles on the roofs of their mouths that would snare prey, according to paleontologists.

- [**Scientists question study about plastic-eating caterpillars**](#) [周六, 16 9月 02:41]

Do the larvae of the wax moth really solve the world's plastic problem? Sensational report of biochemical degradation of polyethylene by caterpillars not confirmed.

- [**'Exciting' discovery on path to develop new type of vaccine to treat global viruses**](#) [周六, 16 9月 02:41]

Scientists have made a significant discovery in efforts to develop a vaccine against Zika, dengue and Hepatitis C viruses that affect millions of people around the world.

- [**Why we did not evolve to live forever: Unveiling the mystery of why we age**](#) [周六, 16 9月 02:41]

Researchers have made a breakthrough in understanding the origin of the ageing process. They have identified that genes belonging to a process called autophagy -- one of the cells most critical survival processes -- promote health and fitness in young worms but drive the process of ageing later in life.

- [**Arctic sea ice once again shows considerable melting**](#) [周五, 15 9月 22:36]

This September, the extent of Arctic sea ice shrank to roughly 4.7 million square kilometres, scientists have determined.

- [**Celebrity fossil reveals all for science**](#) [周五, 15 9月 22:35]

With the help of an artist, a geology professor has figuratively speaking breathed life into one of science's most well-known fossil species; *Agnostus pisiformis*. The trilobite-like arthropod lived in huge numbers in Scandinavia a half-billion years ago. Today, this extinct species provides important clues for science in several ways.

- [**Humans no longer have ancient defense mechanism against viruses**](#) [周五, 15 9月 21:53]

Insects and plants have an important ancient defense mechanism that helps them to fight viruses. This is encoded in their DNA. Scientists

have long assumed that vertebrates -- including humans -- also had this same mechanism. But researchers have found that vertebrates lost this particular asset in the course of their evolution.

- [**Carbohydrates may be the key to a better malaria vaccine**](#) [周五, 15 9月 21:52]

An international research team has shown for the first time that carbohydrates on the surface of malaria parasites play a critical role in malaria's ability to infect mosquito and human hosts. The discovery also suggests steps that may improve the only malaria vaccine approved to protect people against Plasmodium falciparum malaria -- the most deadly form of the disease.

- [**New Orleans greenery post-Katrina reflects social demographics more than hurricane impact**](#) [周五, 15 9月 21:51]

Popular portrayals of "nature reclaiming civilization" in flood-damaged New Orleans, Louisiana, neighborhoods romanticize an urban ecology shaped by policy-driven socioecological disparities in redevelopment investment, ecologists argue.

- [**New climate risk classification created to account for potential 'existential' threats**](#) [周五, 15 9月 09:06]

A new study evaluating models of future climate scenarios has led to the creation of the new risk categories 'catastrophic' and 'unknown' to characterize the range of threats posed by rapid global warming. Researchers propose that unknown risks imply existential threats to the survival of humanity.

- [**Electric eels leap to deliver painful, Taser-like jolt**](#) [周五, 15 9月 03:24]

The electric eel has always been noted for its impressive ability to shock and subdue its prey. It's recently become clear that electric eels also use a clever trick to deliver an intense, Taser-like jolt to potential predators: they leap from the water to target threatening animals, humans included,

above water. Now, a researcher has measured (and experienced) just how strong that jolt can be.

- [**'Handedness' in scale-eating fish: Nature and nurture**](#) [周五, 15 9月 03:23]

Lateralized behaviors are thought to be strengthened during development. However, little is known about how they are acquired during development. In the scale-eating cichlid model, researchers demonstrated the attack side preference of juveniles was developed with scale-eating experience, regardless of age. They also found that kinetics of attack behavior is superior on one side by nature. Therefore, they concluded that the fish learn to use the naturally dominant side through experience.

- [**Could interstellar ice provide the answer to birth of DNA?**](#) [周五, 15 9月 03:22]

Molecules brought to Earth in meteorite strikes could potentially be converted into the building blocks of DNA, researchers have shown.

- [**'Mysterious' ancient creature was definitely an animal, research confirms**](#) [周五, 15 9月 03:22]

It lived well over 550 million years ago, is known only through fossils and has variously been described as looking a bit like a jellyfish, a worm, a fungus and lichen. But was the 'mysterious' Dickinsonia an animal, or was it something else? A new study provides strong proof that Dickinsonia was an animal.

- [**How well electron transport works in furfural biogas**](#) [周四, 14 9月 07:31]

Furfural is a promising candidate in the quest for alternative biofuels.

- [**Evolution of 'true frogs' defies long-held expectations of science**](#) [周四, 14 9月 07:31]

New research shows, in contrast to expectations, 'the rapid global range expansion of true frogs was not associated with increased net-diversification.'

- [**Marijuana may produce psychotic-like effects in high-risk individuals**](#) [周四, 14 9月 07:30]

Marijuana may bring on temporary paranoia and other psychosis-related effects in individuals at high risk of developing a psychotic disorder, finds a preliminary study.

- [**Squirrels use 'chunking' to organize their favorite nuts**](#) [周四, 14 9月 07:29]

Like trick-or-treaters sorting their Halloween candy haul, fox squirrels apparently organize their stashes of nuts by variety, quality and possibly even preference, according to new research.

- [**Climate change challenges the survival of fish across the world**](#) [周四, 14 9月 07:29]

Researchers have published the first analysis looking at how vulnerable the world's freshwater and marine fishes are to climate change. Their study used physiological data to predict how nearly 3,000 fish species living in oceans and rivers will respond to warming water temperatures in different regions.

- [**Bird songs isolate species, new research suggests**](#) [周三, 13 9月 22:45]

Two birds that look the same, but have songs so different they can't recognize each other, should be considered distinct species, suggests new research. Among 72 related populations of Central and South American birds the researchers tested, they found evidence for 21 new species.

- [**Science spin prevalent, researchers warn**](#) [周三, 13 9月 05:05]

More than a quarter of biomedical scientific papers may utilize practices that distort the interpretation of results or mislead readers so that results are viewed more favorably, a new study suggests.

- [**Health benefits of olives and olive oil**](#) [周三, 13 9月 04:10]

A research team discovered that the olive-derived compound oleuropein helps prevent type 2 diabetes.

- [**How hibernating ribosomes wake up**](#) [周三, 13 9月 01:48]

Scientists have uncovered the way a bacterial ribosome moves from an inactive to an active form, and how that 'wake up call' is key to its survival.

- [**'Superbug' bacteria gang up on us, fueled by antibiotic use, nursing home study suggests**](#) [周三, 13 9月 01:48]

What's worse than getting exposed to a kind of bacteria that modern antibiotics can't kill? Getting exposed to more than one -- because they may work together to cause an infection, new research suggests. And trying different antibiotics to control one such 'superbug' may only encourage others. The researchers say it's time to think about such bacteria as members of an antibiotic-resistant ecosystem in healthcare environments -- not as single species that act and respond alone.

- [**Queens control worker reproduction without castration in stingless bee species**](#) [周三, 13 9月 01:48]

Study contradicts the view that worker bees are forcibly castrated by the queen among the 600-odd species of stingless bees widely distributed in tropical and subtropical regions of the world.

- [**Microscope invented at marine biological laboratory illuminates chromosomal 'dark matter'**](#) [周三, 13 9月 01:48]

Biologists, instrument developers, and computational scientists have for the first time measured the density of a relatively inscrutable, highly condensed form of chromosomal material (heterochromatin) that appears in the cells of human beings and other eukaryotes.

- [**Forest regeneration experiment of 30 years yields results**](#) [周三, 13 9月 01:48]

A spruce forest regeneration experiment in Interior Alaska that spanned nearly 30 years demonstrates which forest management practices produce the best results. It looked at different combinations of ground treatments to reduce competition from other vegetation and of

regeneration methods, such as planting spruce seedlings and broadcast seeding. The results show the environmental and management situations in which different techniques work best and the situations in which they are unnecessary. Re...

- [**In mice, calorie restriction reduces fat but increases fur**](#) [周三, 13 9月 01:48]

Calorie restriction may help mice stay slim and live longer, but it also means less fat to keep their bodies warm. Researchers in Brazil have found that mouse skin responds to caloric restriction by stimulating fur growth, increasing blood flow, and altering cell metabolism to increase energy efficiency. The study reveals that animals may use this as an evolutionary adaptation to stay warm -- and alive -- in limited food conditions.

- [**'Missing link' explains how viruses trigger immunity**](#) [周三, 13 9月 01:48]

A new discovery has solved a longstanding mystery of how viruses trigger protective immunity within our body. The research team demonstrated a protein called SIDT2 was crucial for cells to detect viral components in their environment, and initiate an immune response to reduce the virus' spread.

- [**Reversing the negative effects of adolescent marijuana use**](#) [周三, 13 9月 01:48]

Researchers have identified a specific mechanism in the prefrontal cortex for some of the negative mental health risks associated with adolescent marijuana use. By demonstrating that adolescent THC exposure modulates the activity of a neurotransmitter called GABA in the prefrontal cortex region of the brain, they were also able to identify a mechanism to reverse those risks.

- [**Historic legacies affect climate change survival in Caribbean**](#) [周三, 13 9月 01:48]

Discussion of climate change has failed to pay enough attention to the social, political and historic factors which increase the vulnerability of

Caribbean societies, and calls for a new approach focused on understanding and addressing these historic inequalities.

- **[Earthquake faults may have played key role in shaping the culture of ancient Greece](#)** [周二, 12 9月 22:35]

The Ancient Greeks may have built sacred sites deliberately on land affected by previous earthquake activity, according to a new study.

- **[Coffee and bees: New model of climate change effects](#)** [周二, 12 9月 22:28]

Areas in Latin America suitable for growing coffee face predicted declines of 73-88 percent by 2050. But bee species diversity may save the day, even if many species in cool highland regions are lost as the climate warms.

- **[Explosion in number of known life forms](#)** [周二, 12 9月 21:31]

New research has helped increase the number of known genomes by almost 10 percent. Scientists have obtained 7,280 bacterial and 623 archaeal genomes (genetic materials from microorganisms) from environmental samples, explains a new article.

- **[Biding time could improve conservation outcomes](#)** [周二, 12 9月 21:31]

Strategic delays in conservation efforts could be the key to protecting more species according to researchers. The new study found instead of spending project funds immediately, conservation organizations could use the right amount of delay to improve the benefits achieved from their funding by focusing first on investment, capacity building, or monitoring and research.

- **['Keep it local' approach more effective than government schemes at protecting rainforest](#)** [周二, 12 9月 21:31]

Conservation initiatives led by local and indigenous groups can be just as effective as schemes led by government, according to new research. In some cases in the Amazon rainforest, grassroots initiatives can be even more effective at protecting this vital ecosystem.

- [**Researchers discover new, abundant enzyme that helps bacteria infect animals**](#) [周二, 12 9月 21:30]

A new class of enzymes has been discovered in hundreds of bacterial species, including some that cause disease in humans and animals. The discovery provides new insights into how bacteria invade their hosts.

- [**Ancient tree reveals cause of spike in Arctic temperature**](#) [周二, 12 9月 21:30]

A kauri tree trapped in a New Zealand swamp for 30,000 years may have overturned the idea that a slowdown in ocean currents in the North Atlantic may be entirely responsible for Dansgaard-Oeschger events and the characteristic bi-polar see-saw, which sees the Antarctica cool while the Arctic warms during glacial periods. The research reveals a mechanism that generates a 20,000 km long atmospheric bridge, reaching from Antarctica to the Arctic.

- [**Modeling the impact of green eggs and hens**](#) [周二, 12 9月 21:30]

Poultry given vegan organic chicken feed can help to produce eggs with a smaller environmental footprint than those fed non-organic feeds that contain animal by-products, new research shows.

- [**Rapid climate changes across northern hemisphere in the earliest Middle Pleistocene**](#) [周二, 12 9月 21:30]

By studying climate changes that took place thousands of years ago, we can better understand the global climate system and predict Earth's future climate. A multi-organization research team has discovered evidence of rapid climate changes on a millennial-to-centennial scale that occurred 780 to 760 thousand years ago.

- [**Rising CO2 leading to changes in land plant photosynthesis**](#) [周二, 12 9月 05:04]

Researchers have determined that major changes in plant behavior have occurred over the past 40 years, using measurements of subtle changes in the carbon dioxide (CO₂) currently found in the atmosphere.

• [Octopuses aren't loners, new evidence suggests](#) [周二, 12 9月 05:04]

Octopuses are usually solitary creatures, but a new site in the waters off the east coast of Australia is the home of up to 15 gloomy octopuses (*Octopus tetricus*) that have been observed communicating -- either directly as in den evictions or indirectly through posturing, chasing or color changes, according to new research findings.

• [Study of circular DNA comes full circle with use of old technique](#) [周二, 12 9月 04:32]

A 50-year-old lab technique is helping researchers better understand circular DNA, a lesser-known and poorly understood cousin of the linear version commonly associated with life's genetic blueprint. With the aid of a process called density gradient centrifugation, a research team recently published a study that for the first time characterizes all of the circular DNA in the worm *C. elegans*, as well as in three human cell types.

• [What happens to Rex and Kitty after a natural disaster?](#) [周二, 12 9月 03:42]

After a natural disaster, images of destruction pour into our newsfeeds. Most of these focus on the destruction of the landscape, or on the human suffering caused. In any disaster where people suffer and die, pets and livestock will suffer and die, too. This has grave consequences for the animals, of course, but also for their owners. The aftermath of Hurricane Katrina was particularly devastating. The Louisiana SPCA estimates that 15,500 animals required rescue, and that 80–85 percent of these a...

• [Air pollution cuts 3 years off lifespans in Northern China](#) [周二, 12 9月 03:09]

A Chinese policy is unintentionally causing people in northern China to live 3.1 years less than people in the south due to air pollution concentrations that are 46 percent higher. These findings imply that every additional 10 micrograms per cubic meter of particulate matter pollution (PM10) reduces life expectancy by 0.6 years.

• [**'Internal clock' found within live human cells**](#) [周二, 12 9月 03:09]

An internal clock has been discovered within live human cells, a finding that creates new opportunities for understanding the building blocks of life and the onset of disease.

• [**When ancient fossil DNA isn't available, ancient glycans may help trace human evolution**](#) [周二, 12 9月 03:09]

Researchers have discovered a new kind of glycan (sugar chain) that survives even in a 4-million-year-old animal fossil from Kenya, under conditions where ancient DNA does not. While ancient hominin fossils are not yet available for glycan analysis, this proof-of-concept study sets the stage for unprecedented explorations of human origins and diet.

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- [**Magnetic fields to alleviate anxiety**](#) [周六, 16 9月 04:52]
It is possible to unlearn fears. And this works even better when a specific region of the brain has previously been stimulated magnetically.
- [**New Orleans greenery post-Katrina reflects social demographics more than hurricane impact**](#) [周五, 15 9月 21:51]
Popular portrayals of "nature reclaiming civilization" in flood-damaged New Orleans, Louisiana, neighborhoods romanticize an urban ecology shaped by policy-driven socioecological disparities in redevelopment investment, ecologists argue.
- [**A subtler sexism now frames TV coverage of women in sports**](#) [周五, 15 9月 09:06]
An ongoing longitudinal study tracking national coverage of women's sports finds that coverage is still lacking and the sexism of women's sports is less overt but remains a problem.
- [**New climate risk classification created to account for potential 'existential' threats**](#) [周五, 15 9月 09:06]
A new study evaluating models of future climate scenarios has led to the creation of the new risk categories 'catastrophic' and 'unknown' to characterize the range of threats posed by rapid global warming. Researchers propose that unknown risks imply existential threats to the survival of humanity.
- [**One vaccine injection could carry many doses**](#) [周五,

15 9月 03:23]

A new 3-D fabrication method has been developed that can create a new type of drug-carrying particle that could allow several doses of a drug or vaccine to be delivered over an extended time period with just one injection.

- [**Historic legacies affect climate change survival in Caribbean**](#) [周三, 13 9月 01:48]

Discussion of climate change has failed to pay enough attention to the social, political and historic factors which increase the vulnerability of Caribbean societies, and calls for a new approach focused on understanding and addressing these historic inequalities.

- [**How should we handle boys who can't read?**](#) [周二, 12 9月 21:31]

Boys are much worse at reading than girls. The disparities have been quite consistent over 15 years. New insights may give hope -- if they're put to use.

- [**'Keep it local' approach more effective than government schemes at protecting rainforest**](#) [周二, 12 9月 21:31]

Conservation initiatives led by local and indigenous groups can be just as effective as schemes led by government, according to new research. In some cases in the Amazon rainforest, grassroots initiatives can be even more effective at protecting this vital ecosystem.

- [**Air pollution cuts 3 years off lifespans in Northern China**](#) [周二, 12 9月 03:09]

A Chinese policy is unintentionally causing people in northern China to live 3.1 years less than people in the south due to air pollution concentrations that are 46 percent higher. These findings imply that every additional 10 micrograms per cubic meter of particulate matter pollution (PM10) reduces life expectancy by 0.6 years.

- [**Urban climate change**](#) [周二, 12 9月 03:09]

Southern cities such as Houston and Tampa -- which faced the wrath of hurricanes Harvey and Irma, respectively -- may not be the only urban environments vulnerable to extreme weather. Northern cities also face

the potential for flooding as global temperatures continue to warm.

[. Earthquake triggers 'slow motion' quakes in New Zealand](#) [周二, 12 9月 00:27]

Slow slip events, a type of slow motion earthquake that occurs over days to weeks, are thought to be capable of triggering larger, potentially damaging earthquakes. In a new study, scientists have documented the first clear-cut instance of the reverse -- a massive earthquake immediately triggering a series of large slow slip events.

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [Tough stuff: Spider silk enhanced with graphene-based materials](#) [周六, 16 9月 04:52]

Natural spider silk has excellent mechanical properties. Researchers have now found a way to boost the strength of spider's silk using graphene-based materials, paving the way for a novel class of high-performance bionic composites.

- [Immune system linked to alcohol drinking behavior](#) [周六, 16 9月 02:41]

Researchers have found a new link between the brain's immune system and the desire to drink alcohol in the evening.

- [Electric eels leap to deliver painful, Taser-like jolt](#) [周五, 15 9月 03:24]

The electric eel has always been noted for its impressive ability to shock and subdue its prey. It's recently become clear that electric eels also use a clever trick to deliver an intense, Taser-like jolt to potential predators: they leap from the water to target threatening animals, humans included, above water. Now, a researcher has measured (and experienced) just how strong that jolt can be.

- [Sorting molecules with DNA robots](#) [周五, 15 9月 03:24]

Scientists have programmed a 'robot' made of DNA to pick up and sort molecules into predetermined locations.

- [The return of the comet-like exoplanet](#) [周五, 15 9月 03:23]

Astronomers have focused the Hubble Space Telescope on an exoplanet

that had already been seen losing its atmosphere, which forms an enormous cloud of hydrogen, giving the planet the appearance of a giant comet. During earlier observations, it was not possible to cover the whole cloud, whose shape was predicted by numerical simulations. Thanks to these new observations, the scientists have finally been able to confirm the initial predictions.

- **['Handedness' in scale-eating fish: Nature and nurture](#)** [周五, 15 9月 03:23]

Lateralized behaviors are thought to be strengthened during development. However, little is known about how they are acquired during development. In the scale-eating cichlid model, researchers demonstrated the attack side preference of juveniles was developed with scale-eating experience, regardless of age. They also found that kinetics of attack behavior is superior on one side by nature. Therefore, they concluded that the fish learn to use the naturally dominant side through experience.

- **[Could interstellar ice provide the answer to birth of DNA?](#)** [周五, 15 9月 03:22]

Molecules brought to Earth in meteorite strikes could potentially be converted into the building blocks of DNA, researchers have shown.

- **[Artificial 'skin' gives robotic hand a sense of touch](#)** [周四, 14 9月 07:30]

A team of researchers from the University of Houston has reported a breakthrough in stretchable electronics that can serve as an artificial skin, allowing a robotic hand to sense the difference between hot and cold, while also offering advantages for a wide range of biomedical devices.

- **['Peel-and-go' printable structures fold themselves](#)** [周四, 14 9月 07:30]

Researchers have created a printable structure that begins to fold itself up as soon as it's peeled off the printing platform.

- [**Marijuana may produce psychotic-like effects in high-risk individuals**](#) [周四, 14 9月 07:30]

Marijuana may bring on temporary paranoia and other psychosis-related effects in individuals at high risk of developing a psychotic disorder, finds a preliminary study.

- [**'The dark side' of quantum computers**](#) [周四, 14 9月 07:29]

The era of fully fledged quantum computers threatens to destroy internet security as we know it. Researchers are in a race against time to prepare new cryptographic techniques before the arrival of quantum computers, as cryptographers now describe.

- [**Squirrels use 'chunking' to organize their favorite nuts**](#) [周四, 14 9月 07:29]

Like trick-or-treaters sorting their Halloween candy haul, fox squirrels apparently organize their stashes of nuts by variety, quality and possibly even preference, according to new research.

- [**The beam of invisibility**](#) [周三, 13 9月 22:45]

A new idea for a cloaking technology has been created by scientists. A completely opaque material is irradiated from above with a specific wave pattern -- with the effect that light waves from the left can now pass through the material without any obstruction. This surprising result opens up completely new possibilities for active camouflage.

- [**A one-of-a-kind star found to change over decades**](#) [周三, 13 9月 03:48]

Researchers recently found new evidence that lends support to an existing theory of how the unusual star emits energy.

- [**Earthquake faults may have played key role in shaping the culture of ancient Greece**](#) [周二, 12 9月 22:35]

The Ancient Greeks may have built sacred sites deliberately on land affected by previous earthquake activity, according to a new study.

- [**AI -- Engineering: merging, morphing, mobile**](#)

[robots](#) [周二, 12 9月 22:35]

Researchers have developed self-reconfiguring modular robots that can merge, split and even self-heal while retaining full sensorimotor control. The work may take us closer to producing robots that can autonomously change their size, shape and function.

• [Looking stressed can help keep the peace](#) [周一, 11 9月 21:59]

Scratching may have evolved as a communication tool to help social cohesion, new research suggests for the first time.

• [Explosive birth of stars swells galactic cores](#) [周一, 11 9月 11:25]

Astronomers found that active star formation upswells galaxies, like yeast helps bread rise. Using three powerful telescopes on the ground and in orbit, they observed galaxies from 11 billion years ago and found explosive formation of stars in the cores of galaxies. This suggests that galaxies can change their own shape without interaction with other galaxies.

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Latest Science News

Breaking science news and articles on global warming, extrasolar planets, stem cells, bird flu, autism, nanotechnology, dinosaurs, evolution -- the latest discoveries in astronomy, anthropology, biology, chemistry, climate and environment, computers, engineering, health and medicine, math, physics, psychology, technology, and more -- from the world's leading universities and research organizations.

- [**Damage to monarch butterfly colonies in 2016 storm worse than thought**](#) [周一, 18 9月 08:14]

A much greater number of monarch butterflies perished in a snowstorm in March 2016 in Mexico than previously estimated, according to new research. Analysis of damage from the storm -- and the ensuing salvage logging -- sheds further light on the precarious state of the famed butterflies' overwintering colonies.

- [**High blood pressure reasons differ by gender in teens; young adults**](#) [周一, 18 9月 03:10]

Gender matters when it comes to what's most likely to elevate blood pressure in young to middle-aged adults. The volume of blood pumped from the left ventricle during heartbeats, i.e., stroke volume, is the main determinant of blood pressure levels in women, while blood pressure in men is more likely to be determined by the amount of resistance in the body's blood vessels.

- [**Blood pressure better controlled with 'MAP' for doctors**](#) [周一, 18 9月 03:09]

Primary care practices using the Measure accurately, Act rapidly and Partner with patients (MAP) program drove down hypertension rates among patients. In six months of MAP, hypertension control rose from

65.6 percent to 74.8 percent, among more than 21,000 hypertension patients at US primary care practices.

- [**Teens also at risk for organ damage from high blood pressure**](#) [周一, 18 9月 03:09]

Organ damage from high blood pressure doesn't only occur in adults; it can also happen in teenagers, according to new research.

- [**Sugary secrets of a cancer-related protein**](#) [周一, 18 9月 00:03]

The proteins in human cells are extensively decorated with different types of sugars, a phenomenon called glycosylation. These modifications greatly increase the diversity of protein structure and function, affecting how proteins fold, how they behave, and where they go in cells. New research demonstrates that a rare type of glycosylation profoundly affects the function of a protein important for human development and cancer progression.

- [**NASA's Cassini spacecraft ends its historic exploration of Saturn**](#) [周六, 16 9月 22:30]

A thrilling epoch in the exploration of our solar system has come to a close, as NASA's Cassini spacecraft made a fateful plunge into the atmosphere of Saturn, ending its 13-year tour of the ringed planet. Cassini's plunge brings to a close a series of 22 dives between Saturn and its rings, a feat never before attempted by any spacecraft.

- [**Sensing with a twist: A new kind of optical nanosensor uses torque for signal processing**](#) [周六, 16 9月 20:01]

As electronic devices get smaller, their ability to provide precise, chip-based sensing of dynamic physical properties such as motion become challenging to develop. An international group of researchers have put a literal twist on this challenge, demonstrating a new nanoscale optomechanical resonator that can detect torsional motion at near state-of-the-art sensitivity. Their resonator, into which they couple light, also demonstrates torsional frequency mixing, a novel ability to impact optical e...

- **[Fertility research brings death of dogma, birth of hope](#)** [周六, 16 9月 20:01]

A new study shows unequivocally that stem cells in the ovaries are a critical piece of the mammal fertility puzzle, and may be harnessed to revolutionize fertility treatments and perhaps even delay menopause.

- **[Hormone replacement therapy can slow decline in lung function for middle-aged women](#)** [周六, 16 9月 05:05]

Hormone replacement therapy (HRT) can slow the decline in lung function in middle-aged women, according to new research.

- **[Converting waste toilet paper into electricity](#)** [周六, 16 9月 05:02]

Chemists have performed a techno-economic analysis of converting waste toilet paper into electricity. They propose a two-step process and calculate a cost per kWh comparable to that of residential photovoltaic installations.

- **[A drone for last-centimeter delivery](#)** [周六, 16 9月 05:01]

A new drone uses cutting-edge technology to deliver parcels weighing up to 500 grams. The device will never get stuck in traffic, it's programmed to avoid obstacles, and it can reach destinations on steep or uneven terrain. Its protective cage and foldable design mean that it can be carried around in a backpack and used in total safety.

- **[Light on exoplanets may be quite different from Earth: Different photosynthesis?](#)** [周六, 16 9月 05:00]

Researchers have proposed a prediction that red-edge could be observed as on the Earth even on exoplanets around M-dwarfs. They pointed out that the first oxygenic phototrophs are most likely to have evolved underwater to utilize visible light just like what had happened in the primordial ocean on the Earth. They examined light adaptation mechanisms of visible- and IR-radiation-using phototrophs required for adapting to land habitats and found out that IR-using phototrophs struggle to adapt to chan...

- **[Tracing the light inside a LED](#)** [周六, 16 9月 04:54]

The performance of white LED's can be improved, based on better knowledge of the absorption and scattering of light inside the LED. A new method can lead to efficiency improvement and powerful design tools.

- [**Tough stuff: Spider silk enhanced with graphene-based materials**](#) [周六, 16 9月 04:52]

Natural spider silk has excellent mechanical properties. Researchers have now found a way to boost the strength of spider's silk using graphene-based materials, paving the way for a novel class of high-performance bionic composites.

- [**Magnetic fields to alleviate anxiety**](#) [周六, 16 9月 04:52]

It is possible to unlearn fears. And this works even better when a specific region of the brain has previously been stimulated magnetically.

- [**Delayed weaning reduces behavioural problems in cats**](#) [周六, 16 9月 04:52]

Early weaning increases aggression and stereotypic behavior in cats. Based on the study, the recommended weaning age of 12 weeks should be raised by at least two weeks. Delaying weaning is an easy and cost-efficient way of improving the quality of life of cats.

- [**Differences in aggression among people with dementia**](#) [周六, 16 9月 04:50]

Physical aggression among people with dementia is not unusual. A study showed that one-third of patients with the diagnosis Alzheimer's disease or frontotemporal dementia were physically aggressive towards healthcare staff, other patients, relatives, animals and complete strangers. This manifestation of disease must be both understood and addressed in the right way.

- [**Teens come 'jet lagged' to school: Shifting sleeping patterns at weekends**](#) [周六, 16 9月 04:48]

A lack of sleep is associated with more absence and teens turn up jet lagged to school on Mondays, as shown in new research.

• [**Innate immunity: To operate, insert dimers**](#) [周六, 16 9月 04:46]

The presence of DNA in mammalian cell cytoplasm triggers an immune response by binding to a dimeric enzyme, which inserts between DNA double helices to form the “rungs” of a ladder-like structure, as an LMU team has now shown.

• [**Secrets of Bonsai: Uncovering the mechanism of root regeneration**](#) [周六, 16 9月 04:38]

The molecular mechanism behind root regeneration after root cutting in plants has been discovered. A finding which could lead to the development of new methods for regulating plant growth in agriculture and horticulture.

• [**Ultrafast snapshots of relaxing electrons in solids**](#) [周六, 16 9月 04:37]

A team of scientists has been able to capture the dynamics of core-excited excitons in solids in real-time.

• [**Black Sea water temperatures may buck global trend**](#) [周六, 16 9月 04:29]

Scientists have successfully simulated the Black Sea’s long term currents, salt water content and temperature for the first time.

• [**Ancient amphibian had mouthful of teeth ready to grab you**](#) [周六, 16 9月 03:58]

The idea of being bitten by a nearly toothless modern frog or salamander sounds laughable, but their ancient ancestors had a full array of teeth, large fangs and thousands of tiny hook-like structures called denticles on the roofs of their mouths that would snare prey, according to paleontologists.

• [**Memory decline after head injury may be prevented by slowing brain cell growth**](#) [周六, 16 9月 02:42]

Scientists say a new study indicates that the excessive burst of new brain cells after a traumatic head injury that researchers have traditionally

believed helped in recovery could instead lead to epileptic seizures and long-term cognitive decline.

- [**The body's own fat-metabolism protects against the harmful effects of sugar**](#) [周六, 16 9月 02:41]

Researchers have discovered that the fat-metabolism in the cells takes place simultaneously with a detoxification of the harmful substances from the blood sugar, which can avert the damage that can in turn lead to age-related diseases such as diabetes, Alzheimer's and cancer. This indicates that we have a detoxification system which we were not previously aware of.

- [**Scientists question study about plastic-eating caterpillars**](#) [周六, 16 9月 02:41]

Do the larvae of the wax moth really solve the world's plastic problem? Sensational report of biochemical degradation of polyethylene by caterpillars not confirmed.

- [**'Exciting' discovery on path to develop new type of vaccine to treat global viruses**](#) [周六, 16 9月 02:41]

Scientists have made a significant discovery in efforts to develop a vaccine against Zika, dengue and Hepatitis C viruses that affect millions of people around the world.

- [**Why we did not evolve to live forever: Unveiling the mystery of why we age**](#) [周六, 16 9月 02:41]

Researchers have made a breakthrough in understanding the origin of the ageing process. They have identified that genes belonging to a process called autophagy -- one of the cells most critical survival processes -- promote health and fitness in young worms but drive the process of ageing later in life.

- [**Immune system linked to alcohol drinking behavior**](#) [周六, 16 9月 02:41]

Researchers have found a new link between the brain's immune system and the desire to drink alcohol in the evening.

- [**Time to dial back on diabetes treatment in older patients? Study finds 11 percent are overtreated**](#)

[周六, 16 9月 02:41]

Almost 11 percent of Medicare participants with diabetes had very low blood sugar levels that suggested they were being over-treated, a new study finds. But only 14 percent of these patients had a reduction in blood sugar medication refills in the next six months.

- [**Quality initiatives can reduce harm to newborns, shorten hospital stay and save millions**](#)

[周六, 16 9月 02:41]

A quality-improvement initiative at a neonatal intensive care unit finds that chest X-rays can be performed just twice weekly, lessening the chances of a breathing tube popping out accidentally, reducing infants' exposure to radiation and saving an estimated \$1.6 million per year.

- [**Couples weather bickering with a little help from their friends**](#)

[周六, 16 9月 02:41]

New research finds that having good friends and family members to turn to alleviates the stress of everyday conflict between marital partners. Social networks may help provide protection against health problems brought about by ordinary tension between spouses.

- [**Decreased glucose metabolism in medial prefrontal areas is associated with nutritional status in patients with prodromal and early Alzheimer's disease**](#)

[周六, 16 9月 02:41]

A new study shows that hypometabolism in the medial prefrontal areas is specifically associated with Alzheimer's disease-related nutritional problems, and decrease in fat mass may have a key role.

- [**Medical students not trained to prescribe medical marijuana**](#)

[周六, 16 9月 02:41]

More than half of the states in the US now allow some type of legal marijuana use, primarily medical marijuana. But, in a survey of medical residents and deans at the nation's medical schools, researchers have

found that the majority of schools are not teaching their students about medical marijuana, and the majority of students don't feel prepared to discuss the subject with patients.

- [**New organelled discovered in parasitic wasp venom**](#) [周六, 16 9月 02:41]

Biologists have identified the composition of 'virus-like particles' (VLPs) found in the venom of a wasp that is a parasite of fruit flies. Invisible to the eye, wasp VLPs suppress the flies' immune responses by killing their blood cells.

- [**Brain halves increase communication to compensate for aging, study finds**](#) [周六, 16 9月 02:41]

Increased communication between distant brain regions helps older adults compensate for the negative aspects of aging, reports a new study.

- [**Arctic sea ice once again shows considerable melting**](#) [周五, 15 9月 22:36]

This September, the extent of Arctic sea ice shrank to roughly 4.7 million square kilometres, scientists have determined.

- [**Star formation influenced by local environmental conditions**](#) [周五, 15 9月 22:36]

Three scientists have carried out extensive computer simulations related to star formation. They conclude that the present idealized models are lacking when it comes to describing details in the star formation process.

- [**Discovery can pave the way for more effective cholesterol medicine**](#) [周五, 15 9月 22:35]

Research sheds new light on how the body converts the bad kind of cholesterol. The discovery could lead to new and potentially more effective medicine.

- [**Chemotherapy pain could be eased by jetlag drug, study suggests**](#) [周五, 15 9月 22:35]

Painful side effects from cancer medicines could be tackled with a drug

that eases the effects of jetlag, research suggests.

- [**Celebrity fossil reveals all for science**](#) [周五, 15 9月 22:35]

With the help of an artist, a geology professor has figuratively speaking breathed life into one of science's most well-known fossil species; *Agnostus pisiformis*. The trilobite-like arthropod lived in huge numbers in Scandinavia a half-billion years ago. Today, this extinct species provides important clues for science in several ways.

- [**New study on the placebo effect and antidepressants in children and adolescents**](#) [周五, 15 9月 21:53]

Although the clinical efficacy of antidepressants in children and adolescents is proven, it is frequently accompanied by side effects. In addition, the influence of the placebo effect on the efficacy of antidepressants is unclear. A meta-analysis of data from over 6,500 patients has now shown that, although antidepressants are more effective than placebos, the difference is minor and varies according to the type of mental disorder.

- [**20 minute test determines attention and memory capacity in patients with schizophrenia**](#) [周五, 15 9月 21:53]

Researchers have designed a test which in only 20 minutes can examine short-term memory capacity, mental agility and organizational capacities in patients with schizophrenia.

- [**Humans no longer have ancient defense mechanism against viruses**](#) [周五, 15 9月 21:53]

Insects and plants have an important ancient defense mechanism that helps them to fight viruses. This is encoded in their DNA. Scientists have long assumed that vertebrates -- including humans -- also had this same mechanism. But researchers have found that vertebrates lost this particular asset in the course of their evolution.

- [**Girl soccer players five times more likely than boys to return to play same day after concussion**](#) [周五, 15 9月 21:52]

A new study found girls were significantly more likely than boys to

return to play the same day following a soccer-related concussion, placing them at risk for more significant injury. More than half of girls in the study resumed playing in a game or practice the same day as their injury, compared to just 17 percent of boys.

- [**Common surgeries may serve as pathway to nonmedical opioid use in adolescents**](#) [周五, 15 9月 21:52]

Results of study, the first known to suggest long-term opioid use after surgery may be a significant problem for teens and young adults, shows youth patients commonly fill post-surgical painkiller prescriptions for months beyond typical recovery times.

- [**Golf carts causing serious injuries to children**](#) [周五, 15 9月 21:52]

As golf carts become increasingly popular in communities beyond the fairway, new research shows, a significant number of children are being seriously injured while using them.

- [**300,000 families living in US-Mexico border towns face exposure to toxic stress**](#) [周五, 15 9月 21:52]

Roughly 300,000 Texans living in impoverished border communities known as 'colonias' are facing substandard housing, lack of resources and exposure to toxic stress. New research finds these communities are also ill-equipped to face a natural disaster.

- [**Need for epinephrine in schools -- and staff trained to administer it**](#) [周五, 15 9月 21:52]

With school nurses often covering multiple buildings, researchers find that nearly one in five students who experience severe allergic reactions are given potentially life-saving epinephrine injections from unlicensed staff or students.

- [**Green schoolyards offer physical and mental health benefits for children**](#) [周五, 15 9月 21:52]

A growing body of evidence suggests access to safe, natural areas improves health across a wide variety of areas, including heart health, mental health, weight management, ADHD, and stress among children.

Damage to monarch butterfly colonies in 2016 storm worse than thought: Severe cold, snow, and high winds -- and salvage logging that followed -- weakened forest that protects declining butterfly -- ScienceDaily

A much greater number of monarch butterflies perished in a snowstorm in March 2016 in Mexico than previously estimated, according to new research. Analysis of damage from the storm -- and the ensuing salvage logging -- sheds further light on the precarious state of the famed butterflies' overwintering colonies.

Approximately 30-38 percent of the monarch butterflies (*Danaus plexippus*) in the Sierra Chincua and Cerro Pelón overwintering colonies died in the storm, says a team led by Lincoln Brower, Ph.D., research professor of biology at Sweet Briar College, far more than the estimated 7 percent mortality rate cited in initial media reports after the storm that struck between March 7 and March 11, 2016. The researchers'

findings are reported in the latest issue of the Entomological Society of America's *American Entomologist*.

The storm was a severe combination of rain, snow, sleet, and hail along with strong winds and sub-freezing temperatures that downed several thousand Oyamel firs within the forests of the Monarch Butterfly Biosphere Reserve, declared a World Heritage Site by the United Nations in 2008. Typically, the dense forest creates a favorable "microclimate" for the monarchs, protecting them from exposure to intense winds, rain, and cold temperatures.

"The prolonged severe storm destroyed the normal microclimatic protection provided by the intact Oyamel forest and led to freezing in all the colonies," Brower says. "This awakened us to the realization that the forest surrounding the butterfly colonies also needs to be protected, as a generalized wind buffer."

Brower and colleagues counted dead butterflies in random plots within the colonies to estimate the total mortality rate from the storm: 31 percent in the Sierra Chincua colony and 38 percent in the Cerro Pelón colony. The true impact may still have been greater,

however, as the researchers' analysis of weather data from stations within and surrounding the Monarch Butterfly Biosphere Reserve, measured against existing research on monarch butterfly mortality in freezing temperatures, "support the conclusion that the March 2016 storm mortality ... was substantially greater than 40 percent," the researchers report.

Following the storm, the Mexican government permitted salvage logging to remove downed trees, due to concerns over potential fire or insect damage. Brower and colleagues argue, however, that the logging process was "profoundly disturbing and detrimental to the environment," decreasing the forest's ability to return to maturity and provide safe haven for the butterflies. A volume of 60,000 cubic meters of timber was approved for removal -- equivalent to several thousand trees -- which follows an incident of illegal logging occurring in the monarch reserve in 2015, reported in *American Entomologist* last year.

Brower was recently named a Fellow of the Entomological Society of America, in recognition of his career devoted to studying and raising awareness of the monarch butterfly and its overwintering colonies. Since the 1996-1997 overwintering season, the

monarchs' colonies have declined in size by 90 percent. After more than 60 years, Brower's work carries on, he says. "We hope to carry out a drone study, photographing the colonies from a standard height above the butterflies and then using photometric analysis to estimate changing colony densities," he says. "We are concerned that the current methodology of reporting only total colony areas is underestimating the decline of monarchs overwintering in Mexico."

Story Source:

Materials provided by [Entomological Society of America](#). *Note: Content may be edited for style and length.*

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High blood pressure reasons differ by gender in teens; young adults -- ScienceDaily

There are marked gender differences in what drives blood pressure in middle-age in adulthood, suggesting the need for gender-specific treatments for high blood pressure, according to research presented today at the American Heart Association (AHA) Council on Hypertension, AHA Council on Kidney in Cardiovascular Disease, American Society of Hypertension Joint Scientific Sessions 2017, in San Francisco.

Background

"Blood pressure is determined mainly by three factors: heart rate; stroke volume, which is the volume of blood pumped by the heart; and the resistance to blood flow through the vessels, called total peripheral resistance. An increase in any one of the three factors can lead to an increase in blood pressure," said study author Catriona Syme, Ph.D., postdoctoral fellow at The

Hospital for Sick Children (SickKids) in Toronto, Ontario, Canada. "The key takeaway from this study is that, for young and middle-aged women, stroke volume was the main determinant of blood pressure, while, in men, vascular resistance was the main determinant of blood pressure."

Syme and colleagues studied 1,347 Canadians from the Saguenay Youth Study, including 911 adolescents and 426 adults ages 36 to 65 years. The researchers used a device that measures beat-by-beat blood pressure and the underlying forces of heart rate, stroke volume and total peripheral resistance. In the approximately hour-long protocol, they measured these variables at rest, and during posture changes and a mental stressor -- all designed to mimic daily life activities, according to Syme.

Researchers found:

- In females, stroke volume explains 55 percent of the variance in systolic blood pressure (the top number in a blood pressure reading), versus only 35 percent in males.
- In males, the major determinant of systolic blood pressure was total peripheral resistance, which

explained 47 percent of the variance, versus only 30 percent in females.

- These gender differences were seen across most of the 52-minute protocol, being most prominent during standing and least evident during mental stress, according to the abstract.

This study is novel in that it looks at the relative contributions of the three parameters determining blood pressure, which have not been evaluated in a large population-based study, and it assesses these factors over time, in a way that mimics daily life activities. The study also looks at high blood pressure culprits in adolescents and young to middle aged adults, who are not frequently studied despite being affected by hypertension, according to Syme.

"For example, there have been many studies looking at sex differences in the usefulness of blood pressure medications. But, most of those studies have been done in people whose average age was 60-70 years -- many of the women being post-menopausal," Syme said.

"We think pre-menopausal women and men of a similar age may have elevated blood pressure for different reasons, and thus may need to be treated for hypertension differently. After menopause, when the

production of female sex hormones decreases, reasons for hypertension may be more similar in men and women."

While current treatment recommendations for hypertension do not differ by gender across all ages, this study suggests potential benefits to prescribing blood pressure-lowering medications with consideration for gender differences in the underlying physiology of elevated blood pressure in young and middle-aged adults.

This study was conducted in Caucasians. Future studies should investigate whether the relative contributions of these parameters differ by race.

Story Source:

[Materials](#) provided by [American Heart Association](#).

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Teens also at risk for organ damage from high blood pressure -- ScienceDaily

Organ damage from high blood pressure doesn't only occur in adults; it can also happen in teenagers, according to research presented today at the American Heart Association (AHA) Council on Hypertension, AHA Council on Kidney in Cardiovascular Disease, American Society of Hypertension Joint Scientific Sessions 2017 in San Francisco.

And the damage to the heart and blood vessels can occur in youth at blood pressure levels that are below the clinical definition of hypertension in youth.

High blood pressure in youth is defined differently than it is in adults. In childhood, high blood pressure is based on percentiles, rather than blood pressure level. Researchers looked at whether organ damage in teens develops below the 95th percentile, which is the clinical definition of high blood pressure in youth.

Researchers studied blood pressure and measured organ damage in 180 teenagers (14-17 years old, 64 percent white, 57 percent males). They found evidence of organ damage even among the youth categorized as "normal" with blood pressure less than in the 80th percentile. They also found heart and vessel damage in the mid-risk group, which had blood pressures in the 80th to 90th percentiles and the high-risk group, with blood pressures above the 90th percentile.

"Some adolescents may have organ damage related to blood pressure and are not targeted for therapy," said Elaine M. Urbina, M.D., M.S., study author and director of preventive cardiology at Cincinnati Children's Hospital Medical Center in Ohio. "Imaging of the heart may be useful in youth in the high-normal range of blood pressure to determine how aggressive therapy should be."

Story Source:

[Materials](#) provided by [American Heart Association](#).

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| [Section menu](#) | [主菜单](#) |

Sugary secrets of a cancer-related protein -- ScienceDaily

The proteins in human cells are extensively decorated with different types of sugars, a phenomenon called glycosylation. These modifications greatly increase the diversity of protein structure and function, affecting how proteins fold, how they behave, and where they go in cells. New research that will be published in the *Journal of Biological Chemistry* on Sept. 22 demonstrates that a rare type of glycosylation profoundly affects the function of a protein important for human development and cancer progression.

Protein glycosylation is either called N-linked or O-linked, depending on whether the sugar is attached to nitrogen- or oxygen-containing sites, respectively. O-linked modifications typically involve the sugar N-acetylgalactosamine being attached to the amino acids serine or threonine, called "mucin-type" glycosylation because they are commonly found in proteins in mucus membranes; together with N-linked sugars, these "canonical" modifications modify thousands of

different types of proteins.

For over 20 years, Robert Haltiwanger's research group, now at the University of Georgia, has studied much rarer type of O-linked modifications: attachment of the sugars glucose or fucose to serine or threonine, a modification that affects just a few hundred different types of proteins. One of these proteins is Notch, a signaling receptor that is essential for cell development and differentiation and is dysregulated in cancers such as leukemia, breast cancer, and prostate cancer.

"The fact that we found these sugars on Notch was intriguing because Notch is a very important molecule," Haltiwanger said. "So we've been curious about how these sugars affect [Notch's] stability and activity."

The enzymes responsible for modifying Notch with glucose and fucose are called POFUT1 and POGLUT1. Haltiwanger's team, led by Hideyuki Takeuchi, wanted to know exactly why POFUT1 and POGLUT1 were attaching glucose and fucose to Notch in cells.

If you genetically engineer a fly or mouse without POFUT1 or POGLUT1, Haltiwanger said, "you get a

dead fly or a dead mouse. You completely disrupt the Notch pathway; Notch is not functional if you don't add those sugars. There's been a lot of work over the years on: Why is that? What is [the sugar] doing?"

Haltiwanger's new work shows that the fucose and glucose modifications serve as quality-control markers that allow Notch to be transported to its final destination in the cell membrane. When the researchers knocked out POFUT1 or POGLOT1 in cell cultures using CRISPR/Cas technology, cells displayed much less Notch on the cell surface. When both enzymes were knocked out, Notch was almost completely absent.

Using additional biochemical methods, the researchers found that POFUT1 and POGLOT1 attached glucose and fucose to portions of Notch only after they fold in a specific way.

"It's like a stamp of approval," Haltiwanger said. "This part's folded? Boom, you put a fucose on it. And somehow that tells the cell: Don't mess with this anymore. Leave it alone. If you don't add the sugar, [the Notch proteins] get stuck inside the endoplasmic reticulum, get degraded, and don't get secreted."

Knowing that these sugars are essential for Notch activity makes the enzymes that control them, POFUT1 and POGLUT1, potential targets for cancer treatments. Depending on whether Notch is overactive or insufficiently active in a particular cancer, manipulating the sugars that are added to Notch could help correct the dysregulation. Haltiwanger's team is currently working on finding chemical compounds that would inhibit POFUT1 and POGLUT1, thus stopping Notch from embedding in the cell membrane and carrying out its signaling functions. They're also attempting to unravel the details of how the glucose and fucose modifications work together to fine-tune Notch activity.

"That'll keep us busy," Haltiwanger said.

The work was supported by the National Institutes of Health.

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All Top News

Top science stories featured on ScienceDaily's home page.

- [**NASA's Cassini spacecraft ends its historic exploration of Saturn**](#) [周六, 16 9月 22:30]

A thrilling epoch in the exploration of our solar system has come to a close, as NASA's Cassini spacecraft made a fateful plunge into the atmosphere of Saturn, ending its 13-year tour of the ringed planet. Cassini's plunge brings to a close a series of 22 dives between Saturn and its rings, a feat never before attempted by any spacecraft.

- [**A drone for last-centimeter delivery**](#) [周六, 16 9月 05:01]

A new drone uses cutting-edge technology to deliver parcels weighing up to 500 grams. The device will never get stuck in traffic, it's programmed to avoid obstacles, and it can reach destinations on steep or uneven terrain. Its protective cage and foldable design mean that it can be carried around in a backpack and used in total safety.

- [**Light on exoplanets may be quite different from Earth: Different photosynthesis?**](#) [周六, 16 9月 05:00]

Researchers have proposed a prediction that red-edge could be observed as on the Earth even on exoplanets around M-dwarfs. They pointed out that the first oxgenic phototrophs are most likely to have evolved underwater to utilize visible light just like what had happened in the primordial ocean on the Earth. They examined light adaptation mechanisms of visible- and IR-radiation-using phototrophs required for adapting to land habitats and found out that IR-using phototrophs struggle to adapt to chan...

- [**Tough stuff: Spider silk enhanced with graphene-based materials**](#) [周六, 16 9月 04:52]

Natural spider silk has excellent mechanical properties. Researchers have now found a way to boost the strength of spider's silk using graphene-based materials, paving the way for a novel class of high-performance bionic composites.

- [**Ultrafast snapshots of relaxing electrons in solids**](#) [周六, 16 9月 04:37]

A team of scientists has been able to capture the dynamics of core-excited excitons in solids in real-time.

- [**Ancient amphibian had mouthful of teeth ready to grab you**](#) [周六, 16 9月 03:58]

The idea of being bitten by a nearly toothless modern frog or salamander sounds laughable, but their ancient ancestors had a full array of teeth, large fangs and thousands of tiny hook-like structures called denticles on the roofs of their mouths that would snare prey, according to paleontologists.

- [**Why we did not evolve to live forever: Unveiling the mystery of why we age**](#) [周六, 16 9月 02:41]

Researchers have made a breakthrough in understanding the origin of the ageing process. They have identified that genes belonging to a process called autophagy -- one of the cells most critical survival processes -- promote health and fitness in young worms but drive the process of ageing later in life.

- [**Arctic sea ice once again shows considerable melting**](#) [周五, 15 9月 22:36]

This September, the extent of Arctic sea ice shrank to roughly 4.7 million square kilometres, scientists have determined.

- [**Skin patch dissolves 'love handles' in mice**](#) [周五, 15 9月 21:52]

Researchers have developed a medicated skin patch that can turn energy-storing white fat into energy-burning brown fat locally while raising the body's metabolism. The patch could be used to burn off pockets of unwanted fat and treat metabolic disorders like obesity and

diabetes.

- [**Wolves understand cause and effect better than dogs**](#) [周五, 15 9月 21:51]

A rattle will only make noise if you shake it. Animals like the wolf also understand such connections and are better at this than their domesticated descendants. Researchers say that wolves have a better causal understanding than dogs and that they follow human-given communicative cues equally well. The study provides insight that the process of domestication can also affect an animal's causal understanding.

- [**In step toward controlling chemistry, physicists create a new molecule, atom by atom**](#) [周五, 15 9月 03:24]

Physicists have discovered a unique new molecule that could lead to many useful applications, and show how chemical reactions can be studied on a microscopic scale using tools of physics.

- [**Biomarkers in the blood prove strong role of food for type 2 diabetes**](#) [周五, 15 9月 03:24]

A pioneering method has demonstrated its potential in a large study, showing that metabolic fingerprints from blood samples could render important new knowledge on the connection between food and health. The study finds that diet is one of the strongest predictors of type 2 diabetes risk in older women.

- [**Electric eels leap to deliver painful, Taser-like jolt**](#) [周五, 15 9月 03:24]

The electric eel has always been noted for its impressive ability to shock and subdue its prey. It's recently become clear that electric eels also use a clever trick to deliver an intense, Taser-like jolt to potential predators: they leap from the water to target threatening animals, humans included, above water. Now, a researcher has measured (and experienced) just how strong that jolt can be.

- [**Sorting molecules with DNA robots**](#) [周五, 15 9月 03:24]

Scientists have programmed a 'robot' made of DNA to pick up and sort molecules into predetermined locations.

- **[Plant geneticists develop a new application of CRISPR to break yield barriers in crops](#)** [周五, 15 9月 03:23]

Scientists have finally harnessed the untapped power of genome editing to improve agricultural crops. In the tomato plant they have mobilized CRISPR to rapidly generate variants of the plant displaying a continuum of three agriculturally important traits: fruit size, branching architecture and overall plant shape. All are major components in determining yield. The method is designed to work in all food, feed, and fuel crops, including staples rice, maize, sorghum and wheat.

- **[Old fish few and far between under fishing pressure](#)** [周五, 15 9月 03:23]

A new study has found that, for dozens of fish populations around the globe, old fish are greatly depleted -- mainly because of fishing pressure. Old fish are increasingly missing in many populations around the world.

- **[Huge genetic diversity among Papuan New Guinean peoples revealed](#)** [周五, 15 9月 03:23]

The first large-scale genetic study of people in Papua New Guinea has shown that different groups within the country are genetically highly different from each other. Scientists reveal that the people there have remained genetically independent from Europe and Asia for most of the last 50,000 years, and that people from the country's isolated highlands region have been completely independent even until the present day.

- **[The return of the comet-like exoplanet](#)** [周五, 15 9月 03:23]

Astronomers have focused the Hubble Space Telescope on an exoplanet that had already been seen losing its atmosphere, which forms an enormous cloud of hydrogen, giving the planet the appearance of a giant comet. During earlier observations, it was not possible to cover the whole cloud, whose shape was predicted by numerical simulations. Thanks to these new observations, the scientists have finally been able to confirm the initial predictions.

[**'Handedness' in scale-eating fish: Nature and nurture**](#) [周五, 15 9月 03:23]

Lateralized behaviors are thought to be strengthened during development. However, little is known about how they are acquired during development. In the scale-eating cichlid model, researchers demonstrated the attack side preference of juveniles was developed with scale-eating experience, regardless of age. They also found that kinetics of attack behavior is superior on one side by nature. Therefore, they concluded that the fish learn to use the naturally dominant side through experience.

[**Could interstellar ice provide the answer to birth of DNA?**](#) [周五, 15 9月 03:22]

Molecules brought to Earth in meteorite strikes could potentially be converted into the building blocks of DNA, researchers have shown.

[**How does a cell maintain its identity during replication?**](#) [周五, 15 9月 03:22]

Prior to cell division, chromosomes are seemingly a jumbled mess. During cell division, parent cell chromosomes and their duplicates sort themselves out by condensing, becoming thousands of times more compact than at any other time. Researchers have long assumed that genes become "silent" during cell division, not being transcribed into proteins or regulatory molecules. This has left open the question of how genes get properly re-activated after cell division. Now, researchers have found that gen...

[**Hubble observes pitch black planet**](#) [周五, 15 9月 03:22]

Astronomers have discovered that the well-studied exoplanet WASP-12b reflects almost no light, making it appear essentially pitch black. This discovery sheds new light on the atmospheric composition of the planet and also refutes previous hypotheses about WASP-12b's atmosphere. The results are also in stark contrast to observations of another similarly sized exoplanet.

[**New supernova analysis reframes dark energy**](#)

debate [周四, 14 9月 07:31]

The accelerating expansion of the Universe may not be real, but could just be an apparent effect, according to new research. The new study finds the fit of Type Ia supernovae to a model universe with no dark energy to be very slightly better than the fit to the standard dark energy model.

Evolution of 'true frogs' defies long-held expectations of science [周四, 14 9月 07:31]

New research shows, in contrast to expectations, 'the rapid global range expansion of true frogs was not associated with increased net-diversification.'

Artificial 'skin' gives robotic hand a sense of touch [周四, 14 9月 07:30]

A team of researchers from the University of Houston has reported a breakthrough in stretchable electronics that can serve as an artificial skin, allowing a robotic hand to sense the difference between hot and cold, while also offering advantages for a wide range of biomedical devices.

In-utero treatment reverses cleft palate in mice [周四, 14 9月 07:30]

Researchers clarified a molecular pathway responsible for the formation of cleft palate and identified a new treatment to reverse this defect in mouse pups in utero.

'Peel-and-go' printable structures fold themselves [周四, 14 9月 07:30]

Researchers have created a printable structure that begins to fold itself up as soon as it's peeled off the printing platform.

First global map of water in moon's soil [周四, 14 9月 07:30]

A new study maps the trace concentrations of water implanted in the lunar soil by the solar wind, a water source that could be used as resource in future lunar exploration.

- [**New gravity map suggests Mars has a porous crust**](#) [周四, 14 9月 07:30]

Scientists have found evidence that Mars' crust is not as dense as previously thought, a clue that could help researchers better understand the Red Planet's interior structure and evolution.

- [**Squirrels use 'chunking' to organize their favorite nuts**](#) [周四, 14 9月 07:29]

Like trick-or-treaters sorting their Halloween candy haul, fox squirrels apparently organize their stashes of nuts by variety, quality and possibly even preference, according to new research.

- [**Measuring a crucial mineral in the mantle**](#) [周四, 14 9月 07:29]

New research resolves 40 years of debate about the strength of olivine, the most abundant mineral in the Earth's mantle. Measuring the strength of olivine is critical to understanding how strong tectonic plates are, which, in turn, matters to how plates break and create subduction zones.

- [**Climate change challenges the survival of fish across the world**](#) [周四, 14 9月 07:29]

Researchers have published the first analysis looking at how vulnerable the world's freshwater and marine fishes are to climate change. Their study used physiological data to predict how nearly 3,000 fish species living in oceans and rivers will respond to warming water temperatures in different regions.

- [**New drug effective against malaria**](#) [周三, 13 9月 06:49]

Researchers have developed a new drug that is effective against non-severe cases of malaria, according to results from an FDA-supervised clinical trial. The results are significant as public health experts have long warned that the parasite responsible for most malaria cases, *Plasmodium falciparum*, is developing resistance to widely used treatments. New medications are needed to build up secondary defenses against drug-resistant strains of the parasite.

- [**A one-of-a-kind star found to change over**](#)

[decades](#) [周三, 13 9月 03:48]

Researchers recently found new evidence that lends support to an existing theory of how the unusual star emits energy.

• [AI -- Engineering: merging, morphing, mobile robots](#) [周二, 12 9月 22:35]

Researchers have developed self-reconfiguring modular robots that can merge, split and even self-heal while retaining full sensorimotor control. The work may take us closer to producing robots that can autonomously change their size, shape and function.

• [Coffee and bees: New model of climate change effects](#) [周二, 12 9月 22:28]

Areas in Latin America suitable for growing coffee face predicted declines of 73-88 percent by 2050. But bee species diversity may save the day, even if many species in cool highland regions are lost as the climate warms.

• [Your stools reveal whether you can lose weight](#) [周二, 12 9月 21:31]

Something as simple as a feces sample reveals whether you can lose weight by following dietary recommendations characterized by a high content of fruit, vegetables, fibers and whole grains, report scientists.

• [Nanoparticles from tattoos travel inside the body, scientists find](#) [周二, 12 9月 21:31]

The elements that make up the ink in tattoos travel inside the body in micro and nanoparticle forms and reach the lymph nodes according to a new study. It is the first time that there is analytical evidence of the transport of various organic, inorganic pigments and toxic element impurities as well as in depth characterization of the pigments ex vivo in tattooed tissues.

• [Octopuses aren't loners, new evidence suggests](#) [周二, 12 9月 05:04]

Octopuses are usually solitary creatures, but a new site in the waters off the east coast of Australia is the home of up to 15 gloomy octopuses (*Octopus tetricus*) that have been observed communicating -- either

directly as in den evictions or indirectly through posturing, chasing or color changes, according to new research findings.

- [**When ancient fossil DNA isn't available, ancient glycans may help trace human evolution**](#) [周二, 12 9月 03:09]

Researchers have discovered a new kind of glycan (sugar chain) that survives even in a 4-million-year-old animal fossil from Kenya, under conditions where ancient DNA does not. While ancient hominin fossils are not yet available for glycan analysis, this proof-of-concept study sets the stage for unprecedented explorations of human origins and diet.

- [**Urban climate change**](#) [周二, 12 9月 03:09]

Southern cities such as Houston and Tampa -- which faced the wrath of hurricanes Harvey and Irma, respectively -- may not be the only urban environments vulnerable to extreme weather. Northern cities also face the potential for flooding as global temperatures continue to warm.

- [**Why your ancestors would have aced the long jump**](#) [周二, 12 9月 03:09]

A 52-million-year-old ankle fossil suggests our prehuman ancestors were high-flying acrobats. For years, scientists thought the ancestors of today's humans, monkeys, lemurs and apes were relatively slow and deliberate animals, using their grasping hands and feet to creep along small twigs and branches. But a new study suggests the first primates were masters at leaping through the trees.

- [**Scientists track the brain-skull transition from dinosaurs to birds**](#) [周二, 12 9月 00:27]

The dramatic, dinosaur-to-bird transition that occurred in reptiles millions of years ago was accompanied by profound changes in the skull roof of those animals -- and holds important clues about the way the skull forms in response to changes in the brain -- according to a new study. It is the first time scientists have tracked the link between the brain's development and the roofing bones of the skull.

- [**How openings in Antarctic sea ice affect**](#)

[worldwide climate](#) [周二, 12 9月 00:26]

In a new analysis of climate models, researchers reveal the significant global effects that seemingly anomalous polynyas, or openings in sea ice, can have. Their findings indicate that heat escaping from the ocean through these openings impacts sea and atmospheric temperatures and wind patterns around the globe and even rainfall around the tropics.

• [Brain Composer: 'Thinking' melodies onto a musical score](#) [周二, 12 9月 00:26]

A new brain-computer interface application that allows music to be composed by the power of thought has now been developed by scientists.

• [Cold region 'tipping point' now inevitable](#) [周二, 12 9月 00:26]

The decline of cold regions called periglacial zones is now inevitable due to climate change, researchers say.

• [The evolutionary origin of the gut](#) [周二, 12 9月 00:26]

How did the gut, the skin and musculature evolve? This question concerns scientists for more than a century. Through the investigation of the embryonic development of sea anemones, a very old animal lineage, researchers have now come to conclusions which challenge the 150-year-old hypothesis of the homology (common evolutionary origin) of the germ layers that form all later organs and tissues.

• [USA threatened by more frequent flooding](#) [周二, 12 9月 00:26]

The East Coast of the United States is threatened by more frequent flooding in the future. According to this study, the states of Virginia, North Carolina, and South Carolina are most at risk. Their coastal regions are being immersed by up to three millimeters per year -- among other things, due to human intervention.

• [Half-a-billion-year-old fossils shed light animal evolution on Earth](#) [周二, 12 9月 00:26]

Scientists have discovered traces of life more than half-a-billion years old that could change the way we think about how all animals evolved

on Earth.

[Biodiversity just as powerful as climate change for healthy ecosystems](#) [周二, 12 9月 00:26]

Biodiversity is proving to be one of humanity's best defenses against extreme weather. In past experiments, diversity has fostered healthier, more productive ecosystems, like shoreline vegetation that guards against hurricanes. However, many experts doubted whether these experiments would hold up in the real world. A study offers a decisive answer: biodiversity's power in the wild surpasses experimental predictions, in some cases topping even effects of climate.

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

- [**High blood pressure reasons differ by gender in teens; young adults**](#) [周一, 18 9月 03:10]

Gender matters when it comes to what's most likely to elevate blood pressure in young to middle-aged adults. The volume of blood pumped from the left ventricle during heartbeats, i.e., stroke volume, is the main determinant of blood pressure levels in women, while blood pressure in men is more likely to be determined by the amount of resistance in the body's blood vessels.

- [**Blood pressure better controlled with 'MAP' for doctors**](#) [周一, 18 9月 03:09]

Primary care practices using the Measure accurately, Act rapidly and Partner with patients (MAP) program drove down hypertension rates among patients. In six months of MAP, hypertension control rose from 65.6 percent to 74.8 percent, among more than 21,000 hypertension patients at US primary care practices.

- [**Teens also at risk for organ damage from high blood pressure**](#) [周一, 18 9月 03:09]

Organ damage from high blood pressure doesn't only occur in adults; it can also happen in teenagers, according to new research.

- [**Sugary secrets of a cancer-related protein**](#) [周一, 18 9月 00:03]

The proteins in human cells are extensively decorated with different types of sugars, a phenomenon called glycosylation. These modifications greatly increase the diversity of protein structure and

function, affecting how proteins fold, how they behave, and where they go in cells. New research demonstrates that a rare type of glycosylation profoundly affects the function of a protein important for human development and cancer progression.

- [**Fertility research brings death of dogma, birth of hope**](#) [周六, 16 9月 20:01]

A new study shows unequivocally that stem cells in the ovaries are a critical piece of the mammal fertility puzzle, and may be harnessed to revolutionize fertility treatments and perhaps even delay menopause.

- [**Hormone replacement therapy can slow decline in lung function for middle-aged women**](#) [周六, 16 9月 05:05]

Hormone replacement therapy (HRT) can slow the decline in lung function in middle-aged women, according to new research.

- [**Magnetic fields to alleviate anxiety**](#) [周六, 16 9月 04:52]

It is possible to unlearn fears. And this works even better when a specific region of the brain has previously been stimulated magnetically.

- [**Differences in aggression among people with dementia**](#) [周六, 16 9月 04:50]

Physical aggression among people with dementia is not unusual. A study showed that one-third of patients with the diagnosis Alzheimer's disease or frontotemporal dementia were physically aggressive towards healthcare staff, other patients, relatives, animals and complete strangers. This manifestation of disease must be both understood and addressed in the right way.

- [**Teens come 'jet lagged' to school: Shifting sleeping patterns at weekends**](#) [周六, 16 9月 04:48]

A lack of sleep is associated with more absence and teens turn up jet lagged to school on Mondays, as shown in new research.

- [**Innate immunity: To operate, insert dimers**](#) [周六, 16 9月 04:46]

The presence of DNA in mammalian cell cytoplasm triggers an immune

response by binding to a dimeric enzyme, which inserts between DNA double helices to form the “rungs” of a ladder-like structure, as an LMU team has now shown.

- [**Memory decline after head injury may be prevented by slowing brain cell growth**](#) [周六, 16 9月 02:42]

Scientists say a new study indicates that the excessive burst of new brain cells after a traumatic head injury that researchers have traditionally believed helped in recovery could instead lead to epileptic seizures and long-term cognitive decline.

- [**The body's own fat-metabolism protects against the harmful effects of sugar**](#) [周六, 16 9月 02:41]

Researchers have discovered that the fat-metabolism in the cells takes place simultaneously with a detoxification of the harmful substances from the blood sugar, which can avert the damage that can in turn lead to age-related diseases such as diabetes, Alzheimer's and cancer. This indicates that we have a detoxification system which we were not previously aware of.

- [**'Exciting' discovery on path to develop new type of vaccine to treat global viruses**](#) [周六, 16 9月 02:41]

Scientists have made a significant discovery in efforts to develop a vaccine against Zika, dengue and Hepatitis C viruses that affect millions of people around the world.

- [**Why we did not evolve to live forever: Unveiling the mystery of why we age**](#) [周六, 16 9月 02:41]

Researchers have made a breakthrough in understanding the origin of the ageing process. They have identified that genes belonging to a process called autophagy -- one of the cells most critical survival processes -- promote health and fitness in young worms but drive the process of ageing later in life.

- [**Immune system linked to alcohol drinking behavior**](#) [周六, 16 9月 02:41]

Researchers have found a new link between the brain's immune system and the desire to drink alcohol in the evening.

- **[Time to dial back on diabetes treatment in older patients? Study finds 11 percent are overtreated](#)**

[周六, 16 9月 02:41]

Almost 11 percent of Medicare participants with diabetes had very low blood sugar levels that suggested they were being over-treated, a new study finds. But only 14 percent of these patients had a reduction in blood sugar medication refills in the next six months.

- **[Quality initiatives can reduce harm to newborns, shorten hospital stay and save millions](#)**

[周六, 16 9月 02:41]

A quality-improvement initiative at a neonatal intensive care unit finds that chest X-rays can be performed just twice weekly, lessening the chances of a breathing tube popping out accidentally, reducing infants' exposure to radiation and saving an estimated \$1.6 million per year.

- **[Couples weather bickering with a little help from their friends](#)**

[周六, 16 9月 02:41]

New research finds that having good friends and family members to turn to alleviates the stress of everyday conflict between marital partners. Social networks may help provide protection against health problems brought about by ordinary tension between spouses.

- **[Decreased glucose metabolism in medial prefrontal areas is associated with nutritional status in patients with prodromal and early Alzheimer's disease](#)**

[周六, 16 9月 02:41]

A new study shows that hypometabolism in the medial prefrontal areas is specifically associated with Alzheimer's disease-related nutritional problems, and decrease in fat mass may have a key role.

- **[Medical students not trained to prescribe medical marijuana](#)**

[周六, 16 9月 02:41]

More than half of the states in the US now allow some type of legal

marijuana use, primarily medical marijuana. But, in a survey of medical residents and deans at the nation's medical schools, researchers have found that the majority of schools are not teaching their students about medical marijuana, and the majority of students don't feel prepared to discuss the subject with patients.

- [**Brain halves increase communication to compensate for aging, study finds**](#) [周六, 16 9月 02:41]

Increased communication between distant brain regions helps older adults compensate for the negative aspects of aging, reports a new study.

- [**Discovery can pave the way for more effective cholesterol medicine**](#) [周五, 15 9月 22:35]

Research sheds new light on how the body converts the bad kind of cholesterol. The discovery could lead to new and potentially more effective medicine.

- [**Chemotherapy pain could be eased by jetlag drug, study suggests**](#) [周五, 15 9月 22:35]

Painful side effects from cancer medicines could be tackled with a drug that eases the effects of jetlag, research suggests.

- [**New study on the placebo effect and antidepressants in children and adolescents**](#) [周五, 15 9月 21:53]

Although the clinical efficacy of antidepressants in children and adolescents is proven, it is frequently accompanied by side effects. In addition, the influence of the placebo effect on the efficacy of antidepressants is unclear. A meta-analysis of data from over 6,500 patients has now shown that, although antidepressants are more effective than placebos, the difference is minor and varies according to the type of mental disorder.

- [**20 minute test determines attention and memory capacity in patients with schizophrenia**](#) [周五, 15 9月 21:53]

Researchers have designed a test which in only 20 minutes can examine short-term memory capacity, mental agility and organizational capacities

in patients with schizophrenia.

- **[Girl soccer players five times more likely than boys to return to play same day after concussion](#)**

[周五, 15 9月 21:52]

A new study found girls were significantly more likely than boys to return to play the same day following a soccer-related concussion, placing them at risk for more significant injury. More than half of girls in the study resumed playing in a game or practice the same day as their injury, compared to just 17 percent of boys.

- **[Common surgeries may serve as pathway to nonmedical opioid use in adolescents](#)**

[周五, 15 9月 21:52]

Results of study, the first known to suggest long-term opioid use after surgery may be a significant problem for teens and young adults, shows youth patients commonly fill post-surgical painkiller prescriptions for months beyond typical recovery times.

- **[Golf carts causing serious injuries to children](#)**

[周五, 15 9月 21:52]

As golf carts become increasingly popular in communities beyond the fairway, new research shows, a significant number of children are being seriously injured while using them.

- **[300,000 families living in US-Mexico border towns face exposure to toxic stress](#)**

[周五, 15 9月 21:52]

Roughly 300,000 Texans living in impoverished border communities known as 'colonias' are facing substandard housing, lack of resources and exposure to toxic stress. New research finds these communities are also ill-equipped to face a natural disaster.

- **[Need for epinephrine in schools -- and staff trained to administer it](#)**

[周五, 15 9月 21:52]

With school nurses often covering multiple buildings, researchers find that nearly one in five students who experience severe allergic reactions are given potentially life-saving epinephrine injections from unlicensed staff or students.

- [**Green schoolyards offer physical and mental health benefits for children**](#) [周五, 15 9月 21:52]

A growing body of evidence suggests access to safe, natural areas improves health across a wide variety of areas, including heart health, mental health, weight management, ADHD, and stress among children.

- [**Girl soccer players who give up other sports may feel more stressed, less rested**](#) [周五, 15 9月 21:52]

New research has found sport specialization was associated with significantly worse mood, stress, fatigue, soreness, and sleep quality among female youth soccer players, even after controlling for factors such as age and hours spent training.

- [**Immigrant parents report fewer adverse childhood experiences than US-born parents**](#) [周五, 15 9月 21:52]

A new study found immigrants reported fewer potentially health-harming adverse childhood experiences, such as abuse, violence, or divorce, than native-born Americans. The findings suggest immigrants may experience different forms of stress early in life than do those born in the United States.

- [**Campaign increases likelihood parents will ask about guns before a playdate**](#) [周五, 15 9月 21:52]

The Asking Saves Kids (ASK) campaign is effective in increasing parents' comfort level in asking if there is a gun where their child plays, according to research.

- [**Third and fourth graders who own cell phones are more likely to be cyberbullied**](#) [周五, 15 9月 21:52]

New research suggests elementary school-age children who own cell phones may be particularly vulnerable to cyberbullying.

- [**Riding a slide while on a parent's lap increases the risk of injury**](#) [周五, 15 9月 21:52]

Going down a slide on a parent's lap can lead to a broken leg for small

children. An estimated 352,698 children less than 6 years of age were injured on slides in the United States from 2002 through 2015, and many of those injuries were leg fractures.

- [**Increasing number of children arrive at emergency departments addicted to opioids**](#) [周五, 15 9月 21:52]

Showing the opioid epidemic knows no age limits, new research suggests more than 100 children test positive for opioid addiction or dependency each day in US emergency departments.

- [**Injuries caused by firearms differ in rural or urban settings**](#) [周五, 15 9月 21:52]

Researchers examining pediatric firearm injuries found that the age a child is injured by a gun is closely related to where he or she lives: the city or the country.

- [**People with schizophrenia left out of longevity revolution**](#) [周五, 15 9月 21:52]

A team of researchers has analyzed all eight published longitudinal studies of mortality in schizophrenia that met their strict research criteria and found that the mean standardized mortality ratio -- a measure of the mortality rate in schizophrenia -- has increased 37 percent from pre-1970s studies to post-1970s studies.

- [**Carbohydrates may be the key to a better malaria vaccine**](#) [周五, 15 9月 21:52]

An international research team has shown for the first time that carbohydrates on the surface of malaria parasites play a critical role in malaria's ability to infect mosquito and human hosts. The discovery also suggests steps that may improve the only malaria vaccine approved to protect people against Plasmodium falciparum malaria -- the most deadly form of the disease.

- [**Life-saving post-ER suicide prevention strategies are cost effective**](#) [周五, 15 9月 21:52]

Three interventions designed for follow up of patients who are identified

with suicide risk in hospital emergency departments save lives and are cost effective relative to usual care. A study has modeled the use of the approaches in emergency departments and found that all three interventions compare favorably with a standard benchmark of cost-effectiveness used in evaluating healthcare costs.

• **[Regions with stricter firearm laws experience fewer pediatric gun-related injuries](#)** [周五, 15 9月 21:52]

Regions of the United States with stronger firearm legislation had lower rates of Emergency Department visits for pediatric firearm-related injuries, according to a new study.

• **[Skin patch dissolves 'love handles' in mice](#)** [周五, 15 9月 21:52]

Researchers have developed a medicated skin patch that can turn energy-storing white fat into energy-burning brown fat locally while raising the body's metabolism. The patch could be used to burn off pockets of unwanted fat and treat metabolic disorders like obesity and diabetes.

• **[45 percent of parents experience depression, anxiety and stress when newborns leave NICU](#)** [周五, 15 9月 21:52]

Almost half of parents whose children were admitted to a neonatal intensive care unit experienced postpartum depressive symptoms, anxiety and stress when their newborns were discharged from the hospital.

• **[Contaminants in food: Health risks of natural origin are frequently underestimated](#)** [周五, 15 9月 21:51]

Just under 60 percent of the German population view undesirable substances in food as a high or very high health risk. The most well-known of these substances, which are scientifically denoted as contaminants, are mercury compounds and dioxins. In contrast, only around 13 percent of respondents have heard of the natural contaminants pyrrolizidine alkaloids (PAs) in honey or tea - and only roughly one in three of those who have heard of PAs believe these substances pose a

significant health risk.

- [**Sodium \(salt\) intake is associated with a risk of developing type 2 diabetes**](#) [周五, 15 9月 09:06]

Sodium intake may be linked to an increased risk of developing both type 2 diabetes and latent autoimmune diabetes in adults says new research.

- [**Thirdhand smoke exposure effects on liver and brain found to worsen over time**](#) [周五, 15 9月 09:06]

Thirdhand-smoke results when exhaled smoke and smoke emanating from the tip of burning cigarettes gets on surfaces such as clothing, hair, homes, and cars. Using a mouse model, researchers have found that thirdhand-smoke exposure has a significant effect on health, specifically the liver and brain, as early as one month after initiation of exposure -- an effect that worsens with time.

- [**A subtler sexism now frames TV coverage of women in sports**](#) [周五, 15 9月 09:06]

An ongoing longitudinal study tracking national coverage of women's sports finds that coverage is still lacking and the sexism of women's sports is less overt but remains a problem.

- [**Is the Alzheimer's gene the ring leader or the sidekick?**](#) [周五, 15 9月 09:06]

Scientific literature in recent years has focused extensively on one genetic risk factor for Alzheimer's disease, the ApoE4 gene variant. A recent study raises flags that scientists should investigate another important player, the TOMM40 gene.

- [**Scientific explanation for why spurned males abandon courtship attempts**](#) [周五, 15 9月 09:06]

Unsuccessful courtship attempts by males create aversive memories that can reduce their level of enthusiasm for subsequent courtship attempts. Scientists have attempted to understand this behavior at the molecular level.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

- [**NASA's Cassini spacecraft ends its historic exploration of Saturn**](#) [周六, 16 9月 22:30]

A thrilling epoch in the exploration of our solar system has come to a close, as NASA's Cassini spacecraft made a fateful plunge into the atmosphere of Saturn, ending its 13-year tour of the ringed planet. Cassini's plunge brings to a close a series of 22 dives between Saturn and its rings, a feat never before attempted by any spacecraft.

- [**Sensing with a twist: A new kind of optical nanosensor uses torque for signal processing**](#) [周六, 16 9月 20:01]

As electronic devices get smaller, their ability to provide precise, chip-based sensing of dynamic physical properties such as motion become challenging to develop. An international group of researchers have put a literal twist on this challenge, demonstrating a new nanoscale optomechanical resonator that can detect torsional motion at near state-of-the-art sensitivity. Their resonator, into which they couple light, also demonstrates torsional frequency mixing, a novel ability to impact optical e...

- [**Converting waste toilet paper into electricity**](#) [周六, 16 9月 05:02]

Chemists have performed a techno-economic analysis of converting waste toilet paper into electricity. They propose a two-step process and calculate a cost per kWh comparable to that of residential photovoltaic installations.

- [**A drone for last-centimeter delivery**](#) [周六, 16 9月 05:01]

A new drone uses cutting-edge technology to deliver parcels weighing up to 500 grams. The device will never get stuck in traffic, it's programmed to avoid obstacles, and it can reach destinations on steep or uneven terrain. Its protective cage and foldable design mean that it can be carried around in a backpack and used in total safety.

- [**Light on exoplanets may be quite different from Earth: Different photosynthesis?**](#) [周六, 16 9月 05:00]

Researchers have proposed a prediction that red-edge could be observed as on the Earth even on exoplanets around M-dwarfs. They pointed out that the first oxygenic phototrophs are most likely to have evolved underwater to utilize visible light just like what had happened in the primordial ocean on the Earth. They examined light adaptation mechanisms of visible- and IR-radiation-using phototrophs required for adapting to land habitats and found out that IR-using phototrophs struggle to adapt to chan...

- [**Tracing the light inside a LED**](#) [周六, 16 9月 04:54]

The performance of white LED's can be improved, based on better knowledge of the absorption and scattering of light inside the LED. A new method can lead to efficiency improvement and powerful design tools.

- [**Tough stuff: Spider silk enhanced with graphene-based materials**](#) [周六, 16 9月 04:52]

Natural spider silk has excellent mechanical properties. Researchers have now found a way to boost the strength of spider's silk using graphene-based materials, paving the way for a novel class of high-performance bionic composites.

- [**Ultrafast snapshots of relaxing electrons in solids**](#) [周六, 16 9月 04:37]

A team of scientists has been able to capture the dynamics of core-excited excitons in solids in real-time.

- [**Star formation influenced by local**](#)

[environmental conditions](#) [周五, 15 9月 22:36]

Three scientists have carried out extensive computer simulations related to star formation. They conclude that the present idealized models are lacking when it comes to describing details in the star formation process.

• [Golf carts causing serious injuries to children](#) [周五,

15 9月 21:52]

As golf carts become increasingly popular in communities beyond the fairway, new research shows, a significant number of children are being seriously injured while using them.

• [Skin patch dissolves 'love handles' in mice](#) [周五, 15 9月

21:52]

Researchers have developed a medicated skin patch that can turn energy-storing white fat into energy-burning brown fat locally while raising the body's metabolism. The patch could be used to burn off pockets of unwanted fat and treat metabolic disorders like obesity and diabetes.

• [A subtler sexism now frames TV coverage of women in sports](#) [周五, 15 9月 09:06]

An ongoing longitudinal study tracking national coverage of women's sports finds that coverage is still lacking and the sexism of women's sports is less overt but remains a problem.

• [New insights into nanocrystal growth in liquid](#) [周五,

15 9月 09:06]

Researchers have measured the forces that cause certain crystals to assemble, revealing competing factors that researchers might be able to control. The work has a variety of implications in both discovery and applied science. In addition to providing insights into the formation of minerals and semiconductor nanomaterials, it might also help scientists understand soil as it expands and contracts through wetting and drying cycles.

• [Water conservation can have unintended consequences](#) [周五, 15 9月 03:24]

Conventional wisdom dictates water conservation can only benefit communities affected by drought. But researchers have deduced that

indoor residential conservation can have unintended consequences in places where systems of wastewater reuse have already been implemented, diminishing both the quantity and quality of influent available for treatment.

- [**In step toward controlling chemistry, physicists create a new molecule, atom by atom**](#) [周五, 15 9月 03:24]

Physicists have discovered a unique new molecule that could lead to many useful applications, and show how chemical reactions can be studied on a microscopic scale using tools of physics.

- [**Sorting molecules with DNA robots**](#) [周五, 15 9月 03:24]

Scientists have programmed a 'robot' made of DNA to pick up and sort molecules into predetermined locations.

- [**Discovery could reduce nuclear waste with improved method to chemically engineer molecules**](#) [周五, 15 9月 03:23]

A new chemical principle has the potential to revolutionize the creation of specially engineered molecules whose uses include the reduction of nuclear waste and the extraction of chemical pollutants from water and soil.

- [**The return of the comet-like exoplanet**](#) [周五, 15 9月 03:23]

Astronomers have focused the Hubble Space Telescope on an exoplanet that had already been seen losing its atmosphere, which forms an enormous cloud of hydrogen, giving the planet the appearance of a giant comet. During earlier observations, it was not possible to cover the whole cloud, whose shape was predicted by numerical simulations. Thanks to these new observations, the scientists have finally been able to confirm the initial predictions.

- [**Quantum machine learning**](#) [周五, 15 9月 03:23]

Scientists have presented a thorough review on quantum machine learning, its current status and future prospects. The reports contrasts machine learning using classical and quantum resources, identifying opportunities that quantum computing brings to this field.

- [**Filtering molecules from the water or air with nanomembranes**](#) [周五, 15 9月 03:23]

Free-standing carbon membranes that are a millionth of a millimeter thin. The nanomembranes can serve as ultrafine filters and as a protective layer.

- [**Self-healing gold particles**](#) [周五, 15 9月 03:23]

Self-healing materials are able to repair autonomously defects, such as scratches, cracks or dents, and resume their original shape. For this purpose, they must be composed of several components whose combined properties result in the desired characteristics. Scientists have now discovered that also tiny particles of pure gold have surprising self-healing capacities.

- [**Could interstellar ice provide the answer to birth of DNA?**](#) [周五, 15 9月 03:22]

Molecules brought to Earth in meteorite strikes could potentially be converted into the building blocks of DNA, researchers have shown.

- [**Google Glass app helps autistic children with social interactions**](#) [周五, 15 9月 03:22]

A new study demonstrates the potential of wearable technology as a social-skills aid for children with autism spectrum disorder.

- [**The bilingual brain calculates differently depending on the language used**](#) [周五, 15 9月 03:22]

How do multilingual people solve arithmetical tasks presented to them in different languages? The question will gain in importance in the future, as an increasingly globalized job market and accelerated migration will mean that ever more people seek work and study outside of the linguistic area of their home countries.

- [**Hubble observes pitch black planet**](#) [周五, 15 9月 03:22]

Astronomers have discovered that the well-studied exoplanet WASP-12b reflects almost no light, making it appear essentially pitch black. This discovery sheds new light on the atmospheric composition of the

planet and also refutes previous hypotheses about WASP-12b's atmosphere. The results are also in stark contrast to observations of another similarly sized exoplanet.

[**Physicists offer explanation for diverse galaxy rotations**](#) [周五, 15 9月 03:22]

Physicists have found a simple and viable explanation for the diversity observed in galactic rotations. They report that diverse galactic-rotation curves, a graph of rotation speeds at different distances from the center, can be naturally explained if dark matter particles are assumed to strongly collide with one another in the inner halo, close to the galaxy's center -- a process called dark matter self-interaction.

[**Hydrogen power moves a step closer**](#) [周五, 15 9月 03:22]

Physicists are developing methods of creating renewable fuel from water using quantum technology. Renewable hydrogen can already be produced by photoelectrolysis where solar power is used to split water molecules into oxygen and hydrogen. But fundamental problems remain before this can be adopted commercially due to inefficiency. A new study demonstrates that the novel use of nanostructures could increase the maximum photovoltage generated in a photoelectrochemical cell, increasing the productivi...

[**Corrosion: Nanoscale glimpse of crevice and pitting corrosion as it happens**](#) [周五, 15 9月 03:22]

What affects almost everything made of metal, from cars to boats to underground pipes and even the fillings in your teeth? Corrosion -- a slow process of decay. At a global cost of trillions of dollars annually, it carries a steep price tag, not to mention, the potential safety, environmental and health hazards it poses.

[**Graphene-wrapped nanocrystals makes inroads toward next-gen fuel cells**](#) [周四, 14 9月 20:41]

A new study provides insight into how an ultrathin coating can enhance the performance of graphene-wrapped nanocrystals for hydrogen storage applications.

- [**Social media helps students learn scientific argumentation better**](#) [周四, 14 9月 07:31]

Students who took part in a program that taught scientific argumentation learned the concepts better than their peers who did not, a study concludes.

- [**New supernova analysis reframes dark energy debate**](#) [周四, 14 9月 07:31]

The accelerating expansion of the Universe may not be real, but could just be an apparent effect, according to new research. The new study finds the fit of Type Ia supernovae to a model universe with no dark energy to be very slightly better than the fit to the standard dark energy model.

- [**Test strips for cancer detection get upgraded with nanoparticle bling**](#) [周四, 14 9月 07:31]

Detecting cancer could be as easy as a home pregnancy test. Current test strip designs are not sensitive enough, but a new design with platinum-coated gold nanoparticles could make cheap and simple test strip detection a reality.

- [**New software turns mobile-phone accessory into breathing monitor**](#) [周四, 14 9月 07:31]

Researchers have developed new software that makes it possible to use low-cost, thermal cameras attached to mobile phones to track how fast a person is breathing. This type of mobile thermal imaging could be used for monitoring breathing problems in elderly people living alone, people suspected of having sleep apnea or babies at risk for sudden infant death syndrome.

- [**New manufacturing process for SiC power devices opens market to more competition**](#) [周四, 14 9月 07:31]

Researchers are rolling out a new manufacturing process and chip design for silicon carbide (SiC) power devices, which can be used to more efficiently regulate power in technologies that use electronics. The

process -- called PRESiCE -- was developed to make it easier for companies to enter the SiC marketplace and develop new products.

- [**New method for identifying carbon compounds derived from fossil fuels**](#) [周四, 14 9月 07:31]

Scientists have developed a laboratory instrument that will greatly reduce the cost of analyzing carbon isotopes. Among other things, this will allow scientists to measure how much of the carbon dioxide in the atmosphere came from burning fossil fuels, and to estimate fossil fuel emissions in an area as small as a city or as large as a continent.

- [**Wax on, melt off: Adding phase change materials, like paraffin, to concrete could make roads that melt snow and ice**](#) [周四, 14 9月 07:31]

Researchers have made a discovery that could create roads that melt off ice and snow during winter storms. Their secret? Adding a little paraffin wax to the road's concrete mix.

- [**Artificial 'skin' gives robotic hand a sense of touch**](#) [周四, 14 9月 07:30]

A team of researchers from the University of Houston has reported a breakthrough in stretchable electronics that can serve as an artificial skin, allowing a robotic hand to sense the difference between hot and cold, while also offering advantages for a wide range of biomedical devices.

- [**Imaging how magnetism goes surfing**](#) [周四, 14 9月 07:30]

Using advanced dynamic imaging, researchers have been able to visualize deformation (sound) waves in crystals and measured the effect on nanomagnetic elements. This offers new low power magnetization manipulation for memory or logic applications and the methodology offers a new approach for analyzing dynamic strains in other research fields: nanoparticles, chemical reactions, crystallography, etc.

- [**'Peel-and-go' printable structures fold themselves**](#) [周四, 14 9月 07:30]

Researchers have created a printable structure that begins to fold itself up as soon as it's peeled off the printing platform.

- [**Spectroscopic 'science camera' system for smartphones**](#) [周四, 14 9月 07:30]

The latest versions of most smartphones contain at least two and sometimes three built-in cameras. Researchers would like to sell mobile device manufactures on the idea of adding yet another image sensor as a built-in capability for health diagnostic, environmental monitoring, and general-purpose color sensing applications.

- [**Long-range communication barrier for near-zero-power devices shattered**](#) [周四, 14 9月 07:30]

Researchers have demonstrated for the first time that devices that run on almost zero power can transmit data across distances of up to 2.8 kilometers -- breaking a long-held barrier and potentially enabling a vast array of interconnected devices.

- [**First global map of water in moon's soil**](#) [周四, 14 9月 07:30]

A new study maps the trace concentrations of water implanted in the lunar soil by the solar wind, a water source that could be used as resource in future lunar exploration.

- [**Groundwork to better understanding optical properties of glass**](#) [周四, 14 9月 07:30]

Researchers demonstrated a new packing of glass with unique optical properties. What they learned could lead to innovations in technology, such as glass with different mechanical properties, and may elucidate some fundamental aspects of glass formation.

- [**New gravity map suggests Mars has a porous crust**](#) [周四, 14 9月 07:30]

Scientists have found evidence that Mars' crust is not as dense as previously thought, a clue that could help researchers better understand the Red Planet's interior structure and evolution.

- [**'The dark side' of quantum computers**](#) [周四, 14 9月 07:29]

The era of fully fledged quantum computers threatens to destroy internet security as we know it. Researchers are in a race against time to prepare new cryptographic techniques before the arrival of quantum computers, as cryptographers now describe.

- [**Getting to the point \(mutations\) in re-engineering biofuel-producing bacterial enzymes**](#)

[周四, 14 9月 07:29]

Helping bacteria become more efficient when breaking down fibrous plant waste into biofuel could result in more affordable biofuels for our gas tanks and sustainable products such as bioplastics. One way to achieve this goal is to re-engineer the bacterial enzyme complexes, called cellulosomes, which serve as catalysts in the degradation process.

- [**Self-folding electronics could enable advanced robotics**](#)

[周三, 13 9月 22:45]

As demand grows for more versatile, advanced robotics and other technologies, the need for components that can enable these applications also increases. Producing such components en masse has been a major challenge. But now, researchers report that they have developed a way to help meet this need by printing electronics that can fold themselves into a desired shape.

- [**Better, cheaper bio-ink may be used to create artificial organs**](#)

[周三, 13 9月 22:45]

A new bio-ink that may support a more efficient and inexpensive fabrication of human tissues and organs has been created. The researchers analyzed the physical and biological properties of three different GelMA hydrogels -- porcine skin, cold-water fish skin and cold-soluble gelatin.

- [**The beam of invisibility**](#)

[周三, 13 9月 22:45]

A new idea for a cloaking technology has been created by scientists. A completely opaque material is irradiated from above with a specific wave pattern -- with the effect that light waves from the left can now pass through the material without any obstruction. This surprising result opens up completely new possibilities for active camouflage.

[Supported liquid metal catalysts -- a new generation of reaction accelerators](#) [周三, 13 9月 22:44]

Catalysts are agents that initiate chemical reactions, speed them up or increase the yield of the desired product. New and improved catalysts are thus considered the key to creating more sustainable and efficient production processes in the chemical industry. Researchers have now discovered how to bypass the known drawbacks of the technical catalysts that are currently in use by means of a new material concept that makes the creation of significantly more efficient catalysts possible.

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Environment News

Top stories featured on ScienceDaily's Plants & Animals, Earth & Climate, and Fossils & Ruins sections.

- [**Damage to monarch butterfly colonies in 2016 storm worse than thought**](#) [周一, 18 9月 08:14]

A much greater number of monarch butterflies perished in a snowstorm in March 2016 in Mexico than previously estimated, according to new research. Analysis of damage from the storm -- and the ensuing salvage logging -- sheds further light on the precarious state of the famed butterflies' overwintering colonies.

- [**Converting waste toilet paper into electricity**](#) [周六, 16 9月 05:02]

Chemists have performed a techno-economic analysis of converting waste toilet paper into electricity. They propose a two-step process and calculate a cost per kWh comparable to that of residential photovoltaic installations.

- [**Light on exoplanets may be quite different from Earth: Different photosynthesis?**](#) [周六, 16 9月 05:00]

Researchers have proposed a prediction that red-edge could be observed as on the Earth even on exoplanets around M-dwarfs. They pointed out that the first oxgenic phototrophs are most likely to have evolved underwater to utilize visible light just like what had happened in the primordial ocean on the Earth. They examined light adaptation mechanisms of visible- and IR-radiation-using phototrophs required for adapting to land habitats and found out that IR-using phototrophs struggle to adapt to chan...

- [**Tough stuff: Spider silk enhanced with**](#)

graphene-based materials [周六, 16 9月 04:52]

Natural spider silk has excellent mechanical properties. Researchers have now found a way to boost the strength of spider's silk using graphene-based materials, paving the way for a novel class of high-performance bionic composites.

• **Delayed weaning reduces behavioural problems in cats** [周六, 16 9月 04:52]

Early weaning increases aggression and stereotypic behavior in cats. Based on the study, the recommended weaning age of 12 weeks should be raised by at least two weeks. Delaying weaning is an easy and cost-efficient way of improving the quality of life of cats.

• **Innate immunity: To operate, insert dimers** [周六, 16 9月 04:46]

The presence of DNA in mammalian cell cytoplasm triggers an immune response by binding to a dimeric enzyme, which inserts between DNA double helices to form the “rungs” of a ladder-like structure, as an LMU team has now shown.

• **Secrets of Bonsai: Uncovering the mechanism of root regeneration** [周六, 16 9月 04:38]

The molecular mechanism behind root regeneration after root cutting in plants has been discovered. A finding which could lead to the development of new methods for regulating plant growth in agriculture and horticulture.

• **Black Sea water temperatures may buck global trend** [周六, 16 9月 04:29]

Scientists have successfully simulated the Black Sea's long term currents, salt water content and temperature for the first time.

• **Ancient amphibian had mouthful of teeth ready to grab you** [周六, 16 9月 03:58]

The idea of being bitten by a nearly toothless modern frog or salamander sounds laughable, but their ancient ancestors had a full array of teeth, large fangs and thousands of tiny hook-like structures called denticles on

the roofs of their mouths that would snare prey, according to paleontologists.

- [**Scientists question study about plastic-eating caterpillars**](#) [周六, 16 9月 02:41]

Do the larvae of the wax moth really solve the world's plastic problem? Sensational report of biochemical degradation of polyethylene by caterpillars not confirmed.

- [**'Exciting' discovery on path to develop new type of vaccine to treat global viruses**](#) [周六, 16 9月 02:41]

Scientists have made a significant discovery in efforts to develop a vaccine against Zika, dengue and Hepatitis C viruses that affect millions of people around the world.

- [**Why we did not evolve to live forever: Unveiling the mystery of why we age**](#) [周六, 16 9月 02:41]

Researchers have made a breakthrough in understanding the origin of the ageing process. They have identified that genes belonging to a process called autophagy -- one of the cells most critical survival processes -- promote health and fitness in young worms but drive the process of ageing later in life.

- [**Medical students not trained to prescribe medical marijuana**](#) [周六, 16 9月 02:41]

More than half of the states in the US now allow some type of legal marijuana use, primarily medical marijuana. But, in a survey of medical residents and deans at the nation's medical schools, researchers have found that the majority of schools are not teaching their students about medical marijuana, and the majority of students don't feel prepared to discuss the subject with patients.

- [**Arctic sea ice once again shows considerable melting**](#) [周五, 15 9月 22:36]

This September, the extent of Arctic sea ice shrank to roughly 4.7 million square kilometres, scientists have determined.

- [**Celebrity fossil reveals all for science**](#) [周五, 15 9月 22:35]

With the help of an artist, a geology professor has figuratively speaking breathed life into one of science's most well-known fossil species; *Agnostus pisiformis*. The trilobite-like arthropod lived in huge numbers in Scandinavia a half-billion years ago. Today, this extinct species provides important clues for science in several ways.

- [**Humans no longer have ancient defense mechanism against viruses**](#) [周五, 15 9月 21:53]

Insects and plants have an important ancient defense mechanism that helps them to fight viruses. This is encoded in their DNA. Scientists have long assumed that vertebrates -- including humans -- also had this same mechanism. But researchers have found that vertebrates lost this particular asset in the course of their evolution.

- [**300,000 families living in US-Mexico border towns face exposure to toxic stress**](#) [周五, 15 9月 21:52]

Roughly 300,000 Texans living in impoverished border communities known as 'colonias' are facing substandard housing, lack of resources and exposure to toxic stress. New research finds these communities are also ill-equipped to face a natural disaster.

- [**Carbohydrates may be the key to a better malaria vaccine**](#) [周五, 15 9月 21:52]

An international research team has shown for the first time that carbohydrates on the surface of malaria parasites play a critical role in malaria's ability to infect mosquito and human hosts. The discovery also suggests steps that may improve the only malaria vaccine approved to protect people against *Plasmodium falciparum* malaria -- the most deadly form of the disease.

- [**New Orleans greenery post-Katrina reflects social demographics more than hurricane impact**](#) [周五, 15 9月 21:51]

Popular portrayals of "nature reclaiming civilization" in flood-damaged

New Orleans, Louisiana, neighborhoods romanticize an urban ecology shaped by policy-driven socioecological disparities in redevelopment investment, ecologists argue.

- **[Contaminants in food: Health risks of natural origin are frequently underestimated](#)** [周五, 15 9月 21:51]

Just under 60 percent of the German population view undesirable substances in food as a high or very high health risk. The most well-known of these substances, which are scientifically denoted as contaminants, are mercury compounds and dioxins. In contrast, only around 13 percent of respondents have heard of the natural contaminants pyrrolizidine alkaloids (PAs) in honey or tea - and only roughly one in three of those who have heard of PAs believe these substances pose a significant health risk.

- **[Wolves understand cause and effect better than dogs](#)** [周五, 15 9月 21:51]

A rattle will only make noise if you shake it. Animals like the wolf also understand such connections and are better at this than their domesticated descendants. Researchers say that wolves have a better causal understanding than dogs and that they follow human-given communicative cues equally well. The study provides insight that the process of domestication can also affect an animal's causal understanding.

- **[Scientific explanation for why spurned males abandon courtship attempts](#)** [周五, 15 9月 09:06]

Unsuccessful courtship attempts by males create aversive memories that can reduce their level of enthusiasm for subsequent courtship attempts. Scientists have attempted to understand this behavior at the molecular level.

- **[New climate risk classification created to account for potential 'existential' threats](#)** [周五, 15 9月 09:06]

A new study evaluating models of future climate scenarios has led to the creation of the new risk categories 'catastrophic' and 'unknown' to

characterize the range of threats posed by rapid global warming. Researchers propose that unknown risks imply existential threats to the survival of humanity.

- [**Water conservation can have unintended consequences**](#) [周五, 15 9月 03:24]

Conventional wisdom dictates water conservation can only benefit communities affected by drought. But researchers have deduced that indoor residential conservation can have unintended consequences in places where systems of wastewater reuse have already been implemented, diminishing both the quantity and quality of influent available for treatment.

- [**Mixing artificial sweeteners inhibits bitter taste receptors**](#) [周五, 15 9月 03:24]

Blends of artificial sweeteners such as saccharin and cyclamate produce less of a bitter off-taste than each of the individual components, but the explanation for this puzzling phenomenon has been elusive ever since its discovery more than 60 years ago. A study solves this long-standing mystery, revealing that saccharin inhibits the activity of bitter taste receptors stimulated by cyclamate and, conversely, that cyclamate reduces the off-taste elicited by saccharin.

- [**Electric eels leap to deliver painful, Taser-like jolt**](#) [周五, 15 9月 03:24]

The electric eel has always been noted for its impressive ability to shock and subdue its prey. It's recently become clear that electric eels also use a clever trick to deliver an intense, Taser-like jolt to potential predators: they leap from the water to target threatening animals, humans included, above water. Now, a researcher has measured (and experienced) just how strong that jolt can be.

- [**Plant geneticists develop a new application of CRISPR to break yield barriers in crops**](#) [周五, 15 9月 03:23]

Scientists have finally harnessed the untapped power of genome editing to improve agricultural crops. In the tomato plant they have mobilized

CRISPR to rapidly generate variants of the plant displaying a continuum of three agriculturally important traits: fruit size, branching architecture and overall plant shape. All are major components in determining yield. The method is designed to work in all food, feed, and fuel crops, including staples rice, maize, sorghum and wheat.

- [**Discovery could reduce nuclear waste with improved method to chemically engineer molecules**](#) [周五, 15 9月 03:23]

A new chemical principle has the potential to revolutionize the creation of specially engineered molecules whose uses include the reduction of nuclear waste and the extraction of chemical pollutants from water and soil.

- [**Old fish few and far between under fishing pressure**](#) [周五, 15 9月 03:23]

A new study has found that, for dozens of fish populations around the globe, old fish are greatly depleted -- mainly because of fishing pressure. Old fish are increasingly missing in many populations around the world.

- [**Tiny fighters in sediments determine success of invasive marine plants**](#) [周五, 15 9月 03:23]

Armies of microbes that are invisible to the naked eye battle it out to determine whether exotic marine plants successfully invade new territory and replace native species, new research shows. The genetic study, which compared microbial communities in sediments associated with an invasive alga and a native seagrass, is the first to test the idea that marine microbes play a critical role in the establishment of invasive marine species.

- [**'Handedness' in scale-eating fish: Nature and nurture**](#) [周五, 15 9月 03:23]

Lateralized behaviors are thought to be strengthened during development. However, little is known about how they are acquired during development. In the scale-eating cichlid model, researchers

demonstrated the attack side preference of juveniles was developed with scale-eating experience, regardless of age. They also found that kinetics of attack behavior is superior on one side by nature. Therefore, they concluded that the fish learn to use the naturally dominant side through experience.

• [Could interstellar ice provide the answer to birth of DNA?](#) [周五, 15 9月 03:22]

Molecules brought to Earth in meteorite strikes could potentially be converted into the building blocks of DNA, researchers have shown.

• [Chimera viruses can help the fight against lymphomas](#) [周五, 15 9月 03:22]

Researchers have created a chimera virus that allows the study of molecules to treat cancers caused by human herpes virus infection in mice models of disease.

• [How does a cell maintain its identity during replication?](#) [周五, 15 9月 03:22]

Prior to cell division, chromosomes are seemingly a jumbled mess. During cell division, parent cell chromosomes and their duplicates sort themselves out by condensing, becoming thousands of times more compact than at any other time. Researchers have long assumed that genes become "silent" during cell division, not being transcribed into proteins or regulatory molecules. This has left open the question of how genes get properly re-activated after cell division. Now, researchers have found that gen...

• [Light at the end of the tunnel: Restored forest now shelters dozens of endangered species](#) [周五, 15 9月 03:22]

A twenty-year effort to protect and manage tiny remnants of a dilapidated forest in Benin, along with its agricultural and fallow vegetation surroundings, resulted in 14 ha of rich secondary forest, which corresponds to the size of nearly 20 sacred groves. This sanctuary now protects the critically endangered red-bellied monkey together with

52 endangered plant species.

- **[Threatened Alabama snail renamed after a case of mistaken identity](#)** [周五, 15 9月 03:22]

Confusion surrounding the identity of the Painted Rocksnail, a species listed as federally threatened, has been cleared up after over 100 years of mistaken identity. Researchers determined that reports of the Painted Rocksnail outside the Coosa River system in Alabama were misidentifications. They found that the species is rarer and more restricted than previously thought.

- **['Mysterious' ancient creature was definitely an animal, research confirms](#)** [周五, 15 9月 03:22]

It lived well over 550 million years ago, is known only through fossils and has variously been described as looking a bit like a jellyfish, a worm, a fungus and lichen. But was the 'mysterious' Dickinsonia an animal, or was it something else? A new study provides strong proof that Dickinsonia was an animal.

- **[Cost of not adapting to climate change would be at least five times higher](#)** [周五, 15 9月 03:22]

A study on damage to coastal considered only real estate loss. If nothing is done, researchers say, losses might be up to ten times higher if the predicament includes the spreading of flood- and global warming - related diseases.

- **[Once-abundant ash tree and antelope species face extinction](#)** [周四, 14 9月 20:40]

North America's most widespread and valuable ash tree species are on the brink of extinction due to an invasive beetle decimating their populations, while the loss of wilderness areas and poaching are contributing to the declining numbers of five African antelope species, according to the latest update of the IUCN Red List of Threatened Species. Today's IUCN Red List update also reveals a dramatic decline of grasshoppers and millipedes endemic to Madagascar, and the extinction of the Christmas Is...

- [**Forest fires are not limited to hot or temperate climates**](#) [周四, 14 9月 20:40]

Evidence of wildfires dating back 20,000 years was recently discovered in the Massif du Queyras, in the heart of the French Alps, 2,240 meters above sea level. This discovery echoes the recent wildfires in the Arctic tundra, where the presence of trees have become increasingly common.

- [**Helping Chinese farmers tackle erosion, increase profits**](#) [周四, 14 9月 07:31]

On the steep farming slopes of China, researchers are finding ways to improve economic and environmental stability. They studied intercropping with corn and either setaria grass or chili peppers.

- [**Fish food for marine farms harbor antibiotic resistance genes**](#) [周四, 14 9月 07:31]

From isolated caves to ancient permafrost, antibiotic-resistant bacteria and genes for resistance have been showing up in unexpected places. As scientists puzzle over how genes for antibiotic resistance arise in various environments and what risks to human health they might pose, one team has identified a surprising way some of these genes are getting into ocean sediments: through food for marine fisheries.

- [**How well electron transport works in furfural biogas**](#) [周四, 14 9月 07:31]

Furfural is a promising candidate in the quest for alternative biofuels.

- [**New method for identifying carbon compounds derived from fossil fuels**](#) [周四, 14 9月 07:31]

Scientists have developed a laboratory instrument that will greatly reduce the cost of analyzing carbon isotopes. Among other things, this will allow scientists to measure how much of the carbon dioxide in the atmosphere came from burning fossil fuels, and to estimate fossil fuel emissions in an area as small as a city or as large as a continent.

- [**Evolution of 'true frogs' defies long-held**](#)

[expectations of science](#) [周四, 14 9月 07:31]

New research shows, in contrast to expectations, 'the rapid global range expansion of true frogs was not associated with increased net-diversification.'

. [Wax on, melt off: Adding phase change materials, like paraffin, to concrete could make roads that melt snow and ice](#) [周四, 14 9月 07:31]

Researchers have made a discovery that could create roads that melt off ice and snow during winter storms. Their secret? Adding a little paraffin wax to the road's concrete mix.

. [Song experiments reveal 21 possible new tropical bird species](#) [周四, 14 9月 07:30]

Birds often choose their mates based on song, making it a key factor in separating species. However, analyzing spectrograms can only tell us so much -- the characteristics that birds hone in on when identifying potential mates may not be the same ones scientists notice in audio recordings. A new study uses field experiments to 'ask the birds themselves' and uncovers as many as 21 previously unrecognized species.

. [Marijuana may produce psychotic-like effects in high-risk individuals](#) [周四, 14 9月 07:30]

Marijuana may bring on temporary paranoia and other psychosis-related effects in individuals at high risk of developing a psychotic disorder, finds a preliminary study.

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- [**Magnetic fields to alleviate anxiety**](#) [周六, 16 9月 04:52]
It is possible to unlearn fears. And this works even better when a specific region of the brain has previously been stimulated magnetically.
- [**Teens come 'jet lagged' to school: Shifting sleeping patterns at weekends**](#) [周六, 16 9月 04:48]
A lack of sleep is associated with more absence and teens turn up jet lagged to school on Mondays, as shown in new research.
- [**300,000 families living in US-Mexico border towns face exposure to toxic stress**](#) [周五, 15 9月 21:52]
Roughly 300,000 Texans living in impoverished border communities known as 'colonias' are facing substandard housing, lack of resources and exposure to toxic stress. New research finds these communities are also ill-equipped to face a natural disaster.
- [**Need for epinephrine in schools -- and staff trained to administer it**](#) [周五, 15 9月 21:52]
With school nurses often covering multiple buildings, researchers find that nearly one in five students who experience severe allergic reactions are given potentially life-saving epinephrine injections from unlicensed staff or students.
- [**Green schoolyards offer physical and mental health benefits for children**](#) [周五, 15 9月 21:52]
A growing body of evidence suggests access to safe, natural areas improves health across a wide variety of areas, including heart health,

mental health, weight management, ADHD, and stress among children.

- [**New Orleans greenery post-Katrina reflects social demographics more than hurricane impact**](#) [周五, 15 9月 21:51]

Popular portrayals of "nature reclaiming civilization" in flood-damaged New Orleans, Louisiana, neighborhoods romanticize an urban ecology shaped by policy-driven socioecological disparities in redevelopment investment, ecologists argue.

- [**A subtler sexism now frames TV coverage of women in sports**](#) [周五, 15 9月 09:06]

An ongoing longitudinal study tracking national coverage of women's sports finds that coverage is still lacking and the sexism of women's sports is less overt but remains a problem.

- [**New climate risk classification created to account for potential 'existential' threats**](#) [周五, 15 9月 09:06]

A new study evaluating models of future climate scenarios has led to the creation of the new risk categories 'catastrophic' and 'unknown' to characterize the range of threats posed by rapid global warming. Researchers propose that unknown risks imply existential threats to the survival of humanity.

- [**One vaccine injection could carry many doses**](#) [周五, 15 9月 03:23]

A new 3-D fabrication method has been developed that can create a new type of drug-carrying particle that could allow several doses of a drug or vaccine to be delivered over an extended time period with just one injection.

- [**Cost of not adapting to climate change would be at least five times higher**](#) [周五, 15 9月 03:22]

A study on damage to coastal considered only real estate loss. If nothing is done, researchers say, losses might be up to ten times higher if the predicament includes the spreading of flood- and global warming - related diseases.

• **[Quicker learning: Brief reactivations of visual memories are enough to complete a full learning curve](#)** [周四, 14 9月 07:30]

A new study finds that brief memory reactivations can replace the repeated extensive practice and training known as 'practice makes perfect' as a learning technique.

• **[Lion conservation requires effective international cooperation](#)** [周三, 13 9月 22:44]

In response to the alarming population declines of one of the most charismatic representatives of the megafauna, the lion, a team of international wildlife lawyers and lion experts joined efforts to assess the current and potential future role of international treaties regarding the carnivore's conservation.

• **[Decade of data shows FEMA flood maps missed 3 in 4 claims](#)** [周三, 13 9月 05:05]

An analysis of flood claims in three Houston suburbs from 1999-2009 found that the Federal Emergency Management Agency's 100-year flood plain maps failed to capture 75 percent of flood damages from five serious floods, none of which reached the threshold rainfall of a 100-year event.

• **[Kids praised for being smart are more likely to cheat](#)** [周三, 13 9月 03:48]

Kids who are praised for being smart, or who are told they have a reputation for being smart, are more likely to be dishonest and cheat, a pair of studies has found.

• **[Historic legacies affect climate change survival in Caribbean](#)** [周三, 13 9月 01:48]

Discussion of climate change has failed to pay enough attention to the social, political and historic factors which increase the vulnerability of Caribbean societies, and calls for a new approach focused on understanding and addressing these historic inequalities.

• [**How should we handle boys who can't read?**](#) [周二, 12 9月 21:31]

Boys are much worse at reading than girls. The disparities have been quite consistent over 15 years. New insights may give hope -- if they're put to use.

• [**'Keep it local' approach more effective than government schemes at protecting rainforest**](#) [周二, 12 9月 21:31]

Conservation initiatives led by local and indigenous groups can be just as effective as schemes led by government, according to new research. In some cases in the Amazon rainforest, grassroots initiatives can be even more effective at protecting this vital ecosystem.

• [**What happens to Rex and Kitty after a natural disaster?**](#) [周二, 12 9月 03:42]

After a natural disaster, images of destruction pour into our newsfeeds. Most of these focus on the destruction of the landscape, or on the human suffering caused. In any disaster where people suffer and die, pets and livestock will suffer and die, too. This has grave consequences for the animals, of course, but also for their owners. The aftermath of Hurricane Katrina was particularly devastating. The Louisiana SPCA estimates that 15,500 animals required rescue, and that 80–85 percent of these a...

• [**Air pollution cuts 3 years off lifespans in Northern China**](#) [周二, 12 9月 03:09]

A Chinese policy is unintentionally causing people in northern China to live 3.1 years less than people in the south due to air pollution concentrations that are 46 percent higher. These findings imply that every additional 10 micrograms per cubic meter of particulate matter pollution (PM10) reduces life expectancy by 0.6 years.

• [**Urban climate change**](#) [周二, 12 9月 03:09]

Southern cities such as Houston and Tampa -- which faced the wrath of hurricanes Harvey and Irma, respectively -- may not be the only urban environments vulnerable to extreme weather. Northern cities also face the potential for flooding as global temperatures continue to warm.

[. Earthquake triggers 'slow motion' quakes in New Zealand](#) [周二, 12 9月 00:27]

Slow slip events, a type of slow motion earthquake that occurs over days to weeks, are thought to be capable of triggering larger, potentially damaging earthquakes. In a new study, scientists have documented the first clear-cut instance of the reverse -- a massive earthquake immediately triggering a series of large slow slip events.

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [Converting waste toilet paper into electricity](#) [周六, 16 9月 05:02]

Chemists have performed a techno-economic analysis of converting waste toilet paper into electricity. They propose a two-step process and calculate a cost per kWh comparable to that of residential photovoltaic installations.

- [A drone for last-centimeter delivery](#) [周六, 16 9月 05:01]

A new drone uses cutting-edge technology to deliver parcels weighing up to 500 grams. The device will never get stuck in traffic, it's programmed to avoid obstacles, and it can reach destinations on steep or uneven terrain. Its protective cage and foldable design mean that it can be carried around in a backpack and used in total safety.

- [Tough stuff: Spider silk enhanced with graphene-based materials](#) [周六, 16 9月 04:52]

Natural spider silk has excellent mechanical properties. Researchers have now found a way to boost the strength of spider's silk using graphene-based materials, paving the way for a novel class of high-performance bionic composites.

- [Immune system linked to alcohol drinking behavior](#) [周六, 16 9月 02:41]

Researchers have found a new link between the brain's immune system and the desire to drink alcohol in the evening.

- [Wolves understand cause and effect better than dogs](#) [周五, 15 9月 21:51]

A rattle will only make noise if you shake it. Animals like the wolf also understand such connections and are better at this than their domesticated descendants. Researchers say that wolves have a better causal understanding than dogs and that they follow human-given communicative cues equally well. The study provides insight that the process of domestication can also affect an animal's causal understanding.

- [**Electric eels leap to deliver painful, Taser-like jolt**](#) [周五, 15 9月 03:24]

The electric eel has always been noted for its impressive ability to shock and subdue its prey. It's recently become clear that electric eels also use a clever trick to deliver an intense, Taser-like jolt to potential predators: they leap from the water to target threatening animals, humans included, above water. Now, a researcher has measured (and experienced) just how strong that jolt can be.

- [**Sorting molecules with DNA robots**](#) [周五, 15 9月 03:24]

Scientists have programmed a 'robot' made of DNA to pick up and sort molecules into predetermined locations.

- [**The return of the comet-like exoplanet**](#) [周五, 15 9月 03:23]

Astronomers have focused the Hubble Space Telescope on an exoplanet that had already been seen losing its atmosphere, which forms an enormous cloud of hydrogen, giving the planet the appearance of a giant comet. During earlier observations, it was not possible to cover the whole cloud, whose shape was predicted by numerical simulations. Thanks to these new observations, the scientists have finally been able to confirm the initial predictions.

- [**'Handedness' in scale-eating fish: Nature and nurture**](#) [周五, 15 9月 03:23]

Lateralized behaviors are thought to be strengthened during development. However, little is known about how they are acquired during development. In the scale-eating cichlid model, researchers demonstrated the attack side preference of juveniles was developed with scale-eating experience, regardless of age. They also found that kinetics

of attack behavior is superior on one side by nature. Therefore, they concluded that the fish learn to use the naturally dominant side through experience.

- [**Could interstellar ice provide the answer to birth of DNA?**](#) [周五, 15 9月 03:22]

Molecules brought to Earth in meteorite strikes could potentially be converted into the building blocks of DNA, researchers have shown.

- [**Physicists offer explanation for diverse galaxy rotations**](#) [周五, 15 9月 03:22]

Physicists have found a simple and viable explanation for the diversity observed in galactic rotations. They report that diverse galactic-rotation curves, a graph of rotation speeds at different distances from the center, can be naturally explained if dark matter particles are assumed to strongly collide with one another in the inner halo, close to the galaxy's center -- a process called dark matter self-interaction.

- [**Artificial 'skin' gives robotic hand a sense of touch**](#) [周四, 14 9月 07:30]

A team of researchers from the University of Houston has reported a breakthrough in stretchable electronics that can serve as an artificial skin, allowing a robotic hand to sense the difference between hot and cold, while also offering advantages for a wide range of biomedical devices.

- [**'Peel-and-go' printable structures fold themselves**](#) [周四, 14 9月 07:30]

Researchers have created a printable structure that begins to fold itself up as soon as it's peeled off the printing platform.

- [**Long-range communication barrier for near-zero-power devices shattered**](#) [周四, 14 9月 07:30]

Researchers have demonstrated for the first time that devices that run on almost zero power can transmit data across distances of up to 2.8 kilometers -- breaking a long-held barrier and potentially enabling a vast

array of interconnected devices.

- [**Marijuana may produce psychotic-like effects in high-risk individuals**](#) [周四, 14 9月 07:30]

Marijuana may bring on temporary paranoia and other psychosis-related effects in individuals at high risk of developing a psychotic disorder, finds a preliminary study.

- [**'The dark side' of quantum computers**](#) [周四, 14 9月 07:29]

The era of fully fledged quantum computers threatens to destroy internet security as we know it. Researchers are in a race against time to prepare new cryptographic techniques before the arrival of quantum computers, as cryptographers now describe.

- [**Squirrels use 'chunking' to organize their favorite nuts**](#) [周四, 14 9月 07:29]

Like trick-or-treaters sorting their Halloween candy haul, fox squirrels apparently organize their stashes of nuts by variety, quality and possibly even preference, according to new research.

- [**The beam of invisibility**](#) [周三, 13 9月 22:45]

A new idea for a cloaking technology has been created by scientists. A completely opaque material is irradiated from above with a specific wave pattern -- with the effect that light waves from the left can now pass through the material without any obstruction. This surprising result opens up completely new possibilities for active camouflage.

- [**A one-of-a-kind star found to change over decades**](#) [周三, 13 9月 03:48]

Researchers recently found new evidence that lends support to an existing theory of how the unusual star emits energy.

- [**Earthquake faults may have played key role in shaping the culture of ancient Greece**](#) [周二, 12 9月 22:35]

The Ancient Greeks may have built sacred sites deliberately on land affected by previous earthquake activity, according to a new study.

· [AI -- Engineering: merging, morphing, mobile robots](#) [周二, 12 9月 22:35]

Researchers have developed self-reconfiguring modular robots that can merge, split and even self-heal while retaining full sensorimotor control. The work may take us closer to producing robots that can autonomously change their size, shape and function.

· [Looking stressed can help keep the peace](#) [周一, 11 9月 21:59]

Scratching may have evolved as a communication tool to help social cohesion, new research suggests for the first time.

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- [Environment News](#)
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All Top News

Top science stories featured on ScienceDaily's home page.

- [**Solar-to-fuel system recycles CO2 to make ethanol and ethylene**](#) [周二, 19 9月 03:17]

Scientists have harnessed the power of photosynthesis to convert carbon dioxide into fuels and alcohols at efficiencies far greater than plants. The achievement marks a significant advance in the effort to move toward sustainable sources of fuel.

- [**Copper catalyst yields high efficiency CO2-to-fuels conversion**](#) [周二, 19 9月 03:17]

Scientists have developed a new electrocatalyst that can directly convert carbon dioxide into multicarbon fuels and alcohols using record-low inputs of energy. The work is the latest in a round of studies tackling the challenge of a creating a clean chemical manufacturing system that can put carbon dioxide to good use.

- [**When it comes to the threat of extinction, size matters**](#) [周二, 19 9月 01:27]

Animals in the Goldilocks zone -- neither too big, nor too small, but just the right size -- face a lower risk of extinction than do those on both ends of the scale, according to an extensive global analysis.

- [**RNA discovery could help boost plant heat, drought tolerance**](#) [周二, 19 9月 00:35]

The discovery of a RNA that can increase drought and salt tolerance in thale cress could illuminate a new research approach and hold implications for other plants, including food crops.

- [**More evidence of water on Mars**](#) [周二, 19 9月 00:35]

River deposits exist across the surface of Mars and record a surface environment from over 3.5 billion years ago that was able to support liquid water at the surface. A region of Mars named Aeolis Dorsa contains some of the most spectacular and densely packed river deposits seen on Mars.

• [**Urgent emission reductions needed to achieve 1.5°C warming limit**](#) [周一, 18 9月 23:18]

Significant emission reductions are required if we are to achieve one of the key goals of the Paris Agreement, and limit the increase in global average temperatures to 1.5°C; a new partnership warns.

• [**Changes in Earth's crust caused oxygen to fill the atmosphere**](#) [周一, 18 9月 23:18]

New research has uncovered a direct link between changes in the earth's crust three billion years ago and the introduction of free oxygen to the atmosphere. Without these changes, oxygen could have been suppressed in earth's crust forever, so the findings help explain the emergence of life on our planet.

• [**Dogs' social skills linked to oxytocin sensitivity**](#) [周一, 18 9月 23:18]

The tendency of dogs to seek contact with their owners is associated with genetic variations in sensitivity for the hormone oxytocin, according to a new study. The results contribute to our knowledge of how dogs have changed during their development from wolf to household pet.

• [**5,000 deaths annually from Diesel-gate in Europe**](#) [周一, 18 9月 21:33]

Excess emissions from diesel cars cause about 5,000 premature deaths annually across Europe, a new study shows. Higher exposure to secondary particles and ozone can be traced back to excess NOx emissions from diesel cars, vans and light commercial vehicles. With the EU's vehicle emission limits achieved on the road about 5,000 premature deaths could be avoided annually. If diesel cars emitted as little NOx as petrol cars, about 7,500 premature deaths could be avoided annually.

- [**New evidence for small, short-lived drops of early universe quark-gluon plasma?**](#) [周一, 18 9月 21:30]

Particles emerging from even the lowest energy collisions of small deuterons with large heavy nuclei at the Relativistic Heavy Ion Collider exhibit behavior scientists associate with the formation of a soup of quarks and gluons, the fundamental building blocks of nearly all visible matter.

- [**Vaping doubles risk of smoking cigarettes for teens**](#) [周一, 18 9月 21:07]

Teenagers who try e-cigarettes double their risk for smoking tobacco cigarettes, according to a new study. The study found that students in grades seven to 12 who had tried an e-cigarette are 2.16 times more likely to be susceptible to cigarette smoking.

- [**NASA's Cassini spacecraft ends its historic exploration of Saturn**](#) [周六, 16 9月 22:30]

A thrilling epoch in the exploration of our solar system has come to a close, as NASA's Cassini spacecraft made a fateful plunge into the atmosphere of Saturn, ending its 13-year tour of the ringed planet. Cassini's plunge brings to a close a series of 22 dives between Saturn and its rings, a feat never before attempted by any spacecraft.

- [**A drone for last-centimeter delivery**](#) [周六, 16 9月 05:01]

A new drone uses cutting-edge technology to deliver parcels weighing up to 500 grams. The device will never get stuck in traffic, it's programmed to avoid obstacles, and it can reach destinations on steep or uneven terrain. Its protective cage and foldable design mean that it can be carried around in a backpack and used in total safety.

- [**Light on exoplanets may be quite different from Earth: Different photosynthesis?**](#) [周六, 16 9月 05:00]

Researchers have proposed a prediction that red-edge could be observed as on the Earth even on exoplanets around M-dwarfs. They pointed out that the first oxygenic phototrophs are most likely to have evolved

underwater to utilize visible light just like what had happened in the primordial ocean on the Earth. They examined light adaptation mechanisms of visible- and IR-radiation-using phototrophs required for adapting to land habitats and found out that IR-using phototrophs struggle to adapt to chan...

- [**Tough stuff: Spider silk enhanced with graphene-based materials**](#) [周六, 16 9月 04:52]

Natural spider silk has excellent mechanical properties. Researchers have now found a way to boost the strength of spider's silk using graphene-based materials, paving the way for a novel class of high-performance bionic composites.

- [**Ultrafast snapshots of relaxing electrons in solids**](#) [周六, 16 9月 04:37]

A team of scientists has been able to capture the dynamics of core-excited excitons in solids in real-time.

- [**Ancient amphibian had mouthful of teeth ready to grab you**](#) [周六, 16 9月 03:58]

The idea of being bitten by a nearly toothless modern frog or salamander sounds laughable, but their ancient ancestors had a full array of teeth, large fangs and thousands of tiny hook-like structures called denticles on the roofs of their mouths that would snare prey, according to paleontologists.

- [**Why we did not evolve to live forever: Unveiling the mystery of why we age**](#) [周六, 16 9月 02:41]

Researchers have made a breakthrough in understanding the origin of the ageing process. They have identified that genes belonging to a process called autophagy -- one of the cells most critical survival processes -- promote health and fitness in young worms but drive the process of ageing later in life.

- [**Arctic sea ice once again shows considerable melting**](#) [周五, 15 9月 22:36]

This September, the extent of Arctic sea ice shrank to roughly 4.7 million square kilometres, scientists have determined.

• [**Skin patch dissolves 'love handles' in mice**](#) [周五, 15 9月 21:52]

Researchers have developed a medicated skin patch that can turn energy-storing white fat into energy-burning brown fat locally while raising the body's metabolism. The patch could be used to burn off pockets of unwanted fat and treat metabolic disorders like obesity and diabetes.

• [**Wolves understand cause and effect better than dogs**](#) [周五, 15 9月 21:51]

A rattle will only make noise if you shake it. Animals like the wolf also understand such connections and are better at this than their domesticated descendants. Researchers say that wolves have a better causal understanding than dogs and that they follow human-given communicative cues equally well. The study provides insight that the process of domestication can also affect an animal's causal understanding.

• [**In step toward controlling chemistry, physicists create a new molecule, atom by atom**](#) [周五, 15 9月 03:24]

Physicists have discovered a unique new molecule that could lead to many useful applications, and show how chemical reactions can be studied on a microscopic scale using tools of physics.

• [**Biomarkers in the blood prove strong role of food for type 2 diabetes**](#) [周五, 15 9月 03:24]

A pioneering method has demonstrated its potential in a large study, showing that metabolic fingerprints from blood samples could render important new knowledge on the connection between food and health. The study finds that diet is one of the strongest predictors of type 2 diabetes risk in older women.

• [**Electric eels leap to deliver painful, Taser-like jolt**](#) [周五, 15 9月 03:24]

The electric eel has always been noted for its impressive ability to shock and subdue its prey. It's recently become clear that electric eels also use a clever trick to deliver an intense, Taser-like jolt to potential predators: they leap from the water to target threatening animals, humans included, above water. Now, a researcher has measured (and experienced) just how strong that jolt can be.

- [**Sorting molecules with DNA robots**](#) [周五, 15 9月 03:24]

Scientists have programmed a 'robot' made of DNA to pick up and sort molecules into predetermined locations.

- [**Plant geneticists develop a new application of CRISPR to break yield barriers in crops**](#) [周五, 15 9月 03:23]

Scientists have finally harnessed the untapped power of genome editing to improve agricultural crops. In the tomato plant they have mobilized CRISPR to rapidly generate variants of the plant displaying a continuum of three agriculturally important traits: fruit size, branching architecture and overall plant shape. All are major components in determining yield. The method is designed to work in all food, feed, and fuel crops, including staples rice, maize, sorghum and wheat.

- [**Old fish few and far between under fishing pressure**](#) [周五, 15 9月 03:23]

A new study has found that, for dozens of fish populations around the globe, old fish are greatly depleted -- mainly because of fishing pressure. Old fish are increasingly missing in many populations around the world.

- [**Huge genetic diversity among Papuan New Guinean peoples revealed**](#) [周五, 15 9月 03:23]

The first large-scale genetic study of people in Papua New Guinea has shown that different groups within the country are genetically highly different from each other. Scientists reveal that the people there have remained genetically independent from Europe and Asia for most of the last 50,000 years, and that people from the country's isolated highlands region have been completely independent even until the present day.

- [**The return of the comet-like exoplanet**](#) [周五, 15 9月 03:23]

Astronomers have focused the Hubble Space Telescope on an exoplanet that had already been seen losing its atmosphere, which forms an enormous cloud of hydrogen, giving the planet the appearance of a giant comet. During earlier observations, it was not possible to cover the whole cloud, whose shape was predicted by numerical simulations. Thanks to these new observations, the scientists have finally been able to confirm the initial predictions.

- ['Handedness' in scale-eating fish: Nature and nurture](#) [周五, 15 9月 03:23]

Lateralized behaviors are thought to be strengthened during development. However, little is known about how they are acquired during development. In the scale-eating cichlid model, researchers demonstrated the attack side preference of juveniles was developed with scale-eating experience, regardless of age. They also found that kinetics of attack behavior is superior on one side by nature. Therefore, they concluded that the fish learn to use the naturally dominant side through experience.

- [Could interstellar ice provide the answer to birth of DNA?](#) [周五, 15 9月 03:22]

Molecules brought to Earth in meteorite strikes could potentially be converted into the building blocks of DNA, researchers have shown.

- [How does a cell maintain its identity during replication?](#) [周五, 15 9月 03:22]

Prior to cell division, chromosomes are seemingly a jumbled mess. During cell division, parent cell chromosomes and their duplicates sort themselves out by condensing, becoming thousands of times more compact than at any other time. Researchers have long assumed that genes become "silent" during cell division, not being transcribed into proteins or regulatory molecules. This has left open the question of how genes get properly re-activated after cell division. Now, researchers have found that gen...

- [Hubble observes pitch black planet](#) [周五, 15 9月 03:22]

Astronomers have discovered that the well-studied exoplanet WASP-12b reflects almost no light, making it appear essentially pitch black. This discovery sheds new light on the atmospheric composition of the planet and also refutes previous hypotheses about WASP-12b's atmosphere. The results are also in stark contrast to observations of another similarly sized exoplanet.

- [**New supernova analysis reframes dark energy debate**](#) [周四, 14 9月 07:31]

The accelerating expansion of the Universe may not be real, but could just be an apparent effect, according to new research. The new study finds the fit of Type Ia supernovae to a model universe with no dark energy to be very slightly better than the fit to the standard dark energy model.

- [**Evolution of 'true frogs' defies long-held expectations of science**](#) [周四, 14 9月 07:31]

New research shows, in contrast to expectations, 'the rapid global range expansion of true frogs was not associated with increased net-diversification.'

- [**Artificial 'skin' gives robotic hand a sense of touch**](#) [周四, 14 9月 07:30]

A team of researchers from the University of Houston has reported a breakthrough in stretchable electronics that can serve as an artificial skin, allowing a robotic hand to sense the difference between hot and cold, while also offering advantages for a wide range of biomedical devices.

- [**In-utero treatment reverses cleft palate in mice**](#) [周四, 14 9月 07:30]

Researchers clarified a molecular pathway responsible for the formation of cleft palate and identified a new treatment to reverse this defect in mouse pups in utero.

- [**'Peel-and-go' printable structures fold themselves**](#) [周四, 14 9月 07:30]

Researchers have created a printable structure that begins to fold itself up as soon as it's peeled off the printing platform.

- [**First global map of water in moon's soil**](#) [周四, 14 9月 07:30]

A new study maps the trace concentrations of water implanted in the lunar soil by the solar wind, a water source that could be used as resource in future lunar exploration.

- [**New gravity map suggests Mars has a porous crust**](#) [周四, 14 9月 07:30]

Scientists have found evidence that Mars' crust is not as dense as previously thought, a clue that could help researchers better understand the Red Planet's interior structure and evolution.

- [**Squirrels use 'chunking' to organize their favorite nuts**](#) [周四, 14 9月 07:29]

Like trick-or-treaters sorting their Halloween candy haul, fox squirrels apparently organize their stashes of nuts by variety, quality and possibly even preference, according to new research.

- [**Measuring a crucial mineral in the mantle**](#) [周四, 14 9月 07:29]

New research resolves 40 years of debate about the strength of olivine, the most abundant mineral in the Earth's mantle. Measuring the strength of olivine is critical to understanding how strong tectonic plates are, which, in turn, matters to how plates break and create subduction zones.

- [**Climate change challenges the survival of fish across the world**](#) [周四, 14 9月 07:29]

Researchers have published the first analysis looking at how vulnerable the world's freshwater and marine fishes are to climate change. Their study used physiological data to predict how nearly 3,000 fish species living in oceans and rivers will respond to warming water temperatures in different regions.

- [**New drug effective against malaria**](#) [周三, 13 9月 06:49]

Researchers have developed a new drug that is effective against non-severe cases of malaria, according to results from an FDA-supervised

clinical trial. The results are significant as public health experts have long warned that the parasite responsible for most malaria cases, *Plasmodium falciparum*, is developing resistance to widely used treatments. New medications are needed to build up secondary defenses against drug-resistant strains of the parasite.

• [**A one-of-a-kind star found to change over decades**](#) [周三, 13 9月 03:48]

Researchers recently found new evidence that lends support to an existing theory of how the unusual star emits energy.

• [**AI -- Engineering: merging, morphing, mobile robots**](#) [周二, 12 9月 22:35]

Researchers have developed self-reconfiguring modular robots that can merge, split and even self-heal while retaining full sensorimotor control. The work may take us closer to producing robots that can autonomously change their size, shape and function.

• [**Coffee and bees: New model of climate change effects**](#) [周二, 12 9月 22:28]

Areas in Latin America suitable for growing coffee face predicted declines of 73-88 percent by 2050. But bee species diversity may save the day, even if many species in cool highland regions are lost as the climate warms.

• [**Household environment, not genetics, shapes salivary microbes**](#) [周二, 12 9月 22:28]

The mix of microorganisms that inhabit a person's saliva are largely determined by the human host's household, new research shows. The study shows that early environmental influences play a far larger role than human genetics in shaping the salivary microbiome--the group of organisms that play a crucial role in oral and overall health.

• [**Your stools reveal whether you can lose weight**](#) [周二, 12 9月 21:31]

Something as simple as a feces sample reveals whether you can lose weight by following dietary recommendations characterized by a high

content of fruit, vegetables, fibers and whole grains, report scientists.

[Nanoparticles from tattoos travel inside the body, scientists find](#) [周二, 12 9月 21:31]

The elements that make up the ink in tattoos travel inside the body in micro and nanoparticle forms and reach the lymph nodes according to a new study. It is the first time that there is analytical evidence of the transport of various organic, inorganic pigments and toxic element impurities as well as in depth characterization of the pigments ex vivo in tattooed tissues.

| [下一章](#) | [主菜单](#) | [上一章](#) |

Solar-to-fuel system recycles CO₂ to make ethanol and ethylene: Efficient, light-powered production of fuel via artificial photosynthesis -- ScienceDaily

Scientists at the Department of Energy's Lawrence Berkeley National Laboratory (Berkeley Lab) have harnessed the power of photosynthesis to convert carbon dioxide into fuels and alcohols at efficiencies far greater than plants. The achievement marks a significant milestone in the effort to move toward sustainable sources of fuel.

Many systems have successfully reduced carbon dioxide to chemical and fuel precursors, such as carbon monoxide or a mix of carbon monoxide and hydrogen known as syngas. This new work, described in a study published in the journal *Energy and Environmental Science*, is the first to successfully demonstrate the approach of going from carbon dioxide directly to target products, namely ethanol and ethylene, at energy conversion efficiencies rivaling natural counterparts.

The researchers did this by optimizing each component of a photovoltaic-electrochemical system to reduce voltage loss, and creating new materials when existing ones did not suffice.

"This is an exciting development," said study principal investigator Joel Ager, a Berkeley Lab scientist with joint appointments in the Materials Sciences and the Chemical Sciences divisions. "As rising atmospheric CO₂ levels change Earth's climate, the need to develop sustainable sources of power has become increasingly urgent. Our work here shows that we have a plausible path to making fuels directly from sunlight."

That sun-to-fuel path is among the key goals of the Joint Center for Artificial Photosynthesis (JCAP), a DOE Energy Innovation Hub established in 2010 to advance solar fuel research. The study was conducted at JCAP's Berkeley Lab campus.

The initial focus of JCAP research was tackling the efficient splitting of water in the photosynthesis process. Having largely achieved that task using several types of devices, JCAP scientists doing solar-driven carbon dioxide reduction began setting their sights on achieving efficiencies similar to those

demonstrated for water splitting, considered by many to be the next big challenge in artificial photosynthesis.

Another research group at Berkeley Lab is tackling this challenge by focusing on a specific component in a photovoltaic-electrochemical system. In a study published today, they describe a new catalyst that can achieve carbon dioxide to multicarbon conversion using record-low inputs of energy.

Not just for noon

For this JCAP study, researchers engineered a complete system to work at different times of day, not just at a light energy level of 1-sun illumination, which is equivalent to the peak of brightness at high noon on a sunny day. They varied the brightness of the light source to show that the system remained efficient even in low light conditions.

When the researchers coupled the electrodes to silicon photovoltaic cells, they achieved solar conversion efficiencies of 3 to 4 percent for 0.35 to 1-sun illumination. Changing the configuration to a high-performance, tandem solar cell connected in tandem yielded a conversion efficiency to hydrocarbons and

oxygenates exceeding 5 percent at 1-sun illumination.

"We did a little dance in the lab when we reached 5 percent," said Ager, who also holds an appointment as an adjunct professor at UC Berkeley's Materials Science and Engineering Department.

Among the new components developed by the researchers are a copper-silver nanocoral cathode, which reduces the carbon dioxide to hydrocarbons and oxygenates, and an iridium oxide nanotube anode, which oxidizes the water and creates oxygen.

"The nice feature of the nanocoral is that, like plants, it can make the target products over a wide range of conditions, and it is very stable," said Ager.

The researchers characterized the materials at the National Center for Electron Microscopy at the Molecular Foundry, a DOE Office of Science User Facility at Berkeley Lab. The results helped them understand how the metals functioned in the bimetallic cathode. Specifically, they learned that silver aids in the reduction of carbon dioxide to carbon monoxide, while the copper picks up from there to reduce carbon monoxide further to hydrocarbons and alcohols.

Seeking better, low-energy breakups

Because carbon dioxide is a stubbornly stable molecule, breaking it up typically involves a significant input of energy.

"Reducing CO₂ to a hydrocarbon end product like ethanol or ethylene can take up to 5 volts, start to finish," said study lead author Gurudayal, postdoctoral fellow at Berkeley Lab. "Our system reduced that by half while maintaining the selectivity of products."

Notably, the electrodes operated well in water, a neutral pH environment.

"Research groups working on anodes mostly do so using alkaline conditions since anodes typically require a high pH environment, which is not ideal for the solubility of CO₂," said Gurudayal. "It is very difficult to find an anode that works in neutral conditions."

The researchers customized the anode by growing the iridium oxide nanotubes on a zinc oxide surface to create a more uniform surface area to better support chemical reactions.

"By working through each step so carefully, these researchers demonstrated a level of performance and efficiency that people did not think was possible at this point," said Berkeley Lab chemist Frances Houle, JCAP deputy director for Science and Research Integration, who was not part of the study. "This is a big step forward in the design of devices for efficient CO₂ reduction and testing of new materials, and it provides a clear framework for the future advancement of fully integrated solar-driven CO₂-reduction devices."

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| [Section menu](#) | [主菜单](#) |

Copper catalyst yields high efficiency CO₂-to-fuels conversion: Critical role of nanoparticle transformation discovered -- ScienceDaily

Scientists at the Department of Energy's Lawrence Berkeley National Laboratory (Berkeley Lab) have developed a new electrocatalyst that can directly convert carbon dioxide into multicarbon fuels and alcohols using record-low inputs of energy. The work is the latest in a round of studies coming out of Berkeley Lab tackling the challenge of creating a clean chemical manufacturing system that can put carbon dioxide to good use.

In the new study, published this week in the *Proceedings of the National Academy of Sciences (PNAS)*, a team led by Berkeley Lab scientist Peidong Yang discovered that an electrocatalyst made up of copper nanoparticles provided the conditions necessary to break down carbon dioxide to form ethylene, ethanol, and propanol.

All those products contain two to three carbon atoms, and all are considered high-value products in modern life. Ethylene is the basic ingredient used to make plastic films and bottles as well as polyvinyl chloride (PVC) pipes. Ethanol, commonly made from biomass, has already established its place as a biofuel additive for gasoline. While propanol is a very effective fuel, it is currently too costly to manufacture to be used for that purpose.

To gauge the energy efficiency of the catalyst, scientists consider the thermodynamic potential of products -- the amount of energy that can be gained in an electrochemical reaction -- and the amount of extra voltage needed above that thermodynamic potential to drive the reaction at sufficient reaction rates. That extra voltage is called the overpotential; the lower the overpotential, the more efficient the catalyst.

"It is now quite common in this field to make catalysts that can produce multicarbon products from CO₂, but those processes typically operate at high overpotentials of 1 volt to attain appreciable amounts," said Yang, a senior faculty scientist at Berkeley Lab's Materials Sciences Division. "What we are reporting here is much more challenging. We discovered a catalyst for

carbon dioxide reduction operating at high current density with a record low overpotential that is about 300 millivolts less than typical electrocatalysts."

Cube-like copper catalyst

The researchers characterized the electrocatalyst at Berkeley Lab's Molecular Foundry using a combination of X-ray photoelectron spectroscopy, transmission electron microscopy, and scanning electron microscopy.

The catalyst consisted of tightly packed copper spheres, each about 7 nanometers in diameter, layered on top of carbon paper in a densely packed manner. The researchers found that during the very early period of electrolysis, clusters of nanoparticles fused and transformed into cube-like nanostructures. The cube-like shapes ranged in size from 10 to 40 nanometers.

"It is after this transition that the reactions to form multicarbon products are occurring," said study lead author Dohyung Kim, a graduate student in Berkeley Lab's Chemical Sciences Division and at UC Berkeley's Department of Materials Science and Engineering. "We tried to start off with pre-formed

nanoscale copper cubes, but that did not yield significant amounts of multicarbon products. It is this real-time structural change from copper nanospheres to the cube-like structures that is facilitating the formation of multicarbon hydrocarbons and oxygenates."

Exactly how that is happening is still unclear, said Yang, who is also a professor at UC Berkeley's Department of Materials Science and Engineering.

"What we know is that this unique structure provides a beneficial chemical environment for CO₂ conversion to multicarbon products," he said. "The cube-like shapes and associated interface may be providing an ideal meeting place where the carbon dioxide, water, and electrons can come together."

Many paths in the CO₂-to-fuel journey

This latest study exemplifies how carbon dioxide reduction has become an increasingly active area in energy research over the past several years. Instead of harnessing the sun's energy to convert carbon dioxide into plant food, artificial photosynthesis seeks to use the same starting ingredients to produce chemical precursors commonly used in synthetic products as

well as fuels like ethanol.

Researchers at Berkeley Lab have taken on various aspects of this challenge, such as controlling the product that comes out of the catalytic reactions. For instance, in 2016, a hybrid semiconductor-bacteria system was developed for the production of acetate from CO₂ and sunlight. Earlier this year, another research team used a photocatalyst to convert carbon dioxide almost exclusively to carbon monoxide. More recently, a new catalyst was reported for the effective production of synthesis gas mixtures, or syngas.

Researchers have also worked on increasing the energy efficiency of carbon dioxide reduction so that systems can be scaled up for industrial use.

A recent paper led by Berkeley Lab researchers at the Joint Center for Artificial Photosynthesis leverages fundamental science to show how optimizing each component of an entire system can accomplish the goal of solar-powered fuel production with impressive rates of energy efficiency.

This new *PNAS* study focuses on the efficiency of the catalyst rather than an entire system, but the

researchers point out that the catalyst can be hooked up to a variety of renewable energy sources, including solar cells.

"By utilizing values already established for other components, such as commercial solar cells and electrolyzers, we project electricity-to-product and solar-to-product energy efficiencies up to 24.1 and 4.3 percent for two-to-three carbon products, respectively," said Kim.

Kim estimates that if this catalyst were incorporated into an electrolyzer as part of a solar fuel system, a material only 10 square centimeters could produce about 1.3 grams of ethylene, 0.8 grams of ethanol, and 0.2 grams of propanol a day.

"With continued improvements in individual components of a solar fuel system, those numbers should keep improving over time," he said.

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When it comes to the threat of extinction, size matters: Animals in the Goldilocks zone -- neither too big, nor too small, but just the right size -- face a lower risk of extinction than do those on both ends of the scale -- ScienceDaily

Animals in the Goldilocks zone -- neither too big, nor too small, but just the right size -- face a lower risk of extinction than do those on both ends of the scale, according to an extensive global analysis.

Reporting today in the *Proceedings of the National Academy of Sciences*, researchers who determined body masses for thousands of vertebrate animal species showed that the largest and smallest species face a greater risk of extinction than do mid-sized animals.

Disproportionate losses at the large and small ends of the scale raise the likelihood of significant changes to the way natural ecosystems function in forests,

grasslands, oceans and even rivers and streams -- "the living architecture of the planet," the researchers wrote.

"Knowing how animal body size correlates with the likelihood of a species being threatened provides us with a tool to assess extinction risk for the many species we know very little about," said William Ripple, a distinguished professor of ecology at Oregon State University and lead author of the study.

Ripple and colleagues from the United States, Australia and Switzerland looked at the more than 27,000 vertebrate animal species assessed by the International Union for the Conservation of Nature in the so-called Red List. About 4,400 are threatened with extinction.

Among the groups of animals evaluated were birds, reptiles, amphibians, bony fishes, cartilaginous fishes (mostly sharks and rays) and mammals.

The largest animals are threatened principally with harvesting by humans. "Many of the larger species are being killed and consumed by humans, and about 90 percent of all threatened species larger than 2.2 pounds (1 kilogram) in size are being threatened by harvesting," said Ripple.

"Harvesting of these larger animals takes a variety of forms including regulated and unregulated fishing, hunting and trapping for meat consumption, the use of body parts as medicine and killing due to unintentional bycatch," the authors wrote.

Meanwhile, threats to the smallest animals may be grossly underestimated. The smallest species with high extinction risk consist of tiny vertebrate animals generally less than about 3 ounces (77 grams) in body weight. These diminutive species are mostly threatened by loss or modification of habitat. Examples include the Clarke's banana frog, sapphire-bellied hummingbird, gray gecko, hog-nosed bat and the waterfall climbing cave fish. Small species that require freshwater habitats are especially imperiled.

Different conservation strategies will be needed to address threats to the largest and smallest animals, the scientists said. Well known mammals at the large end of the scale -- whales, elephants, rhinos, lions -- have been the target of protection programs, but conservation attention is also needed for large-bodied species that are not mammals. They include large fish, birds, amphibians and reptiles such as the whale shark, Atlantic sturgeon, Somali ostrich, Chinese giant

salamander and the Komodo dragon.

Human activity seems poised to chop off both the head and tail of the size distribution of life, the authors added, which will fundamentally restructure many ecological communities.

Story Source:

[Materials](#) provided by [Oregon State University](#). *Note: Content may be edited for style and length.*

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| [Section menu](#) | [主菜单](#) |

RNA discovery could help boost plant heat, drought tolerance -- ScienceDaily

Texas A&M; AgriLife Research scientists have discovered a ribonucleic acid, or RNA, that can increase the thale cress plant's resistance to stress from drought and salt.

The discovery could help illuminate a new pathway to engineering drought- and salt-tolerant plants, including food crops, said Dr. Liming Xiong, AgriLife Research associate professor, Dallas.

"This is the first finding of a long non-coding RNA, or lncRNA, that regulates plant tolerance to adverse, non-physiological external factors," Xiong said.

The lncRNA his team discovered in thale cress plants existed in low numbers under non-stress conditions, but levels increased when the plants encountered drought or salt stress, he said. Manually increasing the level of the lncRNA showed corresponding increases in drought and salt tolerance compared with plants where the lncRNA level was unaltered.

Most RNA direct or "code" cell machinery to produce proteins. Non-coding RNA, or ncRNA, does not direct protein production but could affect how gene expressions manifest in innumerable other ways. As such, they are considered regulators of important biological processes, Xiong said.

"And there are different types of ncRNA," he said. "Small ncRNA have received much attention in recent years, but in many long, or lncRNA, like the one we found to affect drought and salt tolerance in thale cress, the biological functions remain unknown."

The basic difference between small and long non-coding RNA is the number of nucleotides -- the structural building blocks of RNA. Long have more.

Xiong said investigating the effects of lncRNA is a novel approach to plant drought and salt tolerance research.

"Most of the current work on improving plant stress tolerance does not focus on lncRNA but on the genes that code protein production," he said. "However, manipulation of those protein-encoding genes often impairs plant growth and development."

But the lncRNA studied by Xiong's team can be tweaked without any apparent detriment to the plant's health, he said.

"It's early still, but we could be on the brink of a whole new approach to engineering drought and salt tolerance in plants, including food plants," Xiong said. "Our next step will be to engineer the lncRNA levels in plants other than thale cress and to test whether it might improve drought and salt tolerance across a broader spectrum."

Story Source:

Materials provided by **Texas A&M; AgriLife Communications**. *Note: Content may be edited for style and length.*

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More evidence of water on Mars: New Geological Society of America Bulletin paper -- ScienceDaily

River deposits exist across the surface of Mars and record a surface environment from over 3.5 billion years ago that was able to support liquid water at the surface. A region of Mars named Aeolis Dorsa contains some of the most spectacular and densely packed river deposits seen on Mars.

These deposits are observable with satellite images because they have undergone a process called "topographic inversion," where the deposits filling once topographically low river channels have been exhumed in such a way that they now exist as ridges at the surface of the planet.

With the use of high-resolution images and topographic data from cameras on orbiting satellites, B.T. Cardenas and colleagues from the Jackson School of Geosciences identify fluvial deposit stacking patterns and changes in sedimentation styles controlled

by a migratory coastline. They also develop a method to measure river paleo-transport direction for a subset of these ridges.

Together, these measurements demonstrate that the studied river deposits once filled incised valleys. On Earth, incised valleys are commonly cut and filled during falling and rising eustatic sea level, respectively.

Cardenas and colleagues conclude that similar falling and rising water levels in a large water body forced the formation of the paleo-valleys in their study area. Cross-cutting relationships are observed at the valley-scale, indicating multiple episodes of water level fall and rise, each well over 50 meters, a similar scale to eustatic sea level changes on Earth.

The conclusion that such large water level fluctuations and coastline movements were recorded by these river deposits suggests some long-term stability in the controlling, downstream water body, which would not be expected from catastrophic hydrologic events.

| [Section menu](#) | [主菜单](#) |

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

- [**Blood tests: Sound waves separate biological nanoparticles for 'liquid biopsies'**](#) [周二, 19 9月 04:34]

A prototype device developed by an international team of engineers can sift exceedingly tiny particles called exosomes from blood samples without having to send samples off to a lab. The device, which combines acoustic cell-sorting and microfluidic technologies, could be a boon to both scientific research and medical applications.

- [**Potential pathway to treat flesh-eating bacteria**](#) [周二, 19 9月 04:33]

Researchers have solved a 100-year-old mystery, providing them a possible key to unlock a pathway for treating diseases caused by flesh-eating bacteria. Medical researchers have found a critical target on which to focus for developing a potential Group A Streptococcus vaccine or antibiotic to fight it. By manipulating this target, they hope to either reduce the severity of these infections or clear them up faster.

- [**How patients are likely to respond to DNA drugs**](#) [周二, 19 9月 02:31]

Research could lead to improvements in treating patients with diseases caused by mutations in genes, such as cancer, cystic fibrosis and potentially up to 6,000 other inherited conditions.

- [**Reliance on 'gut feelings' linked to belief in fake news**](#) [周二, 19 9月 02:21]

People who tend to trust their intuition or to believe that the facts they hear are politically biased are more likely to stand behind inaccurate beliefs, a new study suggests.

- [**HIV risk and individual and community level educational status**](#) [周二, 19 9月 02:21]

African-American men who have sex with men (MSM) remain at heightened risk for HIV infection and account for the largest number of African-Americans living with HIV/AIDS. It has long been understood that there is a clear and persistent association between poverty, transactional sex behavior, and HIV risk. A new study has investigated how educational status relates to HIV risk in this population.

- [**Why bad sleep doesn't always lead to depression**](#) [周二, 19 9月 01:27]

Poor sleep is both a risk factor, and a common symptom, of depression. But not everyone who tosses and turns at night becomes depressed. Individuals whose brains are more attuned to rewards may be protected from the negative mental health effects of poor sleep, says a new study.

- [**People's love of the seas could be the key for plastic pollution solution**](#) [周二, 19 9月 01:27]

Tapping into the public's passion for the ocean could be the key to reducing the threats to it posed by plastic pollution.

- [**Re-interventions are common in long-term survivors of childhood heart operation**](#) [周二, 19 9月 00:35]

Among patients who undergo childhood heart surgery for the severe birth defect single-ventricle disease, two-thirds of survivors require a surgical or catheter-based procedure within 20 years. Pediatric cardiology researchers note that doctors should counsel families about the likelihood of re-interventions.

- [**To predict how climate change will affect disease, researchers must fuse climate science and biology**](#) [周二, 19 9月 00:35]

To predict how climate change will affect disease, researchers must fuse climate science and biology, according to a new review.

- [**Myth Debunked that OCD Is Associated With**](#)

[Superior Intelligence](#) [周二, 19 9月 00:35]

Researchers conducted a meta-analysis of all the available literature on IQ in OCD samples versus non-psychiatric controls (98 studies), and found that contrary to the prevailing myth, OCD is not associated with superior IQ, but with normative IQ that is slightly lower compared to control samples. The authors suggested that the small reduction in IQ scores in OCD sufferers may be largely attributed to OCD-related slowness and not to intellectual ability.

• [Eight children born after uterus transplants](#) [周二, 19 9月 00:35]

Eight children born -- and the first robot-assisted operation performed. These are some of the results of 18 years of research on uterus transplants.

• [New assay leads to step toward gene therapy for deaf patients](#) [周二, 19 9月 00:35]

Scientists at have taken an important step toward gene therapy for deaf patients by developing a way to better study a large protein essential for hearing and finding a truncated version of it.

• [MicroRNA helps cancer evade immune system](#) [周二, 19 9月 00:35]

Researchers have discovered how oxygen-deprived tumors survive body's immune response, explains a new report.

• [Biologists identify gene involved in kidney-related birth defects](#) [周二, 19 9月 00:35]

Researchers have identified a gene linked to rare kidney-related birth defects. When working properly, a gene called GREB1L activates a cascade of signals that ultimately tells other genes what they need to do to create a kidney.

• [Video game boosts sex health IQ and attitudes in minority teens](#) [周一, 18 9月 23:18]

A video game to promote health and reduce risky behavior in teens improves sexual health knowledge and attitudes among minority youth, according to a new study. The findings validate the value of the video

game as a tool to engage and educate teens at risk for HIV and other sexually transmitted infections, said the researchers.

- [**Genomic recycling: Ancestral genes take on new roles**](#) [周一, 18 9月 23:18]

One often hears about the multitude of genes we have in common with chimps, birds or other living creatures, but such comparisons are sometimes misleading. The shared percentage usually refers only to genes that encode instructions for making proteins -- while overlooking regulatory genes, which nonetheless make up a large part of the genome.

- [**How bacteria hinder chemotherapy**](#) [周一, 18 9月 22:06]

Scientists have found bacteria in pancreatic tumors that metabolize a common drug, explains a new report.

- [**Altitude training for cancer-fighting cells**](#) [周一, 18 9月 22:06]

Oxygen starvation could toughen up immune T cells for cancer immunotherapy, reports a team of investigators.

- [**Antimalarial drug combined with light sensitive molecules for promising treatment of cancer**](#) [周一, 18 9月 21:33]

Scientists have discovered that a combination of artemisinin, which is a potent anti-malarial drug, and aminolaevulinic acid, which is a photosensitizer, could kill colorectal cancer cells and suppress tumor growth more effectively than administering artemisinin alone. This novel combination therapy could also have fewer side effects.

- [**Cells programmed like computers to fight disease**](#) [周一, 18 9月 21:33]

Cells can be programmed like a computer to fight cancer, influenza, and other serious conditions -- thanks to a breakthrough in synthetic biology.

- [**5,000 deaths annually from Diesel-gate in Europe**](#) [周一, 18 9月 21:33]

Excess emissions from diesel cars cause about 5,000 premature deaths annually across Europe, a new study shows. Higher exposure to

secondary particles and ozone can be traced back to excess NO_x emissions from diesel cars, vans and light commercial vehicles. With the EU's vehicle emission limits achieved on the road about 5,000 premature deaths could be avoided annually. If diesel cars emitted as little NO_x as petrol cars, about 7,500 premature deaths could be avoided annually.

- [**Parents not confident schools can assist child with chronic disease, mental health**](#) [周一, 18 9月 21:08]

Most parents are sure schools would be able to provide basic first aid but are less confident about a school's ability to respond to more complex health situations, such as an asthma attack or mental health problem.

- [**People with schizophrenia are dying younger**](#) [周一, 18 9月 21:08]

People with schizophrenia have a mortality rate that is three times greater each year than those without schizophrenia, and die on average, eight years earlier than people without schizophrenia according to a new study.

- [**A fat-regulating enzyme could hold the key to obesity, diabetes, cancer, other diseases**](#) [周一, 18 9月 21:07]

It had already been known that the enzyme known as phosphatidic acid phosphatase plays a crucial role in regulating the amount of fat in the human body. Controlling it is therefore of interest in the fight against obesity. But scientists have now found that getting rid of the enzyme entirely can increase the risk of cancer, inflammation and other ills.

- [**Congenital hyperinsulinism: A serious yet poorly understood condition**](#) [周一, 18 9月 21:07]

Diabetes is characterized by a deficiency of insulin. The opposite is the case in congenital hyperinsulinism: patients produce the hormone in excessive quantities. This leads to chronic hypoglycemia. The disorder can lead to serious brain damage and even death in the worst cases.

- [**Genetically altered mice bear some hallmarks of human bipolar behavior**](#) [周一, 18 9月 21:07]

Researchers have genetically engineered mice that display many of the

behavioral hallmarks of human bipolar disorder, and that the abnormal behaviors the rodents show can be reversed using well-established drug treatments for bipolar disorder, such as lithium.

- [**HIV-AIDS: Following your gut**](#) [周一, 18 9月 21:07]

Researchers find a way to reduce replication of the AIDS virus in the gastrointestinal tract.

- [**Membrane vesicles released by bacteria may play different roles during infection**](#) [周一, 18 9月 21:07]

Bacteria release membrane-derived vesicles (MVs), which are small particles that can transport virulence factors to neighboring bacteria or to the cells of a mammalian host. This special MV-based system for delivering toxic proteins and nucleic acids in a protected manner to the target cells may have different specific functions depending on whether the bacterium acts as an extracellular or intracellular pathogen.

- [**Vaping doubles risk of smoking cigarettes for teens**](#) [周一, 18 9月 21:07]

Teenagers who try e-cigarettes double their risk for smoking tobacco cigarettes, according to a new study. The study found that students in grades seven to 12 who had tried an e-cigarette are 2.16 times more likely to be susceptible to cigarette smoking.

- [**American Academy of Pediatrics announces its first recommendations on tattoos, piercings**](#) [周一, 18 9月 21:06]

Tattoos and body piercings are an increasingly popular form of self-expression, but it is important for young people to carefully consider the consequences and potential risks associated with body modifications, according to the first clinical report on the topic.

- [**High blood pressure reasons differ by gender in teens; young adults**](#) [周一, 18 9月 03:10]

Gender matters when it comes to what's most likely to elevate blood pressure in young to middle-aged adults. The volume of blood pumped from the left ventricle during heartbeats, i.e., stroke volume, is the main

determinant of blood pressure levels in women, while blood pressure in men is more likely to be determined by the amount of resistance in the body's blood vessels.

- [**Blood pressure better controlled with 'MAP' for doctors**](#) [周一, 18 9月 03:09]

Primary care practices using the Measure accurately, Act rapidly and Partner with patients (MAP) program drove down hypertension rates among patients. In six months of MAP, hypertension control rose from 65.6 percent to 74.8 percent, among more than 21,000 hypertension patients at US primary care practices.

- [**Teens also at risk for organ damage from high blood pressure**](#) [周一, 18 9月 03:09]

Organ damage from high blood pressure doesn't only occur in adults; it can also happen in teenagers, according to new research.

- [**Sugary secrets of a cancer-related protein**](#) [周一, 18 9月 00:03]

The proteins in human cells are extensively decorated with different types of sugars, a phenomenon called glycosylation. These modifications greatly increase the diversity of protein structure and function, affecting how proteins fold, how they behave, and where they go in cells. New research demonstrates that a rare type of glycosylation profoundly affects the function of a protein important for human development and cancer progression.

- [**Fertility research brings death of dogma, birth of hope**](#) [周六, 16 9月 20:01]

A new study shows unequivocally that stem cells in the ovaries are a critical piece of the mammal fertility puzzle, and may be harnessed to revolutionize fertility treatments and perhaps even delay menopause.

- [**Hormone replacement therapy can slow decline in lung function for middle-aged women**](#) [周六, 16 9月 05:05]

Hormone replacement therapy (HRT) can slow the decline in lung function in middle-aged women, according to new research.

- [**Magnetic fields to alleviate anxiety**](#) [周六, 16 9月 04:52]

It is possible to unlearn fears. And this works even better when a specific region of the brain has previously been stimulated magnetically.

- [**Differences in aggression among people with dementia**](#) [周六, 16 9月 04:50]

Physical aggression among people with dementia is not unusual. A study showed that one-third of patients with the diagnosis Alzheimer's disease or frontotemporal dementia were physically aggressive towards healthcare staff, other patients, relatives, animals and complete strangers. This manifestation of disease must be both understood and addressed in the right way.

- [**Teens come 'jet lagged' to school: Shifting sleeping patterns at weekends**](#) [周六, 16 9月 04:48]

A lack of sleep is associated with more absence and teens turn up jet lagged to school on Mondays, as shown in new research.

- [**Innate immunity: To operate, insert dimers**](#) [周六, 16 9月 04:46]

The presence of DNA in mammalian cell cytoplasm triggers an immune response by binding to a dimeric enzyme, which inserts between DNA double helices to form the "rungs" of a ladder-like structure, as an LMU team has now shown.

- [**Memory decline after head injury may be prevented by slowing brain cell growth**](#) [周六, 16 9月 02:42]

Scientists say a new study indicates that the excessive burst of new brain cells after a traumatic head injury that researchers have traditionally believed helped in recovery could instead lead to epileptic seizures and long-term cognitive decline.

- [**The body's own fat-metabolism protects against the harmful effects of sugar**](#) [周六, 16 9月 02:41]

Researchers have discovered that the fat-metabolism in the cells takes place simultaneously with a detoxification of the harmful substances from the blood sugar, which can avert the damage that can in turn lead

to age-related diseases such as diabetes, Alzheimer's and cancer. This indicates that we have a detoxification system which we were not previously aware of.

- [**'Exciting' discovery on path to develop new type of vaccine to treat global viruses**](#) [周六, 16 9月 02:41]

Scientists have made a significant discovery in efforts to develop a vaccine against Zika, dengue and Hepatitis C viruses that affect millions of people around the world.

- [**Why we did not evolve to live forever: Unveiling the mystery of why we age**](#) [周六, 16 9月 02:41]

Researchers have made a breakthrough in understanding the origin of the ageing process. They have identified that genes belonging to a process called autophagy -- one of the cells most critical survival processes -- promote health and fitness in young worms but drive the process of ageing later in life.

- [**Immune system linked to alcohol drinking behavior**](#) [周六, 16 9月 02:41]

Researchers have found a new link between the brain's immune system and the desire to drink alcohol in the evening.

- [**Time to dial back on diabetes treatment in older patients? Study finds 11 percent are overtreated**](#) [周六, 16 9月 02:41]

Almost 11 percent of Medicare participants with diabetes had very low blood sugar levels that suggested they were being over-treated, a new study finds. But only 14 percent of these patients had a reduction in blood sugar medication refills in the next six months.

- [**Quality initiatives can reduce harm to newborns, shorten hospital stay and save millions**](#) [周六, 16 9月 02:41]

A quality-improvement initiative at a neonatal intensive care unit finds that chest X-rays can be performed just twice weekly, lessening the chances of a breathing tube popping out accidentally, reducing infants' exposure to radiation and saving an estimated \$1.6 million per year.

- [**Couples weather bickering with a little help from their friends**](#) [周六, 16 9月 02:41]

New research finds that having good friends and family members to turn to alleviates the stress of everyday conflict between marital partners. Social networks may help provide protection against health problems brought about by ordinary tension between spouses.

- [**Decreased glucose metabolism in medial prefrontal areas is associated with nutritional status in patients with prodromal and early Alzheimer's disease**](#) [周六, 16 9月 02:41]

A new study shows that hypometabolism in the medial prefrontal areas is specifically associated with Alzheimer's disease-related nutritional problems, and decrease in fat mass may have a key role.

- [**Medical students not trained to prescribe medical marijuana**](#) [周六, 16 9月 02:41]

More than half of the states in the US now allow some type of legal marijuana use, primarily medical marijuana. But, in a survey of medical residents and deans at the nation's medical schools, researchers have found that the majority of schools are not teaching their students about medical marijuana, and the majority of students don't feel prepared to discuss the subject with patients.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

- [2-D Electronics' metal or semiconductor? Both](#) [周二, 19 9月 04:15]

Researchers produced the first 2-D field-effect transistor (FET) made of a single material.

- [Solar-to-fuel system recycles CO2 to make ethanol and ethylene](#) [周二, 19 9月 03:17]

Scientists have harnessed the power of photosynthesis to convert carbon dioxide into fuels and alcohols at efficiencies far greater than plants. The achievement marks a significant advance in the effort to move toward sustainable sources of fuel.

- [Copper catalyst yields high efficiency CO2-to-fuels conversion](#) [周二, 19 9月 03:17]

Scientists have developed a new electrocatalyst that can directly convert carbon dioxide into multicarbon fuels and alcohols using record-low inputs of energy. The work is the latest in a round of studies tackling the challenge of a creating a clean chemical manufacturing system that can put carbon dioxide to good use.

- [New quantum phenomena in graphene superlattices](#) [周二, 19 9月 00:36]

Researchers have just shown the first new type of quantum oscillation to be reported for thirty years. It is the first of its kind to be present at high temperature and on the mesoscale and sheds light on the Hofstadter butterfly phenomenon.

- [Just squeeze in -- when spaces are tight, nature](#)

[loosens its laws](#) [周二, 19 9月 00:35]

It turns out that when they're in a hurry and space is limited, ions, like people, will find a way to cram in -- even if that means defying nature's norms. Researchers have now shown that the charged particles will actually forgo their 'opposites attract' behavior, called Coulombic ordering, when confined in the tiny pores of a nanomaterial.

• [Step towards better 'beyond lithium' batteries](#) [周二, 19 9月 00:35]

A step towards new 'beyond lithium' rechargeable batteries with superior performance has been made.

• [Scalable process discovered to produce structural colors inspired by bird feathers](#) [周二, 19 9月 00:35]

Researchers made nano-sized balls of melanin aggregate into clusters called supraballs. Melanin appears black in individual nanoparticles. But altering spacing of the nanoparticles in the ball affects how the particles scatter light. A thin silica coating on the outside of melanin nanoparticles acts like a bumper, limiting how close the particles can pack together. Varying the diameter of the melanin core and the thickness of the silica shell creates supraballs in a range of colors.

• [Physicists discover a tri-anion particle with colossal stability](#) [周二, 19 9月 00:35]

Chemists have created the most stable tri-anion particle currently known to science. A tri-anion particle is a combination of atoms that contains three more electrons than protons. This discovery is novel because previously known tri-anion particles were unstable due to their numerical imbalance.

• [A new approach to ultrafast light pulses](#) [周二, 19 9月 00:35]

A team of researchers has found a new way of producing high-speed pulses of light using two-dimensional molecular aggregates, which could enable new photonic devices such as optically based microchips.

• [More evidence of water on Mars](#) [周二, 19 9月 00:35]

River deposits exist across the surface of Mars and record a surface

environment from over 3.5 billion years ago that was able to support liquid water at the surface. A region of Mars named Aeolis Dorsa contains some of the most spectacular and densely packed river deposits seen on Mars.

- [**Chemists make playdough/lego-like hybrid to create tiny building blocks**](#) [周一, 18 9月 23:43]

Playdough and Legos are among the most popular childhood building toys. But what could you use if you wanted to create something really small — a structure less than the width of a human hair? It turns out, a team of chemists has found, this can be achieved by creating particles that have both playdough and Lego traits.

- [**Secrets of bright, rapidly spinning star revealed**](#) [周一, 18 9月 23:18]

Almost 50 years after it was first predicted that rapidly rotating stars would emit polarized light, scientists have succeeded in observing the phenomenon for the first time. They have now detected the polarized light from Regulus, one of the brightest stars in the night sky.

- [**A solar cell you can put in the wash**](#) [周一, 18 9月 23:18]

Scientists have developed a new type of ultra-thin photovoltaic device, coated on both sides with stretchable and waterproof films, which can continue to provide electricity from sunlight even after being soaked in water or being stretched and compressed.

- [**Video game boosts sex health IQ and attitudes in minority teens**](#) [周一, 18 9月 23:18]

A video game to promote health and reduce risky behavior in teens improves sexual health knowledge and attitudes among minority youth, according to a new study. The findings validate the value of the video game as a tool to engage and educate teens at risk for HIV and other sexually transmitted infections, said the researchers.

- [**Developing roads that can generate power from passing traffic**](#) [周一, 18 9月 23:18]

Researchers are looking at advanced materials for roads and pavements

that could generate electricity from passing traffic. Engineers are working on smart materials such as 'piezoelectric' ceramics that when embedded in road surfaces would be able to harvest and convert vehicle vibration into electrical energy.

- [**An original method of cooling ions could have new and interesting uses**](#) [周一, 18 9月 23:18]

When investigating atoms, scientists face a challenge: At room temperature, individual atoms in a gas have kinetic energy, and fly around at large velocities. Temperature is, in essence, the relative movement between atoms; thus the goal of getting the atoms to have small relative velocities involves freezing them to extremely cold temperatures. A group has now developed new universal method for cooling ions.

- [**Wireless high-speed data and power transfer integrated**](#) [周一, 18 9月 23:18]

Researchers have developed a system that can simultaneously deliver watts of power and transmit data at rates high enough to stream video over the same wireless connection. By integrating power and high-speed data, a true single 'wireless' connection can be achieved.

- [**More efficient use of raw materials with the aid of 'molecular conveyor belts'**](#) [周一, 18 9月 21:34]

Making valuable products, such as fuels, synthetic materials or pharmaceuticals, from renewable raw materials is to date not efficient enough because the microorganisms used only process the raw materials very slowly and generate many by-products in addition to the substances actually wanted. Biotechnologists have now succeeded in optimizing sugar utilization in baker's yeast.

- [**Tiny electrically pumped micro-lasers epitaxially grown on industry standard silicon substrates**](#) [周一, 18 9月 21:33]

A group of researchers successfully demonstrated record-small

electrically pumped micro-lasers epitaxially grown on industry standard (001) silicon substrates in a recent study. The thresholds and footprints are orders of magnitude smaller than those previously reported lasers epitaxially grown on Si.

• [**New evidence for small, short-lived drops of early universe quark-gluon plasma?**](#) [周一, 18 9月 21:30]

Particles emerging from even the lowest energy collisions of small deuterons with large heavy nuclei at the Relativistic Heavy Ion Collider exhibit behavior scientists associate with the formation of a soup of quarks and gluons, the fundamental building blocks of nearly all visible matter.

• [**Devilish source of dust in atmosphere of Earth and Mars**](#) [周一, 18 9月 21:28]

Swirling columns of sand and dust, known as dust devils, are a feature of desert areas on Mars and on Earth. Now, a study of terrestrial dust devils has shown that around two thirds of the fine particles lifted by these vortices can remain suspended in the atmosphere and be transported around the globe. The findings have implications for the climate and weather of both planets and, potentially, human health here on Earth.

• [**World first: 'Storing lightning inside thunder'**](#) [周一, 18 9月 21:07]

In a world first, researchers have stored photonic information on a microchip as an acoustic wave. This allows precious extra time to store, process and then redistribute the data without relying on electronics, which produce excess heat. Such a hybrid chip could have a huge impact in cloud computing and telecommunication centers, which are overheating as we churn through data on our phones.

• [**NASA's Cassini spacecraft ends its historic exploration of Saturn**](#) [周六, 16 9月 22:30]

A thrilling epoch in the exploration of our solar system has come to a close, as NASA's Cassini spacecraft made a fateful plunge into the atmosphere of Saturn, ending its 13-year tour of the ringed planet.

Cassini's plunge brings to a close a series of 22 dives between Saturn and its rings, a feat never before attempted by any spacecraft.

• [**Sensing with a twist: A new kind of optical nanosensor uses torque for signal processing**](#) [周六, 16 9月 20:01]

As electronic devices get smaller, their ability to provide precise, chip-based sensing of dynamic physical properties such as motion become challenging to develop. An international group of researchers have put a literal twist on this challenge, demonstrating a new nanoscale optomechanical resonator that can detect torsional motion at near state-of-the-art sensitivity. Their resonator, into which they couple light, also demonstrates torsional frequency mixing, a novel ability to impact optical e...

• [**Converting waste toilet paper into electricity**](#) [周六, 16 9月 05:02]

Chemists have performed a techno-economic analysis of converting waste toilet paper into electricity. They propose a two-step process and calculate a cost per kWh comparable to that of residential photovoltaic installations.

• [**A drone for last-centimeter delivery**](#) [周六, 16 9月 05:01]

A new drone uses cutting-edge technology to deliver parcels weighing up to 500 grams. The device will never get stuck in traffic, it's programmed to avoid obstacles, and it can reach destinations on steep or uneven terrain. Its protective cage and foldable design mean that it can be carried around in a backpack and used in total safety.

• [**Light on exoplanets may be quite different from Earth: Different photosynthesis?**](#) [周六, 16 9月 05:00]

Researchers have proposed a prediction that red-edge could be observed as on the Earth even on exoplanets around M-dwarfs. They pointed out that the first oxgenic phototrophs are most likely to have evolved underwater to utilize visible light just like what had happened in the primordial ocean on the Earth. They examined light adaptation mechanisms of visible- and IR-radiation-using phototrophs required for adapting to land habitats and found out that IR-using phototrophs

struggle to adapt to chan...

- [**Tracing the light inside a LED**](#) [周六, 16 9月 04:54]

The performance of white LED's can be improved, based on better knowledge of the absorption and scattering of light inside the LED. A new method can lead to efficiency improvement and powerful design tools.

- [**Tough stuff: Spider silk enhanced with graphene-based materials**](#) [周六, 16 9月 04:52]

Natural spider silk has excellent mechanical properties. Researchers have now found a way to boost the strength of spider's silk using graphene-based materials, paving the way for a novel class of high-performance bionic composites.

- [**Ultrafast snapshots of relaxing electrons in solids**](#) [周六, 16 9月 04:37]

A team of scientists has been able to capture the dynamics of core-excited excitons in solids in real-time.

- [**Star formation influenced by local environmental conditions**](#) [周五, 15 9月 22:36]

Three scientists have carried out extensive computer simulations related to star formation. They conclude that the present idealized models are lacking when it comes to describing details in the star formation process.

- [**Golf carts causing serious injuries to children**](#) [周五, 15 9月 21:52]

As golf carts become increasingly popular in communities beyond the fairway, new research shows, a significant number of children are being seriously injured while using them.

- [**Skin patch dissolves 'love handles' in mice**](#) [周五, 15 9月 21:52]

Researchers have developed a medicated skin patch that can turn energy-storing white fat into energy-burning brown fat locally while raising the body's metabolism. The patch could be used to burn off pockets of unwanted fat and treat metabolic disorders like obesity and

diabetes.

- [**A subtler sexism now frames TV coverage of women in sports**](#) [周五, 15 9月 09:06]

An ongoing longitudinal study tracking national coverage of women's sports finds that coverage is still lacking and the sexism of women's sports is less overt but remains a problem.

- [**New insights into nanocrystal growth in liquid**](#) [周五, 15 9月 09:06]

Researchers have measured the forces that cause certain crystals to assemble, revealing competing factors that researchers might be able to control. The work has a variety of implications in both discovery and applied science. In addition to providing insights into the formation of minerals and semiconductor nanomaterials, it might also help scientists understand soil as it expands and contracts through wetting and drying cycles.

- [**Water conservation can have unintended consequences**](#) [周五, 15 9月 03:24]

Conventional wisdom dictates water conservation can only benefit communities affected by drought. But researchers have deduced that indoor residential conservation can have unintended consequences in places where systems of wastewater reuse have already been implemented, diminishing both the quantity and quality of influent available for treatment.

- [**In step toward controlling chemistry, physicists create a new molecule, atom by atom**](#) [周五, 15 9月 03:24]

Physicists have discovered a unique new molecule that could lead to many useful applications, and show how chemical reactions can be studied on a microscopic scale using tools of physics.

- [**Sorting molecules with DNA robots**](#) [周五, 15 9月 03:24]

Scientists have programmed a 'robot' made of DNA to pick up and sort molecules into predetermined locations.

- [**Discovery could reduce nuclear waste with**](#)

[improved method to chemically engineer molecules](#) [周五, 15 9月 03:23]

A new chemical principle has the potential to revolutionize the creation of specially engineered molecules whose uses include the reduction of nuclear waste and the extraction of chemical pollutants from water and soil.

• [The return of the comet-like exoplanet](#) [周五, 15 9月 03:23]

Astronomers have focused the Hubble Space Telescope on an exoplanet that had already been seen losing its atmosphere, which forms an enormous cloud of hydrogen, giving the planet the appearance of a giant comet. During earlier observations, it was not possible to cover the whole cloud, whose shape was predicted by numerical simulations. Thanks to these new observations, the scientists have finally been able to confirm the initial predictions.

• [Quantum machine learning](#) [周五, 15 9月 03:23]

Scientists have presented a thorough review on quantum machine learning, its current status and future prospects. The reports contrasts machine learning using classical and quantum resources, identifying opportunities that quantum computing brings to this field.

• [Filtering molecules from the water or air with nanomembranes](#) [周五, 15 9月 03:23]

Free-standing carbon membranes that are a millionth of a millimeter thin. The nanomembranes can serve as ultrafine filters and as a protective layer.

• [Self-healing gold particles](#) [周五, 15 9月 03:23]

Self-healing materials are able to repair autonomously defects, such as scratches, cracks or dents, and resume their original shape. For this purpose, they must be composed of several components whose combined properties result in the desired characteristics. Scientists have now discovered that also tiny particles of pure gold have surprising self-healing capacities.

• [Could interstellar ice provide the answer to](#)

birth of DNA? [周五, 15 9月 03:22]

Molecules brought to Earth in meteorite strikes could potentially be converted into the building blocks of DNA, researchers have shown.

• **Google Glass app helps autistic children with social interactions** [周五, 15 9月 03:22]

A new study demonstrates the potential of wearable technology as a social-skills aid for children with autism spectrum disorder.

• **The bilingual brain calculates differently depending on the language used** [周五, 15 9月 03:22]

How do multilingual people solve arithmetical tasks presented to them in different languages? The question will gain in importance in the future, as an increasingly globalized job market and accelerated migration will mean that ever more people seek work and study outside of the linguistic area of their home countries.

• **Hubble observes pitch black planet** [周五, 15 9月 03:22]

Astronomers have discovered that the well-studied exoplanet WASP-12b reflects almost no light, making it appear essentially pitch black. This discovery sheds new light on the atmospheric composition of the planet and also refutes previous hypotheses about WASP-12b's atmosphere. The results are also in stark contrast to observations of another similarly sized exoplanet.

• **Physicists offer explanation for diverse galaxy rotations** [周五, 15 9月 03:22]

Physicists have found a simple and viable explanation for the diversity observed in galactic rotations. They report that diverse galactic-rotation curves, a graph of rotation speeds at different distances from the center, can be naturally explained if dark matter particles are assumed to strongly collide with one another in the inner halo, close to the galaxy's center -- a process called dark matter self-interaction.

• **Hydrogen power moves a step closer** [周五, 15 9月 03:22]

Physicists are developing methods of creating renewable fuel from water

using quantum technology. Renewable hydrogen can already be produced by photoelectrolysis where solar power is used to split water molecules into oxygen and hydrogen. But fundamental problems remain before this can be adopted commercially due to inefficiency. A new study demonstrates that the novel use of nanostructures could increase the maximum photovoltage generated in a photoelectrochemical cell, increasing the productivi...

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Environment News

Top stories featured on ScienceDaily's Plants & Animals, Earth & Climate, and Fossils & Ruins sections.

- [Potential pathway to treat flesh-eating bacteria](#) [周二, 19 9月 04:33]

Researchers have solved a 100-year-old mystery, providing them a possible key to unlock a pathway for treating diseases caused by flesh-eating bacteria. Medical researchers have found a critical target on which to focus for developing a potential Group A Streptococcus vaccine or antibiotic to fight it. By manipulating this target, they hope to either reduce the severity of these infections or clear them up faster.

- [Solar-to-fuel system recycles CO2 to make ethanol and ethylene](#) [周二, 19 9月 03:17]

Scientists have harnessed the power of photosynthesis to convert carbon dioxide into fuels and alcohols at efficiencies far greater than plants. The achievement marks a significant advance in the effort to move toward sustainable sources of fuel.

- [Copper catalyst yields high efficiency CO2-to-fuels conversion](#) [周二, 19 9月 03:17]

Scientists have developed a new electrocatalyst that can directly convert carbon dioxide into multicarbon fuels and alcohols using record-low inputs of energy. The work is the latest in a round of studies tackling the challenge of creating a clean chemical manufacturing system that can put carbon dioxide to good use.

- [A cereal crop survives heat and drought](#) [周二, 19 9月 02:30]

Scientists have published the genome sequence of Pearl millet, a drought resistant crop plant most important in arid regions in Africa and Asia. This plant is important to small and medium farmers who grow the plant

without larger irrigation. Pearl millet delivers a good harvest index under drought and heat conditions when rice, maize or wheat already have no grains anymore.

- [**'King Tide' mapping project**](#) [周二, 19 9月 02:21]

'Dress rehearsal' will help quantify local flooding risk and validate storm-surge models, while laying groundwork for a long-term network of volunteer data collectors.

- [**When it comes to the threat of extinction, size matters**](#) [周二, 19 9月 01:27]

Animals in the Goldilocks zone -- neither too big, nor too small, but just the right size -- face a lower risk of extinction than do those on both ends of the scale, according to an extensive global analysis.

- [**People's love of the seas could be the key for plastic pollution solution**](#) [周二, 19 9月 01:27]

Tapping into the public's passion for the ocean could be the key to reducing the threats to it posed by plastic pollution.

- [**An effective way to eliminate atrazine and its by-products in surface water**](#) [周二, 19 9月 00:36]

Atrazine, widely used as a weedkiller, is known to have harmful effects on aquatic wildlife and presents a risk to human health by altering the action of certain hormones. Researchers have now compared various processes used to degrade atrazine, one of the most common pesticides detected in surface water in Quebec.

- [**RNA discovery could help boost plant heat, drought tolerance**](#) [周二, 19 9月 00:35]

The discovery of a RNA that can increase drought and salt tolerance in thale cress could illuminate a new research approach and hold implications for other plants, including food crops.

- [**To predict how climate change will affect disease, researchers must fuse climate science**](#)

[and biology](#) [周二, 19 9月 00:35]

To predict how climate change will affect disease, researchers must fuse climate science and biology, according to a new review.

• [Scientists show molecular basis for ants acting as 'bodyguards' for plants](#) [周二, 19 9月 00:35]

Though you might not think of ants as formidable bodyguards, some do an impressive job protecting plants from enemies. Examining the relationship between the Amazon rainforest plant *Cordia nodosa* in Peru and the ant species *Allomerus octoarticulatus*, scientists found the degree to which the ants express two genes significantly impacts the amount of protection they provide to their hosts.

• [Urgent emission reductions needed to achieve 1.5°C warming limit](#) [周一, 18 9月 23:18]

Significant emission reductions are required if we are to achieve one of the key goals of the Paris Agreement, and limit the increase in global average temperatures to 1.5°C; a new partnership warns.

• [Changes in Earth's crust caused oxygen to fill the atmosphere](#) [周一, 18 9月 23:18]

New research has uncovered a direct link between changes in the earth's crust three billion years ago and the introduction of free oxygen to the atmosphere. Without these changes, oxygen could have been suppressed in earth's crust forever, so the findings help explain the emergence of life on our planet.

• [A solar cell you can put in the wash](#) [周一, 18 9月 23:18]

Scientists have developed a new type of ultra-thin photovoltaic device, coated on both sides with stretchable and waterproof films, which can continue to provide electricity from sunlight even after being soaked in water or being stretched and compressed.

• [Dogs' social skills linked to oxytocin sensitivity](#) [周一, 18 9月 23:18]

The tendency of dogs to seek contact with their owners is associated with genetic variations in sensitivity for the hormone oxytocin,

according to a new study. The results contribute to our knowledge of how dogs have changed during their development from wolf to household pet.

- [**Genomic recycling: Ancestral genes take on new roles**](#) [周一, 18 9月 23:18]

One often hears about the multitude of genes we have in common with chimps, birds or other living creatures, but such comparisons are sometimes misleading. The shared percentage usually refers only to genes that encode instructions for making proteins -- while overlooking regulatory genes, which nonetheless make up a large part of the genome.

- [**Six new sponge species and new symbiotic associations from the Indonesian coral triangle**](#) [周一, 18 9月 23:18]

The Indonesian coral reefs, located in the so-called coral triangle, are considered amongst the richest and most biodiverse places on Earth. Surprisingly, this impressive species diversity is still poorly known. Biologists now report the presence of 94 species of sponges, including six new to science and two new symbiotic sponge associations.

- [**How bacteria hinder chemotherapy**](#) [周一, 18 9月 22:06]

Scientists have found bacteria in pancreatic tumors that metabolize a common drug, explains a new report.

- [**Sheep gene insights could help farmers breed healthier animals**](#) [周一, 18 9月 22:06]

Fresh insights into the genetic code of sheep could aid breeding programs to improve their health and productivity. Scientists have now mapped which genes are turned on and off in the different tissues and organs in a sheep's body.

- [**More efficient use of raw materials with the aid of 'molecular conveyor belts'**](#) [周一, 18 9月 21:34]

Making valuable products, such as fuels, synthetic materials or pharmaceuticals, from renewable raw materials is to date not efficient enough because the microorganisms used only process the raw materials

very slowly and generate many by-products in addition to the substances actually wanted. Biotechnologists have now succeeded in optimizing sugar utilization in baker's yeast.

- [**Welfare of zoo animals set to improve**](#) [周一, 18 9月 21:33]

The wellbeing of zoological animals is set to improve following the successful trial of a new welfare assessment grid.

- [**Fuel from waste and electricity?**](#) [周一, 18 9月 21:33]

Researchers have shown that the combination of microbial and electrochemical conversion of biomass can yield valuable products. For the example of corn beer and corn silage they have gained energy-dense alkanes with diesel-fuel like properties at high carbon and energetic yield.

- [**Cells programmed like computers to fight disease**](#) [周一, 18 9月 21:33]

Cells can be programmed like a computer to fight cancer, influenza, and other serious conditions -- thanks to a breakthrough in synthetic biology.

- [**5,000 deaths annually from Diesel-gate in Europe**](#) [周一, 18 9月 21:33]

Excess emissions from diesel cars cause about 5,000 premature deaths annually across Europe, a new study shows. Higher exposure to secondary particles and ozone can be traced back to excess NOx emissions from diesel cars, vans and light commercial vehicles. With the EU's vehicle emission limits achieved on the road about 5,000 premature deaths could be avoided annually. If diesel cars emitted as little NOx as petrol cars, about 7,500 premature deaths could be avoided annually.

- [**Studies of 'Crater Capital' in the Baltics show impactful history**](#) [周一, 18 9月 21:28]

Studies of craters in the Baltics (Estonia) are giving insights into the many impacts that have peppered the Earth over its long history. In southeastern Estonia, scientists have dated charcoal from trees destroyed in an impact to prove a common origin for two small craters, named Illumetsa. A third submarine crater located on the seabed in the Gulf of

Finland has been measured and dated with with precision.

- [**Devilish source of dust in atmosphere of Earth and Mars**](#) [周一, 18 9月 21:28]

Swirling columns of sand and dust, known as dust devils, are a feature of desert areas on Mars and on Earth. Now, a study of terrestrial dust devils has shown that around two thirds of the fine particles lifted by these vortices can remain suspended in the atmosphere and be transported around the globe. The findings have implications for the climate and weather of both planets and, potentially, human health here on Earth.

- [**Membrane vesicles released by bacteria may play different roles during infection**](#) [周一, 18 9月 21:07]

Bacteria release membrane-derived vesicles (MVs), which are small particles that can transport virulence factors to neighboring bacteria or to the cells of a mammalian host. This special MV-based system for delivering toxic proteins and nucleic acids in a protected manner to the target cells may have different specific functions depending on whether the bacterium acts as an extracellular or intracellular pathogen.

- [**Damage to monarch butterfly colonies in 2016 storm worse than thought**](#) [周一, 18 9月 08:14]

A much greater number of monarch butterflies perished in a snowstorm in March 2016 in Mexico than previously estimated, according to new research. Analysis of damage from the storm -- and the ensuing salvage logging -- sheds further light on the precarious state of the famed butterflies' overwintering colonies.

- [**Converting waste toilet paper into electricity**](#) [周六, 16 9月 05:02]

Chemists have performed a techno-economic analysis of converting waste toilet paper into electricity. They propose a two-step process and calculate a cost per kWh comparable to that of residential photovoltaic installations.

- [**Light on exoplanets may be quite different from**](#)

Earth: Different photosynthesis? [周六, 16 9月 05:00]

Researchers have proposed a prediction that red-edge could be observed as on the Earth even on exoplanets around M-dwarfs. They pointed out that the first oxygenic phototrophs are most likely to have evolved underwater to utilize visible light just like what had happened in the primordial ocean on the Earth. They examined light adaptation mechanisms of visible- and IR-radiation-using phototrophs required for adapting to land habitats and found out that IR-using phototrophs struggle to adapt to chan...

Tough stuff: Spider silk enhanced with graphene-based materials [周六, 16 9月 04:52]

Natural spider silk has excellent mechanical properties. Researchers have now found a way to boost the strength of spider's silk using graphene-based materials, paving the way for a novel class of high-performance bionic composites.

Delayed weaning reduces behavioural problems in cats [周六, 16 9月 04:52]

Early weaning increases aggression and stereotypic behavior in cats. Based on the study, the recommended weaning age of 12 weeks should be raised by at least two weeks. Delaying weaning is an easy and cost-efficient way of improving the quality of life of cats.

Innate immunity: To operate, insert dimers [周六, 16 9月 04:46]

The presence of DNA in mammalian cell cytoplasm triggers an immune response by binding to a dimeric enzyme, which inserts between DNA double helices to form the “rungs” of a ladder-like structure, as an LMU team has now shown.

Secrets of Bonsai: Uncovering the mechanism of root regeneration [周六, 16 9月 04:38]

The molecular mechanism behind root regeneration after root cutting in plants has been discovered. A finding which could lead to the development of new methods for regulating plant growth in agriculture

and horticulture.

- [**Black Sea water temperatures may buck global trend**](#) [周六, 16 9月 04:29]

Scientists have successfully simulated the Black Sea's long term currents, salt water content and temperature for the first time.

- [**Ancient amphibian had mouthful of teeth ready to grab you**](#) [周六, 16 9月 03:58]

The idea of being bitten by a nearly toothless modern frog or salamander sounds laughable, but their ancient ancestors had a full array of teeth, large fangs and thousands of tiny hook-like structures called denticles on the roofs of their mouths that would snare prey, according to paleontologists.

- [**Scientists question study about plastic-eating caterpillars**](#) [周六, 16 9月 02:41]

Do the larvae of the wax moth really solve the world's plastic problem? Sensational report of biochemical degradation of polyethylene by caterpillars not confirmed.

- [**'Exciting' discovery on path to develop new type of vaccine to treat global viruses**](#) [周六, 16 9月 02:41]

Scientists have made a significant discovery in efforts to develop a vaccine against Zika, dengue and Hepatitis C viruses that affect millions of people around the world.

- [**Why we did not evolve to live forever: Unveiling the mystery of why we age**](#) [周六, 16 9月 02:41]

Researchers have made a breakthrough in understanding the origin of the ageing process. They have identified that genes belonging to a process called autophagy -- one of the cells most critical survival processes -- promote health and fitness in young worms but drive the process of ageing later in life.

- [**Medical students not trained to prescribe**](#)

[medical marijuana](#) [周六, 16 9月 02:41]

More than half of the states in the US now allow some type of legal marijuana use, primarily medical marijuana. But, in a survey of medical residents and deans at the nation's medical schools, researchers have found that the majority of schools are not teaching their students about medical marijuana, and the majority of students don't feel prepared to discuss the subject with patients.

• [New organelle discovered in parasitic wasp venom](#) [周六, 16 9月 02:41]

Biologists have identified the composition of 'virus-like particles' (VLPs) found in the venom of a wasp that is a parasite of fruit flies. Invisible to the eye, wasp VLPs suppress the flies' immune responses by killing their blood cells.

• [Arctic sea ice once again shows considerable melting](#) [周五, 15 9月 22:36]

This September, the extent of Arctic sea ice shrank to roughly 4.7 million square kilometres, scientists have determined.

• [Celebrity fossil reveals all for science](#) [周五, 15 9月 22:35]

With the help of an artist, a geology professor has figuratively speaking breathed life into one of science's most well-known fossil species; *Agnostus pisiformis*. The trilobite-like arthropod lived in huge numbers in Scandinavia a half-billion years ago. Today, this extinct species provides important clues for science in several ways.

• [Humans no longer have ancient defense mechanism against viruses](#) [周五, 15 9月 21:53]

Insects and plants have an important ancient defense mechanism that helps them to fight viruses. This is encoded in their DNA. Scientists have long assumed that vertebrates -- including humans -- also had this same mechanism. But researchers have found that vertebrates lost this particular asset in the course of their evolution.

• [300,000 families living in US-Mexico border](#)

[towns face exposure to toxic stress](#) [周五, 15 9月 21:52]

Roughly 300,000 Texans living in impoverished border communities known as 'colonias' are facing substandard housing, lack of resources and exposure to toxic stress. New research finds these communities are also ill-equipped to face a natural disaster.

[Carbohydrates may be the key to a better malaria vaccine](#) [周五, 15 9月 21:52]

An international research team has shown for the first time that carbohydrates on the surface of malaria parasites play a critical role in malaria's ability to infect mosquito and human hosts. The discovery also suggests steps that may improve the only malaria vaccine approved to protect people against Plasmodium falciparum malaria -- the most deadly form of the disease.

[New Orleans greenery post-Katrina reflects social demographics more than hurricane impact](#) [周五, 15 9月 21:51]

Popular portrayals of "nature reclaiming civilization" in flood-damaged New Orleans, Louisiana, neighborhoods romanticize an urban ecology shaped by policy-driven socioecological disparities in redevelopment investment, ecologists argue.

[Contaminants in food: Health risks of natural origin are frequently underestimated](#) [周五, 15 9月 21:51]

Just under 60 percent of the German population view undesirable substances in food as a high or very high health risk. The most well-known of these substances, which are scientifically denoted as contaminants, are mercury compounds and dioxins. In contrast, only around 13 percent of respondents have heard of the natural contaminants pyrrolizidine alkaloids (PAs) in honey or tea - and only roughly one in three of those who have heard of PAs believe these substances pose a significant health risk.

[Wolves understand cause and effect better than](#)

dogs [周五, 15 9月 21:51]

A rattle will only make noise if you shake it. Animals like the wolf also understand such connections and are better at this than their domesticated descendants. Researchers say that wolves have a better causal understanding than dogs and that they follow human-given communicative cues equally well. The study provides insight that the process of domestication can also affect an animal's causal understanding.

Scientific explanation for why spurned males abandon courtship attempts [周五, 15 9月 09:06]

Unsuccessful courtship attempts by males create aversive memories that can reduce their level of enthusiasm for subsequent courtship attempts. Scientists have attempted to understand this behavior at the molecular level.

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- [**Reliance on 'gut feelings' linked to belief in fake news**](#) [周二, 19 9月 02:21]

People who tend to trust their intuition or to believe that the facts they hear are politically biased are more likely to stand behind inaccurate beliefs, a new study suggests.

- [**People's love of the seas could be the key for plastic pollution solution**](#) [周二, 19 9月 01:27]

Tapping into the public's passion for the ocean could be the key to reducing the threats to it posed by plastic pollution.

- [**5,000 deaths annually from Diesel-gate in Europe**](#) [周一, 18 9月 21:33]

Excess emissions from diesel cars cause about 5,000 premature deaths annually across Europe, a new study shows. Higher exposure to secondary particles and ozone can be traced back to excess NOx emissions from diesel cars, vans and light commercial vehicles. With the EU's vehicle emission limits achieved on the road about 5,000 premature deaths could be avoided annually. If diesel cars emitted as little NOx as petrol cars, about 7,500 premature deaths could be avoided annually.

- [**Parents not confident schools can assist child with chronic disease, mental health**](#) [周一, 18 9月 21:08]

Most parents are sure schools would be able to provide basic first aid but are less confident about a school's ability to respond to more complex health situations, such as an asthma attack or mental health problem.

- [**Magnetic fields to alleviate anxiety**](#) [周六, 16 9月 04:52]

It is possible to unlearn fears. And this works even better when a specific region of the brain has previously been stimulated magnetically.

- [**Teens come 'jet lagged' to school: Shifting sleeping patterns at weekends**](#) [周六, 16 9月 04:48]

A lack of sleep is associated with more absence and teens turn up jet lagged to school on Mondays, as shown in new research.

- [**Insult to injury: US workers without paid sick leave suffer from mental distress**](#) [周六, 16 9月 02:41]

Only seven states in the US have mandatory paid sick leave laws, yet, 15 states have passed preemptive legislation prohibiting localities from passing sick leave. Paid sick leave is gaining momentum as a social justice issue with important implications for health and wellness. But what are the implications for the mental well-being of Americans without paid sick leave? A new study is the first to show the link between mental distress and paid sick leave among US workers.

- [**300,000 families living in US-Mexico border towns face exposure to toxic stress**](#) [周五, 15 9月 21:52]

Roughly 300,000 Texans living in impoverished border communities known as 'colonias' are facing substandard housing, lack of resources and exposure to toxic stress. New research finds these communities are also ill-equipped to face a natural disaster.

- [**Need for epinephrine in schools -- and staff trained to administer it**](#) [周五, 15 9月 21:52]

With school nurses often covering multiple buildings, researchers find that nearly one in five students who experience severe allergic reactions are given potentially life-saving epinephrine injections from unlicensed staff or students.

- [**Green schoolyards offer physical and mental health benefits for children**](#) [周五, 15 9月 21:52]

A growing body of evidence suggests access to safe, natural areas

improves health across a wide variety of areas, including heart health, mental health, weight management, ADHD, and stress among children.

- [**New Orleans greenery post-Katrina reflects social demographics more than hurricane impact**](#) [周五, 15 9月 21:51]

Popular portrayals of "nature reclaiming civilization" in flood-damaged New Orleans, Louisiana, neighborhoods romanticize an urban ecology shaped by policy-driven socioecological disparities in redevelopment investment, ecologists argue.

- [**A subtler sexism now frames TV coverage of women in sports**](#) [周五, 15 9月 09:06]

An ongoing longitudinal study tracking national coverage of women's sports finds that coverage is still lacking and the sexism of women's sports is less overt but remains a problem.

- [**New climate risk classification created to account for potential 'existential' threats**](#) [周五, 15 9月 09:06]

A new study evaluating models of future climate scenarios has led to the creation of the new risk categories 'catastrophic' and 'unknown' to characterize the range of threats posed by rapid global warming. Researchers propose that unknown risks imply existential threats to the survival of humanity.

- [**One vaccine injection could carry many doses**](#) [周五, 15 9月 03:23]

A new 3-D fabrication method has been developed that can create a new type of drug-carrying particle that could allow several doses of a drug or vaccine to be delivered over an extended time period with just one injection.

- [**Cost of not adapting to climate change would be at least five times higher**](#) [周五, 15 9月 03:22]

A study on damage to coastal considered only real estate loss. If nothing is done, researchers say, losses might be up to ten times higher if the predicament includes the spreading of flood- and global warming -

related diseases.

- [**Quicker learning: Brief reactivations of visual memories are enough to complete a full learning curve**](#) [周四, 14 9月 07:30]

A new study finds that brief memory reactivations can replace the repeated extensive practice and training known as 'practice makes perfect' as a learning technique.

- [**Lion conservation requires effective international cooperation**](#) [周三, 13 9月 22:44]

In response to the alarming population declines of one of the most charismatic representatives of the megafauna, the lion, a team of international wildlife lawyers and lion experts joined efforts to assess the current and potential future role of international treaties regarding the carnivore's conservation.

- [**Decade of data shows FEMA flood maps missed 3 in 4 claims**](#) [周三, 13 9月 05:05]

An analysis of flood claims in three Houston suburbs from 1999-2009 found that the Federal Emergency Management Agency's 100-year flood plain maps failed to capture 75 percent of flood damages from five serious floods, none of which reached the threshold rainfall of a 100-year event.

- [**Kids praised for being smart are more likely to cheat**](#) [周三, 13 9月 03:48]

Kids who are praised for being smart, or who are told they have a reputation for being smart, are more likely to be dishonest and cheat, a pair of studies has found.

- [**Historic legacies affect climate change survival in Caribbean**](#) [周三, 13 9月 01:48]

Discussion of climate change has failed to pay enough attention to the social, political and historic factors which increase the vulnerability of Caribbean societies, and calls for a new approach focused on

understanding and addressing these historic inequalities.

• **[How should we handle boys who can't read?](#)** [周二, 12 9

月 21:31]

Boys are much worse at reading than girls. The disparities have been quite consistent over 15 years. New insights may give hope -- if they're put to use.

• **['Keep it local' approach more effective than government schemes at protecting rainforest](#)** [周二, 12

9月 21:31]

Conservation initiatives led by local and indigenous groups can be just as effective as schemes led by government, according to new research. In some cases in the Amazon rainforest, grassroots initiatives can be even more effective at protecting this vital ecosystem.

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [**Scientists show molecular basis for ants acting as 'bodyguards' for plants**](#) [周二, 19 9月 00:35]

Though you might not think of ants as formidable bodyguards, some do an impressive job protecting plants from enemies. Examining the relationship between the Amazon rainforest plant *Cordia nodosa* in Peru and the ant species *Allomerus octoarticulatus*, scientists found the degree to which the ants express two genes significantly impacts the amount of protection they provide to their hosts.

- [**When radio galaxies collide, supermassive black holes form tightly bound pairs**](#) [周二, 19 9月 00:35]

Supermassive black holes found in the centers of galaxies can form gravitationally bound pairs when galaxies merge, according to a new study.

- [**More evidence of water on Mars**](#) [周二, 19 9月 00:35]

River deposits exist across the surface of Mars and record a surface environment from over 3.5 billion years ago that was able to support liquid water at the surface. A region of Mars named Aeolis Dorsa contains some of the most spectacular and densely packed river deposits seen on Mars.

- [**A solar cell you can put in the wash**](#) [周一, 18 9月 23:18]

Scientists have developed a new type of ultra-thin photovoltaic device, coated on both sides with stretchable and waterproof films, which can continue to provide electricity from sunlight even after being soaked in water or being stretched and compressed.

- [**Developing roads that can generate power from passing traffic**](#) [周一, 18 9月 23:18]

Researchers are looking at advanced materials for roads and pavements that could generate electricity from passing traffic. Engineers are working on smart materials such as 'piezoelectric' ceramics that when embedded in road surfaces would be able to harvest and convert vehicle vibration into electrical energy.

- [**New evidence for small, short-lived drops of early universe quark-gluon plasma?**](#) [周一, 18 9月 21:30]

Particles emerging from even the lowest energy collisions of small deuterons with large heavy nuclei at the Relativistic Heavy Ion Collider exhibit behavior scientists associate with the formation of a soup of quarks and gluons, the fundamental building blocks of nearly all visible matter.

- [**World first: 'Storing lightning inside thunder'**](#) [周一, 18 9月 21:07]

In a world first, researchers have stored photonic information on a microchip as an acoustic wave. This allows precious extra time to store, process and then redistribute the data without relying on electronics, which produce excess heat. Such a hybrid chip could have a huge impact in cloud computing and telecommunication centers, which are overheating as we churn through data on our phones.

- [**Converting waste toilet paper into electricity**](#) [周六, 16 9月 05:02]

Chemists have performed a techno-economic analysis of converting waste toilet paper into electricity. They propose a two-step process and calculate a cost per kWh comparable to that of residential photovoltaic installations.

- [**A drone for last-centimeter delivery**](#) [周六, 16 9月 05:01]

A new drone uses cutting-edge technology to deliver parcels weighing up to 500 grams. The device will never get stuck in traffic, it's programmed to avoid obstacles, and it can reach destinations on steep or uneven terrain. Its protective cage and foldable design mean that it can

be carried around in a backpack and used in total safety.

- **[Tough stuff: Spider silk enhanced with graphene-based materials](#)** [周六, 16 9月 04:52]

Natural spider silk has excellent mechanical properties. Researchers have now found a way to boost the strength of spider's silk using graphene-based materials, paving the way for a novel class of high-performance bionic composites.

- **[Immune system linked to alcohol drinking behavior](#)** [周六, 16 9月 02:41]

Researchers have found a new link between the brain's immune system and the desire to drink alcohol in the evening.

- **[Wolves understand cause and effect better than dogs](#)** [周五, 15 9月 21:51]

A rattle will only make noise if you shake it. Animals like the wolf also understand such connections and are better at this than their domesticated descendants. Researchers say that wolves have a better causal understanding than dogs and that they follow human-given communicative cues equally well. The study provides insight that the process of domestication can also affect an animal's causal understanding.

- **[Electric eels leap to deliver painful, Taser-like jolt](#)** [周五, 15 9月 03:24]

The electric eel has always been noted for its impressive ability to shock and subdue its prey. It's recently become clear that electric eels also use a clever trick to deliver an intense, Taser-like jolt to potential predators: they leap from the water to target threatening animals, humans included, above water. Now, a researcher has measured (and experienced) just how strong that jolt can be.

- **[Sorting molecules with DNA robots](#)** [周五, 15 9月 03:24]

Scientists have programmed a 'robot' made of DNA to pick up and sort molecules into predetermined locations.

- [**The return of the comet-like exoplanet**](#) [周五, 15 9月 03:23]

Astronomers have focused the Hubble Space Telescope on an exoplanet that had already been seen losing its atmosphere, which forms an enormous cloud of hydrogen, giving the planet the appearance of a giant comet. During earlier observations, it was not possible to cover the whole cloud, whose shape was predicted by numerical simulations. Thanks to these new observations, the scientists have finally been able to confirm the initial predictions.

- [**'Handedness' in scale-eating fish: Nature and nurture**](#) [周五, 15 9月 03:23]

Lateralized behaviors are thought to be strengthened during development. However, little is known about how they are acquired during development. In the scale-eating cichlid model, researchers demonstrated the attack side preference of juveniles was developed with scale-eating experience, regardless of age. They also found that kinetics of attack behavior is superior on one side by nature. Therefore, they concluded that the fish learn to use the naturally dominant side through experience.

- [**Could interstellar ice provide the answer to birth of DNA?**](#) [周五, 15 9月 03:22]

Molecules brought to Earth in meteorite strikes could potentially be converted into the building blocks of DNA, researchers have shown.

- [**Physicists offer explanation for diverse galaxy rotations**](#) [周五, 15 9月 03:22]

Physicists have found a simple and viable explanation for the diversity observed in galactic rotations. They report that diverse galactic-rotation curves, a graph of rotation speeds at different distances from the center, can be naturally explained if dark matter particles are assumed to strongly collide with one another in the inner halo, close to the galaxy's center -- a process called dark matter self-interaction.

- [**Artificial 'skin' gives robotic hand a sense of**](#)

touch [周四, 14 9月 07:30]

A team of researchers from the University of Houston has reported a breakthrough in stretchable electronics that can serve as an artificial skin, allowing a robotic hand to sense the difference between hot and cold, while also offering advantages for a wide range of biomedical devices.

• **'Peel-and-go' printable structures fold themselves** [周四, 14 9月 07:30]

Researchers have created a printable structure that begins to fold itself up as soon as it's peeled off the printing platform.

• **Long-range communication barrier for near-zero-power devices shattered** [周四, 14 9月 07:30]

Researchers have demonstrated for the first time that devices that run on almost zero power can transmit data across distances of up to 2.8 kilometers -- breaking a long-held barrier and potentially enabling a vast array of interconnected devices.

• **Marijuana may produce psychotic-like effects in high-risk individuals** [周四, 14 9月 07:30]

Marijuana may bring on temporary paranoia and other psychosis-related effects in individuals at high risk of developing a psychotic disorder, finds a preliminary study.

• **'The dark side' of quantum computers** [周四, 14 9月 07:29]

The era of fully fledged quantum computers threatens to destroy internet security as we know it. Researchers are in a race against time to prepare new cryptographic techniques before the arrival of quantum computers, as cryptographers now describe.

• **Squirrels use 'chunking' to organize their favorite nuts** [周四, 14 9月 07:29]

Like trick-or-treaters sorting their Halloween candy haul, fox squirrels apparently organize their stashes of nuts by variety, quality and possibly even preference, according to new research.

• [**The beam of invisibility**](#) [周三, 13 9月 22:45]

A new idea for a cloaking technology has been created by scientists. A completely opaque material is irradiated from above with a specific wave pattern -- with the effect that light waves from the left can now pass through the material without any obstruction. This surprising result opens up completely new possibilities for active camouflage.

• [**A one-of-a-kind star found to change over decades**](#) [周三, 13 9月 03:48]

Researchers recently found new evidence that lends support to an existing theory of how the unusual star emits energy.

• [**Earthquake faults may have played key role in shaping the culture of ancient Greece**](#) [周二, 12 9月 22:35]

The Ancient Greeks may have built sacred sites deliberately on land affected by previous earthquake activity, according to a new study.

• [**AI -- Engineering: merging, morphing, mobile robots**](#) [周二, 12 9月 22:35]

Researchers have developed self-reconfiguring modular robots that can merge, split and even self-heal while retaining full sensorimotor control. The work may take us closer to producing robots that can autonomously change their size, shape and function.

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ScienceDaily

周三, 20 9月 2017

ScienceDaily

[周三, 20 9月 2017]

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- [Risks vary widely in drone-human impacts](#) [周三, 20 9月 04:03]

New research suggests there's wide variation in the risk that unmanned aircraft pose to people on the ground.

- [Gulf Spill oil dispersants associated with health symptoms in cleanup workers](#) [周三, 20 9月 04:03]

Workers who were likely exposed to dispersants while cleaning up the 2010 Deepwater Horizon oil spill experienced a range of health symptoms including cough and wheeze, and skin and eye irritation.

- [Tiny lasers from a gallery of whispers](#) [周三, 20 9月 04:03]

Whispering gallery mode resonators rely on a phenomenon similar to an effect observed in circular galleries, and the same phenomenon applies to light. When light is stored in ring-shaped or spherical active resonators, the waves superimpose in such a way that it can result in laser light. Investigators now report a new type of dye-doped WGM micro-laser that produces light with tunable wavelengths.

- [Security cameras vulnerable to attacks using infrared light](#) [周三, 20 9月 04:02]

Researchers have demonstrated that security cameras infected with malware can receive covert signals and leak sensitive information from

the very same surveillance devices used to protect facilities.

- [**Emerging disease further jeopardizes North American frogs**](#) [周三, 20 9月 04:02]

A deadly amphibian disease called severe Perkinsea infections, or SPI, is the cause of many large-scale frog die-offs in the United States, according to a new study.

- [**End-of-summer Arctic sea ice extent is eighth lowest on record**](#) [周三, 20 9月 04:01]

Arctic sea ice appeared to have reached its yearly lowest extent on Sept. 13, scientists have reported. Analysis of satellite data showed that at 1.79 million square miles (4.64 million square kilometers), this year's Arctic sea ice minimum extent is the eighth lowest in the consistent long-term satellite record, which began in 1978.

- [**Home blood pressure monitoring for hypertension best combined with intensive support**](#) [周三, 20 9月 02:04]

People who monitor their own blood pressure at home are most likely to see a benefit if they combine it with individually tailored intensive support, according to a new systematic literature review and meta-analysis.

- [**Screening for cervical abnormalities in women offered HPV vaccination**](#) [周三, 20 9月 02:04]

Human papillomavirus (HPV) testing detects a higher number of precancerous cervical lesions than cytology-based Pap smears in a female population including a proportion offered HPV vaccination, according to a new study.

- [**What web browsers and proteins have in common**](#) [周三, 20 9月 02:04]

The discovery of a previously overlooked site on protein molecules may solve a mystery about how proteins are able to carry out specialized functions in living cells.

- **[Groundbreaking investigative effort identifies gonorrhea vaccine candidates](#)** [周三, 20 9月 02:04]

Researchers have identified a pair of proteins that show promise as the basis for a gonorrhea vaccine.

- **[Management studies: Dishonesty shift](#)** [周三, 20 9月 02:04]

Lying comes more easily to people in teams: Behavioral scientists have shown in an experimental study why groups are more likely to behave unethically than individuals.

- **[A study switches from genetic to metabolic analysis to reconstitute evolutionary process](#)** [周三, 20 9月 02:04]

A new method for analyzing a living being chemical compositions is tested in Andean plants and attest the genesis of species by means of geographic isolation. Scientists analyzed chemical compounds which express specific biogeographic trends in the evolutionary process, validating a Smithsonian hypothesis on the evolution of the genus Espeletia in the process.

- **[Wikipedia used to give AI context clues](#)** [周三, 20 9月 02:04]

A team of computer scientists is teaching artificial intelligence agents how to interact with the world in a way that makes sense.

- **[North Atlantic right whales decline confirmed: 458 remaining](#)** [周三, 20 9月 02:04]

Marine biologists have developed a new model to improve estimates of abundance and population trends of endangered North Atlantic right whales, which have declined in numbers and productivity in recent years. Between 1990 and 2010 abundance increased to 482 animals, but since 2010 the numbers have declined to 458 in 2015, with 14 known deaths this year.

- **[Sleep deprivation is an effective anti-depressant for nearly half of depressed patients, study suggests](#)** [周三, 20 9月 02:04]

Sleep deprivation - typically administered in controlled, inpatient settings - rapidly reduces symptoms of depression in roughly half of depression patients, according the first meta-analysis on the subject in nearly 30 years.

- [**Brain powered: Increased physical activity among breast cancer survivors boosts cognition**](#)

[周三, 20 9月 02:04]

It is estimated that up to 75 percent of breast cancer survivors experience problems with cognitive difficulties following treatments, perhaps lasting years. Currently, few science-based options are available to help. Researchers report in a pilot study of 87 female breast cancer survivors an increase in physical activity more than doubled the women's post-treatment mental processing speed.

- [**Proteins' role in development of spinal sensory cells redefined**](#)

[周三, 20 9月 02:04]

A recent study has overturned a common belief about how a certain class of proteins in the spinal cord regulate the formation of nervous system cells -- called neurons -- during embryonic development.

- [**Mercury's poles may be icier than scientists thought**](#)

[周三, 20 9月 00:31]

A new study identifies three large surface ice deposits near Mercury's north pole, and suggests there could be many additional small-scale deposits that would dramatically increase the planet's surface ice inventory.

- [**Advanced lithium-ion and metal-air batteries**](#)

[周三, 20 9月 00:31]

Engineers are developing energy storage technologies that are cheaper, safer and more efficient.

- [**Winner takes all: Success enhances taste for luxury goods, study suggests**](#)

[周三, 20 9月 00:31]

Footballers in flashy cars, City workers in Armani suits, reality TV celebrities sipping expensive champagne while sitting in hot tubs: what drives people to purchase luxury goods? New research suggests that it

may be a sense of being a 'winner' -- but that contrary to expectations, it is not driven by testosterone.

- [**One-way track for microwaves based on mechanical interference**](#) [周三, 20 9月 00:31]

Researchers use interference in the motion of a micrometer-size drum to route microwave signals in a single direction.

- [**How to remove a tick and prevent future bites**](#) [周二, 19 9月 23:12]

As tick populations grow and spread across the country, their prevalence is increasing the public's risk for some troubling diseases. Of these diseases, say dermatologists, Lyme disease, Rocky Mountain spotted fever, Powassan virus and alpha-gal syndrome — a mysterious red meat allergy — are among the most serious.

- [**Rogue wave analysis supports investigation of the El Faro sinking**](#) [周二, 19 9月 23:12]

A new analysis done to support the investigation into the 2015 sinking of the El Faro cargo ship has calculated the likelihood of a massive rogue wave during Hurricane Joaquin in October of that year – and demonstrated a new technique for evaluating the probability of rogue waves over space and time.

- [**Getting emotional after failure helps you improve next time, study finds**](#) [周二, 19 9月 23:12]

Emotional responses to failure rather than cognitive ones are more effective at improving people's results for the next time they tackle the next related task, new research indicates.

- [**Fluorescence microscopy on a chip: no lenses required**](#) [周二, 19 9月 23:11]

Fluorescence microscopy gives researchers incredible power to illuminate the tiniest structures and capture the real-time activities of live cells by tagging biological molecules with a veritable rainbow of fluorescent dyes. This power comes at a cost: The technology can be expensive and time-consuming and, so far, has resisted attempts at

automation.

- [**Antibiotics following C-section among obese women reduces risk of surgical infection**](#) [周二, 19 9月 23:06]

Among obese women undergoing cesarean delivery, a postoperative 48-hour course of antibiotics significantly decreased the rate of surgical site infection within 30 days after delivery, according to a study.

- [**Contribution of opioid-related deaths to the change in life expectancy in the US**](#) [周二, 19 9月 23:06]

Between 2000 and 2015 in the US, life expectancy increased overall but drug-poisoning deaths, mostly related to opioids, contributed to reducing life expectancy, according to a study.

- [**How the shape and size of your face relates to your sexuality**](#) [周二, 19 9月 23:06]

Men and women with shorter, wider faces tend to be more sexually motivated and to have a stronger sex drive than those with faces of other dimensions. The research investigates the role that facial features play in sexual relationships and mate selection.

- [**Key regulator of male fertility identified**](#) [周二, 19 9月 23:06]

When it comes to male reproductive fertility, timing is everything. Now scientists are finding new details on how disruption of this timing may contribute to male infertility or congenital illness. Researchers are identifying the key molecular and genetic switch that activates production of healthy male sperm -- but only when the time is right.

- [**Nonlinear physics bridges thoughts to sounds in birdsong**](#) [周二, 19 9月 23:05]

The beautiful sound of birdsongs emerging from the trees is a wonderful example of how much nature can still teach us, even as much about their origins are still mysterious to us. About 40 percent of bird species learn to vocalize when they are exposed to a tutor, a behavior of interest to many neurologists and neurobiologists. The other 60 percent can vocalize instinctually in isolation. The variety across species, and the

relationship between the nervous system and biomechanics makes birdsong p...

- [**Cell-based therapy success could be boosted by new antioxidant**](#) [周二, 19 9月 22:52]

Cell therapies being developed to treat a range of conditions could be improved by a chemical compound that aids their survival, research suggests. Lab tests found that the human-made molecule -- a type of antioxidant -- helps to shield healthy cells from damage such as would be caused when they are transplanted into a patient during cell therapy.

- [**New hosts for Chagas disease vectors identified**](#) [周二, 19 9月 22:26]

Solitary weasel-like animals called tayra might look pretty harmless, but some may actually be incubators for a parasite that causes Chagas disease, a chronic, debilitating condition that is spread by insects called kissing bugs and affects more than 8 million people worldwide.

- [**Cost effective quantum moves a step closer**](#) [周二, 19 9月 22:26]

Researchers have taken an important step towards enabling quantum networks to be cost-effective and truly secure from attack. The experiments prove the viability of a measurement-device-independent quantum key distribution (QKD) system, based on readily available hardware.

- [**Playing American football before age 12 could have long-term health effects**](#) [周二, 19 9月 22:25]

Playing American football before the age of 12 may have long-term consequences for players' mood and behavior, according to a study involving 214 professional and amateur football players.

- [**Exposure to pet and pest allergens during infancy linked to reduced asthma risk**](#) [周二, 19 9月 22:25]

Children exposed to high indoor levels of pet or pest allergens during infancy have a lower risk of developing asthma by 7 years of age, new research reveals. The findings may provide clues for the design of strategies to prevent asthma from developing.

- [**A dream of foam: better concrete, beer froth and ice cream**](#) [周二, 19 9月 22:25]

Researchers have discovered a new method to design stable foams. Their findings could make beer froth and ice cream last longer -- and revolutionize construction materials such as concrete.

- [**Novel strategy for chirality controlled synthesis of single-walled carbon nanotubes**](#) [周二, 19 9月 22:25]

Researchers have developed a novel strategy for controlling chirality of single-walled carbon nanotubes.

- [**An interconnection between the nervous and immune system**](#) [周二, 19 9月 22:25]

Researchers have shown that the increased incidence of infections seen in spinal cord injury patients is directly linked to a disruption of the normal central nervous system.

- [**A piece of the puzzle: Eight autism-related mutations in one gene**](#) [周二, 19 9月 22:25]

Researchers discover a large number of clustered mutations in a single gene, TRIO, that disrupt the development of the brain's connections and likely contribute to the development of autism-spectrum disorders. The scientists also find that a sister gene linked to schizophrenia, KALRN, is inactive in early brain development, but becomes active in adolescence.

- [**Guidelines for handling CAR T cell side effects**](#) [周二, 19 9月 21:28]

Immune-cell based therapies opening a new frontier for cancer treatment carry unique, potentially lethal side effects that provide a new challenge for oncologists, one addressed by proposed guidelines for systematically dealing with the toxicities of these drugs.

- [**Cell model of the brain provides new knowledge on developmental disease**](#) [周二, 19 9月 21:26]

By reprogramming skin cells into nerve cells, researchers are creating cell models of the human brain. In a new study, the researchers describe

how cells from patients with the severe developmental disease lissencephaly differ from healthy cells. The method can provide vital new knowledge on difficult-to-study congenital diseases.

• [Size matters in the detection of exoplanet atmospheres](#) [周二, 19 9月 21:26]

A group-analysis of 30 exoplanets orbiting distant stars suggests that size, not mass, is a key factor in whether a planet's atmosphere can be detected. The largest population-study of exoplanets to date successfully detected atmospheres around 16 'hot Jupiters', and found that water vapor was present in every case.

• [What do we need to know to mine an asteroid?](#) [周二, 19 9月 21:26]

The mining of resources contained in asteroids, for use as propellant, building materials or in life-support systems, has the potential to revolutionise exploration of our Solar System. To make this concept a reality, we need to increase our knowledge of the very diverse population of accessible Near Earth Asteroids (NEA).

• [Nanosat fleet proposed for voyage to 300 asteroids](#) [周二, 19 9月 21:26]

A fleet of tiny spacecraft could visit over 300 asteroids in just over three years, according to a mission study. The Asteroid Touring Nanosat Fleet concept comprises 50 spacecraft propelled by innovative electric solar wind sails (E-sails) and equipped with instruments to take images and collect spectroscopic data on the composition of the asteroids. Each nanosat would visit six or seven asteroids before returning to Earth to deliver the data.

• [Molecular motors: Slowing the clockwork](#) [周二, 19 9月 21:26]

Progress on the way to smart nanomachines: Chemists have modified the synthesis of a molecular motor so as to reduce the speed of its light-driven rotation, thus permitting the researchers to analyze the mechanism of motion in complete detail.

• [Local epileptic seizure shows long distance](#)

[**interaction**](#) [周二, 19 9月 21:26]

An epileptic seizure may be highly local, but it also influences brain activity at a distance of over ten centimeters from the core. This, in turn, affects the active area, scientists report.

• [**New treatment for osteoporosis provides better protection against fractures**](#) [周二, 19 9月 21:24]

A new treatment for osteoporosis provides major improvements in bone density and more effective protection against fractures than the current standard treatment. This study is the first that compares the effect of two osteoporosis medicines on fractures.

• [**Nanocapsules enable cell-inspired metabolic reactions**](#) [周二, 19 9月 21:24]

Researchers have succeeded in developing capsules capable of producing the bio-molecule glucose-6-phosphate that plays an important role in metabolic processes. The researchers were able to produce the metabolite in conditions very similar to the biochemical reaction inside natural cells.

• [**Ricin only lethal in combination with sugar**](#) [周二, 19 9月 21:23]

Researchers have discovered a means of immunizing cells against the biological weapon ricin, which, they report, is only lethal when combined with sugar.

• [**'Language of stem cells' discovered**](#) [周二, 19 9月 21:23]

Stem cells control the cells around them, inducing them to perform specific functions. This phenomenon of the "language of stem cells", which has now been discovered for the very first time, report investigators.

Risks vary widely in drone-human impacts -- ScienceDaily

New Virginia Tech research suggests there's wide variation in the risk that unmanned aircraft pose to people on the ground.

Many of the most promising applications for these aircraft -- including package delivery, public safety, and traffic management -- entail flights over people and raise the possibility, however unlikely, of an impact between the aircraft and a human.

So before unmanned aircraft systems -- also known as UAS or drones -- can be utilized efficiently by the many industries eager to employ them, policymakers need to understand what injuries these aircraft could potentially cause and what design features, operational limitations, and regulations could help prevent them.

Without robust experimental data on these topics, Federal Aviation Administration (FAA) regulations currently prohibit UAS operations over people. (Operators can apply for a waiver, but the FAA has

granted only three, all extremely limited in scope.)

Virginia Tech's injury biomechanics group and its FAA-approved UAS test site teamed up to fill that gap and have just released the first peer-reviewed academic study to offer quantitative data on injury risk associated with potential drone-human collisions.

The research, published in the *Annals of Biomedical Engineering*, assessed head and neck injury risk from three small commercially available aircraft in a variety of impact scenarios. It represents a critical step toward developing UAS safety standards that can minimize the risk of catastrophic or fatal injury from operations over people.

The injury biomechanics team is led by Steven Rowson, an assistant professor of biomedical engineering and mechanics in the College of Engineering, and Stefan Duma, the Harry Wyatt Professor of Engineering and interim director of the Institute for Critical Technology and Applied Science.

The group's wide-ranging experience evaluating injury risk includes extensive work in the automotive and sports industries -- both areas in which evidence-based

safety standards have been effective at reducing catastrophic and fatal injuries.

The Virginia Tech Mid-Atlantic Aviation Partnership, which runs the UAS test site, helped design and conduct the experiments.

The team used three commercially available aircraft, with masses ranging from 1.2 kilograms to 11 kilograms; the aircraft impacted a test dummy whose head and neck contained sensors to measure acceleration and force.

In one set of tests, the aircraft were flown into the dummy at full speed; in another, aircraft were dropped directly onto the dummy's head in different orientations.

The forces produced by these impacts were evaluated relative to standard benchmarks for forces likely to cause potentially severe or life-threatening injuries -- skull fractures, for example.

In general, the injury risk increased with aircraft mass. For example, in drop tests with the smallest drone, the risk of severe neck injury was less than 10 percent; for

the largest aircraft, the median risk rose to 70 percent.

These results suggest that a subset of small drones may already be safe to operate over people. Other aircraft, however, present significant injury risk, even those well within mass and speed limits outlined in the FAA's Part 107 guidelines for commercial operations by small UAS.

The data also shows that despite greater impact speeds in the live flight tests, the drop tests -- which facilitated more direct contact between the aircraft center of mass and the dummy's head -- tended to result in more severe hits. That reflects a common thread in the numbers: The nature of the impact had a significant influence on the resulting injury probability.

"There's a wide range of risk," Rowson said. "In some instances it was low, and in some instances it was high, and there are lessons we can take away from that to reduce injury risk in a deliberate way through product design."

During impacts in which the aircraft was deflected away from the body -- by a protruding rotor arm, for example -- the force and resulting injury risk were

reduced. Aircraft features specifically designed to redirect its center of mass in the event of an impact could make severe injuries less likely.

The data showed that injury risk was also reduced when the aircraft deformed upon impact or when pieces broke off. Those deformations and fractures absorb some of the energy of the crash and offer another route for risk mitigation.

"If you reduce the energy that's able to be transferred to be head, you reduce the injury risk," said Eamon Campolettano, a doctoral student from Hicksville, New York, and the paper's first author. "The overarching goal for manufacturers should be to limit energy transfer."

The fact that some of the trials in the study yielded risk values greater than 50 percent highlights the potential for UAS-human impacts to lead to severe injuries. The significant variation in the data points to the need for comprehensive testing, especially considering the range of shapes, sizes, and materials in the commercial UAS market.

"What happens when the arm strikes first, or the center

of mass?" asked Campolettano. "What we set out to do with this study was to explore some of the many different ways drones and people can interact, and then use that baseline to choose different impact orientations for future studies."

The team is using these initial results to guide the development of a broader set of controlled experiments in a laboratory environment, which will represent a necessary foundation for future regulations on UAS operations over people.

"There's a tremendous demand for more research in this area," said Mark Blanks, the director of the Virginia Tech Mid-Atlantic Aviation Partnership. "The first step was to establish a baseline for how to perform these tests. Now we're doing a lot of work with individual companies, looking at specific airframes and potential mitigations."

"The big question right now is, what is the acceptable level of safety?" said Blanks, who also chairs an industry standards subcommittee developing recommendations for safe operations over people.

"How much proof does the FAA need before they say, 'Yes, that's okay'? Once those standards are in place,

we're going to see huge expansion in the industry."

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Gulf Spill oil dispersants associated with health symptoms in cleanup workers -- ScienceDaily

Workers who were likely exposed to dispersants while cleaning up the 2010 Deepwater Horizon oil spill experienced a range of health symptoms including cough and wheeze, and skin and eye irritation, according to scientists at the National Institutes of Health (NIH). The study appeared online Sept. 15 in *Environmental Health Perspectives* and is the first research to examine dispersant-related health symptoms in humans.

Oil dispersants are a blend of chemical compounds used to break down oil slicks into smaller drops of oil, making them easily degraded by natural processes or diluted by large volumes of water. The study estimated the likelihood of exposure to dispersants, based on the types of jobs the workers did and where. Individuals who handled dispersants, worked near where dispersants were being applied, or had contact with dispersant equipment reported the symptoms they

experienced during oil spill cleanup as part of the Gulf Long-term Follow-up (GuLF) STUDY.

The research team found that workers exposed to dispersants were more likely to experience certain symptoms -- cough, wheeze, tightness in the chest, and burning in the eyes, nose, throat, or lungs -- than those who were not exposed to dispersants.

Dale Sandler, Ph.D., the lead GuLF STUDY researcher at the National Institute of Environmental Health Sciences (NIEHS), part of NIH, said the findings only apply to workers involved in the cleanup effort and not the general public.

"The health effects that we see in the workers don't necessarily apply to the community at large, although many of the workers live in affected areas," Sandler said.

After the oil spill, two chemical dispersants, Corexit EC9500A or Corexit EC9527A, were used in some areas where oil was present. Sandler said since it was the first time oil dispersants had been used on such a large scale, it was important to examine the possible health effects. Most of the previous research on

dispersants focused on how well the compounds dispersed oil and the potential environmental impacts. Several small animal studies that tested the chemicals in dispersants suggested some of the compounds were toxic.

One of the challenges the researchers faced was distinguishing whether the effects they saw were associated with the dispersants or petroleum products from the spill. Sandler said the scientists were able to consider both exposures and isolate the effects associated with the dispersants.

The researchers also considered the association between having been exposed to the dispersants during cleanup work and having current symptoms at the time the workers joined the study. Many of those who reported symptoms while they were involved in the oil spill response and cleanup, no longer had them one to three years later when the telephone interviews were conducted. Sandler explained that these findings were consistent with a short-term effect of dispersants on health symptoms. She noted, however, that a small percentage of oil spill workers were still having these symptoms.

"While symptoms are not disease, many people who worked on the oil spill underwent a stressful experience," said NIEHS Director Linda Birnbaum, Ph.D. "Some of them are continuing to not feel well, and we don't know what factors are contributing to it. The ongoing GuLF STUDY research is important for shedding light on the potential health impacts associated with an oil spill."

GuLF STUDY participants completed telephone interviews during enrollment, a subsequent home visit that included medical assessments and collecting biological samples, and one follow-up telephone interview. A new follow-up interview is scheduled to start fall 2017. The data used in this study came from enrollment interviews with 31,609 English or Spanish-speaking persons who were involved in oil spill response or cleanup.

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Tiny lasers from a gallery of whispers: New technique promises tunable laser devices -- ScienceDaily

Whispering gallery mode (WGM) resonators are used to make tiny micro-lasers, sensors, switches, routers and other devices. These tiny structures rely on a phenomenon similar to an effect observed in circular galleries, such as in some cathedrals or museums, where sound waves travel across the gallery and are reflected and refocused tightly enough that a whisper on one side can be heard on the other.

The same phenomenon applies to light. When light is stored in ring-shaped or spherical active resonators, the waves superimpose in such a way that it can result in laser light. This week in *APL Photonics*, by AIP Publishing, investigators report a new type of dye-doped WGM micro-laser that produces light with tunable wavelengths. Not only is the tuning range of the new devices broader than has been possible in the past, it is completely reversible.

A unique feature of the design, according to lead author Tobias Siegle of Karlsruhe Institute of Technology in Germany, is that tuning is made possible by changing the size of a flexible substrate. Stretching the substrate changes the distance between the two sides of the split disk in the resonator and thus, the wavelength of the light produced.

The disk itself is typically about 25 microns across, with an initial gap between its two halves of roughly 2.5 microns, just 3 percent the diameter of a typical human hair. The disk is mounted on an elastomer, or stretchy plastic substrate, which can be pulled in a direction perpendicular to the disk's split, decreasing the gap size. The light produced by these micro-lasers shifts toward the blue range of the spectrum when the gap size decreases. They observed wavelength shifts of several nanometers in the visible range.

"Our new design produces a broad tuning range that cannot be easily achieved with other WGM resonators," Siegle said. "Additionally, the tuning mechanism is completely reversible."

This feature allows the device to be used in fundamental optics research. Another feature of the

split-disk technology is enhanced sensitivity in refractive index sensing.

"For a gap width of 1.4 microns, the sensing performance is increased by 65 percent," Siegle said, when comparing to a reference disk resonator without a gap.

The most useful devices have a low lasing threshold, since this allows the use of small amounts of energy. A low threshold reduces or prevents photo-bleaching of the dye molecules used in the device and increases its expected lifetime. The investigators tested their design and found low-threshold lasing for split disks fabricated using a 3-D or electron-beam lithography technique.

Another quantity they studied is the quality, or Q factor, which corresponds to the photon storage time in the laser cavity. A high Q value is desirable, and although investigators found that their split-disk design reduced Q somewhat, the lasing threshold was within an appropriate range, making the design valuable.

Future work will be focused on developing tunable coupled resonator waveguides, which can be used as

optical delay lines or filters, and in other applications.

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Emerging disease further jeopardizes North American frogs -- ScienceDaily

Frogs and salamanders are currently among the most threatened groups of animals on the planet. The two most common frog diseases, chytridiomycosis and ranavirus infection, are linked to frog population declines worldwide. The new study suggests that that SPI is the third most common infectious disease of frogs.

Scientists with the USGS studied 247 frog die-offs in 43 states from 1999 through 2015. The researchers found that SPI caused 21 of the mass mortalities in 10 states spanning from Alaska to Florida, all involving tadpoles. Up to 95 percent of the tadpole populations died during the SPI mortality events.

"Amphibians such as frogs are valuable because they serve as pest control by eating insects like mosquitos, and they are food for larger predators," said Marcos Isidoro Ayza, a USGS scientist, University of Wisconsin-Madison post-doctoral fellow and the lead author of the study. "They're also exceptional

indicators of ecosystem health. Like the proverbial canary in a coal mine, amphibians let us know when something in our environment is going awry."

The SPI die-offs occurred in tadpoles of 11 frog species, including the critically endangered dusky gopherfrog in its only remaining breeding locations in Mississippi. Most of the SPI events occurred in states bordering the Atlantic Ocean and Gulf of Mexico. However, SPI was also detected in Alaska, Oregon and Minnesota.

"Habitat loss, habitat fragmentation and disease are among the factors that contribute to amphibian declines," said Jonathan Sleeman, director of the USGS National Wildlife Health Center. "This study indicates that SPI is an additional disease that can further threaten vulnerable frog populations."

SPI is caused by a tiny one-celled parasitic organism called a protist. The SPI-causing protist, called *Perkinsea*, is highly resistant to disinfection agents such as common bleach. As a result, it is difficult to prevent the spread of *Perkinsea*, and SPI is able to reoccur at known locations.

"SPI in frogs may be under-diagnosed because it is not a disease for which they are typically screened," Isidoro Ayza said. "Incorporating routine screening of critical habitats for infected frogs is crucial to help understand the distribution of this destructive disease."

The disease kills tadpoles by causing multi-organ failure, and there is no cure or treatment for SPI at this time. SPI is not known to affect humans or pets.

Story Source:

[Materials](#) provided by [US Geological Survey](#). *Note: Content may be edited for style and length.*

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All Top News

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· [**Emerging disease further jeopardizes North American frogs**](#) [周三, 20 9月 04:02]

A deadly amphibian disease called severe Perkinsea infections, or SPI, is the cause of many large-scale frog die-offs in the United States, according to a new study.

· [**End-of-summer Arctic sea ice extent is eighth lowest on record**](#) [周三, 20 9月 04:01]

Arctic sea ice appeared to have reached its yearly lowest extent on Sept. 13, scientists have reported. Analysis of satellite data showed that at 1.79 million square miles (4.64 million square kilometers), this year's Arctic sea ice minimum extent is the eighth lowest in the consistent long-term satellite record, which began in 1978.

· [**North Atlantic right whales decline confirmed: 458 remaining**](#) [周三, 20 9月 02:04]

Marine biologists have developed a new model to improve estimates of abundance and population trends of endangered North Atlantic right whales, which have declined in numbers and productivity in recent years. Between 1990 and 2010 abundance increased to 482 animals, but since 2010 the numbers have declined to 458 in 2015, with 14 known deaths this year.

· [**Sleep deprivation is an effective anti-depressant for nearly half of depressed patients, study suggests**](#) [周三, 20 9月 02:04]

Sleep deprivation - typically administered in controlled, inpatient

settings - rapidly reduces symptoms of depression in roughly half of depression patients, according the first meta-analysis on the subject in nearly 30 years.

- [**Mercury's poles may be icier than scientists thought**](#) [周三, 20 9月 00:31]

A new study identifies three large surface ice deposits near Mercury's north pole, and suggests there could be many additional small-scale deposits that would dramatically increase the planet's surface ice inventory.

- [**Getting emotional after failure helps you improve next time, study finds**](#) [周二, 19 9月 23:12]

Emotional responses to failure rather than cognitive ones are more effective at improving people's results for the next time they tackle the next related task, new research indicates.

- [**Playing American football before age 12 could have long-term health effects**](#) [周二, 19 9月 22:25]

Playing American football before the age of 12 may have long-term consequences for players' mood and behavior, according to a study involving 214 professional and amateur football players.

- [**Exposure to pet and pest allergens during infancy linked to reduced asthma risk**](#) [周二, 19 9月 22:25]

Children exposed to high indoor levels of pet or pest allergens during infancy have a lower risk of developing asthma by 7 years of age, new research reveals. The findings may provide clues for the design of strategies to prevent asthma from developing.

- [**New mirror-coating technology promises dramatic improvements in telescopes**](#) [周二, 19 9月 10:23]

An electrical engineer has teamed up with astronomers to improve telescope mirrors using thin-film technology from the electronics industry. They are developing new protective coatings using an atomic layer deposition system large enough to accommodate telescope mirrors.

- [**DNA triggers shape-shifting in hydrogels, opening a new way to make 'soft robots'**](#) [周二, 19 9月 10:22]

Biochemical engineers have used sequences of DNA molecules to induce shape-changing in water-based gels, demonstrating a new tactic to produce "soft" robots and "smart" medical devices that do not rely on cumbersome wires, batteries or tethers.

- [**Solar-to-fuel system recycles CO2 to make ethanol and ethylene**](#) [周二, 19 9月 03:17]

Scientists have harnessed the power of photosynthesis to convert carbon dioxide into fuels and alcohols at efficiencies far greater than plants. The achievement marks a significant advance in the effort to move toward sustainable sources of fuel.

- [**Copper catalyst yields high efficiency CO2-to-fuels conversion**](#) [周二, 19 9月 03:17]

Scientists have developed a new electrocatalyst that can directly convert carbon dioxide into multicarbon fuels and alcohols using record-low inputs of energy. The work is the latest in a round of studies tackling the challenge of a creating a clean chemical manufacturing system that can put carbon dioxide to good use.

- [**When it comes to the threat of extinction, size matters**](#) [周二, 19 9月 01:27]

Animals in the Goldilocks zone -- neither too big, nor too small, but just the right size -- face a lower risk of extinction than do those on both ends of the scale, according to an extensive global analysis.

- [**RNA discovery could help boost plant heat, drought tolerance**](#) [周二, 19 9月 00:35]

The discovery of a RNA that can increase drought and salt tolerance in thale cress could illuminate a new research approach and hold implications for other plants, including food crops.

- [**More evidence of water on Mars**](#) [周二, 19 9月 00:35]

River deposits exist across the surface of Mars and record a surface

environment from over 3.5 billion years ago that was able to support liquid water at the surface. A region of Mars named Aeolis Dorsa contains some of the most spectacular and densely packed river deposits seen on Mars.

• [**Urgent emission reductions needed to achieve 1.5°C warming limit**](#) [周一, 18 9月 23:18]

Significant emission reductions are required if we are to achieve one of the key goals of the Paris Agreement, and limit the increase in global average temperatures to 1.5°C; a new partnership warns.

• [**Changes in Earth's crust caused oxygen to fill the atmosphere**](#) [周一, 18 9月 23:18]

New research has uncovered a direct link between changes in the earth's crust three billion years ago and the introduction of free oxygen to the atmosphere. Without these changes, oxygen could have been suppressed in earth's crust forever, so the findings help explain the emergence of life on our planet.

• [**Dogs' social skills linked to oxytocin sensitivity**](#) [周一, 18 9月 23:18]

The tendency of dogs to seek contact with their owners is associated with genetic variations in sensitivity for the hormone oxytocin, according to a new study. The results contribute to our knowledge of how dogs have changed during their development from wolf to household pet.

• [**5,000 deaths annually from Diesel-gate in Europe**](#) [周一, 18 9月 21:33]

Excess emissions from diesel cars cause about 5,000 premature deaths annually across Europe, a new study shows. Higher exposure to secondary particles and ozone can be traced back to excess NOx emissions from diesel cars, vans and light commercial vehicles. With the EU's vehicle emission limits achieved on the road about 5,000 premature deaths could be avoided annually. If diesel cars emitted as little NOx as petrol cars, about 7,500 premature deaths could be avoided annually.

- [**New evidence for small, short-lived drops of early universe quark-gluon plasma?**](#) [周一, 18 9月 21:30]

Particles emerging from even the lowest energy collisions of small deuterons with large heavy nuclei at the Relativistic Heavy Ion Collider exhibit behavior scientists associate with the formation of a soup of quarks and gluons, the fundamental building blocks of nearly all visible matter.

- [**Vaping doubles risk of smoking cigarettes for teens**](#) [周一, 18 9月 21:07]

Teenagers who try e-cigarettes double their risk for smoking tobacco cigarettes, according to a new study. The study found that students in grades seven to 12 who had tried an e-cigarette are 2.16 times more likely to be susceptible to cigarette smoking.

- [**NASA's Cassini spacecraft ends its historic exploration of Saturn**](#) [周六, 16 9月 22:30]

A thrilling epoch in the exploration of our solar system has come to a close, as NASA's Cassini spacecraft made a fateful plunge into the atmosphere of Saturn, ending its 13-year tour of the ringed planet. Cassini's plunge brings to a close a series of 22 dives between Saturn and its rings, a feat never before attempted by any spacecraft.

- [**A drone for last-centimeter delivery**](#) [周六, 16 9月 05:01]

A new drone uses cutting-edge technology to deliver parcels weighing up to 500 grams. The device will never get stuck in traffic, it's programmed to avoid obstacles, and it can reach destinations on steep or uneven terrain. Its protective cage and foldable design mean that it can be carried around in a backpack and used in total safety.

- [**Light on exoplanets may be quite different from Earth: Different photosynthesis?**](#) [周六, 16 9月 05:00]

Researchers have proposed a prediction that red-edge could be observed as on the Earth even on exoplanets around M-dwarfs. They pointed out that the first oxygenic phototrophs are most likely to have evolved

underwater to utilize visible light just like what had happened in the primordial ocean on the Earth. They examined light adaptation mechanisms of visible- and IR-radiation-using phototrophs required for adapting to land habitats and found out that IR-using phototrophs struggle to adapt to chan...

- [**Tough stuff: Spider silk enhanced with graphene-based materials**](#) [周六, 16 9月 04:52]

Natural spider silk has excellent mechanical properties. Researchers have now found a way to boost the strength of spider's silk using graphene-based materials, paving the way for a novel class of high-performance bionic composites.

- [**Ultrafast snapshots of relaxing electrons in solids**](#) [周六, 16 9月 04:37]

A team of scientists has been able to capture the dynamics of core-excited excitons in solids in real-time.

- [**Ancient amphibian had mouthful of teeth ready to grab you**](#) [周六, 16 9月 03:58]

The idea of being bitten by a nearly toothless modern frog or salamander sounds laughable, but their ancient ancestors had a full array of teeth, large fangs and thousands of tiny hook-like structures called denticles on the roofs of their mouths that would snare prey, according to paleontologists.

- [**Why we did not evolve to live forever: Unveiling the mystery of why we age**](#) [周六, 16 9月 02:41]

Researchers have made a breakthrough in understanding the origin of the ageing process. They have identified that genes belonging to a process called autophagy -- one of the cells most critical survival processes -- promote health and fitness in young worms but drive the process of ageing later in life.

- [**Arctic sea ice once again shows considerable melting**](#) [周五, 15 9月 22:36]

This September, the extent of Arctic sea ice shrank to roughly 4.7 million square kilometres, scientists have determined.

• [**Skin patch dissolves 'love handles' in mice**](#) [周五, 15 9月 21:52]

Researchers have developed a medicated skin patch that can turn energy-storing white fat into energy-burning brown fat locally while raising the body's metabolism. The patch could be used to burn off pockets of unwanted fat and treat metabolic disorders like obesity and diabetes.

• [**Wolves understand cause and effect better than dogs**](#) [周五, 15 9月 21:51]

A rattle will only make noise if you shake it. Animals like the wolf also understand such connections and are better at this than their domesticated descendants. Researchers say that wolves have a better causal understanding than dogs and that they follow human-given communicative cues equally well. The study provides insight that the process of domestication can also affect an animal's causal understanding.

• [**In step toward controlling chemistry, physicists create a new molecule, atom by atom**](#) [周五, 15 9月 03:24]

Physicists have discovered a unique new molecule that could lead to many useful applications, and show how chemical reactions can be studied on a microscopic scale using tools of physics.

• [**Biomarkers in the blood prove strong role of food for type 2 diabetes**](#) [周五, 15 9月 03:24]

A pioneering method has demonstrated its potential in a large study, showing that metabolic fingerprints from blood samples could render important new knowledge on the connection between food and health. The study finds that diet is one of the strongest predictors of type 2 diabetes risk in older women.

• [**Electric eels leap to deliver painful, Taser-like jolt**](#) [周五, 15 9月 03:24]

The electric eel has always been noted for its impressive ability to shock and subdue its prey. It's recently become clear that electric eels also use a clever trick to deliver an intense, Taser-like jolt to potential predators: they leap from the water to target threatening animals, humans included, above water. Now, a researcher has measured (and experienced) just how strong that jolt can be.

- [**Sorting molecules with DNA robots**](#) [周五, 15 9月 03:24]

Scientists have programmed a 'robot' made of DNA to pick up and sort molecules into predetermined locations.

- [**Plant geneticists develop a new application of CRISPR to break yield barriers in crops**](#) [周五, 15 9月 03:23]

Scientists have finally harnessed the untapped power of genome editing to improve agricultural crops. In the tomato plant they have mobilized CRISPR to rapidly generate variants of the plant displaying a continuum of three agriculturally important traits: fruit size, branching architecture and overall plant shape. All are major components in determining yield. The method is designed to work in all food, feed, and fuel crops, including staples rice, maize, sorghum and wheat.

- [**Old fish few and far between under fishing pressure**](#) [周五, 15 9月 03:23]

A new study has found that, for dozens of fish populations around the globe, old fish are greatly depleted -- mainly because of fishing pressure. Old fish are increasingly missing in many populations around the world.

- [**Huge genetic diversity among Papuan New Guinean peoples revealed**](#) [周五, 15 9月 03:23]

The first large-scale genetic study of people in Papua New Guinea has shown that different groups within the country are genetically highly different from each other. Scientists reveal that the people there have remained genetically independent from Europe and Asia for most of the last 50,000 years, and that people from the country's isolated highlands region have been completely independent even until the present day.

- [**The return of the comet-like exoplanet**](#) [周五, 15 9月 03:23]

Astronomers have focused the Hubble Space Telescope on an exoplanet that had already been seen losing its atmosphere, which forms an enormous cloud of hydrogen, giving the planet the appearance of a giant comet. During earlier observations, it was not possible to cover the whole cloud, whose shape was predicted by numerical simulations. Thanks to these new observations, the scientists have finally been able to confirm the initial predictions.

- ['Handedness' in scale-eating fish: Nature and nurture](#) [周五, 15 9月 03:23]

Lateralized behaviors are thought to be strengthened during development. However, little is known about how they are acquired during development. In the scale-eating cichlid model, researchers demonstrated the attack side preference of juveniles was developed with scale-eating experience, regardless of age. They also found that kinetics of attack behavior is superior on one side by nature. Therefore, they concluded that the fish learn to use the naturally dominant side through experience.

- [Could interstellar ice provide the answer to birth of DNA?](#) [周五, 15 9月 03:22]

Molecules brought to Earth in meteorite strikes could potentially be converted into the building blocks of DNA, researchers have shown.

- [How does a cell maintain its identity during replication?](#) [周五, 15 9月 03:22]

Prior to cell division, chromosomes are seemingly a jumbled mess. During cell division, parent cell chromosomes and their duplicates sort themselves out by condensing, becoming thousands of times more compact than at any other time. Researchers have long assumed that genes become "silent" during cell division, not being transcribed into proteins or regulatory molecules. This has left open the question of how genes get properly re-activated after cell division. Now, researchers have found that gen...

- [Hubble observes pitch black planet](#) [周五, 15 9月 03:22]

Astronomers have discovered that the well-studied exoplanet WASP-12b reflects almost no light, making it appear essentially pitch black. This discovery sheds new light on the atmospheric composition of the planet and also refutes previous hypotheses about WASP-12b's atmosphere. The results are also in stark contrast to observations of another similarly sized exoplanet.

- [**New supernova analysis reframes dark energy debate**](#) [周四, 14 9月 07:31]

The accelerating expansion of the Universe may not be real, but could just be an apparent effect, according to new research. The new study finds the fit of Type Ia supernovae to a model universe with no dark energy to be very slightly better than the fit to the standard dark energy model.

- [**Evolution of 'true frogs' defies long-held expectations of science**](#) [周四, 14 9月 07:31]

New research shows, in contrast to expectations, 'the rapid global range expansion of true frogs was not associated with increased net-diversification.'

- [**Artificial 'skin' gives robotic hand a sense of touch**](#) [周四, 14 9月 07:30]

A team of researchers from the University of Houston has reported a breakthrough in stretchable electronics that can serve as an artificial skin, allowing a robotic hand to sense the difference between hot and cold, while also offering advantages for a wide range of biomedical devices.

- [**In-utero treatment reverses cleft palate in mice**](#) [周四, 14 9月 07:30]

Researchers clarified a molecular pathway responsible for the formation of cleft palate and identified a new treatment to reverse this defect in mouse pups in utero.

- [**'Peel-and-go' printable structures fold themselves**](#) [周四, 14 9月 07:30]

Researchers have created a printable structure that begins to fold itself up as soon as it's peeled off the printing platform.

- [**First global map of water in moon's soil**](#) [周四, 14 9月 07:30]

A new study maps the trace concentrations of water implanted in the lunar soil by the solar wind, a water source that could be used as resource in future lunar exploration.

- [**New gravity map suggests Mars has a porous crust**](#) [周四, 14 9月 07:30]

Scientists have found evidence that Mars' crust is not as dense as previously thought, a clue that could help researchers better understand the Red Planet's interior structure and evolution.

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

- [Risks vary widely in drone-human impacts](#) [周三, 20 9月 04:03]

New research suggests there's wide variation in the risk that unmanned aircraft pose to people on the ground.

- [Gulf Spill oil dispersants associated with health symptoms in cleanup workers](#) [周三, 20 9月 04:03]

Workers who were likely exposed to dispersants while cleaning up the 2010 Deepwater Horizon oil spill experienced a range of health symptoms including cough and wheeze, and skin and eye irritation.

- [Home blood pressure monitoring for hypertension best combined with intensive support](#) [周三, 20 9月 02:04]

People who monitor their own blood pressure at home are most likely to see a benefit if they combine it with individually tailored intensive support, according to a new systematic literature review and meta-analysis.

- [Screening for cervical abnormalities in women offered HPV vaccination](#) [周三, 20 9月 02:04]

Human papillomavirus (HPV) testing detects a higher number of precancerous cervical lesions than cytology-based Pap smears in a female population including a proportion offered HPV vaccination, according to a new study.

- [What web browsers and proteins have in](#)

common [周三, 20 9月 02:04]

The discovery of a previously overlooked site on protein molecules may solve a mystery about how proteins are able to carry out specialized functions in living cells.

• **Groundbreaking investigative effort identifies gonorrhea vaccine candidates** [周三, 20 9月 02:04]

Researchers have identified a pair of proteins that show promise as the basis for a gonorrhea vaccine.

• **Management studies: Dishonesty shift** [周三, 20 9月 02:04]

Lying comes more easily to people in teams: Behavioral scientists have shown in an experimental study why groups are more likely to behave unethically than individuals.

• **Sleep deprivation is an effective anti-depressant for nearly half of depressed patients, study suggests** [周三, 20 9月 02:04]

Sleep deprivation - typically administered in controlled, inpatient settings - rapidly reduces symptoms of depression in roughly half of depression patients, according the first meta-analysis on the subject in nearly 30 years.

• **Brain powered: Increased physical activity among breast cancer survivors boosts cognition** [周三, 20 9月 02:04]

It is estimated that up to 75 percent of breast cancer survivors experience problems with cognitive difficulties following treatments, perhaps lasting years. Currently, few science-based options are available to help. Researchers report in a pilot study of 87 female breast cancer survivors an increase in physical activity more than doubled the women's post-treatment mental processing speed.

• **Proteins' role in development of spinal sensory cells redefined** [周三, 20 9月 02:04]

A recent study has overturned a common belief about how a certain

class of proteins in the spinal cord regulate the formation of nervous system cells -- called neurons -- during embryonic development.

- [**Winner takes all: Success enhances taste for luxury goods, study suggests**](#) [周三, 20 9月 00:31]

Footballers in flashy cars, City workers in Armani suits, reality TV celebrities sipping expensive champagne while sitting in hot tubs: what drives people to purchase luxury goods? New research suggests that it may be a sense of being a 'winner' -- but that contrary to expectations, it is not driven by testosterone.

- [**How to remove a tick and prevent future bites**](#) [周二, 19 9月 23:12]

As tick populations grow and spread across the country, their prevalence is increasing the public's risk for some troubling diseases. Of these diseases, say dermatologists, Lyme disease, Rocky Mountain spotted fever, Powassan virus and alpha-gal syndrome — a mysterious red meat allergy — are among the most serious.

- [**Getting emotional after failure helps you improve next time, study finds**](#) [周二, 19 9月 23:12]

Emotional responses to failure rather than cognitive ones are more effective at improving people's results for the next time they tackle the next related task, new research indicates.

- [**Antibiotics following C-section among obese women reduces risk of surgical infection**](#) [周二, 19 9月 23:06]

Among obese women undergoing cesarean delivery, a postoperative 48-hour course of antibiotics significantly decreased the rate of surgical site infection within 30 days after delivery, according to a study.

- [**Contribution of opioid-related deaths to the change in life expectancy in the US**](#) [周二, 19 9月 23:06]

Between 2000 and 2015 in the US, life expectancy increased overall but drug-poisoning deaths, mostly related to opioids, contributed to reducing life expectancy, according to a study.

- [**How the shape and size of your face relates to your sexuality**](#) [周二, 19 9月 23:06]

Men and women with shorter, wider faces tend to be more sexually motivated and to have a stronger sex drive than those with faces of other dimensions. The research investigates the role that facial features play in sexual relationships and mate selection.

- [**Key regulator of male fertility identified**](#) [周二, 19 9月 23:06]

When it comes to male reproductive fertility, timing is everything. Now scientists are finding new details on how disruption of this timing may contribute to male infertility or congenital illness. Researchers are identifying the key molecular and genetic switch that activates production of healthy male sperm -- but only when the time is right.

- [**Cell-based therapy success could be boosted by new antioxidant**](#) [周二, 19 9月 22:52]

Cell therapies being developed to treat a range of conditions could be improved by a chemical compound that aids their survival, research suggests. Lab tests found that the human-made molecule -- a type of antioxidant -- helps to shield healthy cells from damage such as would be caused when they are transplanted into a patient during cell therapy.

- [**New hosts for Chagas disease vectors identified**](#) [周二, 19 9月 22:26]

Solitary weasel-like animals called tayra might look pretty harmless, but some may actually be incubators for a parasite that causes Chagas disease, a chronic, debilitating condition that is spread by insects called kissing bugs and affects more than 8 million people worldwide.

- [**Playing American football before age 12 could have long-term health effects**](#) [周二, 19 9月 22:25]

Playing American football before the age of 12 may have long-term consequences for players' mood and behavior, according to a study involving 214 professional and amateur football players.

- [**Exposure to pet and pest allergens during infancy linked to reduced asthma risk**](#) [周二, 19 9月 22:25]

Children exposed to high indoor levels of pet or pest allergens during infancy have a lower risk of developing asthma by 7 years of age, new research reveals. The findings may provide clues for the design of strategies to prevent asthma from developing.

- [**An interconnection between the nervous and immune system**](#) [周二, 19 9月 22:25]

Researchers have shown that the increased incidence of infections seen in spinal cord injury patients is directly linked to a disruption of the normal central nervous system.

- [**A piece of the puzzle: Eight autism-related mutations in one gene**](#) [周二, 19 9月 22:25]

Researchers discover a large number of clustered mutations in a single gene, TRIO, that disrupt the development of the brain's connections and likely contribute to the development of autism-spectrum disorders. The scientists also find that a sister gene linked to schizophrenia, KALRN, is inactive in early brain development, but becomes active in adolescence.

- [**Guidelines for handling CAR T cell side effects**](#) [周二, 19 9月 21:28]

Immune-cell based therapies opening a new frontier for cancer treatment carry unique, potentially lethal side effects that provide a new challenge for oncologists, one addressed by proposed guidelines for systematically dealing with the toxicities of these drugs.

- [**Cell model of the brain provides new knowledge on developmental disease**](#) [周二, 19 9月 21:26]

By reprogramming skin cells into nerve cells, researchers are creating cell models of the human brain. In a new study, the researchers describe how cells from patients with the severe developmental disease lissencephaly differ from healthy cells. The method can provide vital new knowledge on difficult-to-study congenital diseases.

- [**Local epileptic seizure shows long distance interaction**](#) [周二, 19 9月 21:26]

An epileptic seizure may be highly local, but it also influences brain

activity at a distance of over ten centimeters from the core. This, in turn, affects the active area, scientists report.

- [**New treatment for osteoporosis provides better protection against fractures**](#) [周二, 19 9月 21:24]

A new treatment for osteoporosis provides major improvements in bone density and more effective protection against fractures than the current standard treatment. This study is the first that compares the effect of two osteoporosis medicines on fractures.

- [**Nanocapsules enable cell-inspired metabolic reactions**](#) [周二, 19 9月 21:24]

Researchers have succeeded in developing capsules capable of producing the bio-molecule glucose-6-phosphate that plays an important role in metabolic processes. The researchers were able to produce the metabolite in conditions very similar to the biochemical reaction inside natural cells.

- [**Ricin only lethal in combination with sugar**](#) [周二, 19 9月 21:23]

Researchers have discovered a means of immunizing cells against the biological weapon ricin, which, they report, is only lethal when combined with sugar.

- [**'Language of stem cells' discovered**](#) [周二, 19 9月 21:23]

Stem cells control the cells around them, inducing them to perform specific functions. This phenomenon of the "language of stem cells", which has now been discovered for the very first time, report investigators.

- [**How eyes get clogged in glaucoma and how to free them**](#) [周二, 19 9月 21:15]

Biologists have found an explanation for the increase in intraocular pressure in glaucoma and a promising therapeutic option to rejuvenate the eye.

- [**Overcoming the brain's fortress-like barrier**](#) [周二, 19 9月 21:10]

Scientists have helped provide a way to better understand how to enable drugs to enter the brain and how cancer cells make it past the blood brain barrier.

- [**Changes in teenage parenthood**](#) [周二, 19 9月 21:10]

The US birth rate hasn't changed for two generations of teenage girls, but other aspects of young parenthood are shifting, especially regarding young fathers.

- [**The brain at work: Spotting half-hidden objects**](#)

[周二, 19 9月 21:10]

The human and non-human primate brain is remarkable in recognizing partially hidden objects. A study, conducted during a shape recognition task, shows as more of the shape is hidden, a brain area involved in cognition starts to send signals to the visual cortex. The findings make the scientists wonder if this communication between different brain areas might be impaired in people with autism or Alzheimer's. Both conditions can cause confusion in cluttered surroundings and problems recognizing ob...

- [**Students' self-concepts of ability in math, reading predict later math, reading attainment**](#) [周二, 19 9月 21:10]

A new longitudinal study looked at how youths' self-concepts are linked to their actual academic achievement in math and reading from middle childhood to adolescence. The study found that students' self-concepts of their abilities in these two academic domains play an important role in motivating their achievements over time and across levels of achievement.

- [**The wrong first step to revive athletes in cardiac arrest**](#) [周二, 19 9月 21:09]

New research suggests that the main obstacle to an appropriate bystander response during athletes' cardiac arrest could be an apparently widespread myth: that 'tongue swallowing' is a common complication of sudden loss of consciousness that must be avoided or relieved at all costs to prevent death from asphyxia.

- [**Treatment-resistant melanoma may be vulnerable to a drug holiday, study finds**](#) [周二, 19 9月 11:23]

A new study has uncovered the mechanisms by which treatment-resistant melanoma become vulnerable to cessation of a class of drugs called MAP kinase (MAPK)-targeted inhibitors. By identifying these mechanisms, the scientists discovered that therapeutic benefits for patients could derive from a one-two punch of a drug holiday of MAPK inhibitors followed by a class of drugs called DNA repair inhibitors.

- [**ADHD kids can be still, if they're not straining their brains**](#) [周二, 19 9月 10:22]

Lack of motivation or boredom with school isn't to blame for squirming by children with Attention Deficit Hyperactivity Disorder. Symptoms such as fidgeting, foot-tapping and chair-swiveling are triggered by cognitively demanding tasks - like school and homework. But movies and video games don't typically require brain strain, so the excessive movement doesn't manifest.

- [**Owners of seriously ill pets at risk of stress, anxiety and depressive symptoms**](#) [周二, 19 9月 10:22]

Owners of seriously or terminally ill pets are more likely to suffer with stress and symptoms of depression and anxiety, as well as poorer quality of life, compared with owners of healthy animals, finds a study.

- [**Toy gun popular with kids can cause serious eye injury, warn doctors**](#) [周二, 19 9月 10:22]

A toy gun that is popular with children can cause serious eye injuries, warn doctors in a new article.

- [**Taking a break from dieting may improve weight loss**](#) [周二, 19 9月 10:22]

Avoiding continuous dieting may be the key to losing weight and keeping the kilos off, the latest research shows. Researchers showed in a randomized controlled trial, that taking a two-week break during dieting may improve weight loss.

- [**Analyzing the language of color**](#) [周二, 19 9月 04:34]

Languages tend to divide the "warm" part of the color spectrum into more color words, such as orange, yellow, and red, compared to the "cooler" regions, which include blue and green, cognitive scientists have found. This pattern, which they found across more than 100 languages, may reflect the fact that most objects that stand out in a scene are warm-colored, while cooler colors such as green and blue tend to be found in backgrounds, the researchers say.

- [**Fake news more likely to thrive online due to lowered fact-checking**](#) [周二, 19 9月 04:34]

Fake news is more likely to thrive online due to lowered fact-checking, according to new American research.

- [**New lung cell type discovered**](#) [周二, 19 9月 04:34]

A new lung cell type that is implicated in the body's innate immune defense against the bacteria *Streptococcus pneumoniae* -- one of the leading causes of pneumonia worldwide -- has been discovered by researchers.

- [**Blood tests: Sound waves separate biological nanoparticles for 'liquid biopsies'**](#) [周二, 19 9月 04:34]

A prototype device developed by an international team of engineers can sift exceedingly tiny particles called exosomes from blood samples without having to send samples off to a lab. The device, which combines acoustic cell-sorting and microfluidic technologies, could be a boon to both scientific research and medical applications.

- [**Urine output to disease: Study sheds light on the importance of hormone quality control**](#) [周二, 19 9月 04:34]

A discovery about the endoplasmic reticulum in hormone-producing cells shed lights on water balance under normal physiology and could open doors to better understanding of diseases related to misfolded proteins.

- [**Horses working in therapeutic riding programs**](#)

[**do not experience additional stress**](#) [周二, 19 9月 04:34]

In the US, therapeutic horseback riding offers equine-assisted therapy to diverse populations who have anxiety disorders. Veterans diagnosed with post-traumatic stress disorder often are prescribed this type of therapy to cope with anxiety, but little is known about how these programs affect the stress levels in horses. Now, a study has revealed that horses ridden by veterans with PTSD did not have undue physiological stress responses while participating in a therapy program.

• [**Potential pathway to treat flesh-eating bacteria**](#) [周二, 19 9月 04:33]

Researchers have solved a 100-year-old mystery, providing them a possible key to unlock a pathway for treating diseases caused by flesh-eating bacteria. Medical researchers have found a critical target on which to focus for developing a potential Group A Streptococcus vaccine or antibiotic to fight it. By manipulating this target, they hope to either reduce the severity of these infections or clear them up faster.

• [**Beta blockers not needed after heart attack if other medications taken**](#) [周二, 19 9月 04:33]

Beta blockers are not needed after a heart attack if heart-attack survivors are taking ACE inhibitors and statins, new research suggests. The study is the first to challenge the current clinical guideline that heart-attack survivors should take all three drugs -- beta blockers, ACE inhibitors and statins -- for the rest of their lives.

• [**New self-powered paper patch could help diabetics measure glucose during exercise**](#) [周二, 19 9月 04:33]

A new paper-based sensor patch developed by researchers at Binghamton University, State University of New York could allow diabetics to effectively measure glucose levels during exercise.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

- [Risks vary widely in drone-human impacts](#) [周三, 20 9月 04:03]

New research suggests there's wide variation in the risk that unmanned aircraft pose to people on the ground.

- [Tiny lasers from a gallery of whispers](#) [周三, 20 9月 04:03]

Whispering gallery mode resonators rely on a phenomenon similar to an effect observed in circular galleries, and the same phenomenon applies to light. When light is stored in ring-shaped or spherical active resonators, the waves superimpose in such a way that it can result in laser light. Investigators now report a new type of dye-doped WGM micro-laser that produces light with tunable wavelengths.

- [Security cameras vulnerable to attacks using infrared light](#) [周三, 20 9月 04:02]

Researchers have demonstrated that security cameras infected with malware can receive covert signals and leak sensitive information from the very same surveillance devices used to protect facilities.

- [Wikipedia used to give AI context clues](#) [周三, 20 9月 02:04]

A team of computer scientists is teaching artificial intelligence agents how to interact with the world in a way that makes sense.

- [Mercury's poles may be icier than scientists thought](#) [周三, 20 9月 00:31]

A new study identifies three large surface ice deposits near Mercury's north pole, and suggests there could be many additional small-scale deposits that would dramatically increase the planet's surface ice

inventory.

- [**Advanced lithium-ion and metal-air batteries**](#) [周三, 20 9月 00:31]

Engineers are developing energy storage technologies that are cheaper, safer and more efficient.

- [**One-way track for microwaves based on mechanical interference**](#) [周三, 20 9月 00:31]

Researchers use interference in the motion of a micrometer-size drum to route microwave signals in a single direction.

- [**Rogue wave analysis supports investigation of the El Faro sinking**](#) [周二, 19 9月 23:12]

A new analysis done to support the investigation into the 2015 sinking of the El Faro cargo ship has calculated the likelihood of a massive rogue wave during Hurricane Joaquin in October of that year – and demonstrated a new technique for evaluating the probability of rogue waves over space and time.

- [**Fluorescence microscopy on a chip: no lenses required**](#) [周二, 19 9月 23:11]

Fluorescence microscopy gives researchers incredible power to illuminate the tiniest structures and capture the real-time activities of live cells by tagging biological molecules with a veritable rainbow of fluorescent dyes. This power comes at a cost: The technology can be expensive and time-consuming and, so far, has resisted attempts at automation.

- [**Nonlinear physics bridges thoughts to sounds in birdsong**](#) [周二, 19 9月 23:05]

The beautiful sound of birdsongs emerging from the trees is a wonderful example of how much nature can still teach us, even as much about their origins are still mysterious to us. About 40 percent of bird species learn to vocalize when they are exposed to a tutor, a behavior of interest to many neurologists and neurobiologists. The other 60 percent can vocalize instinctually in isolation. The variety across species, and the

relationship between the nervous system and biomechanics makes birdsong p...

• [**Cost effective quantum moves a step closer**](#) [周二, 19 9月 22:26]

Researchers have taken an important step towards enabling quantum networks to be cost-effective and truly secure from attack. The experiments prove the viability of a measurement-device-independent quantum key distribution (QKD) system, based on readily available hardware.

• [**A dream of foam: better concrete, beer froth and ice cream**](#) [周二, 19 9月 22:25]

Researchers have discovered a new method to design stable foams. Their findings could make beer froth and ice cream last longer -- and revolutionize construction materials such as concrete.

• [**Novel strategy for chirality controlled synthesis of single-walled carbon nanotubes**](#) [周二, 19 9月 22:25]

Researchers have developed a novel strategy for controlling chirality of single-walled carbon nanotubes.

• [**Size matters in the detection of exoplanet atmospheres**](#) [周二, 19 9月 21:26]

A group-analysis of 30 exoplanets orbiting distant stars suggests that size, not mass, is a key factor in whether a planet's atmosphere can be detected. The largest population-study of exoplanets to date successfully detected atmospheres around 16 'hot Jupiters', and found that water vapor was present in every case.

• [**What do we need to know to mine an asteroid?**](#) [周二, 19 9月 21:26]

The mining of resources contained in asteroids, for use as propellant, building materials or in life-support systems, has the potential to revolutionise exploration of our Solar System. To make this concept a reality, we need to increase our knowledge of the very diverse population of accessible Near Earth Asteroids (NEA).

[**Nanosat fleet proposed for voyage to 300 asteroids**](#) [周二, 19 9月 21:26]

A fleet of tiny spacecraft could visit over 300 asteroids in just over three years, according to a mission study. The Asteroid Touring Nanosat Fleet concept comprises 50 spacecraft propelled by innovative electric solar wind sails (E-sails) and equipped with instruments to take images and collect spectroscopic data on the composition of the asteroids. Each nanosat would visit six or seven asteroids before returning to Earth to deliver the data.

[**Molecular motors: Slowing the clockwork**](#) [周二, 19 9月 21:26]

Progress on the way to smart nanomachines: Chemists have modified the synthesis of a molecular motor so as to reduce the speed of its light-driven rotation, thus permitting the researchers to analyze the mechanism of motion in complete detail.

[**Nanocapsules enable cell-inspired metabolic reactions**](#) [周二, 19 9月 21:24]

Researchers have succeeded in developing capsules capable of producing the bio-molecule glucose-6-phosphate that plays an important role in metabolic processes. The researchers were able to produce the metabolite in conditions very similar to the biochemical reaction inside natural cells.

[**Supercontinuum lasers can lead to better bread and beer**](#) [周二, 19 9月 21:10]

Researchers have analyzed whole grains with long near-infrared wavelengths using a new type of light source, the supercontinuum laser. The research has significance for our knowledge of food ingredients and may, for example, eventually lead to better quality of bread and beer.

[**Graphene and other carbon nanomaterials can replace scarce metals**](#) [周二, 19 9月 21:10]

Scarce metals are found in a wide range of everyday objects around us. They are complicated to extract, difficult to recycle and so rare that

several of them have become "conflict minerals" which can promote conflicts and oppression. New research shows that there are potential technology-based solutions that can replace many of the metals with carbon nanomaterials, such as graphene.

• **[One step closer to lifelike robots](#)** [周二, 19 9月 21:10]

Researchers have developed a 3-D-printable synthetic soft muscle that can lift 1,000 times its own weight. The muscle has intrinsic expansion ability and, unlike previous artificial muscles, it does not require an external compressor or high voltage equipment, signaling a breakthrough in the creation of soft robots that can move independently. The new material also has a strain density -- an ability to expand -- that is 15 times larger than natural muscle.

• **[The sublime challenge of jet noise](#)** [周二, 19 9月 11:22]

A scientist is using ALCF resources to create high fidelity simulations of jet turbulence to determine how and where noise is produced. The results may lead to novel engineering designs that reduce noise over commercial flight paths and on aircraft carrier decks.

• **[Optical, electrical bistability study sheds light on next-gen high speed data transfer](#)** [周二, 19 9月 11:22]

Today, electrical bistable devices are the foundation of digital electronics, serving as building blocks of switches, logic gates and memories in computer systems. However, the bandwidth of these electronic computers is limited by the signal delay of time constants important to electronic logic operations. In an attempt to mitigate these problems, scientists have considered the development of an optical digital computer, and one team has gone so far as to demonstrate the optical and electrical bi...

• **[New mirror-coating technology promises dramatic improvements in telescopes](#)** [周二, 19 9月 10:23]

An electrical engineer has teamed up with astronomers to improve telescope mirrors using thin-film technology from the electronics industry. They are developing new protective coatings using an atomic layer deposition system large enough to accommodate telescope mirrors.

• [**DNA triggers shape-shifting in hydrogels, opening a new way to make 'soft robots'**](#) [周二, 19 9月 10:22]

Biochemical engineers have used sequences of DNA molecules to induce shape-changing in water-based gels, demonstrating a new tactic to produce "soft" robots and "smart" medical devices that do not rely on cumbersome wires, batteries or tethers.

• [**Fake news more likely to thrive online due to lowered fact-checking**](#) [周二, 19 9月 04:34]

Fake news is more likely to thrive online due to lowered fact-checking, according to new American research.

• [**Blood tests: Sound waves separate biological nanoparticles for 'liquid biopsies'**](#) [周二, 19 9月 04:34]

A prototype device developed by an international team of engineers can sift exceedingly tiny particles called exosomes from blood samples without having to send samples off to a lab. The device, which combines acoustic cell-sorting and microfluidic technologies, could be a boon to both scientific research and medical applications.

• [**Enzyme's worth to biofuels shown in recent research**](#) [周二, 19 9月 04:34]

A newly discovered enzyme proves adept at breaking down cellulose fibers regardless of whether their crystalline structure is simple or highly complex. No other enzyme has shown that ability.

• [**New self-powered paper patch could help diabetics measure glucose during exercise**](#) [周二, 19 9月 04:33]

A new paper-based sensor patch developed by researchers at Binghamton University, State University of New York could allow diabetics to effectively measure glucose levels during exercise.

• [**2-D Electronics' metal or semiconductor? Both**](#) [周二, 19 9月 04:15]

Researchers produced the first 2-D field-effect transistor (FET) made of a single material.

- [**Solar-to-fuel system recycles CO2 to make ethanol and ethylene**](#) [周二, 19 9月 03:17]

Scientists have harnessed the power of photosynthesis to convert carbon dioxide into fuels and alcohols at efficiencies far greater than plants. The achievement marks a significant advance in the effort to move toward sustainable sources of fuel.

- [**Copper catalyst yields high efficiency CO2-to-fuels conversion**](#) [周二, 19 9月 03:17]

Scientists have developed a new electrocatalyst that can directly convert carbon dioxide into multicarbon fuels and alcohols using record-low inputs of energy. The work is the latest in a round of studies tackling the challenge of creating a clean chemical manufacturing system that can put carbon dioxide to good use.

- [**Coatings needed for concentrating solar power**](#) [周二, 19 9月 03:17]

Next-generation concentrating solar power (CSP) plants require high-temperature fluids, like molten salts, in the range of 550-750 degrees Celsius to store heat and generate electricity. At those high temperatures, however, the molten salts eat away at common alloys used in the heat exchangers, piping, and storage vessels of CSP systems. New research is aimed at mitigating corrosion levels in CSP plants with nickel-based coatings.

- [**New quantum phenomena in graphene superlattices**](#) [周二, 19 9月 00:36]

Researchers have just shown the first new type of quantum oscillation to be reported for thirty years. It is the first of its kind to be present at high temperature and on the mesoscale and sheds light on the Hofstadter butterfly phenomenon.

- [**Just squeeze in -- when spaces are tight, nature loosens its laws**](#) [周二, 19 9月 00:35]

It turns out that when they're in a hurry and space is limited, ions, like people, will find a way to cram in -- even if that means defying nature's

norms. Researchers have now shown that the charged particles will actually forgo their 'opposites attract' behavior, called Coulombic ordering, when confined in the tiny pores of a nanomaterial.

- [**Step towards better 'beyond lithium' batteries**](#) [周二, 19 9月 00:35]

A step towards new 'beyond lithium' rechargeable batteries with superior performance has been made.

- [**Scalable process discovered to produce structural colors inspired by bird feathers**](#) [周二, 19 9月 00:35]

Researchers made nano-sized balls of melanin aggregate into clusters called supraballs. Melanin appears black in individual nanoparticles. But altering spacing of the nanoparticles in the ball affects how the particles scatter light. A thin silica coating on the outside of melanin nanoparticles acts like a bumper, limiting how close the particles can pack together. Varying the diameter of the melanin core and the thickness of the silica shell creates supraballs in a range of colors.

- [**Physicists discover a tri-anion particle with colossal stability**](#) [周二, 19 9月 00:35]

Chemists have created the most stable tri-anion particle currently known to science. A tri-anion particle is a combination of atoms that contains three more electrons than protons. This discovery is novel because previously known tri-anion particles were unstable due to their numerical imbalance.

- [**When radio galaxies collide, supermassive black holes form tightly bound pairs**](#) [周二, 19 9月 00:35]

Supermassive black holes found in the centers of galaxies can form gravitationally bound pairs when galaxies merge, according to a new study.

- [**A new approach to ultrafast light pulses**](#) [周二, 19 9月 00:35]

A team of researchers has found a new way of producing high-speed pulses of light using two-dimensional molecular aggregates, which could enable new photonic devices such as optically based microchips.

• [**More evidence of water on Mars**](#) [周二, 19 9月 00:35]

River deposits exist across the surface of Mars and record a surface environment from over 3.5 billion years ago that was able to support liquid water at the surface. A region of Mars named Aeolis Dorsa contains some of the most spectacular and densely packed river deposits seen on Mars.

• [**Chemists make playdough/lego-like hybrid to create tiny building blocks**](#) [周一, 18 9月 23:43]

Playdough and Legos are among the most popular childhood building toys. But what could you use if you wanted to create something really small — a structure less than the width of a human hair? It turns out, a team of chemists has found, this can be achieved by creating particles that have both playdough and Lego traits.

• [**Secrets of bright, rapidly spinning star revealed**](#) [周一, 18 9月 23:18]

Almost 50 years after it was first predicted that rapidly rotating stars would emit polarized light, scientists have succeeded in observing the phenomenon for the first time. They have now detected the polarized light from Regulus, one of the brightest stars in the night sky.

• [**A solar cell you can put in the wash**](#) [周一, 18 9月 23:18]

Scientists have developed a new type of ultra-thin photovoltaic device, coated on both sides with stretchable and waterproof films, which can continue to provide electricity from sunlight even after being soaked in water or being stretched and compressed.

• [**Video game boosts sex health IQ and attitudes in minority teens**](#) [周一, 18 9月 23:18]

A video game to promote health and reduce risky behavior in teens improves sexual health knowledge and attitudes among minority youth, according to a new study. The findings validate the value of the video game as a tool to engage and educate teens at risk for HIV and other sexually transmitted infections, said the researchers.

• [**Developing roads that can generate power from**](#)

[passing traffic](#) [周一, 18 9月 23:18]

Researchers are looking at advanced materials for roads and pavements that could generate electricity from passing traffic. Engineers are working on smart materials such as 'piezoelectric' ceramics that when embedded in road surfaces would be able to harvest and convert vehicle vibration into electrical energy.

• [An original method of cooling ions could have new and interesting uses](#) [周一, 18 9月 23:18]

When investigating atoms, scientists face a challenge: At room temperature, individual atoms in a gas have kinetic energy, and fly around at large velocities. Temperature is, in essence, the relative movement between atoms; thus the goal of getting the atoms to have small relative velocities involves freezing them to extremely cold temperatures. A group has now developed new universal method for cooling ions.

• [Wireless high-speed data and power transfer integrated](#) [周一, 18 9月 23:18]

Researchers have developed a system that can simultaneously deliver watts of power and transmit data at rates high enough to stream video over the same wireless connection. By integrating power and high-speed data, a true single 'wireless' connection can be achieved.

• [More efficient use of raw materials with the aid of 'molecular conveyor belts'](#) [周一, 18 9月 21:34]

Making valuable products, such as fuels, synthetic materials or pharmaceuticals, from renewable raw materials is to date not efficient enough because the microorganisms used only process the raw materials very slowly and generate many by-products in addition to the substances actually wanted. Biotechnologists have now succeeded in optimizing sugar utilization in baker's yeast.

• [Tiny electrically pumped micro-lasers epitaxially grown on industry standard silicon](#)

substrates [周一, 18 9月 21:33]

A group of researchers successfully demonstrated record-small electrically pumped micro-lasers epitaxially grown on industry standard (001) silicon substrates in a recent study. The thresholds and footprints are orders of magnitude smaller than those previously reported lasers epitaxially grown on Si.

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Environment News

Top stories featured on ScienceDaily's Plants & Animals, Earth & Climate, and Fossils & Ruins sections.

- [**Gulf Spill oil dispersants associated with health symptoms in cleanup workers**](#) [周三, 20 9月 04:03]

Workers who were likely exposed to dispersants while cleaning up the 2010 Deepwater Horizon oil spill experienced a range of health symptoms including cough and wheeze, and skin and eye irritation.

- [**Emerging disease further jeopardizes North American frogs**](#) [周三, 20 9月 04:02]

A deadly amphibian disease called severe Perkinsea infections, or SPI, is the cause of many large-scale frog die-offs in the United States, according to a new study.

- [**End-of-summer Arctic sea ice extent is eighth lowest on record**](#) [周三, 20 9月 04:01]

Arctic sea ice appeared to have reached its yearly lowest extent on Sept. 13, scientists have reported. Analysis of satellite data showed that at 1.79 million square miles (4.64 million square kilometers), this year's Arctic sea ice minimum extent is the eighth lowest in the consistent long-term satellite record, which began in 1978.

- [**What web browsers and proteins have in common**](#) [周三, 20 9月 02:04]

The discovery of a previously overlooked site on protein molecules may solve a mystery about how proteins are able to carry out specialized functions in living cells.

- [**A study switches from genetic to metabolic**](#)

[analysis to reconstitute evolutionary process](#) [周三, 20 9

月 02:04]

A new method for analyzing a living being chemical compositions is tested in Andean plants and attest the genesis of species by means of geographic isolation. Scientists analyzed chemical compounds which express specific biogeographic trends in the evolutionary process, validating a Smithsonian hypothesis on the evolution of the genus *Espeletia* in the process.

• [How to remove a tick and prevent future bites](#) [周二,

19 9月 23:12]

As tick populations grow and spread across the country, their prevalence is increasing the public's risk for some troubling diseases. Of these diseases, say dermatologists, Lyme disease, Rocky Mountain spotted fever, Powassan virus and alpha-gal syndrome — a mysterious red meat allergy — are among the most serious.

• [Nonlinear physics bridges thoughts to sounds in birdsong](#) [周二, 19 9月 23:05]

The beautiful sound of birdsongs emerging from the trees is a wonderful example of how much nature can still teach us, even as much about their origins are still mysterious to us. About 40 percent of bird species learn to vocalize when they are exposed to a tutor, a behavior of interest to many neurologists and neurobiologists. The other 60 percent can vocalize instinctually in isolation. The variety across species, and the relationship between the nervous system and biomechanics makes birdsong p...

• [New hosts for Chagas disease vectors identified](#) [周

二, 19 9月 22:26]

Solitary weasel-like animals called tayra might look pretty harmless, but some may actually be incubators for a parasite that causes Chagas disease, a chronic, debilitating condition that is spread by insects called kissing bugs and affects more than 8 million people worldwide.

• [Exposure to pet and pest allergens during infancy linked to reduced asthma risk](#) [周二, 19 9月 22:25]

Children exposed to high indoor levels of pet or pest allergens during

infancy have a lower risk of developing asthma by 7 years of age, new research reveals. The findings may provide clues for the design of strategies to prevent asthma from developing.

- [**Supercontinuum lasers can lead to better bread and beer**](#) [周二, 19 9月 21:10]

Researchers have analyzed whole grains with long near-infrared wavelengths using a new type of light source, the supercontinuum laser. The research has significance for our knowledge of food ingredients and may, for example, eventually lead to better quality of bread and beer.

- [**Declining queen conch populations are fragmented and that's changing the conservation game**](#) [周二, 19 9月 21:10]

To provide a vital scientific foundation for conservation efforts, an international team has conducted a genetic analysis comparing queen conch at 19 sites throughout the Caribbean. Their findings will help scientists understand how local subpopulations of conch are fragmented throughout the Caribbean, an essential first step needed to develop effective science-driven management plans and practices.

- [**Catching a diversity of fish species — instead of specializing — means more stable income for fishers**](#) [周二, 19 9月 11:23]

A team of scientists analyzed nearly 30 years of revenue and permitting records for individuals fishing in Alaskan waters and tracked how their fishing choices, in terms of permits purchased and species caught, influenced their year-to-year income volatility.

- [**DNA triggers shape-shifting in hydrogels, opening a new way to make 'soft robots'**](#) [周二, 19 9月 10:22]

Biochemical engineers have used sequences of DNA molecules to induce shape-changing in water-based gels, demonstrating a new tactic to produce "soft" robots and "smart" medical devices that do not rely on cumbersome wires, batteries or tethers.

• [**Parasitic eye infection poses significant threat to UK dogs, warn experts**](#) [周二, 19 9月 10:22]

A parasitic worm that is becoming increasingly common in Europe poses a significant threat to UK dogs, warn experts in a new report.

• [**Owners of seriously ill pets at risk of stress, anxiety and depressive symptoms**](#) [周二, 19 9月 10:22]

Owners of seriously or terminally ill pets are more likely to suffer with stress and symptoms of depression and anxiety, as well as poorer quality of life, compared with owners of healthy animals, finds a study.

• [**Importance of early season control of herbicide-resistant kochia**](#) [周二, 19 9月 04:34]

Researchers are providing new insights into the control of herbicide-resistant kochia, a weed that competes with both dryland and irrigated crops across the Great Plains states.

• [**Horses working in therapeutic riding programs do not experience additional stress**](#) [周二, 19 9月 04:34]

In the US, therapeutic horseback riding offers equine-assisted therapy to diverse populations who have anxiety disorders. Veterans diagnosed with post-traumatic stress disorder often are prescribed this type of therapy to cope with anxiety, but little is known about how these programs affect the stress levels in horses. Now, a study has revealed that horses ridden by veterans with PTSD did not have undue physiological stress responses while participating in a therapy program.

• [**Enzyme's worth to biofuels shown in recent research**](#) [周二, 19 9月 04:34]

A newly discovered enzyme proves adept at breaking down cellulose fibers regardless of whether their crystalline structure is simple or highly complex. No other enzyme has shown that ability.

• [**Potential pathway to treat flesh-eating bacteria**](#) [周二, 19 9月 04:33]

Researchers have solved a 100-year-old mystery, providing them a

possible key to unlock a pathway for treating diseases caused by flesh-eating bacteria. Medical researchers have found a critical target on which to focus for developing a potential Group A Streptococcus vaccine or antibiotic to fight it. By manipulating this target, they hope to either reduce the severity of these infections or clear them up faster.

- [**Sex, aggression controlled separately in female animal brains, but overlap in male brains**](#) [周二, 19 9月 04:14]

Brain structures that control sexual and aggressive behavior in mice are wired differently in females than in males, new research shows.

- [**Solar-to-fuel system recycles CO2 to make ethanol and ethylene**](#) [周二, 19 9月 03:17]

Scientists have harnessed the power of photosynthesis to convert carbon dioxide into fuels and alcohols at efficiencies far greater than plants. The achievement marks a significant advance in the effort to move toward sustainable sources of fuel.

- [**Copper catalyst yields high efficiency CO2-to-fuels conversion**](#) [周二, 19 9月 03:17]

Scientists have developed a new electrocatalyst that can directly convert carbon dioxide into multicarbon fuels and alcohols using record-low inputs of energy. The work is the latest in a round of studies tackling the challenge of creating a clean chemical manufacturing system that can put carbon dioxide to good use.

- [**Coatings needed for concentrating solar power**](#) [周二, 19 9月 03:17]

Next-generation concentrating solar power (CSP) plants require high-temperature fluids, like molten salts, in the range of 550-750 degrees Celsius to store heat and generate electricity. At those high temperatures, however, the molten salts eat away at common alloys used in the heat exchangers, piping, and storage vessels of CSP systems. New research is aimed at mitigating corrosion levels in CSP plants with nickel-based coatings.

- [**A cereal crop survives heat and drought**](#) [周二, 19 9月 02:30]

Scientists have published the genome sequence of Pearl millet, a drought resistant crop plant most important in arid regions in Africa and Asia. This plant is important to small and medium farmers who grow the plant without larger irrigation. Pearl millet delivers a good harvest index under drought and heat conditions when rice, maize or wheat already have no grains anymore.

- **['King Tide' mapping project](#)** [周二, 19 9月 02:21]

'Dress rehearsal' will help quantify local flooding risk and validate storm-surge models, while laying groundwork for a long-term network of volunteer data collectors.

- **[When it comes to the threat of extinction, size matters](#)** [周二, 19 9月 01:27]

Animals in the Goldilocks zone -- neither too big, nor too small, but just the right size -- face a lower risk of extinction than do those on both ends of the scale, according to an extensive global analysis.

- **[People's love of the seas could be the key for plastic pollution solution](#)** [周二, 19 9月 01:27]

Tapping into the public's passion for the ocean could be the key to reducing the threats to it posed by plastic pollution.

- **[An effective way to eliminate atrazine and its by-products in surface water](#)** [周二, 19 9月 00:36]

Atrazine, widely used as a weedkiller, is known to have harmful effects on aquatic wildlife and presents a risk to human health by altering the action of certain hormones. Researchers have now compared various processes used to degrade atrazine, one of the most common pesticides detected in surface water in Quebec.

- **[RNA discovery could help boost plant heat, drought tolerance](#)** [周二, 19 9月 00:35]

The discovery of a RNA that can increase drought and salt tolerance in thale cress could illuminate a new research approach and hold implications for other plants, including food crops.

- [**To predict how climate change will affect disease, researchers must fuse climate science and biology**](#) [周二, 19 9月 00:35]

To predict how climate change will affect disease, researchers must fuse climate science and biology, according to a new review.

- [**Scientists show molecular basis for ants acting as 'bodyguards' for plants**](#) [周二, 19 9月 00:35]

Though you might not think of ants as formidable bodyguards, some do an impressive job protecting plants from enemies. Examining the relationship between the Amazon rainforest plant *Cordia nodosa* in Peru and the ant species *Allomerus octoarticulatus*, scientists found the degree to which the ants express two genes significantly impacts the amount of protection they provide to their hosts.

- [**Urgent emission reductions needed to achieve 1.5°C warming limit**](#) [周一, 18 9月 23:18]

Significant emission reductions are required if we are to achieve one of the key goals of the Paris Agreement, and limit the increase in global average temperatures to 1.5°C; a new partnership warns.

- [**Changes in Earth's crust caused oxygen to fill the atmosphere**](#) [周一, 18 9月 23:18]

New research has uncovered a direct link between changes in the earth's crust three billion years ago and the introduction of free oxygen to the atmosphere. Without these changes, oxygen could have been suppressed in earth's crust forever, so the findings help explain the emergence of life on our planet.

- [**A solar cell you can put in the wash**](#) [周一, 18 9月 23:18]

Scientists have developed a new type of ultra-thin photovoltaic device, coated on both sides with stretchable and waterproof films, which can continue to provide electricity from sunlight even after being soaked in water or being stretched and compressed.

- [**Dogs' social skills linked to oxytocin sensitivity**](#) [周

—, 18 9月 23:18]

The tendency of dogs to seek contact with their owners is associated with genetic variations in sensitivity for the hormone oxytocin, according to a new study. The results contribute to our knowledge of how dogs have changed during their development from wolf to household pet.

• [**Genomic recycling: Ancestral genes take on new roles**](#) [周一, 18 9月 23:18]

One often hears about the multitude of genes we have in common with chimps, birds or other living creatures, but such comparisons are sometimes misleading. The shared percentage usually refers only to genes that encode instructions for making proteins -- while overlooking regulatory genes, which nonetheless make up a large part of the genome.

• [**Six new sponge species and new symbiotic associations from the Indonesian coral triangle**](#) [周

—, 18 9月 23:18]

The Indonesian coral reefs, located in the so-called coral triangle, are considered amongst the richest and most biodiverse places on Earth. Surprisingly, this impressive species diversity is still poorly known. Biologists now report the presence of 94 species of sponges, including six new to science and two new symbiotic sponge associations.

• [**How bacteria hinder chemotherapy**](#) [周一, 18 9月 22:06]

Scientists have found bacteria in pancreatic tumors that metabolize a common drug, explains a new report.

• [**Sheep gene insights could help farmers breed healthier animals**](#) [周一, 18 9月 22:06]

Fresh insights into the genetic code of sheep could aid breeding programs to improve their health and productivity. Scientists have now mapped which genes are turned on and off in the different tissues and organs in a sheep's body.

• [**More efficient use of raw materials with the aid of 'molecular conveyor belts'**](#) [周一, 18 9月 21:34]

Making valuable products, such as fuels, synthetic materials or

pharmaceuticals, from renewable raw materials is to date not efficient enough because the microorganisms used only process the raw materials very slowly and generate many by-products in addition to the substances actually wanted. Biotechnologists have now succeeded in optimizing sugar utilization in baker's yeast.

- [**Welfare of zoo animals set to improve**](#) [周一, 18 9月 21:33]

The wellbeing of zoological animals is set to improve following the successful trial of a new welfare assessment grid.

- [**Fuel from waste and electricity?**](#) [周一, 18 9月 21:33]

Researchers have shown that the combination of microbial and electrochemical conversion of biomass can yield valuable products. For the example of corn beer and corn silage they have gained energy-dense alkanes with diesel-fuel like properties at high carbon and energetic yield.

- [**Cells programmed like computers to fight disease**](#) [周一, 18 9月 21:33]

Cells can be programmed like a computer to fight cancer, influenza, and other serious conditions -- thanks to a breakthrough in synthetic biology.

- [**5,000 deaths annually from Diesel-gate in Europe**](#) [周一, 18 9月 21:33]

Excess emissions from diesel cars cause about 5,000 premature deaths annually across Europe, a new study shows. Higher exposure to secondary particles and ozone can be traced back to excess NOx emissions from diesel cars, vans and light commercial vehicles. With the EU's vehicle emission limits achieved on the road about 5,000 premature deaths could be avoided annually. If diesel cars emitted as little NOx as petrol cars, about 7,500 premature deaths could be avoided annually.

- [**Studies of 'Crater Capital' in the Baltics show impactful history**](#) [周一, 18 9月 21:28]

Studies of craters in the Baltics (Estonia) are giving insights into the many impacts that have peppered the Earth over its long history. In southeastern Estonia, scientists have dated charcoal from trees destroyed

in an impact to prove a common origin for two small craters, named Illumetsa. A third submarine crater located on the seabed in the Gulf of Finland has been measured and dated with with precision.

[Devilish source of dust in atmosphere of Earth and Mars](#) [周一, 18 9月 21:28]

Swirling columns of sand and dust, known as dust devils, are a feature of desert areas on Mars and on Earth. Now, a study of terrestrial dust devils has shown that around two thirds of the fine particles lifted by these vortices can remain suspended in the atmosphere and be transported around the globe. The findings have implications for the climate and weather of both planets and, potentially, human health here on Earth.

[Membrane vesicles released by bacteria may play different roles during infection](#) [周一, 18 9月 21:07]

Bacteria release membrane-derived vesicles (MVs), which are small particles that can transport virulence factors to neighboring bacteria or to the cells of a mammalian host. This special MV-based system for delivering toxic proteins and nucleic acids in a protected manner to the target cells may have different specific functions depending on whether the bacterium acts as an extracellular or intracellular pathogen.

[Damage to monarch butterfly colonies in 2016 storm worse than thought](#) [周一, 18 9月 08:14]

A much greater number of monarch butterflies perished in a snowstorm in March 2016 in Mexico than previously estimated, according to new research. Analysis of damage from the storm -- and the ensuing salvage logging -- sheds further light on the precarious state of the famed butterflies' overwintering colonies.

[Converting waste toilet paper into electricity](#) [周六, 16 9月 05:02]

Chemists have performed a techno-economic analysis of converting waste toilet paper into electricity. They propose a two-step process and calculate a cost per kWh comparable to that of residential photovoltaic installations.

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- [**Management studies: Dishonesty shift**](#) [周三, 20 9月 02:04]

Lying comes more easily to people in teams: Behavioral scientists have shown in an experimental study why groups are more likely to behave unethically than individuals.

- [**Students' self-concepts of ability in math, reading predict later math, reading attainment**](#) [周二, 19 9月 21:10]

A new longitudinal study looked at how youths' self-concepts are linked to their actual academic achievement in math and reading from middle childhood to adolescence. The study found that students' self-concepts of their abilities in these two academic domains play an important role in motivating their achievements over time and across levels of achievement.

- [**Catching a diversity of fish species — instead of specializing — means more stable income for fishers**](#) [周二, 19 9月 11:23]

A team of scientists analyzed nearly 30 years of revenue and permitting records for individuals fishing in Alaskan waters and tracked how their fishing choices, in terms of permits purchased and species caught, influenced their year-to-year income volatility.

- [**The sublime challenge of jet noise**](#) [周二, 19 9月 11:22]

A scientist is using ALCF resources to create high fidelity simulations of jet turbulence to determine how and where noise is produced. The results may lead to novel engineering designs that reduce noise over

commercial flight paths and on aircraft carrier decks.

- [**Fake news more likely to thrive online due to lowered fact-checking**](#) [周二, 19 9月 04:34]

Fake news is more likely to thrive online due to lowered fact-checking, according to new American research.

- [**Enzyme's worth to biofuels shown in recent research**](#) [周二, 19 9月 04:34]

A newly discovered enzyme proves adept at breaking down cellulose fibers regardless of whether their crystalline structure is simple or highly complex. No other enzyme has shown that ability.

- [**Reliance on 'gut feelings' linked to belief in fake news**](#) [周二, 19 9月 02:21]

People who tend to trust their intuition or to believe that the facts they hear are politically biased are more likely to stand behind inaccurate beliefs, a new study suggests.

- [**People's love of the seas could be the key for plastic pollution solution**](#) [周二, 19 9月 01:27]

Tapping into the public's passion for the ocean could be the key to reducing the threats to it posed by plastic pollution.

- [**5,000 deaths annually from Diesel-gate in Europe**](#) [周一, 18 9月 21:33]

Excess emissions from diesel cars cause about 5,000 premature deaths annually across Europe, a new study shows. Higher exposure to secondary particles and ozone can be traced back to excess NOx emissions from diesel cars, vans and light commercial vehicles. With the EU's vehicle emission limits achieved on the road about 5,000 premature deaths could be avoided annually. If diesel cars emitted as little NOx as petrol cars, about 7,500 premature deaths could be avoided annually.

- [**Parents not confident schools can assist child with chronic disease, mental health**](#) [周一, 18 9月 21:08]

Most parents are sure schools would be able to provide basic first aid but are less confident about a school's ability to respond to more complex health situations, such as an asthma attack or mental health problem.

- [**Magnetic fields to alleviate anxiety**](#) [周六, 16 9月 04:52]

It is possible to unlearn fears. And this works even better when a specific region of the brain has previously been stimulated magnetically.

- [**Teens come 'jet lagged' to school: Shifting sleeping patterns at weekends**](#) [周六, 16 9月 04:48]

A lack of sleep is associated with more absence and teens turn up jet lagged to school on Mondays, as shown in new research.

- [**Insult to injury: US workers without paid sick leave suffer from mental distress**](#) [周六, 16 9月 02:41]

Only seven states in the US have mandatory paid sick leave laws, yet, 15 states have passed preemptive legislation prohibiting localities from passing sick leave. Paid sick leave is gaining momentum as a social justice issue with important implications for health and wellness. But what are the implications for the mental well-being of Americans without paid sick leave? A new study is the first to show the link between mental distress and paid sick leave among US workers.

- [**300,000 families living in US-Mexico border towns face exposure to toxic stress**](#) [周五, 15 9月 21:52]

Roughly 300,000 Texans living in impoverished border communities known as 'colonias' are facing substandard housing, lack of resources and exposure to toxic stress. New research finds these communities are also ill-equipped to face a natural disaster.

- [**Need for epinephrine in schools -- and staff trained to administer it**](#) [周五, 15 9月 21:52]

With school nurses often covering multiple buildings, researchers find that nearly one in five students who experience severe allergic reactions are given potentially life-saving epinephrine injections from unlicensed staff or students.

- [**Green schoolyards offer physical and mental health benefits for children**](#) [周五, 15 9月 21:52]

A growing body of evidence suggests access to safe, natural areas improves health across a wide variety of areas, including heart health, mental health, weight management, ADHD, and stress among children.

- [**New Orleans greenery post-Katrina reflects social demographics more than hurricane impact**](#) [周五, 15 9月 21:51]

Popular portrayals of "nature reclaiming civilization" in flood-damaged New Orleans, Louisiana, neighborhoods romanticize an urban ecology shaped by policy-driven socioecological disparities in redevelopment investment, ecologists argue.

- [**A subtler sexism now frames TV coverage of women in sports**](#) [周五, 15 9月 09:06]

An ongoing longitudinal study tracking national coverage of women's sports finds that coverage is still lacking and the sexism of women's sports is less overt but remains a problem.

- [**New climate risk classification created to account for potential 'existential' threats**](#) [周五, 15 9月 09:06]

A new study evaluating models of future climate scenarios has led to the creation of the new risk categories 'catastrophic' and 'unknown' to characterize the range of threats posed by rapid global warming. Researchers propose that unknown risks imply existential threats to the survival of humanity.

- [**One vaccine injection could carry many doses**](#) [周五, 15 9月 03:23]

A new 3-D fabrication method has been developed that can create a new type of drug-carrying particle that could allow several doses of a drug or vaccine to be delivered over an extended time period with just one injection.

- [**Cost of not adapting to climate change would be**](#)

at least five times higher [周五, 15 9月 03:22]

A study on damage to coastal considered only real estate loss. If nothing is done, researchers say, losses might be up to ten times higher if the predicament includes the spreading of flood- and global warming - related diseases.

Quicker learning: Brief reactivations of visual memories are enough to complete a full learning curve [周四, 14 9月 07:30]

A new study finds that brief memory reactivations can replace the repeated extensive practice and training known as 'practice makes perfect' as a learning technique.

Lion conservation requires effective international cooperation [周三, 13 9月 22:44]

In response to the alarming population declines of one of the most charismatic representatives of the megafauna, the lion, a team of international wildlife lawyers and lion experts joined efforts to assess the current and potential future role of international treaties regarding the carnivore's conservation.

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [DNA triggers shape-shifting in hydrogels, opening a new way to make 'soft robots'](#) [周二, 19 9月 10:22]

Biochemical engineers have used sequences of DNA molecules to induce shape-changing in water-based gels, demonstrating a new tactic to produce "soft" robots and "smart" medical devices that do not rely on cumbersome wires, batteries or tethers.

- [Scientists show molecular basis for ants acting as 'bodyguards' for plants](#) [周二, 19 9月 00:35]

Though you might not think of ants as formidable bodyguards, some do an impressive job protecting plants from enemies. Examining the relationship between the Amazon rainforest plant *Cordia nodosa* in Peru and the ant species *Allomerus octoarticulatus*, scientists found the degree to which the ants express two genes significantly impacts the amount of protection they provide to their hosts.

- [When radio galaxies collide, supermassive black holes form tightly bound pairs](#) [周二, 19 9月 00:35]

Supermassive black holes found in the centers of galaxies can form gravitationally bound pairs when galaxies merge, according to a new study.

- [More evidence of water on Mars](#) [周二, 19 9月 00:35]

River deposits exist across the surface of Mars and record a surface environment from over 3.5 billion years ago that was able to support liquid water at the surface. A region of Mars named *Aeolis Dorsa* contains some of the most spectacular and densely packed river deposits

seen on Mars.

- [**A solar cell you can put in the wash**](#) [周一, 18 9月 23:18]

Scientists have developed a new type of ultra-thin photovoltaic device, coated on both sides with stretchable and waterproof films, which can continue to provide electricity from sunlight even after being soaked in water or being stretched and compressed.

- [**Developing roads that can generate power from passing traffic**](#) [周一, 18 9月 23:18]

Researchers are looking at advanced materials for roads and pavements that could generate electricity from passing traffic. Engineers are working on smart materials such as 'piezoelectric' ceramics that when embedded in road surfaces would be able to harvest and convert vehicle vibration into electrical energy.

- [**New evidence for small, short-lived drops of early universe quark-gluon plasma?**](#) [周一, 18 9月 21:30]

Particles emerging from even the lowest energy collisions of small deuterons with large heavy nuclei at the Relativistic Heavy Ion Collider exhibit behavior scientists associate with the formation of a soup of quarks and gluons, the fundamental building blocks of nearly all visible matter.

- [**World first: 'Storing lightning inside thunder'**](#) [周一, 18 9月 21:07]

In a world first, researchers have stored photonic information on a microchip as an acoustic wave. This allows precious extra time to store, process and then redistribute the data without relying on electronics, which produce excess heat. Such a hybrid chip could have a huge impact in cloud computing and telecommunication centers, which are overheating as we churn through data on our phones.

- [**Converting waste toilet paper into electricity**](#) [周六, 16 9月 05:02]

Chemists have performed a techno-economic analysis of converting waste toilet paper into electricity. They propose a two-step process and calculate a cost per kWh comparable to that of residential photovoltaic

installations.

- [**A drone for last-centimeter delivery**](#) [周六, 16 9月 05:01]

A new drone uses cutting-edge technology to deliver parcels weighing up to 500 grams. The device will never get stuck in traffic, it's programmed to avoid obstacles, and it can reach destinations on steep or uneven terrain. Its protective cage and foldable design mean that it can be carried around in a backpack and used in total safety.

- [**Tough stuff: Spider silk enhanced with graphene-based materials**](#) [周六, 16 9月 04:52]

Natural spider silk has excellent mechanical properties. Researchers have now found a way to boost the strength of spider's silk using graphene-based materials, paving the way for a novel class of high-performance bionic composites.

- [**Immune system linked to alcohol drinking behavior**](#) [周六, 16 9月 02:41]

Researchers have found a new link between the brain's immune system and the desire to drink alcohol in the evening.

- [**Wolves understand cause and effect better than dogs**](#) [周五, 15 9月 21:51]

A rattle will only make noise if you shake it. Animals like the wolf also understand such connections and are better at this than their domesticated descendants. Researchers say that wolves have a better causal understanding than dogs and that they follow human-given communicative cues equally well. The study provides insight that the process of domestication can also affect an animal's causal understanding.

- [**Electric eels leap to deliver painful, Taser-like jolt**](#) [周五, 15 9月 03:24]

The electric eel has always been noted for its impressive ability to shock and subdue its prey. It's recently become clear that electric eels also use a clever trick to deliver an intense, Taser-like jolt to potential predators:

they leap from the water to target threatening animals, humans included, above water. Now, a researcher has measured (and experienced) just how strong that jolt can be.

- [**Sorting molecules with DNA robots**](#) [周五, 15 9月 03:24]

Scientists have programmed a 'robot' made of DNA to pick up and sort molecules into predetermined locations.

- [**The return of the comet-like exoplanet**](#) [周五, 15 9月 03:23]

Astronomers have focused the Hubble Space Telescope on an exoplanet that had already been seen losing its atmosphere, which forms an enormous cloud of hydrogen, giving the planet the appearance of a giant comet. During earlier observations, it was not possible to cover the whole cloud, whose shape was predicted by numerical simulations. Thanks to these new observations, the scientists have finally been able to confirm the initial predictions.

- [**'Handedness' in scale-eating fish: Nature and nurture**](#) [周五, 15 9月 03:23]

Lateralized behaviors are thought to be strengthened during development. However, little is known about how they are acquired during development. In the scale-eating cichlid model, researchers demonstrated the attack side preference of juveniles was developed with scale-eating experience, regardless of age. They also found that kinetics of attack behavior is superior on one side by nature. Therefore, they concluded that the fish learn to use the naturally dominant side through experience.

- [**Could interstellar ice provide the answer to birth of DNA?**](#) [周五, 15 9月 03:22]

Molecules brought to Earth in meteorite strikes could potentially be converted into the building blocks of DNA, researchers have shown.

- [**Physicists offer explanation for diverse galaxy rotations**](#) [周五, 15 9月 03:22]

Physicists have found a simple and viable explanation for the diversity observed in galactic rotations. They report that diverse galactic-rotation

curves, a graph of rotation speeds at different distances from the center, can be naturally explained if dark matter particles are assumed to strongly collide with one another in the inner halo, close to the galaxy's center -- a process called dark matter self-interaction.

- [**Artificial 'skin' gives robotic hand a sense of touch**](#) [周四, 14 9月 07:30]

A team of researchers from the University of Houston has reported a breakthrough in stretchable electronics that can serve as an artificial skin, allowing a robotic hand to sense the difference between hot and cold, while also offering advantages for a wide range of biomedical devices.

- [**'Peel-and-go' printable structures fold themselves**](#) [周四, 14 9月 07:30]

Researchers have created a printable structure that begins to fold itself up as soon as it's peeled off the printing platform.

- [**Long-range communication barrier for near-zero-power devices shattered**](#) [周四, 14 9月 07:30]

Researchers have demonstrated for the first time that devices that run on almost zero power can transmit data across distances of up to 2.8 kilometers -- breaking a long-held barrier and potentially enabling a vast array of interconnected devices.

- [**Marijuana may produce psychotic-like effects in high-risk individuals**](#) [周四, 14 9月 07:30]

Marijuana may bring on temporary paranoia and other psychosis-related effects in individuals at high risk of developing a psychotic disorder, finds a preliminary study.

- [**'The dark side' of quantum computers**](#) [周四, 14 9月 07:29]

The era of fully fledged quantum computers threatens to destroy internet security as we know it. Researchers are in a race against time to prepare new cryptographic techniques before the arrival of quantum computers, as cryptographers now describe.

• [Squirrels use 'chunking' to organize their favorite nuts](#) [周四, 14 9月 07:29]

Like trick-or-treaters sorting their Halloween candy haul, fox squirrels apparently organize their stashes of nuts by variety, quality and possibly even preference, according to new research.

• [The beam of invisibility](#) [周三, 13 9月 22:45]

A new idea for a cloaking technology has been created by scientists. A completely opaque material is irradiated from above with a specific wave pattern -- with the effect that light waves from the left can now pass through the material without any obstruction. This surprising result opens up completely new possibilities for active camouflage.

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ScienceDaily

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- [**Efforts to save sea turtles are a 'global conservation success story'**](#) [周四, 21 9月 06:21]

A new study of the world's seven sea turtle species provides evidence that their numbers are growing overall (unlike many endangered vertebrates), thanks to years of conservation efforts that have played a key role in sea turtle recovery -- even for small sea turtle populations.

- [**Mathematics predicts a sixth mass extinction**](#) [周四, 21 9月 06:21]

Scientists have analyzed significant changes in the carbon cycle over the last 540 million years, including the five mass extinction events. They have identified 'thresholds of catastrophe' in the carbon cycle that, if exceeded, would lead to an unstable environment, and ultimately, mass extinction.

- [**One e-cigarette with nicotine leads to adrenaline changes in nonsmokers' hearts**](#) [周四, 21 9月 06:21]

Electronic cigarettes have been touted as both a safer alternative for smokers and as an effective way for people to gradually quit smoking altogether. But a new study shows that nicotine inhaled from e-cigarettes can greatly increase a person's heart rate and aggravate the sympathetic nervous system.

- **[3-D analysis of dog fossils sheds light on domestication debate](#)** [周四, 21 9月 06:20]

In an effort to settle the debate about the origin of dog domestication, a technique that uses 3-D scans of fossils is helping researchers determine the difference between dogs and wolves.

- **[Protected waters foster resurgence of West Coast rockfish](#)** [周四, 21 9月 03:49]

West Coast rockfish species in deep collapse only 20 years ago have multiplied rapidly in large marine protected areas off Southern California, likely seeding surrounding waters with enough offspring to offer promise of renewed fishing, a new study has found.

- **[Unique type of object discovered in our solar system](#)** [周四, 21 9月 02:47]

Astronomers have observed the intriguing characteristics of an unusual type of object in the asteroid belt between Mars and Jupiter: two asteroids orbiting each other and exhibiting comet-like features, including a bright coma and a long tail. This is the first known binary asteroid also classified as a comet.

- **[Immune cells may heal bleeding brain after strokes](#)** [周四, 21 9月 02:47]

By studying rodents, researchers showed that instead of attacking germs, some neutrophils may help heal the brain after an intracerebral hemorrhage, a form of stroke caused by ruptured blood vessels. The study suggests that two neutrophil-related proteins may play critical roles in protecting the brain from stroke-induced damage and could be used as treatments for intracerebral hemorrhage.

- **[Communication among health care facilities key to preventing spread of drug-resistant bacteria](#)** [周四, 21 9月 02:47]

Communication breakdowns between care facilities can pave the way for outbreaks of infection, according to research on the spread of an extensively drug-resistant bacterium.

- [**Plants combine color and fragrance to procure pollinators**](#) [周四, 21 9月 02:47]

Who knew that it's possible to predict the fragrance of a flower by looking at its color? This is true for many of the 41 insect-pollinated plant species growing in a Phrygana scrubland habitat on the Greek island of Lesbos.

- [**Wave Glider surfs across stormy Drake Passage in Antarctica**](#) [周四, 21 9月 02:46]

A hardy ocean drone made a first-ever attempt to surf across Antarctica's stormy Drake Passage gathering data about ocean mixing.

- [**Fly away home? Ice age may have clipped bird migration**](#) [周四, 21 9月 02:46]

The onset of the last ice age may have forced some bird species to abandon their northerly migrations for thousands of years, says new research led by an ornithologist. The study challenges a long-held presumption that birds merely shortened their migratory flights when glaciers advanced south to cover much of North America and northern Europe about 21,000 years ago.

- [**Automatic code reuse: System automatically modifies code for transfer to other programs**](#) [周四, 21 9月 02:46]

Researchers have developed a new system that allows programmers to transplant code from one program into another. The programmer can select the code from one program and an insertion point in a second program, and the system will automatically make modifications necessary -- such as changing variable names -- to integrate the code into its new context.

- [**Species abundance: Winter restricts innovation**](#) [周四, 21 9月 01:17]

Why are there so many more species in the tropics? The 'storage effect' is stronger there than in temperate forests.

- [**Bite force research reveals dinosaur-eating frog**](#) [周四, 21 9月 01:17]

Scientists say that a large, now extinct, frog called Beelzebufo that lived about 68 million years ago in Madagascar would have been capable of eating small dinosaurs. The conclusion comes from a study of the bite force of South American horned frogs from the living genus Ceratophrys, known as Pacman frogs for their characteristic round shape and large mouth, similar to the video game character Pac-Man.

- [**Small intestine permeable peptides facilitate digestive tract absorption**](#) [周四, 21 9月 01:17]

Biopharmaceuticals, medium- and high-molecular weight biologically active macromolecules, are not easily absorbed by the small intestine, the main organ responsible for gastrointestinal absorption, resulting in a bottleneck for oral administration type biopharmaceutical development. Now, researchers have found a new small intestine permeable peptide that can facilitate digestive tract absorption of biopharmaceutical products. The discovery should make it possible for oral administration of drugs ...

- [**Animal acoustic activity decline shows forest fire pollution wreaks havoc on wildlife**](#) [周四, 21 9月 01:17]

Forest fires in Southeast Asia during the El Niño droughts of 2015 caused considerable disruption to the biodiversity of the region due to the smoke-induced 'haze' they created, according to new research.

- [**New concept of terrestrial planet formation**](#) [周四, 21 9月 01:17]

Scientists are proposing a new way of understanding the cooling and transfer of heat from terrestrial planetary interiors and how that affects the generation of the volcanic terrains that dominate the rocky planets.

- [**World's first 'molecular robot' capable of building molecules**](#) [周四, 21 9月 01:17]

Scientists have created the world's first 'molecular robot' that is capable of performing basic tasks including building other molecules.

- [**Dinosaur evolution: Lumbering giants had agile ancestors**](#) [周四, 21 9月 01:17]

The best known sauropod dinosaurs were huge herbivorous creatures, whose brain structures were markedly different from those of their evolutionary predecessors, for the earliest representatives of the group were small, lithe carnivores.

- [**Oxytocin turns up the volume of your social environment**](#) [周四, 21 9月 01:17]

A new study shows that the so-called 'love hormone' oxytocin can intensify negative as well as positive experiences.

- [**Parents: How you manage conflict has an impact on your kids**](#) [周四, 21 9月 01:17]

It's not always bad for children to be exposed to their parents' disagreements. It's how those disagreements are handled that really matters, according to a new study.

- [**Newly ID'd role of major Alzheimer's gene suggests possible therapeutic target**](#) [周四, 21 9月 01:17]

A new role has been identified for the major Alzheimer's risk factor ApoE4, suggesting that targeting the protein may help treat the disease. Researchers show that ApoE4 exacerbates the brain damage caused by toxic tangles of a different Alzheimer's-associated protein: tau. In the absence of ApoE, tau tangles did very little harm to brain cells.

- [**Scientists make atoms-thick 'Post-It notes' for solar cells and circuits**](#) [周四, 21 9月 01:17]

A new study describes an innovative method to make stacks of semiconductors just a few atoms thick. The technique offers scientists and engineers a simple, cost-effective method to make thin, uniform layers of these materials, which could expand capabilities for devices from solar cells to cell phones.

- [**Brain cancer growth halted by absence of protein**](#) [周四, 21 9月 01:16]

The growth of certain aggressive brain tumors can be halted by cutting off their access to a signaling molecule produced by the brain's nerve

cells, according to a new study.

- [**Millions of new genes in human microbiome**](#) [周四, 21 9月 01:16]

A new study of the human microbiome has uncovered millions of previously unknown genes from microbial communities in the human gut, skin, mouth, and vaginal microbiome, allowing for new insights into the role these microbes play in human health and disease.

- [**Hold the phone: An ambulance might lower your chances of surviving some injuries**](#) [周四, 21 9月 01:16]

Victims of gunshots and stabbings are significantly less likely to die if they're taken to the trauma center by a private vehicle than ground emergency medical services (EMS), according to results of a new analysis.

- [**Genome editing reveals role of gene important for human embryo development**](#) [周四, 21 9月 01:16]

Researchers have used genome editing technology to reveal the role of a key gene in human embryos in the first few days of development. This is the first time that genome editing has been used to study gene function in human embryos, which could help scientists to better understand the biology of our early development.

- [**Guess who? Facial expressions can cause confusion**](#) [周三, 20 9月 23:36]

Photos of the same person can look substantially different. For example, your passport photo may look quite different from your driving license, or your face in holiday photos. Research has shown when photos of an individual's face are judged too dissimilar to go together, people will tend to think they show several different identities. Scientists have tested this concept further by exploring what happens when the photos show faces with different expressions.

- [**Spinning a lighter, safer electrode**](#) [周三, 20 9月 23:35]

A fabric-like material electrode has been created that could help make energy storage devices -- batteries and supercapacitors -- faster and less

susceptible to leaks or disastrous meltdowns. Their design for a new supercapacitor, which looks something like a furry sponge infused with gelatin, offers a unique alternative to the flammable electrolyte solution that is a common component in these devices.

- **[Midlife depression may stem from tension with mothers and siblings, study finds](#)** [周三, 20 9月 23:35]

Relationships with our mothers and siblings continue to have an effect on our well-being, particularly at midlife. A new study found that tension with our mothers and siblings, similar to our spouses, is associated with symptoms of depression.

- **[Smokers who quit have metabolite levels that resemble those of nonsmokers](#)** [周三, 20 9月 23:35]

Even after years of smoking, the body has a remarkable ability to repair itself. Now in a study shows that certain metabolic changes occur soon after quitting, and these changes could help explain how some ill-effects of smoking might be reversible.

- **[Immune cells produce wound healing factor, could lead to new IBD treatment](#)** [周三, 20 9月 23:35]

Specific immune cells have the ability to produce a healing factor that can promote wound repair in the intestine, a finding that could lead to new, potential therapeutic treatments for inflammatory bowel disease (IBD), according to a new research study.

- **[Straining the memory: Prototype strain engineered materials are the future of data storage](#)** [周三, 20 9月 23:34]

Researchers have strain-engineered a data storage material to store data by exploiting a process of avalanche atomic switching. Memory cells using this material substantially outperform state-of-the-art phase change memory devices.

- **[Imagining a world without species](#)** [周三, 20 9月 23:34]

Categorizing species can get hazy at small, microbial scales. After all,

the classical definition of species as interbreeding individuals with sexually viable offspring doesn't apply to asexual organisms. Examining shared DNA doesn't help either: collectively, E. coli bacteria have only 20 percent of genes in common. In new research, a researcher asks: could organism interactions be described without mentioning species at all?

• [**Mathematicians ask: What's in a ripple?**](#) [周三, 20 9月 23:34]

When a fluid or a gas experiences a sudden disturbance, it often gives rise to a phenomenon known as an undular bore, which consists of a series of rapid oscillations that propagate and spread. But how to describe what transpires? New mathematics research brings us closer to finding an answer.

• [**Researchers identify new target, develop new drug for cancer therapies**](#) [周三, 20 9月 23:33]

Opening up a new pathway to fight cancer, researchers have found a way to target an enzyme that is crucial to tumor growth while also blocking the mechanism that has made past attempts to target that enzyme resistant to treatment. Researchers were able to use this finding to develop a drug that successfully inhibits tumor growth of melanoma as well as pancreatic and colorectal cancer in mice.

• [**Is the Milky Way an 'outlier' galaxy? Studying its 'siblings' for clues**](#) [周三, 20 9月 23:33]

The most-studied galaxy in the universe -- the Milky Way -- might not be as 'typical' as previously thought, according to a new study. Early results from the Satellites Around Galactic Analogs (SAGA) Survey indicate that the Milky Way's satellites are much more tranquil than other systems of comparable luminosity and environment. Many satellites of those 'sibling' galaxies are actively pumping out new stars, but the Milky Way's satellites are mostly inert.

• [**Real or fake? Creating fingers to protect identities**](#) [周三, 20 9月 23:33]

Biometric experts for the first time have designed and created a fake

finger containing multiple key properties of human skin. Commonly called a spoof, this fake finger has been used to test two of the predominant types of fingerprint readers to help determine their resilience to spoof attacks.

- [**How Teotihuacan's urban design was lost and found**](#) [周三, 20 9月 23:33]

A new article outlines how the urban design of the city of Teotihuacan differed from past and subsequent cities, only to be rediscovered and partially modeled on many centuries later by the Aztecs.

- [**Cellular backup plan for keeping iron levels just right**](#) [周三, 20 9月 23:33]

Researchers have uncovered a new connection in the network of checks and balances underlying cellular iron regulation.

- [**Plant physiology: Adjusting to fluctuating temperatures**](#) [周三, 20 9月 22:45]

The average vegetation periods of trees and shrubs in North America are intrinsically three weeks shorter than those of comparable species in Europe and Asia, new research indicates.

- [**10,000 year-old DNA proves when fish colonized our lakes**](#) [周三, 20 9月 22:45]

DNA in lake sediment forms a natural archive displaying when various fish species colonized lakes after the glacial period. Scientists' analyses of the prevalence of whitefish DNA in sediment reveal that the whitefish came to Lake Stora Lögdsjön in Västerbotten already 10,000 years ago, whereas Lake Hotagen in Jämtland had its whitefish only 2,200 years ago.

- [**Foster tadpoles trigger parental instinct in poison frogs**](#) [周三, 20 9月 22:43]

Poison frogs, especially male poison frogs, are very caring parents. After the tadpoles hatch, the males piggyback their offspring to distant pools spread around the rainforest where they can feed and develop. A recent

study shows that this parental behavior can be triggered experimentally. When unrelated tadpoles are placed on the backs of adult frogs, male – and even female – “foster parents” make their way to pools in the forest in the same way as if they had picked up the tadpoles themselves.

- [**Mathematical simulations shed new light on epilepsy surgery**](#) [周三, 20 9月 22:43]

Results from an unexpected quarter is could help neurologists to identify which brain region to remove to eliminate an epilepsy patient’s symptoms. Mathematicians have shown that it is sensible to examine the interconnections between different brain regions closely, instead of searching for abnormal regions only.

- [**Naked molecules dancing in liquid become visible**](#) [周三, 20 9月 22:42]

Moving, vibrating and leaping molecules make up our world. However, capturing their movement is not an easy task. Scientists were able to see the movement of molecules stored inside a graphene pocket without the need to stain them. This study paves the way for observing the dynamics of life building blocks, like proteins and DNA, as well as the self-assembly of other materials.

- [**Building social communication skills in shy children helps with peer likeability**](#) [周三, 20 9月 22:00]

A new study has discovered that shy children with low English vocabulary skills, can still be popular among their peers if they have high-functioning social communication skills that enable them to engage and interact well with their peers in social settings.

- [**Rolling dice for cell size specification in plant leaf epidermis**](#) [周三, 20 9月 22:00]

Scientists have discovered that endoreduplication, which promotes cellular enlargement in the epidermal tissue of *Arabidopsis thaliana*, occurs randomly as a Poisson process throughout cellular maturation.

- [**More mouths can be fed by boosting number of**](#)

[plant pores](#) [周三, 20 9月 22:00]

Scientists have synthesized a new bioactive small molecule that has the ability to increase stomata numbers on flowering plants without stunting their growth. The team's new discovery could help elucidate the stomatal development mechanism in plants.

[Gravity waves influence weather and climate](#) [周三, 20 9月 22:00]

Gravity waves form in the atmosphere as a result of destabilizing processes. The effects of gravity waves can only be taken into consideration by including additional special components in the models.

Efforts to save sea turtles are a 'global conservation success story' -- ScienceDaily

A new study of the world's seven sea turtle species provides evidence that their numbers are growing overall (unlike many endangered vertebrates), thanks to years of conservation efforts that have played a key role in sea turtle recovery -- even for small sea turtle populations. Sea turtles have historically suffered population declines for reasons that include accidental catch and harvesting adults and eggs.

Such decreases have motivated worldwide conservation efforts since the 1950s to employ tactics like strict fishing regulations and beach protection measures. To examine the current global status of sea turtles, Antonios Mazaris and colleagues studied 4,417 annual estimates of sea turtle nesting abundance based on specific time periods of nesting data collection that ranged in length from six to 47 years.

They used estimates from 2010 or later to evaluate the

length of time periods required to detect significant trends in abundance within Regional Management Units (which represent discrete groups of nesting sites in certain areas that are distinct from one another based on genetics, distribution, movement, and demography) for each species, finding a majority of population increases (95 significant increases compared to 35 significant decreases).

Despite the encouraging upward population trends, Mazaris et al.'s results complement International Union of Conservation for Nature (IUCN) assessments of sea turtle status, which lists six sea turtle species as endangered.

The authors also found that while longer time periods of nesting data collection are important for detecting population trends, shorter intervals not currently used by IUCN could still provide important information, though they highlight the need for more updated and continuous nesting site information.

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| [Section menu](#) | [主菜单](#) |

Mathematics predicts a sixth mass extinction: By 2100, oceans may hold enough carbon to launch mass extermination of species in future millennia -- ScienceDaily

In the past 540 million years, the Earth has endured five mass extinction events, each involving processes that upended the normal cycling of carbon through the atmosphere and oceans. These globally fatal perturbations in carbon each unfolded over thousands to millions of years, and are coincident with the widespread extermination of marine species around the world.

The question for many scientists is whether the carbon cycle is now experiencing a significant jolt that could tip the planet toward a sixth mass extinction. In the modern era, carbon dioxide emissions have risen steadily since the 19th century, but deciphering whether this recent spike in carbon could lead to mass extinction has been challenging. That's mainly because

it's difficult to relate ancient carbon anomalies, occurring over thousands to millions of years, to today's disruptions, which have taken place over just a little more than a century.

Now Daniel Rothman, professor of geophysics in the MIT Department of Earth, Atmospheric and Planetary Sciences and co-director of MIT's Lorenz Center, has analyzed significant changes in the carbon cycle over the last 540 million years, including the five mass extinction events. He has identified "thresholds of catastrophe" in the carbon cycle that, if exceeded, would lead to an unstable environment, and ultimately, mass extinction.

In a paper published in *Science Advances*, he proposes that mass extinction occurs if one of two thresholds are crossed: For changes in the carbon cycle that occur over long timescales, extinctions will follow if those changes occur at rates faster than global ecosystems can adapt. For carbon perturbations that take place over shorter timescales, the pace of carbon-cycle changes will not matter; instead, the size or magnitude of the change will determine the likelihood of an extinction event.

Taking this reasoning forward in time, Rothman predicts that, given the recent rise in carbon dioxide emissions over a relatively short timescale, a sixth extinction will depend on whether a critical amount of carbon is added to the oceans. That amount, he calculates, is about 310 gigatons, which he estimates to be roughly equivalent to the amount of carbon that human activities will have added to the world's oceans by the year 2100.

Does this mean that mass extinction will soon follow at the turn of the century? Rothman says it would take some time -- about 10,000 years -- for such ecological disasters to play out. However, he says that by 2100 the world may have tipped into "unknown territory."

"This is not saying that disaster occurs the next day," Rothman says. "It's saying that, if left unchecked, the carbon cycle would move into a realm which would be no longer stable, and would behave in a way that would be difficult to predict. In the geologic past, this type of behavior is associated with mass extinction."

History follows theory

Rothman had previously done work on the end-

Permian extinction, the most severe extinction in Earth's history, in which a massive pulse of carbon through the Earth's system was involved in wiping out more than 95 percent of marine species worldwide. Since then, conversations with colleagues spurred him to consider the likelihood of a sixth extinction, raising an essential question:

"How can you really compare these great events in the geologic past, which occur over such vast timescales, to what's going on today, which is centuries at the longest?" Rothman says. "So I sat down one summer day and tried to think about how one might go about this systematically."

He eventually derived a simple mathematical formula based on basic physical principles that relates the critical rate and magnitude of change in the carbon cycle to the timescale that separates fast from slow change. He hypothesized that this formula should predict whether mass extinction, or some other sort of global catastrophe, should occur.

Rothman then asked whether history followed his hypothesis. By searching through hundreds of published geochemistry papers, he identified 31 events

in the last 542 million years in which a significant change occurred in Earth's carbon cycle. For each event, including the five mass extinctions, Rothman noted the change in carbon, expressed in the geochemical record as a change in the relative abundance of two isotopes, carbon-12 and carbon-13. He also noted the duration of time over which the changes occurred.

He then devised a mathematical transformation to convert these quantities into the total mass of carbon that was added to the oceans during each event. Finally, he plotted both the mass and timescale of each event.

"It became evident that there was a characteristic rate of change that the system basically didn't like to go past," Rothman says.

In other words, he observed a common threshold that most of the 31 events appeared to stay under. While these events involved significant changes in carbon, they were relatively benign -- not enough to destabilize the system toward catastrophe. In contrast, four of the five mass extinction events lay over the threshold, with the most severe end-Permian extinction being the

farthest over the line.

"Then it became a question of figuring out what it meant," Rothman says.

A hidden leak

Upon further analysis, Rothman found that the critical rate for catastrophe is related to a hidden process within the Earth's natural carbon cycle. The cycle is essentially a loop between photosynthesis and respiration. Normally, there is a "leak" in the cycle, in which a small amount of organic carbon sinks to the ocean bottom and, over time, is buried as sediment and sequestered from the rest of the carbon cycle.

Rothman found that the critical rate was equivalent to the rate of excess production of carbon dioxide that would result from plugging the leak. Any additional carbon dioxide injected into the cycle could not be described by the loop itself. One or more other processes would instead have taken the carbon cycle into unstable territory.

He then determined that the critical rate applies only beyond the timescale at which the marine carbon cycle

can re-establish its equilibrium after it is disturbed. Today, this timescale is about 10,000 years. For much shorter events, the critical threshold is no longer tied to the rate at which carbon is added to the oceans but instead to the carbon's total mass. Both scenarios would leave an excess of carbon circulating through the oceans and atmosphere, likely resulting in global warming and ocean acidification.

The century's the limit

From the critical rate and the equilibrium timescale, Rothman calculated the critical mass of carbon for the modern day to be about 310 gigatons.

He then compared his prediction to the total amount of carbon added to the Earth's oceans by the year 2100, as projected in the most recent report of the Intergovernmental Panel on Climate Change. The IPCC projections consider four possible pathways for carbon dioxide emissions, ranging from one associated with stringent policies to limit carbon dioxide emissions, to another related to the high range of scenarios with no limitations.

The best-case scenario projects that humans will add

300 gigatons of carbon to the oceans by 2100, while more than 500 gigatons will be added under the worst-case scenario, far exceeding the critical threshold. In all scenarios, Rothman shows that by 2100, the carbon cycle will either be close to or well beyond the threshold for catastrophe.

"There should be ways of pulling back [emissions of carbon dioxide]," Rothman says. "But this work points out reasons why we need to be careful, and it gives more reasons for studying the past to inform the present."

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| [Section menu](#) | [主菜单](#) |

One e-cigarette with nicotine leads to adrenaline changes in nonsmokers' hearts -- ScienceDaily

A new UCLA study found that healthy nonsmokers experienced increased adrenaline levels in their heart after one electronic cigarette (e-cigarette) with nicotine but there were no increased adrenaline levels when the study subjects used an a nicotine-free or empty e-cig.

The findings are published in *Journal of the American Heart Association*, the Open Access Journal of the American Heart Association/American Stroke Association.

Unlike cigarettes, e-cigs have no combustion or tobacco. Instead, these electronic, handheld devices deliver nicotine with flavoring and other chemicals in a vapor instead of smoke.

"While e-cigarettes typically deliver fewer carcinogens than are found in the tar of tobacco cigarette smoke, they also usually deliver nicotine. Many believe that

the tar -- not the nicotine -- is what leads to increased cancer and heart attack risks," said Dr. Holly R. Middlekauff, senior study author and professor of medicine (cardiology) and physiology at the David Geffen School of Medicine at UCLA. "So, we asked the question, are e-cigarettes safe?"

The researchers had previously reported that chronic e-cig users have elevated sympathetic nerve activity which increases adrenaline directed to the heart and are more susceptible to oxidative stress. Both are risks factors for heart attack. This study aimed to find out if nicotine caused these events.

Middlekauff and her team used a technique called "heart rate variability" obtained from a prolonged, non-invasive heart rhythm recording. Heart rate variability is calculated from the degree of variability in the time between heartbeats. This variability may be indicative of the amount of adrenaline on the heart.

Prior studies have used a heart rate variability test to link increased adrenaline activity in the heart with increased cardiac risk. People with known heart disease and people without known heart disease who have this pattern of high adrenaline levels in the heart have

increased risk of death, Middlekauff said.

In the first study to separate the nicotine from the non-nicotine components when looking at the heart impact of e-cigarettes on humans, researchers studied 33 healthy adults who were not current e-cigarette or tobacco cigarette smokers. On different days, each participant used an e-cigarette with nicotine, an e-cigarette without nicotine or an empty 'sham' device. Researchers measured cardiac adrenaline activity by assessing heart rate variability and oxidative stress in blood samples by measuring the enzyme plasma paraoxonase (PON1).

They found:

- Exposure to e-cigarettes with nicotine, but not e-cigarettes without nicotine, led to increased adrenaline levels to the heart, as indicated by abnormal heart rate variability.
- Oxidative stress, which increases risks for atherosclerosis and heart attack, showed no changes after exposure to e-cigarettes with and without nicotine. The number of markers they studied for oxidative stress were minimal, however and more studies are warranted, according to Middlekauff.

"While it's reassuring that the non-nicotine components do not have an obvious effect on adrenaline levels to the heart, these findings challenge the concept that inhaled nicotine is benign, or safe. Our study showed that acute electronic cigarette use with nicotine increases cardiac adrenaline levels. And it's in the same pattern that is associated with increased cardiac risk in patients who have known cardiac disease, and even in patients without known cardiac disease," Middlekauff said. "I think that just seeing this pattern at all is very concerning and it would hopefully discourage nonsmokers from taking up electronic cigarettes."

Future studies should look more closely at oxidative stress and e-cigarette use, using a broader number of cardiac markers, in a larger population of people, researchers said.

Co-authors are Roya S. Moheimani; May Bhetraratana; Kacey M. Peters; Benjamin K. Yang; Fen Yin; Jeffrey Gornbein and Dr. Jesus A. Araujo, all from UCLA. Author disclosures are on the manuscript.

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| [Section menu](#) | [主菜单](#) |

3-D analysis of dog fossils sheds light on domestication debate -- ScienceDaily

In an effort to settle the debate about the origin of dog domestication, a technique that uses 3-D scans of fossils is helping researchers determine the difference between dogs and wolves.

In the ongoing debate, one camp believes dogs were domesticated in the Paleolithic age (more than 17,000 years ago), when humans were hunter-gatherers. The other camp believes domestication occurred in the Neolithic age (17,000 to 7,000 years ago), when humans first established agriculture and civilizations.

Abby Grace Drake, a senior lecturer in the Department of Ecology and Evolutionary Biology, and her colleagues have been analyzing 3-D scans of ancient fossil canid mandibles to determine whether they belong to dogs or wolves. The answer, they find, is not so simple.

The researchers found that in the early stages of domestication, the skull changed shape but evolution of the mandible lagged behind and did not co-evolve with the skull. Their study is reported in the Aug. 25 issue of the journal *Scientific Reports*.

"A lot of the fossil evidence for the date of dog domestication is based on morphological [structural] analysis of mandibles," said Drake, the paper's first author. Robert Losey, an anthropologist at the University of Alberta, Canada, is a senior co-author of the paper. "Our study shows that when you measure modern dog mandibles and wolf mandibles using 3-D measurements you can distinguish them, and yet when we looked at these fossil mandibles, they don't look like dogs or wolves."

Wolves have fairly straight mandibles while dog mandibles are curved, structural features that become evident in a 3-D scan. In a proof of principle, when analyzing the 3-D structures of mandibles of modern dogs, Drake and colleagues correctly classified 99.5 percent of the samples as being dog or wolf.

However, 3-D analysis of fossil records from four ancient sites, two from Russia and two from Alaska,

found that most of those fossil mandibles could not be classified as either dog or wolf, even though features in canid skulls from the same sites as well as other data proved that the samples were dog remains.

Other evidence also showed that these canids were domesticated: The remains were found within human dwellings, remains at both the Russian sites revealed butchery marks, indicating that they were eaten, and isotope analysis of canid and human remains from one of the sites -- Ust'-Polui, in the Russian Arctic -- showed canids and humans were both eating fish, and humans were feeding their canids.

Since mandibles do not appear to evolve as rapidly as the skull, the results show they are not reliable for identifying early dog fossils, Drake said.

Four of 26 fossil mandibles from Ust'-Polui, which was occupied from 250 B.C. to 150 B.C., were identified as dogs, while three of the mandibles from the site were identified as wolves.

At another site, Ivolgin, in southern Russia, occupied between 300 B.C. and 200 B.C., none of the 20 mandibles were identified as dogs, though 8 were

identified as wolves. All of the skulls found at these sites, 12 from Ivolgin and five from Ust'-Polui, were clearly identified as dogs.

Canid fossils of wolves and dogs from the Alaskan sites from 1600 CE were used as controls and to compare genetic testing against the structural 3-D data.

A 2015 paper by Drake and Michael Coquerelle, an anthropologist at the University Rey Juan Carlos in Alcorcon, Spain, and a co-author on the current paper, used the 3-D technique to refute a claim that dogs existed 30,000 years ago. That claim was based on linear caliper measurements of skulls. Linear measurements are inaccurate because dog and wolf skull sizes overlap, Drake said. On the other hand, 3-D analysis of skulls uses landmarks across the skull to identify differences between dogs and wolves in the angle of the muzzle, or snout, and in the angling of the eye orbits.

"The earliest dogs I've seen in my analysis are from 7,000 to 9,000 years ago," Drake said.

The study was funded by the Social Sciences and Humanities Research Council of Canada and the

European Research Council.

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| [Section menu](#) | [主菜单](#) |

Protected waters foster resurgence of West Coast rockfish: Recovering species likely seeding surrounding waters with offspring, new research shows -- ScienceDaily

West Coast rockfish species in deep collapse only 20 years ago have multiplied rapidly in large marine protected areas off Southern California, likely seeding surrounding waters with enough offspring to offer promise of renewed fishing, a new study has found.

The research published in *Royal Society Open Science* shows that protecting important ocean habitat promotes the long-term recovery of rockfish such as cowcod and bocaccio that have long been a staple of West Coast fishermen. Favorable ocean conditions also played a role, according to the study by scientists from NOAA Fisheries' Southwest Fisheries Science Center (SWFSC), University of San Diego, and the University of Massachusetts Amherst.

"The larvae of several species of rockfish that were

once heavily fished increased in number within protected areas over the past decade," said Andrew Thompson, a research scientist at the SWFSC in La Jolla, Calif. "The larvae have the potential to drift outside the protected region. That's good for fisheries because it can build populations beyond the protected waters too."

The research drew on long-running surveys of California waters by the California Cooperative Oceanic Fisheries Investigations (CalCOFI), a partnership between the California Department of Fish and Wildlife, NOAA Fisheries and the Scripps Institution of Oceanography. The collaboration began in the 1940s to study the factors behind the collapse of the California sardine fishery and continues quarterly surveys to study ocean conditions and fish populations.

"We would have never known this if not for the trove of data we get from those ships out on the water regularly looking at everything from temperature to, in this case, numbers of larval rockfish," said Kristen Koch, Acting Director of the SWFSC. "We've discovered this conservation success story thanks to long-term monitoring that gives us new insight into how the ocean works and changes."

The study used CalCOFI data to examine larval numbers of 15 rockfish species inside and outside two large protected areas southwest of Los Angeles called Cowcod Conservation Areas (CCAs), designated by NOAA Fisheries in 2001 at the recommendation of the Pacific Fishery Management Council. The CCAs prohibit fishing deeper than 110 feet, since many adult rockfish species live at such depths. Therefore, the 4,300-square-mile areas protect numerous species of rockfish in addition to cowcod.

Researchers examined trends from 1998 to 2013 in eight species that were historically fished and seven that were not. The same period brought largely cool ocean conditions, which support increased rockfish reproduction.

Scientists found that larvae of most of the rockfish species historically targeted by fishing increased throughout Southern California waters, but especially within the protected conservation areas. Species that were not historically fished increased at about the same rate both inside and outside the protected areas, indicating that rockfish spawning was high within the protected areas.

"This is the first research we know of to demonstrate that marine protected areas are producing high abundances of fish larvae that can seed surrounding areas," Thompson said. "That was an important part of the vision for these areas when they were established, and it's rewarding that management actions are contributing to the recovery of rockfish in Southern California."

Story Source:

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All Top News

Top science stories featured on ScienceDaily's home page.

- [**Efforts to save sea turtles are a 'global conservation success story'**](#) [周四, 21 9月 06:21]

A new study of the world's seven sea turtle species provides evidence that their numbers are growing overall (unlike many endangered vertebrates), thanks to years of conservation efforts that have played a key role in sea turtle recovery -- even for small sea turtle populations.

- [**Mathematics predicts a sixth mass extinction**](#) [周四, 21 9月 06:21]

Scientists have analyzed significant changes in the carbon cycle over the last 540 million years, including the five mass extinction events. They have identified 'thresholds of catastrophe' in the carbon cycle that, if exceeded, would lead to an unstable environment, and ultimately, mass extinction.

- [**Unique type of object discovered in our solar system**](#) [周四, 21 9月 02:47]

Astronomers have observed the intriguing characteristics of an unusual type of object in the asteroid belt between Mars and Jupiter: two asteroids orbiting each other and exhibiting comet-like features, including a bright coma and a long tail. This is the first known binary asteroid also classified as a comet.

- [**Fly away home? Ice age may have clipped bird migration**](#) [周四, 21 9月 02:46]

The onset of the last ice age may have forced some bird species to abandon their northerly migrations for thousands of years, says new research led by an ornithologist. The study challenges a long-held

presumption that birds merely shortened their migratory flights when glaciers advanced south to cover much of North America and northern Europe about 21,000 years ago.

- **[Species abundance: Winter restricts innovation](#)** [周四, 21 9月 01:17]

Why are there so many more species in the tropics? The 'storage effect' is stronger there than in temperate forests.

- **[Bite force research reveals dinosaur-eating frog](#)** [周四, 21 9月 01:17]

Scientists say that a large, now extinct, frog called *Beelzebufo* that lived about 68 million years ago in Madagascar would have been capable of eating small dinosaurs. The conclusion comes from a study of the bite force of South American horned frogs from the living genus *Ceratophrys*, known as Pacman frogs for their characteristic round shape and large mouth, similar to the video game character Pac-Man.

- **[Animal acoustic activity decline shows forest fire pollution wreaks havoc on wildlife](#)** [周四, 21 9月 01:17]

Forest fires in Southeast Asia during the El Niño droughts of 2015 caused considerable disruption to the biodiversity of the region due to the smoke-induced 'haze' they created, according to new research.

- **[New concept of terrestrial planet formation](#)** [周四, 21 9月 01:17]

Scientists are proposing a new way of understanding the cooling and transfer of heat from terrestrial planetary interiors and how that affects the generation of the volcanic terrains that dominate the rocky planets.

- **[World's first 'molecular robot' capable of building molecules](#)** [周四, 21 9月 01:17]

Scientists have created the world's first 'molecular robot' that is capable of performing basic tasks including building other molecules.

- **[Dinosaur evolution: Lumbering giants had agile ancestors](#)** [周四, 21 9月 01:17]

The best known sauropod dinosaurs were huge herbivorous creatures, whose brain structures were markedly different from those of their

evolutionary predecessors, for the earliest representatives of the group were small, lithe carnivores.

- [**Scientists make atoms-thick 'Post-It notes' for solar cells and circuits**](#) [周四, 21 9月 01:17]

A new study describes an innovative method to make stacks of semiconductors just a few atoms thick. The technique offers scientists and engineers a simple, cost-effective method to make thin, uniform layers of these materials, which could expand capabilities for devices from solar cells to cell phones.

- [**Brain cancer growth halted by absence of protein**](#) [周四, 21 9月 01:16]

The growth of certain aggressive brain tumors can be halted by cutting off their access to a signaling molecule produced by the brain's nerve cells, according to a new study.

- [**Millions of new genes in human microbiome**](#) [周四, 21 9月 01:16]

A new study of the human microbiome has uncovered millions of previously unknown genes from microbial communities in the human gut, skin, mouth, and vaginal microbiome, allowing for new insights into the role these microbes play in human health and disease.

- [**Genome editing reveals role of gene important for human embryo development**](#) [周四, 21 9月 01:16]

Researchers have used genome editing technology to reveal the role of a key gene in human embryos in the first few days of development. This is the first time that genome editing has been used to study gene function in human embryos, which could help scientists to better understand the biology of our early development.

- [**Is the Milky Way an 'outlier' galaxy? Studying its 'siblings' for clues**](#) [周三, 20 9月 23:33]

The most-studied galaxy in the universe -- the Milky Way -- might not be as 'typical' as previously thought, according to a new study. Early results from the Satellites Around Galactic Analogs (SAGA) Survey

indicate that the Milky Way's satellites are much more tranquil than other systems of comparable luminosity and environment. Many satellites of those 'sibling' galaxies are actively pumping out new stars, but the Milky Way's satellites are mostly inert.

- [**How Teotihuacan's urban design was lost and found**](#) [周三, 20 9月 23:33]

A new article outlines how the urban design of the city of Teotihuacan differed from past and subsequent cities, only to be rediscovered and partially modeled on many centuries later by the Aztecs.

- [**10,000 year-old DNA proves when fish colonized our lakes**](#) [周三, 20 9月 22:45]

DNA in lake sediment forms a natural archive displaying when various fish species colonized lakes after the glacial period. Scientists' analyses of the prevalence of whitefish DNA in sediment reveal that the whitefish came to Lake Stora Lögdasjön in Västerbotten already 10,000 years ago, whereas Lake Hotagen in Jämtland had its whitefish only 2,200 years ago.

- [**Emerging disease further jeopardizes North American frogs**](#) [周三, 20 9月 04:02]

A deadly amphibian disease called severe Perkinsea infections, or SPI, is the cause of many large-scale frog die-offs in the United States, according to a new study.

- [**End-of-summer Arctic sea ice extent is eighth lowest on record**](#) [周三, 20 9月 04:01]

Arctic sea ice appeared to have reached its yearly lowest extent on Sept. 13, scientists have reported. Analysis of satellite data showed that at 1.79 million square miles (4.64 million square kilometers), this year's Arctic sea ice minimum extent is the eighth lowest in the consistent long-term satellite record, which began in 1978.

- [**North Atlantic right whales decline confirmed: 458 remaining**](#) [周三, 20 9月 02:04]

Marine biologists have developed a new model to improve estimates of abundance and population trends of endangered North Atlantic right whales, which have declined in numbers and productivity in recent years. Between 1990 and 2010 abundance increased to 482 animals, but since 2010 the numbers have declined to 458 in 2015, with 14 known deaths this year.

- [**Sleep deprivation is an effective anti-depressant for nearly half of depressed patients, study suggests**](#) [周三, 20 9月 02:04]

Sleep deprivation - typically administered in controlled, inpatient settings - rapidly reduces symptoms of depression in roughly half of depression patients, according the first meta-analysis on the subject in nearly 30 years.

- [**Mercury's poles may be icier than scientists thought**](#) [周三, 20 9月 00:31]

A new study identifies three large surface ice deposits near Mercury's north pole, and suggests there could be many additional small-scale deposits that would dramatically increase the planet's surface ice inventory.

- [**Getting emotional after failure helps you improve next time, study finds**](#) [周二, 19 9月 23:12]

Emotional responses to failure rather than cognitive ones are more effective at improving people's results for the next time they tackle the next related task, new research indicates.

- [**Playing American football before age 12 could have long-term health effects**](#) [周二, 19 9月 22:25]

Playing American football before the age of 12 may have long-term consequences for players' mood and behavior, according to a study involving 214 professional and amateur football players.

- [**Exposure to pet and pest allergens during infancy linked to reduced asthma risk**](#) [周二, 19 9月 22:25]

Children exposed to high indoor levels of pet or pest allergens during infancy have a lower risk of developing asthma by 7 years of age, new research reveals. The findings may provide clues for the design of strategies to prevent asthma from developing.

- [**New mirror-coating technology promises dramatic improvements in telescopes**](#) [周二, 19 9月 10:23]

An electrical engineer has teamed up with astronomers to improve telescope mirrors using thin-film technology from the electronics industry. They are developing new protective coatings using an atomic layer deposition system large enough to accommodate telescope mirrors.

- [**DNA triggers shape-shifting in hydrogels, opening a new way to make 'soft robots'**](#) [周二, 19 9月 10:22]

Biochemical engineers have used sequences of DNA molecules to induce shape-changing in water-based gels, demonstrating a new tactic to produce "soft" robots and "smart" medical devices that do not rely on cumbersome wires, batteries or tethers.

- [**Solar-to-fuel system recycles CO₂ to make ethanol and ethylene**](#) [周二, 19 9月 03:17]

Scientists have harnessed the power of photosynthesis to convert carbon dioxide into fuels and alcohols at efficiencies far greater than plants. The achievement marks a significant advance in the effort to move toward sustainable sources of fuel.

- [**Copper catalyst yields high efficiency CO₂-to-fuels conversion**](#) [周二, 19 9月 03:17]

Scientists have developed a new electrocatalyst that can directly convert carbon dioxide into multicarbon fuels and alcohols using record-low inputs of energy. The work is the latest in a round of studies tackling the challenge of creating a clean chemical manufacturing system that can put carbon dioxide to good use.

- [**When it comes to the threat of extinction, size matters**](#) [周二, 19 9月 01:27]

Animals in the Goldilocks zone -- neither too big, nor too small, but just the right size -- face a lower risk of extinction than do those on both ends of the scale, according to an extensive global analysis.

- [**RNA discovery could help boost plant heat, drought tolerance**](#) [周二, 19 9月 00:35]

The discovery of a RNA that can increase drought and salt tolerance in thale cress could illuminate a new research approach and hold implications for other plants, including food crops.

- [**More evidence of water on Mars**](#) [周二, 19 9月 00:35]

River deposits exist across the surface of Mars and record a surface environment from over 3.5 billion years ago that was able to support liquid water at the surface. A region of Mars named Aeolis Dorsa contains some of the most spectacular and densely packed river deposits seen on Mars.

- [**Urgent emission reductions needed to achieve 1.5°C warming limit**](#) [周一, 18 9月 23:18]

Significant emission reductions are required if we are to achieve one of the key goals of the Paris Agreement, and limit the increase in global average temperatures to 1.5°C; a new partnership warns.

- [**Changes in Earth's crust caused oxygen to fill the atmosphere**](#) [周一, 18 9月 23:18]

New research has uncovered a direct link between changes in the earth's crust three billion years ago and the introduction of free oxygen to the atmosphere. Without these changes, oxygen could have been suppressed in earth's crust forever, so the findings help explain the emergence of life on our planet.

- [**Dogs' social skills linked to oxytocin sensitivity**](#) [周一, 18 9月 23:18]

The tendency of dogs to seek contact with their owners is associated with genetic variations in sensitivity for the hormone oxytocin, according to a new study. The results contribute to our knowledge of how dogs have changed during their development from wolf to

household pet.

- [**5,000 deaths annually from Diesel-gate in Europe**](#) [周一, 18 9月 21:33]

Excess emissions from diesel cars cause about 5,000 premature deaths annually across Europe, a new study shows. Higher exposure to secondary particles and ozone can be traced back to excess NOx emissions from diesel cars, vans and light commercial vehicles. With the EU's vehicle emission limits achieved on the road about 5,000 premature deaths could be avoided annually. If diesel cars emitted as little NOx as petrol cars, about 7,500 premature deaths could be avoided annually.

- [**New evidence for small, short-lived drops of early universe quark-gluon plasma?**](#) [周一, 18 9月 21:30]

Particles emerging from even the lowest energy collisions of small deuterons with large heavy nuclei at the Relativistic Heavy Ion Collider exhibit behavior scientists associate with the formation of a soup of quarks and gluons, the fundamental building blocks of nearly all visible matter.

- [**Vaping doubles risk of smoking cigarettes for teens**](#) [周一, 18 9月 21:07]

Teenagers who try e-cigarettes double their risk for smoking tobacco cigarettes, according to a new study. The study found that students in grades seven to 12 who had tried an e-cigarette are 2.16 times more likely to be susceptible to cigarette smoking.

- [**NASA's Cassini spacecraft ends its historic exploration of Saturn**](#) [周六, 16 9月 22:30]

A thrilling epoch in the exploration of our solar system has come to a close, as NASA's Cassini spacecraft made a fateful plunge into the atmosphere of Saturn, ending its 13-year tour of the ringed planet. Cassini's plunge brings to a close a series of 22 dives between Saturn and its rings, a feat never before attempted by any spacecraft.

- [**A drone for last-centimeter delivery**](#) [周六, 16 9月 05:01]

A new drone uses cutting-edge technology to deliver parcels weighing up to 500 grams. The device will never get stuck in traffic, it's programmed to avoid obstacles, and it can reach destinations on steep or uneven terrain. Its protective cage and foldable design mean that it can be carried around in a backpack and used in total safety.

• [Light on exoplanets may be quite different from Earth: Different photosynthesis?](#) [周六, 16 9月 05:00]

Researchers have proposed a prediction that red-edge could be observed as on the Earth even on exoplanets around M-dwarfs. They pointed out that the first oxygenic phototrophs are most likely to have evolved underwater to utilize visible light just like what had happened in the primordial ocean on the Earth. They examined light adaptation mechanisms of visible- and IR-radiation-using phototrophs required for adapting to land habitats and found out that IR-using phototrophs struggle to adapt to chan...

• [Tough stuff: Spider silk enhanced with graphene-based materials](#) [周六, 16 9月 04:52]

Natural spider silk has excellent mechanical properties. Researchers have now found a way to boost the strength of spider's silk using graphene-based materials, paving the way for a novel class of high-performance bionic composites.

• [Ultrafast snapshots of relaxing electrons in solids](#) [周六, 16 9月 04:37]

A team of scientists has been able to capture the dynamics of core-excited excitons in solids in real-time.

• [Ancient amphibian had mouthful of teeth ready to grab you](#) [周六, 16 9月 03:58]

The idea of being bitten by a nearly toothless modern frog or salamander sounds laughable, but their ancient ancestors had a full array of teeth, large fangs and thousands of tiny hook-like structures called denticles on the roofs of their mouths that would snare prey, according to paleontologists.

- **[Why we did not evolve to live forever: Unveiling the mystery of why we age](#)** [周六, 16 9月 02:41]

Researchers have made a breakthrough in understanding the origin of the ageing process. They have identified that genes belonging to a process called autophagy -- one of the cells most critical survival processes -- promote health and fitness in young worms but drive the process of ageing later in life.

- **[Arctic sea ice once again shows considerable melting](#)** [周五, 15 9月 22:36]

This September, the extent of Arctic sea ice shrank to roughly 4.7 million square kilometres, scientists have determined.

- **[Skin patch dissolves 'love handles' in mice](#)** [周五, 15 9月 21:52]

Researchers have developed a medicated skin patch that can turn energy-storing white fat into energy-burning brown fat locally while raising the body's metabolism. The patch could be used to burn off pockets of unwanted fat and treat metabolic disorders like obesity and diabetes.

- **[Wolves understand cause and effect better than dogs](#)** [周五, 15 9月 21:51]

A rattle will only make noise if you shake it. Animals like the wolf also understand such connections and are better at this than their domesticated descendants. Researchers say that wolves have a better causal understanding than dogs and that they follow human-given communicative cues equally well. The study provides insight that the process of domestication can also affect an animal's causal understanding.

- **[In step toward controlling chemistry, physicists create a new molecule, atom by atom](#)** [周五, 15 9月 03:24]

Physicists have discovered a unique new molecule that could lead to many useful applications, and show how chemical reactions can be studied on a microscopic scale using tools of physics.

[Biomarkers in the blood prove strong role of food for type 2 diabetes](#) [周五, 15 9月 03:24]

A pioneering method has demonstrated its potential in a large study, showing that metabolic fingerprints from blood samples could render important new knowledge on the connection between food and health. The study finds that diet is one of the strongest predictors of type 2 diabetes risk in older women.

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

- [**One e-cigarette with nicotine leads to adrenaline changes in nonsmokers' hearts**](#) [周四, 21 9月 06:21]

Electronic cigarettes have been touted as both a safer alternative for smokers and as an effective way for people to gradually quit smoking altogether. But a new study shows that nicotine inhaled from e-cigarettes can greatly increase a person's heart rate and aggravate the sympathetic nervous system.

- [**Immune cells may heal bleeding brain after strokes**](#) [周四, 21 9月 02:47]

By studying rodents, researchers showed that instead of attacking germs, some neutrophils may help heal the brain after an intracerebral hemorrhage, a form of stroke caused by ruptured blood vessels. The study suggests that two neutrophil-related proteins may play critical roles in protecting the brain from stroke-induced damage and could be used as treatments for intracerebral hemorrhage.

- [**Communication among health care facilities key to preventing spread of drug-resistant bacteria**](#) [周四, 21 9月 02:47]

Communication breakdowns between care facilities can pave the way for outbreaks of infection, according to research on the spread of an extensively drug-resistant bacterium.

- [**Small intestine permeable peptides facilitate digestive tract absorption**](#) [周四, 21 9月 01:17]

Biopharmaceuticals, medium- and high-molecular weight biologically

active macromolecules, are not easily absorbed by the small intestine, the main organ responsible for gastrointestinal absorption, resulting in a bottleneck for oral administration type biopharmaceutical development. Now, researchers have found a new small intestine permeable peptide that can facilitate digestive tract absorption of biopharmaceutical products. The discovery should make it possible for oral administration of drugs ...

- [**Oxytocin turns up the volume of your social environment**](#) [周四, 21 9月 01:17]

A new study shows that the so-called 'love hormone' oxytocin can intensify negative as well as positive experiences.

- [**Parents: How you manage conflict has an impact on your kids**](#) [周四, 21 9月 01:17]

It's not always bad for children to be exposed to their parents' disagreements. It's how those disagreements are handled that really matters, according to a new study.

- [**Newly ID'd role of major Alzheimer's gene suggests possible therapeutic target**](#) [周四, 21 9月 01:17]

A new role has been identified for the major Alzheimer's risk factor ApoE4, suggesting that targeting the protein may help treat the disease. Researchers show that ApoE4 exacerbates the brain damage caused by toxic tangles of a different Alzheimer's-associated protein: tau. In the absence of ApoE, tau tangles did very little harm to brain cells.

- [**Brain cancer growth halted by absence of protein**](#) [周四, 21 9月 01:16]

The growth of certain aggressive brain tumors can be halted by cutting off their access to a signaling molecule produced by the brain's nerve cells, according to a new study.

- [**Millions of new genes in human microbiome**](#) [周四, 21 9月 01:16]

A new study of the human microbiome has uncovered millions of previously unknown genes from microbial communities in the human

gut, skin, mouth, and vaginal microbiome, allowing for new insights into the role these microbes play in human health and disease.

- [**Hold the phone: An ambulance might lower your chances of surviving some injuries**](#) [周四, 21 9月 01:16]

Victims of gunshots and stabbings are significantly less likely to die if they're taken to the trauma center by a private vehicle than ground emergency medical services (EMS), according to results of a new analysis.

- [**Genome editing reveals role of gene important for human embryo development**](#) [周四, 21 9月 01:16]

Researchers have used genome editing technology to reveal the role of a key gene in human embryos in the first few days of development. This is the first time that genome editing has been used to study gene function in human embryos, which could help scientists to better understand the biology of our early development.

- [**Guess who? Facial expressions can cause confusion**](#) [周三, 20 9月 23:36]

Photos of the same person can look substantially different. For example, your passport photo may look quite different from your driving license, or your face in holiday photos. Research has shown when photos of an individual's face are judged too dissimilar to go together, people will tend to think they show several different identities. Scientists have tested this concept further by exploring what happens when the photos show faces with different expressions.

- [**Midlife depression may stem from tension with mothers and siblings, study finds**](#) [周三, 20 9月 23:35]

Relationships with our mothers and siblings continue to have an effect on our well-being, particularly at midlife. A new study found that tension with our mothers and siblings, similar to our spouses, is associated with symptoms of depression.

- [**Smokers who quit have metabolite levels that**](#)

resemble those of nonsmokers [周三, 20 9月 23:35]

Even after years of smoking, the body has a remarkable ability to repair itself. Now in a study shows that certain metabolic changes occur soon after quitting, and these changes could help explain how some ill-effects of smoking might be reversible.

Immune cells produce wound healing factor, could lead to new IBD treatment [周三, 20 9月 23:35]

Specific immune cells have the ability to produce a healing factor that can promote wound repair in the intestine, a finding that could lead to new, potential therapeutic treatments for inflammatory bowel disease (IBD), according to a new research study.

Researchers identify new target, develop new drug for cancer therapies [周三, 20 9月 23:33]

Opening up a new pathway to fight cancer, researchers have found a way to target an enzyme that is crucial to tumor growth while also blocking the mechanism that has made past attempts to target that enzyme resistant to treatment. Researchers were able to use this finding to develop a drug that successfully inhibits tumor growth of melanoma as well as pancreatic and colorectal cancer in mice.

Cellular backup plan for keeping iron levels just right [周三, 20 9月 23:33]

Researchers have uncovered a new connection in the network of checks and balances underlying cellular iron regulation.

Building social communication skills in shy children helps with peer likeability [周三, 20 9月 22:00]

A new study has discovered that shy children with low English vocabulary skills, can still be popular among their peers if they have high-functioning social communication skills that enable them to engage and interact well with their peers in social settings.

PTSD linked with increased Lupus risk [周三, 20 9月 21:59]

Trauma exposure and posttraumatic stress disorder (PTSD) in civilian

women were strongly associated with increased risk of developing lupus, an autoimmune disease.

• [**New tool to assess individual's level of wisdom**](#) [周三, 20 9月 21:59]

Researchers have developed a new tool called the San Diego Wisdom Scale (SD-WISE) to assess an individual's level of wisdom, based upon a conceptualization of wisdom as a trait with a neurobiological as well as psychosocial basis.

• [**Foot pain? New study says look at hip and knee for complete diagnosis**](#) [周三, 20 9月 06:15]

New guidelines may be in order for evaluating and treating lower extremity pain. Investigators set out to determine if there was a relation between foot pain and lower extremity joint pain, and they found a significant association between foot pain and knee or hip pain.

• [**New markers for severe form of multiple sclerosis uncovered**](#) [周三, 20 9月 04:41]

Scientists have uncovered two closely related cytokines -- molecules involved in cell communication and movement -- that may explain why some people develop progressive multiple sclerosis (MS), the most severe form of the disease. The findings point the way toward developing a novel treatment to prevent progressive forms of the disease.

• [**PET imaging tracks Zika virus infection, disease progression in mouse model**](#) [周三, 20 9月 04:41]

For the first time, scientists have used Positron Emission Tomography (PET) imaging to study brain inflammation following Zika virus infection in mice, according to a study. Traditional methods of infectious disease research using animal models provide limited information about disease progression until the study's endpoint, when investigators can analyze tissues from those animals. Imaging studies allow longitudinal studies of the same animal during the course of infection.

- **[Red cosmetic powder used in Hindu ceremonies contains unsafe lead levels](#)** [周三, 20 9月 04:03]

Sindoor -- a cosmetic powder sold in the United States and used during Hindu religious and cultural ceremonies -- has unsafe levels of lead, according to a study. Researchers say at a minimum there is a need to monitor sindoor lead levels and make the public aware of the potential hazards.

- **[Risks vary widely in drone-human impacts](#)** [周三, 20 9月 04:03]

New research suggests there's wide variation in the risk that unmanned aircraft pose to people on the ground.

- **[Gulf Spill oil dispersants associated with health symptoms in cleanup workers](#)** [周三, 20 9月 04:03]

Workers who were likely exposed to dispersants while cleaning up the 2010 Deepwater Horizon oil spill experienced a range of health symptoms including cough and wheeze, and skin and eye irritation.

- **[Managing negative emotions can help pregnant smokers quit](#)** [周三, 20 9月 04:02]

Pregnant smokers are more likely to quit if they can learn to manage negative emotions that lead to smoking, new research indicates.

- **[Clear tactics, but few easy solutions, for hospitals combating ransomware](#)** [周三, 20 9月 02:48]

Hospitals facing the prospect of ransomware attacks like the one that afflicted British hospitals in May can take many concrete steps to better protect themselves, but some of the most important measures -- such as a national policy not to pay ransoms -- may be tougher to formulate.

- **[Cell model of brain provides new knowledge of developmental disease](#)** [周三, 20 9月 02:48]

By reprogramming skin cells into nerve cells, researchers are creating cell models of the human brain. The researchers describe how cells from patients with the severe developmental disease lissencephaly differ from

healthy cells. The method can provide vital new knowledge on difficult-to-study congenital diseases.

- [**Home blood pressure monitoring for hypertension best combined with intensive support**](#) [周三, 20 9月 02:04]

People who monitor their own blood pressure at home are most likely to see a benefit if they combine it with individually tailored intensive support, according to a new systematic literature review and meta-analysis.

- [**Screening for cervical abnormalities in women offered HPV vaccination**](#) [周三, 20 9月 02:04]

Human papillomavirus (HPV) testing detects a higher number of precancerous cervical lesions than cytology-based Pap smears in a female population including a proportion offered HPV vaccination, according to a new study.

- [**What web browsers and proteins have in common**](#) [周三, 20 9月 02:04]

The discovery of a previously overlooked site on protein molecules may solve a mystery about how proteins are able to carry out specialized functions in living cells.

- [**Groundbreaking investigative effort identifies gonorrhea vaccine candidates**](#) [周三, 20 9月 02:04]

Researchers have identified a pair of proteins that show promise as the basis for a gonorrhea vaccine.

- [**What's the latest on gut microbiota?**](#) [周三, 20 9月 02:04]

How many undergraduate classes in microbiology -- or any scientific field, for that matter -- can say they're published in a peer-reviewed journal? Now there is a new review of the primary literature and latest discoveries on the interactions between gut microbiota and the human host.

• [**Political polarization? Don't blame the web**](#) [周三, 20 9月 02:04]

Despite the popular narrative that the web is to blame for rising political polarization, a study by economists has found that recent growth in polarization is greatest for demographic groups in which individuals are least likely to use the internet and social media. This means that data does not support the claim that the internet is the most significant driver of partisanship.

• [**Sleep deprivation is an effective anti-depressant for nearly half of depressed patients, study suggests**](#) [周三, 20 9月 02:04]

Sleep deprivation - typically administered in controlled, inpatient settings - rapidly reduces symptoms of depression in roughly half of depression patients, according the first meta-analysis on the subject in nearly 30 years.

• [**Brain powered: Increased physical activity among breast cancer survivors boosts cognition**](#) [周三, 20 9月 02:04]

It is estimated that up to 75 percent of breast cancer survivors experience problems with cognitive difficulties following treatments, perhaps lasting years. Currently, few science-based options are available to help. Researchers report in a pilot study of 87 female breast cancer survivors an increase in physical activity more than doubled the women's post-treatment mental processing speed.

• [**Proteins' role in development of spinal sensory cells redefined**](#) [周三, 20 9月 02:04]

A recent study has overturned a common belief about how a certain class of proteins in the spinal cord regulate the formation of nervous system cells -- called neurons -- during embryonic development.

• [**Winner takes all: Success enhances taste for luxury goods, study suggests**](#) [周三, 20 9月 00:31]

Footballers in flashy cars, City workers in Armani suits, reality TV

celebrities sipping expensive champagne while sitting in hot tubs: what drives people to purchase luxury goods? New research suggests that it may be a sense of being a 'winner' -- but that contrary to expectations, it is not driven by testosterone.

- [**Scientists discover complex axis of immune suppression exploited by cancers**](#) [周三, 20 9月 00:30]

A new mechanism by which cancer cells evade destruction by the immune system has been discovered by a team of researchers. Their paper describes how immune cells known as group 2 innate lymphoid cells (ILC2s) are recruited by leukemic cells to suppress an essential anticancer immune response.

- [**How to remove a tick and prevent future bites**](#) [周二, 19 9月 23:12]

As tick populations grow and spread across the country, their prevalence is increasing the public's risk for some troubling diseases. Of these diseases, say dermatologists, Lyme disease, Rocky Mountain spotted fever, Powassan virus and alpha-gal syndrome — a mysterious red meat allergy — are among the most serious.

- [**Getting emotional after failure helps you improve next time, study finds**](#) [周二, 19 9月 23:12]

Emotional responses to failure rather than cognitive ones are more effective at improving people's results for the next time they tackle the next related task, new research indicates.

- [**Antibiotics following C-section among obese women reduces risk of surgical infection**](#) [周二, 19 9月 23:06]

Among obese women undergoing cesarean delivery, a postoperative 48-hour course of antibiotics significantly decreased the rate of surgical site infection within 30 days after delivery, according to a study.

- [**Contribution of opioid-related deaths to the change in life expectancy in the US**](#) [周二, 19 9月 23:06]

Between 2000 and 2015 in the US, life expectancy increased overall but drug-poisoning deaths, mostly related to opioids, contributed to reducing

life expectancy, according to a study.

• [How the shape and size of your face relates to your sexuality](#) [周二, 19 9月 23:06]

Men and women with shorter, wider faces tend to be more sexually motivated and to have a stronger sex drive than those with faces of other dimensions. The research investigates the role that facial features play in sexual relationships and mate selection.

• [Key regulator of male fertility identified](#) [周二, 19 9月 23:06]

When it comes to male reproductive fertility, timing is everything. Now scientists are finding new details on how disruption of this timing may contribute to male infertility or congenital illness. Researchers are identifying the key molecular and genetic switch that activates production of healthy male sperm -- but only when the time is right.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

- [**Mathematics predicts a sixth mass extinction**](#) [周四, 21 9月 06:21]

Scientists have analyzed significant changes in the carbon cycle over the last 540 million years, including the five mass extinction events. They have identified 'thresholds of catastrophe' in the carbon cycle that, if exceeded, would lead to an unstable environment, and ultimately, mass extinction.

- [**Unique type of object discovered in our solar system**](#) [周四, 21 9月 02:47]

Astronomers have observed the intriguing characteristics of an unusual type of object in the asteroid belt between Mars and Jupiter: two asteroids orbiting each other and exhibiting comet-like features, including a bright coma and a long tail. This is the first known binary asteroid also classified as a comet.

- [**Wave Glider surfs across stormy Drake Passage in Antarctica**](#) [周四, 21 9月 02:46]

A hardy ocean drone made a first-ever attempt to surf across Antarctica's stormy Drake Passage gathering data about ocean mixing.

- [**Automatic code reuse: System automatically modifies code for transfer to other programs**](#) [周四, 21 9月 02:46]

Researchers have developed a new system that allows programmers to transplant code from one program into another. The programmer can select the code from one program and an insertion point in a second program, and the system will automatically make modifications

necessary -- such as changing variable names -- to integrate the code into its new context.

- [**New concept of terrestrial planet formation**](#) [周四, 21 9月 01:17]

Scientists are proposing a new way of understanding the cooling and transfer of heat from terrestrial planetary interiors and how that affects the generation of the volcanic terrains that dominate the rocky planets.

- [**World's first 'molecular robot' capable of building molecules**](#) [周四, 21 9月 01:17]

Scientists have created the world's first 'molecular robot' that is capable of performing basic tasks including building other molecules.

- [**Spinning a lighter, safer electrode**](#) [周三, 20 9月 23:35]

A fabric-like material electrode has been created that could help make energy storage devices -- batteries and supercapacitors -- faster and less susceptible to leaks or disastrous meltdowns. Their design for a new supercapacitor, which looks something like a furry sponge infused with gelatin, offers a unique alternative to the flammable electrolyte solution that is a common component in these devices.

- [**Straining the memory: Prototype strain engineered materials are the future of data storage**](#) [周三, 20 9月 23:34]

Researchers have strain-engineered a data storage material to store data by exploiting a process of avalanche atomic switching. Memory cells using this material substantially outperform state-of-the-art phase change memory devices.

- [**Mathematicians ask: What's in a ripple?**](#) [周三, 20 9月 23:34]

When a fluid or a gas experiences a sudden disturbance, it often gives rise to a phenomenon known as an undular bore, which consists of a series of rapid oscillations that propagate and spread. But how to describe what transpires? New mathematics research brings us closer to finding an answer.

- [**Is the Milky Way an 'outlier' galaxy? Studying**](#)

[its 'siblings' for clues](#) [周三, 20 9月 23:33]

The most-studied galaxy in the universe -- the Milky Way -- might not be as 'typical' as previously thought, according to a new study. Early results from the Satellites Around Galactic Analogs (SAGA) Survey indicate that the Milky Way's satellites are much more tranquil than other systems of comparable luminosity and environment. Many satellites of those 'sibling' galaxies are actively pumping out new stars, but the Milky Way's satellites are mostly inert.

• [Real or fake? Creating fingers to protect identities](#) [周三, 20 9月 23:33]

Biometric experts for the first time have designed and created a fake finger containing multiple key properties of human skin. Commonly called a spoof, this fake finger has been used to test two of the predominant types of fingerprint readers to help determine their resilience to spoof attacks.

• [Mathematical simulations shed new light on epilepsy surgery](#) [周三, 20 9月 22:43]

Results from an unexpected quarter is could help neurologists to identify which brain region to remove to eliminate an epilepsy patient's symptoms. Mathematicians have shown that it is sensible to examine the interconnections between different brain regions closely, instead of searching for abnormal regions only.

• [Naked molecules dancing in liquid become visible](#) [周三, 20 9月 22:42]

Moving, vibrating and leaping molecules make up our world. However, capturing their movement is not an easy task. Scientists were able to see the movement of molecules stored inside a graphene pocket without the need to stain them. This study paves the way for observing the dynamics of life building blocks, like proteins and DNA, as well as the self-assembly of other materials.

• [Gravity waves influence weather and climate](#) [周三, 20 9月 22:00]

Gravity waves form in the atmosphere as a result of destabilizing processes. The effects of gravity waves can only be taken into consideration by including additional special components in the models.

- [**Risks vary widely in drone-human impacts**](#) [周三, 20 9月 04:03]

New research suggests there's wide variation in the risk that unmanned aircraft pose to people on the ground.

- [**Tiny lasers from a gallery of whispers**](#) [周三, 20 9月 04:03]

Whispering gallery mode resonators rely on a phenomenon similar to an effect observed in circular galleries, and the same phenomenon applies to light. When light is stored in ring-shaped or spherical active resonators, the waves superimpose in such a way that it can result in laser light. Investigators now report a new type of dye-doped WGM micro-laser that produces light with tunable wavelengths.

- [**Security cameras vulnerable to attacks using infrared light**](#) [周三, 20 9月 04:02]

Researchers have demonstrated that security cameras infected with malware can receive covert signals and leak sensitive information from the very same surveillance devices used to protect facilities.

- [**Clear tactics, but few easy solutions, for hospitals combating ransomware**](#) [周三, 20 9月 02:48]

Hospitals facing the prospect of ransomware attacks like the one that afflicted British hospitals in May can take many concrete steps to better protect themselves, but some of the most important measures -- such as a national policy not to pay ransoms -- may be tougher to formulate.

- [**Wikipedia used to give AI context clues**](#) [周三, 20 9月 02:04]

A team of computer scientists is teaching artificial intelligence agents how to interact with the world in a way that makes sense.

- [**Mercury's poles may be icier than scientists thought**](#) [周三, 20 9月 00:31]

A new study identifies three large surface ice deposits near Mercury's north pole, and suggests there could be many additional small-scale

deposits that would dramatically increase the planet's surface ice inventory.

- [**Advanced lithium-ion and metal-air batteries**](#) [周三, 20 9月 00:31]

Engineers are developing energy storage technologies that are cheaper, safer and more efficient.

- [**UK oil and gas reserves may last only a decade, study suggests**](#) [周三, 20 9月 00:31]

The UK has low oil and gas resources and limited prospects for fracking, according to a new analysis by scientists, who recommend a shift towards greater use of renewable, clean energy.

- [**One-way track for microwaves based on mechanical interference**](#) [周三, 20 9月 00:31]

Researchers use interference in the motion of a micrometer-size drum to route microwave signals in a single direction.

- [**Rogue wave analysis supports investigation of the El Faro sinking**](#) [周二, 19 9月 23:12]

A new analysis done to support the investigation into the 2015 sinking of the El Faro cargo ship has calculated the likelihood of a massive rogue wave during Hurricane Joaquin in October of that year – and demonstrated a new technique for evaluating the probability of rogue waves over space and time.

- [**Fluorescence microscopy on a chip: no lenses required**](#) [周二, 19 9月 23:11]

Fluorescence microscopy gives researchers incredible power to illuminate the tiniest structures and capture the real-time activities of live cells by tagging biological molecules with a veritable rainbow of fluorescent dyes. This power comes at a cost: The technology can be expensive and time-consuming and, so far, has resisted attempts at automation.

- [**Nonlinear physics bridges thoughts to sounds in**](#)

[birdsong](#) [周二, 19 9月 23:05]

The beautiful sound of birdsongs emerging from the trees is a wonderful example of how much nature can still teach us, even as much about their origins are still mysterious to us. About 40 percent of bird species learn to vocalize when they are exposed to a tutor, a behavior of interest to many neurologists and neurobiologists. The other 60 percent can vocalize instinctually in isolation. The variety across species, and the relationship between the nervous system and biomechanics makes birdsong p...

• [Cost effective quantum moves a step closer](#) [周二, 19 9月 22:26]

Researchers have taken an important step towards enabling quantum networks to be cost-effective and truly secure from attack. The experiments prove the viability of a measurement-device-independent quantum key distribution (QKD) system, based on readily available hardware.

• [A dream of foam: better concrete, beer froth and ice cream](#) [周二, 19 9月 22:25]

Researchers have discovered a new method to design stable foams. Their findings could make beer froth and ice cream last longer -- and revolutionize construction materials such as concrete.

• [Novel strategy for chirality controlled synthesis of single-walled carbon nanotubes](#) [周二, 19 9月 22:25]

Researchers have developed a novel strategy for controlling chirality of single-walled carbon nanotubes.

• [Size matters in the detection of exoplanet atmospheres](#) [周二, 19 9月 21:26]

A group-analysis of 30 exoplanets orbiting distant stars suggests that size, not mass, is a key factor in whether a planet's atmosphere can be detected. The largest population-study of exoplanets to date successfully detected atmospheres around 16 'hot Jupiters', and found that water vapor was present in every case.

• [What do we need to know to mine an asteroid?](#) [周二, 19 9月 21:26]

The mining of resources contained in asteroids, for use as propellant, building materials or in life-support systems, has the potential to revolutionise exploration of our Solar System. To make this concept a reality, we need to increase our knowledge of the very diverse population of accessible Near Earth Asteroids (NEA).

• [Nanosat fleet proposed for voyage to 300 asteroids](#) [周二, 19 9月 21:26]

A fleet of tiny spacecraft could visit over 300 asteroids in just over three years, according to a mission study. The Asteroid Touring Nanosat Fleet concept comprises 50 spacecraft propelled by innovative electric solar wind sails (E-sails) and equipped with instruments to take images and collect spectroscopic data on the composition of the asteroids. Each nanosat would visit six or seven asteroids before returning to Earth to deliver the data.

• [Molecular motors: Slowing the clockwork](#) [周二, 19 9月 21:26]

Progress on the way to smart nanomachines: Chemists have modified the synthesis of a molecular motor so as to reduce the speed of its light-driven rotation, thus permitting the researchers to analyze the mechanism of motion in complete detail.

• [Nanocapsules enable cell-inspired metabolic reactions](#) [周二, 19 9月 21:24]

Researchers have succeeded in developing capsules capable of producing the bio-molecule glucose-6-phosphate that plays an important role in metabolic processes. The researchers were able to produce the metabolite in conditions very similar to the biochemical reaction inside natural cells.

• [Supercontinuum lasers can lead to better bread and beer](#) [周二, 19 9月 21:10]

Researchers have analyzed whole grains with long near-infrared wavelengths using a new type of light source, the supercontinuum laser.

The research has significance for our knowledge of food ingredients and may, for example, eventually lead to better quality of bread and beer.

- [**Graphene and other carbon nanomaterials can replace scarce metals**](#) [周二, 19 9月 21:10]

Scarce metals are found in a wide range of everyday objects around us. They are complicated to extract, difficult to recycle and so rare that several of them have become "conflict minerals" which can promote conflicts and oppression. New research shows that there are potential technology-based solutions that can replace many of the metals with carbon nanomaterials, such as graphene.

- [**Solar wind impacts on giant 'space hurricanes' may affect satellite safety**](#) [周二, 19 9月 21:10]

Could the flapping of a butterfly's wings in Costa Rica set off a hurricane in California? For most people, this hypothetical scenario may be difficult to imagine on Earth -- particularly when a real disaster strikes. Yet, in space, similarly small fluctuations in the solar wind as it streams toward the Earth's magnetic shield actually can affect the speed and strength of 'space hurricanes,' a researcher explains.

- [**One step closer to lifelike robots**](#) [周二, 19 9月 21:10]

Researchers have developed a 3-D-printable synthetic soft muscle that can lift 1,000 times its own weight. The muscle has intrinsic expansion ability and, unlike previous artificial muscles, it does not require an external compressor or high voltage equipment, signaling a breakthrough in the creation of soft robots that can move independently. The new material also has a strain density -- an ability to expand -- that is 15 times larger than natural muscle.

- [**The sublime challenge of jet noise**](#) [周二, 19 9月 11:22]

A scientist is using ALCF resources to create high fidelity simulations of jet turbulence to determine how and where noise is produced. The results may lead to novel engineering designs that reduce noise over commercial flight paths and on aircraft carrier decks.

- [**Optical, electrical bistability study sheds light on**](#)

[next-gen high speed data transfer](#) [周二, 19 9月 11:22]

Today, electrical bistable devices are the foundation of digital electronics, serving as building blocks of switches, logic gates and memories in computer systems. However, the bandwidth of these electronic computers is limited by the signal delay of time constants important to electronic logic operations. In an attempt to mitigate these problems, scientists have considered the development of an optical digital computer, and one team has gone so far as to demonstrate the optical and electrical bi...

· [New mirror-coating technology promises dramatic improvements in telescopes](#) [周二, 19 9月 10:23]

An electrical engineer has teamed up with astronomers to improve telescope mirrors using thin-film technology from the electronics industry. They are developing new protective coatings using an atomic layer deposition system large enough to accommodate telescope mirrors.

· [DNA triggers shape-shifting in hydrogels, opening a new way to make 'soft robots'](#) [周二, 19 9月 10:22]

Biochemical engineers have used sequences of DNA molecules to induce shape-changing in water-based gels, demonstrating a new tactic to produce "soft" robots and "smart" medical devices that do not rely on cumbersome wires, batteries or tethers.

· [Fake news more likely to thrive online due to lowered fact-checking](#) [周二, 19 9月 04:34]

Fake news is more likely to thrive online due to lowered fact-checking, according to new American research.

· [Blood tests: Sound waves separate biological nanoparticles for 'liquid biopsies'](#) [周二, 19 9月 04:34]

A prototype device developed by an international team of engineers can sift exceedingly tiny particles called exosomes from blood samples without having to send samples off to a lab. The device, which combines acoustic cell-sorting and microfluidic technologies, could be a boon to

both scientific research and medical applications.

• [**Enzyme's worth to biofuels shown in recent research**](#) [周二, 19 9月 04:34]

A newly discovered enzyme proves adept at breaking down cellulose fibers regardless of whether their crystalline structure is simple or highly complex. No other enzyme has shown that ability.

• [**New self-powered paper patch could help diabetics measure glucose during exercise**](#) [周二, 19 9月 04:33]

A new paper-based sensor patch developed by researchers at Binghamton University, State University of New York could allow diabetics to effectively measure glucose levels during exercise.

• [**2-D Electronics' metal or semiconductor? Both**](#) [周二, 19 9月 04:15]

Researchers produced the first 2-D field-effect transistor (FET) made of a single material.

• [**Solar-to-fuel system recycles CO2 to make ethanol and ethylene**](#) [周二, 19 9月 03:17]

Scientists have harnessed the power of photosynthesis to convert carbon dioxide into fuels and alcohols at efficiencies far greater than plants. The achievement marks a significant advance in the effort to move toward sustainable sources of fuel.

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Environment News

Top stories featured on ScienceDaily's Plants & Animals, Earth & Climate, and Fossils & Ruins sections.

- [**Efforts to save sea turtles are a 'global conservation success story'**](#) [周四, 21 9月 06:21]

A new study of the world's seven sea turtle species provides evidence that their numbers are growing overall (unlike many endangered vertebrates), thanks to years of conservation efforts that have played a key role in sea turtle recovery -- even for small sea turtle populations.

- [**Mathematics predicts a sixth mass extinction**](#) [周四, 21 9月 06:21]

Scientists have analyzed significant changes in the carbon cycle over the last 540 million years, including the five mass extinction events. They have identified 'thresholds of catastrophe' in the carbon cycle that, if exceeded, would lead to an unstable environment, and ultimately, mass extinction.

- [**3-D analysis of dog fossils sheds light on domestication debate**](#) [周四, 21 9月 06:20]

In an effort to settle the debate about the origin of dog domestication, a technique that uses 3-D scans of fossils is helping researchers determine the difference between dogs and wolves.

- [**Protected waters foster resurgence of West Coast rockfish**](#) [周四, 21 9月 03:49]

West Coast rockfish species in deep collapse only 20 years ago have multiplied rapidly in large marine protected areas off Southern California, likely seeding surrounding waters with enough offspring to offer promise of renewed fishing, a new study has found.

- [**Plants combine color and fragrance to procure pollinators**](#) [周四, 21 9月 02:47]

Who knew that it's possible to predict the fragrance of a flower by looking at its color? This is true for many of the 41 insect-pollinated plant species growing in a Phrygana scrubland habitat on the Greek island of Lesbos.

- [**Wave Glider surfs across stormy Drake Passage in Antarctica**](#) [周四, 21 9月 02:46]

A hardy ocean drone made a first-ever attempt to surf across Antarctica's stormy Drake Passage gathering data about ocean mixing.

- [**Fly away home? Ice age may have clipped bird migration**](#) [周四, 21 9月 02:46]

The onset of the last ice age may have forced some bird species to abandon their northerly migrations for thousands of years, says new research led by an ornithologist. The study challenges a long-held presumption that birds merely shortened their migratory flights when glaciers advanced south to cover much of North America and northern Europe about 21,000 years ago.

- [**Species abundance: Winter restricts innovation**](#) [周四, 21 9月 01:17]

Why are there so many more species in the tropics? The 'storage effect' is stronger there than in temperate forests.

- [**Bite force research reveals dinosaur-eating frog**](#) [周四, 21 9月 01:17]

Scientists say that a large, now extinct, frog called *Beelzebufo* that lived about 68 million years ago in Madagascar would have been capable of eating small dinosaurs. The conclusion comes from a study of the bite force of South American horned frogs from the living genus *Ceratophrys*, known as Pacman frogs for their characteristic round shape and large mouth, similar to the video game character Pac-Man.

- [**Animal acoustic activity decline shows forest fire pollution wreaks havoc on wildlife**](#) [周四, 21 9月 01:17]

Forest fires in Southeast Asia during the El Niño droughts of 2015 caused considerable disruption to the biodiversity of the region due to the smoke-induced 'haze' they created, according to new research.

• [Dinosaur evolution: Lumbering giants had agile ancestors](#) [周四, 21 9月 01:17]

The best known sauropod dinosaurs were huge herbivorous creatures, whose brain structures were markedly different from those of their evolutionary predecessors, for the earliest representatives of the group were small, lithe carnivores.

• [Millions of new genes in human microbiome](#) [周四, 21 9月 01:16]

A new study of the human microbiome has uncovered millions of previously unknown genes from microbial communities in the human gut, skin, mouth, and vaginal microbiome, allowing for new insights into the role these microbes play in human health and disease.

• [Imagining a world without species](#) [周三, 20 9月 23:34]

Categorizing species can get hazy at small, microbial scales. After all, the classical definition of species as interbreeding individuals with sexually viable offspring doesn't apply to asexual organisms. Examining shared DNA doesn't help either: collectively, E. coli bacteria have only 20 percent of genes in common. In new research, a researcher asks: could organism interactions be described without mentioning species at all?

• [How Teotihuacan's urban design was lost and found](#) [周三, 20 9月 23:33]

A new article outlines how the urban design of the city of Teotihuacan differed from past and subsequent cities, only to be rediscovered and partially modeled on many centuries later by the Aztecs.

• [Cellular backup plan for keeping iron levels just right](#) [周三, 20 9月 23:33]

Researchers have uncovered a new connection in the network of checks and balances underlying cellular iron regulation.

- [**Plant physiology: Adjusting to fluctuating temperatures**](#) [周三, 20 9月 22:45]

The average vegetation periods of trees and shrubs in North America are intrinsically three weeks shorter than those of comparable species in Europe and Asia, new research indicates.

- [**10,000 year-old DNA proves when fish colonized our lakes**](#) [周三, 20 9月 22:45]

DNA in lake sediment forms a natural archive displaying when various fish species colonized lakes after the glacial period. Scientists' analyses of the prevalence of whitefish DNA in sediment reveal that the whitefish came to Lake Stora Lögdasjön in Västerbotten already 10,000 years ago, whereas Lake Hotagen in Jämtland had its whitefish only 2,200 years ago.

- [**Foster tadpoles trigger parental instinct in poison frogs**](#) [周三, 20 9月 22:43]

Poison frogs, especially male poison frogs, are very caring parents. After the tadpoles hatch, the males piggyback their offspring to distant pools spread around the rainforest where they can feed and develop. A recent study shows that this parental behavior can be triggered experimentally. When unrelated tadpoles are placed on the backs of adult frogs, male – and even female – “foster parents” make their way to pools in the forest in the same way as if they had picked up the tadpoles themselves.

- [**Rolling dice for cell size specification in plant leaf epidermis**](#) [周三, 20 9月 22:00]

Scientists have discovered that endoreduplication, which promotes cellular enlargement in the epidermal tissue of *Arabidopsis thaliana*, occurs randomly as a Poisson process throughout cellular maturation.

- [**More mouths can be fed by boosting number of plant pores**](#) [周三, 20 9月 22:00]

Scientists have synthesized a new bioactive small molecule that has the ability to increase stomata numbers on flowering plants without stunting

their growth. The team's new discovery could help elucidate the stomatal development mechanism in plants.

• [**Gravity waves influence weather and climate**](#) [周三, 20 9月 22:00]

Gravity waves form in the atmosphere as a result of destabilizing processes. The effects of gravity waves can only be taken into consideration by including additional special components in the models.

• [**Atmospheric effects of Arctic snowmelt**](#) [周三, 20 9月 22:00]

Researchers are exploring the changing chemistry of the Arctic's atmosphere to help answer the question of what happens as snow and ice begin to melt.

• [**Could condors return to Northern California?**](#) [周三, 20 9月 22:00]

In 2003, Northern California's Yurok Tribe initiated efforts to reintroduce California condors on their lands. While wild condors have not existed in the region for more than a hundred years, a new study suggests that hunters transitioning from lead to non-lead ammunition may allow these apex scavengers to succeed there once again.

• [**Breaking legume's crop wild relative barrier**](#) [周三, 20 9月 21:59]

In a new study, scientists report significant strides in transferring disease- and stress-resistance traits from wild relatives of several legumes to their domesticated varieties.

• [**Gulf Spill oil dispersants associated with health symptoms in cleanup workers**](#) [周三, 20 9月 04:03]

Workers who were likely exposed to dispersants while cleaning up the 2010 Deepwater Horizon oil spill experienced a range of health symptoms including cough and wheeze, and skin and eye irritation.

• [**Emerging disease further jeopardizes North American frogs**](#) [周三, 20 9月 04:02]

A deadly amphibian disease called severe Perkinsea infections, or SPI, is the cause of many large-scale frog die-offs in the United States, according to a new study.

- [**End-of-summer Arctic sea ice extent is eighth lowest on record**](#) [周三, 20 9月 04:01]

Arctic sea ice appeared to have reached its yearly lowest extent on Sept. 13, scientists have reported. Analysis of satellite data showed that at 1.79 million square miles (4.64 million square kilometers), this year's Arctic sea ice minimum extent is the eighth lowest in the consistent long-term satellite record, which began in 1978.

- [**Monk parakeets invade Mexico**](#) [周三, 20 9月 02:04]

A recent, rapid, and ongoing invasion of monk parakeets in Mexico has been described in a new article, including the regulatory changes that affected the species' spread.

- [**What web browsers and proteins have in common**](#) [周三, 20 9月 02:04]

The discovery of a previously overlooked site on protein molecules may solve a mystery about how proteins are able to carry out specialized functions in living cells.

- [**What's the latest on gut microbiota?**](#) [周三, 20 9月 02:04]

How many undergraduate classes in microbiology -- or any scientific field, for that matter -- can say they're published in a peer-reviewed journal? Now there is a new review of the primary literature and latest discoveries on the interactions between gut microbiota and the human host.

- [**A study switches from genetic to metabolic analysis to reconstitute evolutionary process**](#) [周三, 20 9月 02:04]

A new method for analyzing a living being chemical compositions is tested in Andean plants and attest the genesis of species by means of geographic isolation. Scientists analyzed chemical compounds which express specific biogeographic trends in the evolutionary process, validating a Smithsonian hypothesis on the evolution of the genus *Espeletia* in the process.

- [**North Atlantic right whales decline confirmed:**](#)

[458 remaining](#) [周三, 20 9月 02:04]

Marine biologists have developed a new model to improve estimates of abundance and population trends of endangered North Atlantic right whales, which have declined in numbers and productivity in recent years. Between 1990 and 2010 abundance increased to 482 animals, but since 2010 the numbers have declined to 458 in 2015, with 14 known deaths this year.

• [Changes in non-extreme precipitation may have not-so-subtle consequences](#) [周三, 20 9月 00:31]

Extreme floods and droughts receive a lot of attention. But what happens when precipitation -- or lack thereof -- occurs in a more measured way?

• [UK oil and gas reserves may last only a decade, study suggests](#) [周三, 20 9月 00:31]

The UK has low oil and gas resources and limited prospects for fracking, according to a new analysis by scientists, who recommend a shift towards greater use of renewable, clean energy.

• [Running roaches, flapping moths create a new physics of organisms](#) [周三, 20 9月 00:31]

Sand-swimming lizards, slithering robotic snakes, dusk-flying moths and running roaches all have one thing in common: They're increasingly being studied by physicists interested in understanding the shared strategies these creatures have developed to overcome the challenges of moving through their environments.

• [How to remove a tick and prevent future bites](#) [周二, 19 9月 23:12]

As tick populations grow and spread across the country, their prevalence is increasing the public's risk for some troubling diseases. Of these diseases, say dermatologists, Lyme disease, Rocky Mountain spotted fever, Powassan virus and alpha-gal syndrome — a mysterious red meat allergy — are among the most serious.

• [Nonlinear physics bridges thoughts to sounds in](#)

[birdsong](#) [周二, 19 9月 23:05]

The beautiful sound of birdsongs emerging from the trees is a wonderful example of how much nature can still teach us, even as much about their origins are still mysterious to us. About 40 percent of bird species learn to vocalize when they are exposed to a tutor, a behavior of interest to many neurologists and neurobiologists. The other 60 percent can vocalize instinctually in isolation. The variety across species, and the relationship between the nervous system and biomechanics makes birdsong p...

• [New hosts for Chagas disease vectors identified](#) [周二, 19 9月 22:26]

Solitary weasel-like animals called tayra might look pretty harmless, but some may actually be incubators for a parasite that causes Chagas disease, a chronic, debilitating condition that is spread by insects called kissing bugs and affects more than 8 million people worldwide.

• [Exposure to pet and pest allergens during infancy linked to reduced asthma risk](#) [周二, 19 9月 22:25]

Children exposed to high indoor levels of pet or pest allergens during infancy have a lower risk of developing asthma by 7 years of age, new research reveals. The findings may provide clues for the design of strategies to prevent asthma from developing.

• [Supercontinuum lasers can lead to better bread and beer](#) [周二, 19 9月 21:10]

Researchers have analyzed whole grains with long near-infrared wavelengths using a new type of light source, the supercontinuum laser. The research has significance for our knowledge of food ingredients and may, for example, eventually lead to better quality of bread and beer.

• [Declining queen conch populations are fragmented and that's changing the conservation game](#) [周二, 19 9月 21:10]

To provide a vital scientific foundation for conservation efforts, an international team has conducted a genetic analysis comparing queen

conch at 19 sites throughout the Caribbean. Their findings will help scientists understand how local subpopulations of conch are fragmented throughout the Caribbean, an essential first step needed to develop effective science-driven management plans and practices.

- [**Catching a diversity of fish species — instead of specializing — means more stable income for fishers**](#) [周二, 19 9月 11:23]

A team of scientists analyzed nearly 30 years of revenue and permitting records for individuals fishing in Alaskan waters and tracked how their fishing choices, in terms of permits purchased and species caught, influenced their year-to-year income volatility.

- [**DNA triggers shape-shifting in hydrogels, opening a new way to make 'soft robots'**](#) [周二, 19 9月 10:22]

Biochemical engineers have used sequences of DNA molecules to induce shape-changing in water-based gels, demonstrating a new tactic to produce "soft" robots and "smart" medical devices that do not rely on cumbersome wires, batteries or tethers.

- [**Parasitic eye infection poses significant threat to UK dogs, warn experts**](#) [周二, 19 9月 10:22]

A parasitic worm that is becoming increasingly common in Europe poses a significant threat to UK dogs, warn experts in a new report.

- [**Owners of seriously ill pets at risk of stress, anxiety and depressive symptoms**](#) [周二, 19 9月 10:22]

Owners of seriously or terminally ill pets are more likely to suffer with stress and symptoms of depression and anxiety, as well as poorer quality of life, compared with owners of healthy animals, finds a study.

- [**Importance of early season control of herbicide-resistant kochia**](#) [周二, 19 9月 04:34]

Researchers are providing new insights into the control of herbicide-resistant kochia, a weed that competes with both dryland and irrigated crops across the Great Plains states.

• [Horses working in therapeutic riding programs do not experience additional stress](#) [周二, 19 9月 04:34]

In the US, therapeutic horseback riding offers equine-assisted therapy to diverse populations who have anxiety disorders. Veterans diagnosed with post-traumatic stress disorder often are prescribed this type of therapy to cope with anxiety, but little is known about how these programs affect the stress levels in horses. Now, a study has revealed that horses ridden by veterans with PTSD did not have undue physiological stress responses while participating in a therapy program.

• [Enzyme's worth to biofuels shown in recent research](#) [周二, 19 9月 04:34]

A newly discovered enzyme proves adept at breaking down cellulose fibers regardless of whether their crystalline structure is simple or highly complex. No other enzyme has shown that ability.

• [Potential pathway to treat flesh-eating bacteria](#) [周二, 19 9月 04:33]

Researchers have solved a 100-year-old mystery, providing them a possible key to unlock a pathway for treating diseases caused by flesh-eating bacteria. Medical researchers have found a critical target on which to focus for developing a potential Group A Streptococcus vaccine or antibiotic to fight it. By manipulating this target, they hope to either reduce the severity of these infections or clear them up faster.

• [Sex, aggression controlled separately in female animal brains, but overlap in male brains](#) [周二, 19 9月 04:14]

Brain structures that control sexual and aggressive behavior in mice are wired differently in females than in males, new research shows.

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- [**Communication among health care facilities key to preventing spread of drug-resistant bacteria**](#) [周四, 21 9月 02:47]

Communication breakdowns between care facilities can pave the way for outbreaks of infection, according to research on the spread of an extensively drug-resistant bacterium.

- [**Hold the phone: An ambulance might lower your chances of surviving some injuries**](#) [周四, 21 9月 01:16]

Victims of gunshots and stabbings are significantly less likely to die if they're taken to the trauma center by a private vehicle than ground emergency medical services (EMS), according to results of a new analysis.

- [**Building social communication skills in shy children helps with peer likeability**](#) [周三, 20 9月 22:00]

A new study has discovered that shy children with low English vocabulary skills, can still be popular among their peers if they have high-functioning social communication skills that enable them to engage and interact well with their peers in social settings.

- [**New tool to assess individual's level of wisdom**](#) [周三, 20 9月 21:59]

Researchers have developed a new tool called the San Diego Wisdom Scale (SD-WISE) to assess an individual's level of wisdom, based upon a conceptualization of wisdom as a trait with a neurobiological as well as psychosocial basis.

• [**Clear tactics, but few easy solutions, for hospitals combating ransomware**](#) [周三, 20 9月 02:48]

Hospitals facing the prospect of ransomware attacks like the one that afflicted British hospitals in May can take many concrete steps to better protect themselves, but some of the most important measures -- such as a national policy not to pay ransoms -- may be tougher to formulate.

• [**Management studies: Dishonesty shift**](#) [周三, 20 9月 02:04]

Lying comes more easily to people in teams: Behavioral scientists have shown in an experimental study why groups are more likely to behave unethically than individuals.

• [**Political polarization? Don't blame the web**](#) [周三, 20 9月 02:04]

Despite the popular narrative that the web is to blame for rising political polarization, a study by economists has found that recent growth in polarization is greatest for demographic groups in which individuals are least likely to use the internet and social media. This means that data does not support the claim that the internet is the most significant driver of partisanship.

• [**Changes in non-extreme precipitation may have not-so-subtle consequences**](#) [周三, 20 9月 00:31]

Extreme floods and droughts receive a lot of attention. But what happens when precipitation -- or lack thereof -- occurs in a more measured way?

• [**UK oil and gas reserves may last only a decade, study suggests**](#) [周三, 20 9月 00:31]

The UK has low oil and gas resources and limited prospects for fracking, according to a new analysis by scientists, who recommend a shift towards greater use of renewable, clean energy.

• [**Students' self-concepts of ability in math, reading predict later math, reading attainment**](#) [周二, 19 9月 21:10]

A new longitudinal study looked at how youths' self-concepts are linked

to their actual academic achievement in math and reading from middle childhood to adolescence. The study found that students' self-concepts of their abilities in these two academic domains play an important role in motivating their achievements over time and across levels of achievement.

- [**Catching a diversity of fish species — instead of specializing — means more stable income for fishers**](#) [周二, 19 9月 11:23]

A team of scientists analyzed nearly 30 years of revenue and permitting records for individuals fishing in Alaskan waters and tracked how their fishing choices, in terms of permits purchased and species caught, influenced their year-to-year income volatility.

- [**The sublime challenge of jet noise**](#) [周二, 19 9月 11:22]

A scientist is using ALCF resources to create high fidelity simulations of jet turbulence to determine how and where noise is produced. The results may lead to novel engineering designs that reduce noise over commercial flight paths and on aircraft carrier decks.

- [**Fake news more likely to thrive online due to lowered fact-checking**](#) [周二, 19 9月 04:34]

Fake news is more likely to thrive online due to lowered fact-checking, according to new American research.

- [**Enzyme's worth to biofuels shown in recent research**](#) [周二, 19 9月 04:34]

A newly discovered enzyme proves adept at breaking down cellulose fibers regardless of whether their crystalline structure is simple or highly complex. No other enzyme has shown that ability.

- [**Reliance on 'gut feelings' linked to belief in fake news**](#) [周二, 19 9月 02:21]

People who tend to trust their intuition or to believe that the facts they hear are politically biased are more likely to stand behind inaccurate beliefs, a new study suggests.

- [**People's love of the seas could be the key for plastic pollution solution**](#) [周二, 19 9月 01:27]

Tapping into the public's passion for the ocean could be the key to reducing the threats to it posed by plastic pollution.

- [**5,000 deaths annually from Diesel-gate in Europe**](#) [周一, 18 9月 21:33]

Excess emissions from diesel cars cause about 5,000 premature deaths annually across Europe, a new study shows. Higher exposure to secondary particles and ozone can be traced back to excess NOx emissions from diesel cars, vans and light commercial vehicles. With the EU's vehicle emission limits achieved on the road about 5,000 premature deaths could be avoided annually. If diesel cars emitted as little NOx as petrol cars, about 7,500 premature deaths could be avoided annually.

- [**Parents not confident schools can assist child with chronic disease, mental health**](#) [周一, 18 9月 21:08]

Most parents are sure schools would be able to provide basic first aid but are less confident about a school's ability to respond to more complex health situations, such as an asthma attack or mental health problem.

- [**Magnetic fields to alleviate anxiety**](#) [周六, 16 9月 04:52]

It is possible to unlearn fears. And this works even better when a specific region of the brain has previously been stimulated magnetically.

- [**Teens come 'jet lagged' to school: Shifting sleeping patterns at weekends**](#) [周六, 16 9月 04:48]

A lack of sleep is associated with more absence and teens turn up jet lagged to school on Mondays, as shown in new research.

- [**Insult to injury: US workers without paid sick leave suffer from mental distress**](#) [周六, 16 9月 02:41]

Only seven states in the US have mandatory paid sick leave laws, yet, 15 states have passed preemptive legislation prohibiting localities from passing sick leave. Paid sick leave is gaining momentum as a social justice issue with important implications for health and wellness. But

what are the implications for the mental well-being of Americans without paid sick leave? A new study is the first to show the link between mental distress and paid sick leave among US workers.

- [**300,000 families living in US-Mexico border towns face exposure to toxic stress**](#) [周五, 15 9月 21:52]

Roughly 300,000 Texans living in impoverished border communities known as 'colonias' are facing substandard housing, lack of resources and exposure to toxic stress. New research finds these communities are also ill-equipped to face a natural disaster.

- [**Need for epinephrine in schools -- and staff trained to administer it**](#) [周五, 15 9月 21:52]

With school nurses often covering multiple buildings, researchers find that nearly one in five students who experience severe allergic reactions are given potentially life-saving epinephrine injections from unlicensed staff or students.

- [**Green schoolyards offer physical and mental health benefits for children**](#) [周五, 15 9月 21:52]

A growing body of evidence suggests access to safe, natural areas improves health across a wide variety of areas, including heart health, mental health, weight management, ADHD, and stress among children.

- [**New Orleans greenery post-Katrina reflects social demographics more than hurricane impact**](#) [周五, 15 9月 21:51]

Popular portrayals of "nature reclaiming civilization" in flood-damaged New Orleans, Louisiana, neighborhoods romanticize an urban ecology shaped by policy-driven socioecological disparities in redevelopment investment, ecologists argue.

- [**A subtler sexism now frames TV coverage of women in sports**](#) [周五, 15 9月 09:06]

An ongoing longitudinal study tracking national coverage of women's sports finds that coverage is still lacking and the sexism of women's

sports is less overt but remains a problem.

· [**New climate risk classification created to account for potential 'existential' threats**](#) [周五, 15 9月 09:06]

A new study evaluating models of future climate scenarios has led to the creation of the new risk categories 'catastrophic' and 'unknown' to characterize the range of threats posed by rapid global warming. Researchers propose that unknown risks imply existential threats to the survival of humanity.

· [**One vaccine injection could carry many doses**](#) [周五, 15 9月 03:23]

A new 3-D fabrication method has been developed that can create a new type of drug-carrying particle that could allow several doses of a drug or vaccine to be delivered over an extended time period with just one injection.

· [**Cost of not adapting to climate change would be at least five times higher**](#) [周五, 15 9月 03:22]

A study on damage to coastal considered only real estate loss. If nothing is done, researchers say, losses might be up to ten times higher if the predicament includes the spreading of flood- and global warming - related diseases.

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [**Unique type of object discovered in our solar system**](#) [周四, 21 9月 02:47]

Astronomers have observed the intriguing characteristics of an unusual type of object in the asteroid belt between Mars and Jupiter: two asteroids orbiting each other and exhibiting comet-like features, including a bright coma and a long tail. This is the first known binary asteroid also classified as a comet.

- [**Plants combine color and fragrance to procure pollinators**](#) [周四, 21 9月 02:47]

Who knew that it's possible to predict the fragrance of a flower by looking at its color? This is true for many of the 41 insect-pollinated plant species growing in a Phrygana scrubland habitat on the Greek island of Lesbos.

- [**Bite force research reveals dinosaur-eating frog**](#) [周四, 21 9月 01:17]

Scientists say that a large, now extinct, frog called *Beelzebufo* that lived about 68 million years ago in Madagascar would have been capable of eating small dinosaurs. The conclusion comes from a study of the bite force of South American horned frogs from the living genus *Ceratophrys*, known as Pacman frogs for their characteristic round shape and large mouth, similar to the video game character Pac-Man.

- [**World's first 'molecular robot' capable of building molecules**](#) [周四, 21 9月 01:17]

Scientists have created the world's first 'molecular robot' that is capable

of performing basic tasks including building other molecules.

• [**Dinosaur evolution: Lumbering giants had agile ancestors**](#) [周四, 21 9月 01:17]

The best known sauropod dinosaurs were huge herbivorous creatures, whose brain structures were markedly different from those of their evolutionary predecessors, for the earliest representatives of the group were small, lithe carnivores.

• [**Scientists make atoms-thick 'Post-It notes' for solar cells and circuits**](#) [周四, 21 9月 01:17]

A new study describes an innovative method to make stacks of semiconductors just a few atoms thick. The technique offers scientists and engineers a simple, cost-effective method to make thin, uniform layers of these materials, which could expand capabilities for devices from solar cells to cell phones.

• [**Hold the phone: An ambulance might lower your chances of surviving some injuries**](#) [周四, 21 9月 01:16]

Victims of gunshots and stabbings are significantly less likely to die if they're taken to the trauma center by a private vehicle than ground emergency medical services (EMS), according to results of a new analysis.

• [**Is the Milky Way an 'outlier' galaxy? Studying its 'siblings' for clues**](#) [周三, 20 9月 23:33]

The most-studied galaxy in the universe -- the Milky Way -- might not be as 'typical' as previously thought, according to a new study. Early results from the Satellites Around Galactic Analogs (SAGA) Survey indicate that the Milky Way's satellites are much more tranquil than other systems of comparable luminosity and environment. Many satellites of those 'sibling' galaxies are actively pumping out new stars, but the Milky Way's satellites are mostly inert.

• [**Real or fake? Creating fingers to protect identities**](#) [周三, 20 9月 23:33]

Biometric experts for the first time have designed and created a fake finger containing multiple key properties of human skin. Commonly called a spoof, this fake finger has been used to test two of the predominant types of fingerprint readers to help determine their resilience to spoof attacks.

• [**Gravity waves influence weather and climate**](#) [周三, 20 9月 22:00]

Gravity waves form in the atmosphere as a result of destabilizing processes. The effects of gravity waves can only be taken into consideration by including additional special components in the models.

• [**Solar wind impacts on giant 'space hurricanes' may affect satellite safety**](#) [周二, 19 9月 21:10]

Could the flapping of a butterfly's wings in Costa Rica set off a hurricane in California? For most people, this hypothetical scenario may be difficult to imagine on Earth -- particularly when a real disaster strikes. Yet, in space, similarly small fluctuations in the solar wind as it streams toward the Earth's magnetic shield actually can affect the speed and strength of 'space hurricanes,' a researcher explains.

• [**DNA triggers shape-shifting in hydrogels, opening a new way to make 'soft robots'**](#) [周二, 19 9月 10:22]

Biochemical engineers have used sequences of DNA molecules to induce shape-changing in water-based gels, demonstrating a new tactic to produce "soft" robots and "smart" medical devices that do not rely on cumbersome wires, batteries or tethers.

• [**Scientists show molecular basis for ants acting as 'bodyguards' for plants**](#) [周二, 19 9月 00:35]

Though you might not think of ants as formidable bodyguards, some do an impressive job protecting plants from enemies. Examining the relationship between the Amazon rainforest plant *Cordia nodosa* in Peru and the ant species *Allomerus octoarticulatus*, scientists found the degree to which the ants express two genes significantly impacts the amount of protection they provide to their hosts.

• [**When radio galaxies collide, supermassive black holes form tightly bound pairs**](#) [周二, 19 9月 00:35]

Supermassive black holes found in the centers of galaxies can form gravitationally bound pairs when galaxies merge, according to a new study.

• [**More evidence of water on Mars**](#) [周二, 19 9月 00:35]

River deposits exist across the surface of Mars and record a surface environment from over 3.5 billion years ago that was able to support liquid water at the surface. A region of Mars named Aeolis Dorsa contains some of the most spectacular and densely packed river deposits seen on Mars.

• [**A solar cell you can put in the wash**](#) [周一, 18 9月 23:18]

Scientists have developed a new type of ultra-thin photovoltaic device, coated on both sides with stretchable and waterproof films, which can continue to provide electricity from sunlight even after being soaked in water or being stretched and compressed.

• [**Developing roads that can generate power from passing traffic**](#) [周一, 18 9月 23:18]

Researchers are looking at advanced materials for roads and pavements that could generate electricity from passing traffic. Engineers are working on smart materials such as 'piezoelectric' ceramics that when embedded in road surfaces would be able to harvest and convert vehicle vibration into electrical energy.

• [**New evidence for small, short-lived drops of early universe quark-gluon plasma?**](#) [周一, 18 9月 21:30]

Particles emerging from even the lowest energy collisions of small deuterons with large heavy nuclei at the Relativistic Heavy Ion Collider exhibit behavior scientists associate with the formation of a soup of quarks and gluons, the fundamental building blocks of nearly all visible matter.

• [**World first: 'Storing lightning inside thunder'**](#) [周一, 18 9月 21:07]

In a world first, researchers have stored photonic information on a microchip as an acoustic wave. This allows precious extra time to store, process and then redistribute the data without relying on electronics, which produce excess heat. Such a hybrid chip could have a huge impact in cloud computing and telecommunication centers, which are overheating as we churn through data on our phones.

• [Converting waste toilet paper into electricity](#) [周六, 16 9月 05:02]

Chemists have performed a techno-economic analysis of converting waste toilet paper into electricity. They propose a two-step process and calculate a cost per kWh comparable to that of residential photovoltaic installations.

• [A drone for last-centimeter delivery](#) [周六, 16 9月 05:01]

A new drone uses cutting-edge technology to deliver parcels weighing up to 500 grams. The device will never get stuck in traffic, it's programmed to avoid obstacles, and it can reach destinations on steep or uneven terrain. Its protective cage and foldable design mean that it can be carried around in a backpack and used in total safety.

• [Tough stuff: Spider silk enhanced with graphene-based materials](#) [周六, 16 9月 04:52]

Natural spider silk has excellent mechanical properties. Researchers have now found a way to boost the strength of spider's silk using graphene-based materials, paving the way for a novel class of high-performance bionic composites.

• [Immune system linked to alcohol drinking behavior](#) [周六, 16 9月 02:41]

Researchers have found a new link between the brain's immune system and the desire to drink alcohol in the evening.

• [Wolves understand cause and effect better than dogs](#) [周五, 15 9月 21:51]

A rattle will only make noise if you shake it. Animals like the wolf also understand such connections and are better at this than their

domesticated descendants. Researchers say that wolves have a better causal understanding than dogs and that they follow human-given communicative cues equally well. The study provides insight that the process of domestication can also affect an animal's causal understanding.

- [**Electric eels leap to deliver painful, Taser-like jolt**](#) [周五, 15 9月 03:24]

The electric eel has always been noted for its impressive ability to shock and subdue its prey. It's recently become clear that electric eels also use a clever trick to deliver an intense, Taser-like jolt to potential predators: they leap from the water to target threatening animals, humans included, above water. Now, a researcher has measured (and experienced) just how strong that jolt can be.

- [**Sorting molecules with DNA robots**](#) [周五, 15 9月 03:24]

Scientists have programmed a 'robot' made of DNA to pick up and sort molecules into predetermined locations.

- [**The return of the comet-like exoplanet**](#) [周五, 15 9月 03:23]

Astronomers have focused the Hubble Space Telescope on an exoplanet that had already been seen losing its atmosphere, which forms an enormous cloud of hydrogen, giving the planet the appearance of a giant comet. During earlier observations, it was not possible to cover the whole cloud, whose shape was predicted by numerical simulations. Thanks to these new observations, the scientists have finally been able to confirm the initial predictions.

- [**'Handedness' in scale-eating fish: Nature and nurture**](#) [周五, 15 9月 03:23]

Lateralized behaviors are thought to be strengthened during development. However, little is known about how they are acquired during development. In the scale-eating cichlid model, researchers demonstrated the attack side preference of juveniles was developed with scale-eating experience, regardless of age. They also found that kinetics of attack behavior is superior on one side by nature. Therefore, they concluded that the fish learn to use the naturally dominant side through

experience.

· [**Could interstellar ice provide the answer to birth of DNA?**](#) [周五, 15 9月 03:22]

Molecules brought to Earth in meteorite strikes could potentially be converted into the building blocks of DNA, researchers have shown.

· [**Physicists offer explanation for diverse galaxy rotations**](#) [周五, 15 9月 03:22]

Physicists have found a simple and viable explanation for the diversity observed in galactic rotations. They report that diverse galactic-rotation curves, a graph of rotation speeds at different distances from the center, can be naturally explained if dark matter particles are assumed to strongly collide with one another in the inner halo, close to the galaxy's center -- a process called dark matter self-interaction.

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ScienceDaily

周六, 23 9月 2017

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- [**NASA'S OSIRIS-REx spacecraft slingshots past Earth**](#) [周六, 23 9月 04:25]

NASA's asteroid sample return spacecraft successfully used Earth's gravity on Friday to slingshot itself on a path toward the asteroid Bennu, for a rendezvous next August.

- [**Mechanism that underlies age-associated bone loss**](#) [周六, 23 9月 03:05]

A major health problem in older people is age-associated osteoporosis -- the thinning of bone and the loss of bone density that increases the risk of fractures. Researchers have now detailed an underlying mechanism leading to that osteoporosis. When this mechanism malfunctions, progenitor cells stop creating bone-producing cells, and instead create fat cells. Knowledge of this mechanism can provide targets in the search for novel bone-loss.

- [**Two Group A Streptococcus genes linked to 'flesh-eating' bacterial infections**](#) [周六, 23 9月 03:05]

Group A Streptococcus bacteria cause illnesses ranging from mild nuisances like strep throat to life-threatening conditions such as flesh-eating disease, also known as necrotizing fasciitis. Life-threatening infections occur when the bacteria spread underneath the surface of the

skin or throat and invade the underlying soft tissue. Researchers have found two group A Streptococcus genes involved in invasive infections, which may be potential targets for therapeutics.

- [**Enhancing the sensing capabilities of diamonds with quantum properties**](#) [周六, 23 9月 00:29]

When a nitrogen atom is next to the space vacated by a carbon atom, it forms what is called a nitrogen-vacancy center. Now, researchers have shown how they can create more NV centers, which makes sensing magnetic fields easier, using a relatively simple method that can be done in many labs.

- [**700 years old saint myth has been proven \(almost\) true**](#) [周五, 22 9月 23:17]

Scientists confirm that the age and content of an old sack is in accordance with a medieval myth about Saint Francis of Assisi.

- [**Our weight tells how we assess food**](#) [周五, 22 9月 23:17]

A new study demonstrated that people of normal weight tend to associate natural foods such as apples with their sensory characteristics. On the other hand, processed foods such as pizzas are generally associated with their function or the context in which they are eaten. But that's not all. The research also highlighted the ways in which underweight people pay greater attention to natural foods and overweight people to processed foods.

- [**Residents: Frontline defenders against antibiotic resistance?**](#) [周五, 22 9月 23:17]

Residents often decide which antibiotics to start a patient on so they could become the first line of defense against antibiotic resistance.

- [**Strategy might prevent infections in patients with spinal cord injuries**](#) [周五, 22 9月 23:17]

A new study sheds light on how to reduce the number of infections in patients with spinal cord injuries without using antibiotics.

- [**Usher syndrome: Gene therapy restores hearing**](#)

and balance [周五, 22 9月 23:17]

Scientists have recently restored hearing and balance in a mouse model of Usher syndrome type 1G characterized by profound congenital deafness and vestibular disorders caused by severe dysmorphogenesis of the mechano-electrical transduction apparatus of the inner ear's sensory cells. These findings open up new possibilities for the development of gene therapy treatments for hereditary forms of deafness.

• **A sustainable future powered by sea** [周五, 22 9月 21:40]

Researchers develop turbines to convert the power of ocean waves into clean, renewable energy.

• **Assembly of nanoparticles proceeds like a zipper**

[周五, 22 9月 21:40]

It has always been the Holy Grail of materials science to describe and control the material's structure-function relationship. Nanoparticles are an attractive class of components to be used in functional materials because they exhibit size-dependent properties, such as superparamagnetism and plasmonic absorption of light. Furthermore, controlling the arrangement of nanoparticles can result in unforeseen properties, but such studies are hard to carry out due to limited efficient approaches to prod...

• **Stimuli fading away en route to consciousness** [周五, 22 9月 21:40]

Whether or not we consciously perceive the stimuli projected onto our retina is decided in our brain. A recent study shows how some signals dissipate along the processing path to conscious perception. This process begins at rather late stages of signal processing. By contrast, in earlier stages there is hardly any difference in the reaction of neurons to conscious and unconscious stimuli.

• **Ancient textiles reveal differences in Mediterranean fabrics in the 1st millennium BC**

[周五, 22 9月 21:40]

Analysis of Iron Age textiles indicates that during c. 1000-400 BC Italy shared the textile culture of Central Europe, while Greece was largely influenced by the traditions of ancient Near East.

- [**Crowning the 'king of the crops': Sequencing the white guinea yam genome**](#) [周五, 22 9月 21:40]

Scientists have, for the first time, provided a genome sequence for the white Guinea yam, a staple crop with huge economic and cultural significance on the African continent and a lifeline for millions of people.

- [**Winter cold extremes linked to high-altitude polar vortex weakening**](#) [周五, 22 9月 21:40]

When the strong winds that circle the Arctic slacken, cold polar air can escape and cause extreme winter chills in parts of the Northern hemisphere. A new study finds that these weak states have become more persistent over the past four decades and can be linked to cold winters in Russia and Europe.

- [**Flint's water crisis led to fewer babies and higher fetal death rates, researchers find**](#) [周五, 22 9月 21:16]

An estimated 275 fewer children were born in Flint, Michigan, while the city was using lead-contaminated water from the Flint River, according to new research findings.

- [**Breathing dirty air may harm kidneys**](#) [周五, 22 9月 21:16]

Outdoor air pollution may increase the risk of chronic kidney disease and contribute to kidney failure, say researchers. Scientists culled national VA databases to evaluate the effects of air pollution and kidney disease on nearly 2.5 million people over a period of 8.5 years, beginning in 2004. The scientists compared VA data on kidney function to air-quality levels collected by the Environmental Protection Agency (EPA) as well as the National Aeronautics and Space Administration (NASA).

- [**Effective help is available for migraine sufferers**](#) [周五, 22 9月 21:15]

Although it's the third most prevalent illness in the world, migraine is widely misunderstood and frequently undiagnosed. Until quite recently a common "remedy" for migraine was to lie in a dark room and wait for

the pain to pass. But today there are treatments that work – and new medications formulated specifically for migraine are in the pipeline.

- [**Rainbow colors reveal cell history**](#) [周五, 22 9月 21:14]

A system called "Beta-bow", which allows the history of beta-cells to be traced by genetic bar-coding and multicolor imaging, has been developed by researchers.

- [**New genetic syndrome predisposes the body to cancer**](#) [周五, 22 9月 21:14]

A new syndrome caused by biallelic mutations -- those produced in both gene copies inherited from the mother and father -- in the FANCM gene predisposes the body to the appearance of tumors and causes rejection to chemotherapy treatments. Contrary to what scientists believed, the gene does not cause Fanconi anemia. Researchers recommend modifying the clinical monitoring of patients with these mutations.

- [**Improving techniques for joint defect treatment**](#) [周五, 22 9月 21:12]

Different surface topographies and materials provide interesting ways to study cell behavior and potentially provide novel solutions for treating joint defects. Tissue engineering methods that simulate native cartilage could prove useful to create cartilage implants in the laboratory, according to new research.

- [**Smartphone apps can reduce depression**](#) [周五, 22 9月 21:09]

New research has confirmed that smartphone apps are an effective treatment option for depression, paving the way for safe and accessible interventions for the millions of people around the world diagnosed with this condition.

- [**Party discipline for jumping genes**](#) [周五, 22 9月 21:09]

Jumping genes, transposons, are part of the genome of most organisms, aggregated into families and can damage the genome by jumping. How hosts suppress the jumping is well investigated. Why they still can jump has hardly been understood so far. Researchers investigated for the first time in all transposons of the host organism, which properties and host environments facilitate jumping. They showed that family affiliation is

more important than position.

- [**Personality changes don't precede clinical onset of Alzheimer's, study shows**](#) [周五, 22 9月 21:09]

No evidence has been found to support the idea that personality changes begin before the clinical onset of mild cognitive impairment (MCI) or dementia, a new and comprehensive study reports.

- [**Ultra-light aluminum: Chemist reports breakthrough in material design**](#) [周五, 22 9月 21:09]

Chemists report a new, metastable, ultra-light crystalline form of aluminum has been computationally designed using density functional calculations with imposing periodic boundary conditions.

- [**Artificial orchid cultivation kit**](#) [周五, 22 9月 21:09]

Orchids are loved by gardeners around the world but are notoriously difficult to cultivate. Researchers have developed a new orchid cultivation kit and have succeeded in complete artificial cultivation of an autonomous orchid. Since this kit can be made cheaply, it can broaden the opportunities for orchid cultivation in general households. It is also expected to be useful in preserving the genetic diversity of orchidaceous plants, many of which are in danger of extinction.

- [**Quick test may speed antibiotic treatment, combat drug resistance**](#) [周五, 22 9月 21:09]

Researchers have demonstrated a potential new tactic for rapidly determining whether an antibiotic combats a given infection, thus hastening effective medical treatment and limiting the development of drug-resistant bacteria. Their method can quickly sense mechanical fluctuations of bacterial cells and any changes induced by an antibiotic.

- [**The math of doughnuts: 'Moonshine' sheds light on elliptic curves**](#) [周五, 22 9月 21:09]

Mathematicians have opened a new chapter in the theory of moonshine, one which begins to harness the power of the pariahs -- sporadic simple groups that previously had no known application.

- [**Positive, negative or neutral, it all matters: NASA explains space radiation**](#) [周五, 22 9月 21:09]

Charged particles may be small, but they matter to astronauts. NASA's Human Research Program (HRP) is investigating these particles to solve one of its biggest challenges for a human journey to Mars: space radiation and its effects on the human body.

- [**Being active saves lives whether a gym workout, walking to work or washing the floor**](#) [周五, 22 9月 06:50]

Any activity is good for people to meet the current guideline of 30 minutes of activity a day, or 150 minutes a week to raise the heart rate, new research indicates.

- [**Alternative splicing, an important mechanism for cancer**](#) [周五, 22 9月 06:50]

Scientists discover several alterations in this cellular process with implications in cancer by analyzing samples from more than 4,000 patients.

- [**Preterm children have more medical sleep problems but fall asleep more independently**](#) [周五, 22 9月 04:13]

A new study suggests that while healthy preterm children have more medical sleep problems than full-term children, they are more likely to fall asleep independently.

- [**New technique accurately digitizes transparent objects**](#) [周五, 22 9月 04:12]

A new imaging technique makes it possible to precisely digitize clear objects and their surroundings, an achievement that has eluded current state-of-the-art 3-D rendering methods.

- [**Strong alcohol policies help reduce alcohol-involved homicides**](#) [周五, 22 9月 04:12]

Stronger alcohol policies, including taxes and sales restrictions, have been shown to reduce the likelihood of alcohol involvement among

homicide victims, according to a new study.

- [**Babies can learn that hard work pays off**](#) [周五, 22 9月 04:12]

A new study reveals babies as young as 15 months can learn the value of hard work. Researchers found babies who watched an adult struggle to reach two different goals before succeeding tried harder at their own difficult task than babies who saw an adult succeed effortlessly.

- [**Ozark grasslands experience major increase in trees and shrubs**](#) [周五, 22 9月 04:12]

Woody vegetation, such as trees and shrubs, has increased dramatically in Ozark grasslands over the past 75 years, according to a study. If these ecosystems continue to favor woody vegetation, will it be possible to maintain open grasslands for the foreseeable future?

- [**'Labyrinth' chip could help monitor aggressive cancer stem cells**](#) [周五, 22 9月 04:12]

Inspired by the Labyrinth of Greek mythology, a new chip etched with fluid channels sends blood samples through a hydrodynamic maze to separate out rare circulating cancer cells into a relatively clean stream for analysis. It is already in use in a breast cancer clinical trial.

- [**New hope for people with fibromyalgia**](#) [周五, 22 9月 04:12]

A novel psychological therapy that encourages addressing emotional experiences related to trauma, conflict and relationship problems has been found helpful for people with the chronic pain condition fibromyalgia.

- [**Unique gene therapy prevents, reverses multiple sclerosis in animal model**](#) [周五, 22 9月 04:12]

Multiple sclerosis can be inhibited or reversed using a novel gene therapy technique that stops the disease's immune response in mouse models, researchers have found.

- [**Into more thin air: Exploring the adaptation extremes of human high altitude sickness and**](#)

fitness [周五, 22 9月 04:12]

Many research groups have explored human adaptation to high altitude living among three major far-flung global populations: Tibetans, Ethiopians and Peruvians. But few have simultaneously explored the other extreme---maladaptation----in the form of chronic mountain sickness (CMS). Now, in the largest whole genome study of its kind, an international research team led by University of California San Diego's Chairman of Pediatrics, Dr. Gabriel Haddad, has expanded on their recent study of understand...

• **Dancing electrons lose the race** [周五, 22 9月 02:13]

Ultrashort pulses of light were employed by physicists to start a race between electrons emitted from different initial states in a solid material. Timing this race revealed an unexpected result: the fastest electrons arrived in last place.

• **Synthetic molecule 'kicks and kills' some persistent HIV in mice** [周五, 22 9月 02:13]

Scientists have designed a synthetic molecule that can reactivate dormant human immunodeficiency virus (HIV) in mice and lead to the death of some of the infected cells, according to a new study.

• **Japanese encephalitis vaccine cuts disease rate in Nepal** [周五, 22 9月 02:13]

From 2006 through 2011, Nepal conducted a mass immunization campaign against Japanese encephalitis -- a mosquito-borne viral disease. Now, investigators have reported that the vaccination effort prevented thousands of cases of Japanese encephalitis (JE) and cut JE rates in Nepal by at least 78 percent.

• **Your neurons register familiar faces, whether you notice them or not** [周五, 22 9月 02:13]

When people see an image of a person they recognize particular cells light up in the brain. Now, researchers have found that those cells light up even when a person sees a familiar face or object but fails to notice it. The only difference is that the neural activity is weaker and delayed in

comparison to what happens when an observer consciously registers and can recall having seen a particular image.

- [**Ancient DNA data fills in thousands of years of human prehistory in Africa**](#) [周五, 22 9月 02:13]

By sequencing the ancient genomes of 15 individuals from different parts of Africa, researchers reporting in the journal Cell on Sept. 21 have reconstructed the prehistory of humans on the continent, going back thousands of years. The findings shed light on which human populations lived in eastern and southern Africa between 8,000 and 1,000 years ago, the researchers say.

- [**A rapid alternative to standard safety tests for lentiviral vectors**](#) [周五, 22 9月 02:13]

A new, publicly available test to assess the safety of cell therapy products altered by lentivirus generates results within a few hours, potentially hastening the pace at which viral immunotherapies move into clinical trial. Current assays required by the US Food and Drug Administration take about six weeks to complete. The rapid test, which does not have a significant risk of false positives, is also a fraction of the cost of the standard approach.

- [**Scientists sequence asexual tiny worm whose lineage stretches back 18 million years**](#) [周五, 22 9月 02:13]

A team of scientists has sequenced, for the first time, a tiny worm that belongs to a group of exclusively asexual species that originated approximately 18 million years ago -- making it one of the oldest living lineages of asexual animals known.

- [**Green algae could hold clues for engineering faster-growing crops**](#) [周五, 22 9月 02:13]

Two new studies provide a detailed look at an essential part of algae's growth machinery, with the eventual goal of applying this knowledge to improving the growth of crops.

- [**Detecting cosmic rays from a galaxy far, far**](#)

[away](#) [周五, 22 9月 02:12]

Where do cosmic rays come from? Solving a 50-year-old mystery, a collaboration of researchers has discovered it's much farther than the Milky Way.

. [Jellyfish, with no brains, still seem to sleep](#) [周五, 22 9月 02:12]

The discovery that primitive jellyfish sleep suggests that sleep is an ancient, evolutionarily conserved behavior.

| [下一章](#) | [主菜单](#) |

NASA'S OSIRIS-REx spacecraft slingshots past Earth -- ScienceDaily

NASA's asteroid sample return spacecraft successfully used Earth's gravity on Friday to slingshot itself on a path toward the asteroid Bennu, for a rendezvous next August.

At 12:52 p.m. EDT on Sept. 22, the OSIRIS-REx (Origins, Spectral Interpretation, Resource Identification, and Security -- Regolith Explorer) spacecraft came within 10,711 miles (17,237 km) of Antarctica, just south of Cape Horn, Chile, before following a route north over the Pacific Ocean.

OSIRIS-REx launched from Cape Canaveral Air Force Station in Florida on Sept. 8, 2016, on an Atlas V 411 rocket. Although the rocket provided the spacecraft with the all the momentum required to propel it forward to Bennu, OSIRIS-REx needed an extra boost from the Earth's gravity to change its orbital plane. Bennu's orbit around the Sun is tilted six degrees from Earth's orbit, and this maneuver changed the spacecraft's direction to put it on the path toward

Bennu.

As a result of the flyby, the velocity change to the spacecraft was 8,451 miles per hour (3.778 kilometers per second).

"The encounter with Earth is fundamental to our rendezvous with Bennu," said Rich Burns, OSIRIS-REx project manager at NASA's Goddard Space Flight Center in Greenbelt, Maryland. "The total velocity change from Earth's gravity far exceeds the total fuel load of the OSIRIS-REx propulsion system, so we are really leveraging our Earth flyby to make a massive change to the OSIRIS-REx trajectory, specifically changing the tilt of the orbit to match Bennu."

The mission team also is using OSIRIS-REx's Earth flyby as an opportunity to test and calibrate the spacecraft's instrument suite. Approximately four hours after the point of closest approach, and on three subsequent days over the next two weeks, the spacecraft's instruments will be turned on to scan Earth and the Moon. These data will be used to calibrate the spacecraft's science instruments in preparation for OSIRIS-REx's arrival at Bennu in late 2018.

"The opportunity to collect science data over the next two weeks provides the OSIRIS-REx mission team with an excellent opportunity to practice for operations at Bennu," said Dante Lauretta, OSIRIS-REx principal investigator at the University of Arizona, Tucson.

"During the Earth flyby, the science and operations teams are co-located, performing daily activities together as they will during the asteroid encounter."

The OSIRIS-REx spacecraft is currently on a seven-year journey to rendezvous with, study, and return a sample of Bennu to Earth. This sample of a primitive asteroid will help scientists understand the formation of our solar system more than 4.5 billion years ago.

NASA's Goddard Space Flight Center provides overall mission management, systems engineering and the safety and mission assurance for OSIRIS-REx. Dante Lauretta of the University of Arizona, Tucson, is the principal investigator, and the University of Arizona also leads the science team and the mission's science observation planning and data processing. Lockheed Martin Space Systems in Denver built the spacecraft and is providing flight operations. Goddard and KineticX Aerospace are responsible for navigating the OSIRIS-REx spacecraft. OSIRIS-REx is the third mission in

NASA's New Frontiers Program. NASA's Marshall Space Flight Center in Huntsville, Alabama, manages the agency's New Frontiers Program for the Science Mission Directorate in Washington.

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Mechanism that underlies age-associated bone loss -- ScienceDaily

A major health problem in older people is age-associated osteoporosis -- the thinning of bone and the loss of bone density that increases the risk of fractures. Often this is accompanied by an increase in fat cells in the bone marrow.

University of Alabama at Birmingham researchers have now detailed an underlying mechanism leading to that osteoporosis. When this mechanism malfunctions, progenitor cells stop creating bone-producing cells, and instead create fat cells. Knowledge of this mechanism can provide targets in the search for novel bone-loss therapeutics to treat human osteoporosis with minimal side effects.

The UAB researchers found that a protein called Cbf-beta plays a critical role in maintaining the bone-producing cells. Furthermore, examination of aged mice showed dramatically reduced levels of Cbf-beta in bone marrow cells, as compared to younger mice.

Thus, they propose, maintaining Cbf-beta may be essential to preventing human age-associated osteoporosis that is due to elevated creation of fat cells.

Bone is a living tissue that constantly rebuilds. Bones need a constant new creation of cells specific to their tissue, including the bone-producing cells called osteoblasts. Osteoblasts live only about three months and do not divide.

The progenitor cells for osteoblasts are bone marrow mesenchymal stem cells. Besides osteoblasts, mesenchymal stem cells can also differentiate into the chondrocyte cells that make cartilage, the myocyte cells that help form muscles and the adipocytes, or fat cells. Thus, the same progenitor cell has four possible tracks of differentiation.

UAB researchers and colleagues focused on the molecular mechanism that controls the lineage commitment switch between the osteoblast and adipocyte tracks. Led by Yi-Ping Li, Ph.D., UAB professor of pathology, and Wei Chen, M.D., UAB associate professor of pathology, they investigated the key role played by Cbf-beta, or core-binding factor subunit beta.

Study details

The team led by Li and Chen generated three mouse models by deleting Cbf-beta at various stages of the osteoblast lineage. All three mouse models showed severe osteoporosis with accumulation of fat cells in the bone marrow, a pathology that resembles aged bone from enhanced adipocyte creation.

Bone marrow mesenchymal stem cells and bone cells from the skulls of Cbf-beta-deficient mice showed increased expression of adipocyte genes.

Looking at the mechanism downstream, the researchers found that the loss of Cbf-beta impeded the canonical Wnt signaling pathway, particularly through decreased Wnt10b expression. In nonmutant mice, they found that the protein complex composed of Cbf-beta and the Runx2 transcription factor binds to the Wnt10b promoter to drive Wnt10b expression. The Cbf-beta/Runx2 complex also inhibited expression of the enhancer protein C/EBP-alpha that promotes differentiation of adipocytes.

In addition, the researchers showed that Cbf-beta maintains the osteoblast lineage commitment in two

ways -- through the Wnt paracrine pathway to affect nearby cells and through endogenous signaling within the cell to suppress adipogenesis gene expression.

Altogether, this knowledge of the mechanism driven by Cbf-beta can help explain the imbalance in bone maintenance seen in older people.

Story Source:

[Materials](#) provided by [University of Alabama at Birmingham](#). *Note: Content may be edited for style and length.*

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Two Group A Streptococcus genes linked to 'flesh-eating' bacterial infections -- ScienceDaily

Group A Streptococcus bacteria cause a variety of illnesses that range from mild nuisances like strep throat to life-threatening conditions including pneumonia, toxic shock syndrome and the flesh-eating disease formally known as necrotizing fasciitis. The life-threatening infections occur when the bacteria spread underneath the surface of the skin or throat and invade the underlying soft tissue. A 2005 study published in *The Lancet* attributed half a million deaths worldwide each year to group A Streptococcus.

"In 24 to 48 hours, you can go from being healthy to having a limb amputated to save your life," said Kevin McIver, professor of cell biology and molecular genetics at the University of Maryland, College Park. "And we don't really know why or how the bacteria do that."

In a new study, McIver's laboratory and researchers at

the University of Maryland School of Medicine identified two genes important for invasive group A Streptococcus infections in mice. The genes, subcutaneous fitness genes A (scfA) and B (scfB), may prove to be promising clinical targets in the fight against these infections, as there are no vaccines against group A Streptococcus or effective treatments for invasive infections. The study was published online on August 23, 2017, in the journal PLOS Pathogens.

Led by Yoann Le Breton, the study's first author and a research assistant professor in McIver's group, the researchers discovered scfA and scfB by performing transposon sequencing on the entire group A Streptococcus genome. Transposons, also known as jumping genes, are short sequences of DNA that physically move within a genome, mutating genes by jumping into them. If the mutation causes an interesting effect, scientists can identify the mutated gene by locating the transposon, sequencing the DNA surrounding the transposon and mapping its location in the genome.

"Invasion under the skin, or subcutaneously, is not the norm for group A Streptococcus bacteria; it's actually very rare," McIver explained. "We hypothesized that

there must be genes in the bacteria important for invading soft tissues and surviving under the skin. And we tested that theory by using transposons to make thousands of different individual mutants that we used to infect a subcutaneous environment in mice."

McIver and his colleagues used a transposon called Krmit -- which they created in a previous study -- to generate a collection of approximately 85,000 unique mutants in a group A Streptococcus strain. They injected the mutant strains into mice, which resulted in humanlike infections. The transposon was named for the Muppets character Kermit the frog, whose creator Jim Henson, a 1960 College Park alumnus, died of toxic shock syndrome following group A Streptococcal pneumonia.

"We were particularly interested in the mutations that didn't come out the other end -- the ones not found in the surviving bacteria from the infected tissue," McIver said. "These genes would be good targets for a vaccine or treatment because the bacteria missing these genes did not flourish in the infection site."

The researchers identified 273 scf genes as potentially involved in establishing infection under the skin, but

two genes stood out: scfA and scfB. Based on patterns in their DNA sequences, these genes likely encode proteins in the bacterial membrane. This is a prime location for gene products involved in infection because many dangerous bacteria secrete toxins or proteins through the membrane to attack the host. Additional experiments showed that bacteria lacking scfA or scfB had difficulty spreading from under the skin to the bloodstream and other organs.

The results suggest that these two genes are involved in the invasion process and may be potential targets for therapeutics.

"The next steps will be to expand the study to include multiple animal models, and these experiments are already underway," said Mark Shirtliff, a co-author of the study and a professor in the Department of Microbiology and Immunology at the University of Maryland School of Medicine and the Department of Microbial Pathogenesis at the University of Maryland School of Dentistry. "We can also begin to formulate improved therapies and vaccines against group A streptococcus infections and their complications such as rheumatic heart disease, pneumonia and necrotizing fasciitis."

McIver also looks forward to using transposon sequencing to study other ways bacteria attack humans.

"Transposon sequencing can be used to probe how bacteria infect humans in any environment you can think of," McIver said. "Like group A Streptococcus, many pathogenic bacteria have completely sequenced genomes, but we don't know what most of the genes are doing. We're excited to have a method to interrogate all that unknown genetic material to better understand human infections."

Story Source:

[Materials](#) provided by [University of Maryland](#). *Note: Content may be edited for style and length.*

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Enhancing the sensing capabilities of diamonds with quantum properties: Simple method can give diamonds the special properties needed for quantum applications such as sensing magnetic fields -- ScienceDaily

Pure diamond consists of carbon atoms in a perfect crystal lattice. But remove a few carbons and swap some others for nitrogen, and you get a diamond with special quantum-sensing properties. These properties are useful for quantum information applications and sensing magnetic fields, and as a platform for probing the mysteries of quantum physics.

When a nitrogen atom is next to the space vacated by a carbon atom, it forms what is called a nitrogen-vacancy (NV) center. Now, researchers have shown how they can create more NV centers, which makes sensing magnetic fields easier, using a relatively simple method that can be done in many labs. They describe their results this week in *Applied Physics Letters*, from AIP

Publishing.

Magnetic field sensing presents a prime example for the importance of this sensing. Green light can induce the NV centers to fluoresce and emit red light, but the amount of this fluorescence changes in the presence of a magnetic field. By measuring the brightness of the fluorescence, diamond NV centers can help determine magnetic field strength. Such a device can make magnetic images of a range of sample types, including rocks and biological tissue.

The sensitivity of this type of magnetic detection is determined by the concentration of NV centers while vacancies that are not paired with nitrogen create noise. Efficient conversion of vacancies into NV centers, therefore, as well as maximizing the concentration of NV centers, plays a key role in advancing these detection methods.

Researchers typically purchase nitrogen-doped diamonds from a separate company. They then bombard the diamond with electrons, protons or other particles, which strip away some of the carbon atoms, leaving behind vacancies. Finally, a heating process called annealing nudges the vacancies next to the

nitrogen atoms to form the NV centers. The problem is that irradiation often requires sending your sample to a separate facility, which is expensive and time-consuming.

"What is special about our approach is that it's very simple and very straightforward," said Dima Farfurnik of the Hebrew University of Jerusalem in Israel. "You get sufficiently high NV concentrations that are appropriate for many applications with a simple procedure that can be done in-house."

Their method uses high energy electron bombardment in a transmission electron microscope (TEM), an instrument accessible to many researchers, to locally create NV centers. Normally, a TEM is used to image materials down to subnanometer resolutions, but its narrow electron beam can also irradiate diamonds.

Others have shown TEMs can create NV centers in specialized diamond samples, but the researchers in this study successfully tested the method on several commercially available diamond samples.

In a typical, untreated sample, less than 1 percent of the nitrogen atoms form NV centers. But by using a TEM,

the researchers increased this conversion efficiency to as high as 10 percent. In certain cases, the samples reached their saturation limit, and more irradiation was no longer effective. For other samples, however, the researchers didn't hit this limit, suggesting that additional irradiation could boost efficiencies further. With higher conversion efficiencies, and small irradiation volumes possible with a TEM, devices like magnetic sensors could be more compact.

To make sure the method didn't hinder the effectiveness of NVs in applications like sensing magnetic fields, the researchers confirmed that the length of time the NV centers remain in their states -- the coherence time -- didn't change.

Packing enough NV centers in a diamond would allow physicists to probe the quantum interactions among the centers themselves. This research could enable the creation of a unique quantum state called a squeezed state, which has never been demonstrated before in a solid and could push the sensing capabilities of these systems beyond today's classical limits.

"We hope the enhanced number of NV centers due to irradiation will serve as a stepping stone for this long-

term and ambitious goal," Farfurnik said.

Story Source:

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700 years old saint myth has been proven (almost) true -- ScienceDaily

Scientists confirm that the age and content of an old sack is in accordance with a medieval myth about Saint Francis of Assisi.

For more than 700 years the Friary of Folloni near Montella in Italy has protected and guarded some small fragments of textile.

According to the legend the textile fragments originate from a sack that appeared on the doorstep of the friary in the winter of 1224 containing bread sent from Saint Francis of Assisi, who at that time was in France. The bread was allegedly brought to the friary by an angel.

Ever since that cold winter's night the sack has been guarded by the friary, and today the last few remaining fragments are kept as a relic in a well protected shrine.

In line with the legend

A Danish/Italian/Dutch team of researchers led by

Associate Professor Kaare Lund Rasmussen from University of Southern Denmark has had the opportunity to conduct scientific studies of the alleged bread sack fragments. Their study is published in the journal Radiocarbon.

C-14 analysis revealed that the textile can be dated to 1220-1295.

The age is in line with the legend, says Kaare Lund Rasmussen, a chemist, and specialized in archeo-chemical analyses.

There was probably bread in the sack

The researchers also looked for traces of bread in the textile. They did this by looking for ergosterol, a sterol for the fungal kingdom and encountered in several types of mould. Ergosterol can be a potential biomarker for brewing, baking or agriculture.

Our studies show that there was probably bread in the sack. We don't know when, but it seems unlikely that it was after 1732, where the sack fragments were immured in order to protect them. It is more likely that bread was in contact with the textile in the 300 years

before 1732; a period, where the textile was used as altar cloth -- or maybe it was indeed on the cold winter's night in 1224 -- it is possible, says Rasmussen.

Scientific measurements cannot prove a legend or belief. What they can do, is either to de-authenticate the object or show accordance between the physical/chemical evidence and the legend, say the researchers in their paper, published in the journal *Radiocarbon*.

Belief versus science

The researchers have not addressed the issue of how the bread sack ended up on the doorstep of the friary.

This is maybe more a question of belief than science, says Rasmussen.

The bread sack: According to legend the bread sack miraculously appeared on the doorstep of the friary in 1224. For 300 years it was used as an altar cloth. During this time pieces were cut off and given to other religious institutions in Italy. After an earthquake in 1732 a new friary was built and the remaining sack fragments were immured. In 1807 the fragments were

moved to the main church, Santa Maria del piano. In 1817 half of the textile was returned to the friary. In 1999 the remaining half returned. Today the fragments of the textile are kept in a reliquary.

Story Source:

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All Top News

Top science stories featured on ScienceDaily's home page.

- [**Winter cold extremes linked to high-altitude polar vortex weakening**](#) [周五, 22 9月 21:40]

When the strong winds that circle the Arctic slacken, cold polar air can escape and cause extreme winter chills in parts of the Northern hemisphere. A new study finds that these weak states have become more persistent over the past four decades and can be linked to cold winters in Russia and Europe.

- [**Flint's water crisis led to fewer babies and higher fetal death rates, researchers find**](#) [周五, 22 9月 21:16]

An estimated 275 fewer children were born in Flint, Michigan, while the city was using lead-contaminated water from the Flint River, according to new research findings.

- [**Babies can learn that hard work pays off**](#) [周五, 22 9月 04:12]

A new study reveals babies as young as 15 months can learn the value of hard work. Researchers found babies who watched an adult struggle to reach two different goals before succeeding tried harder at their own difficult task than babies who saw an adult succeed effortlessly.

- [**Unique gene therapy prevents, reverses multiple sclerosis in animal model**](#) [周五, 22 9月 04:12]

Multiple sclerosis can be inhibited or reversed using a novel gene therapy technique that stops the disease's immune response in mouse models, researchers have found.

- [**Ancient DNA data fills in thousands of years of human prehistory in Africa**](#) [周五, 22 9月 02:13]

By sequencing the ancient genomes of 15 individuals from different parts of Africa, researchers reporting in the journal *Cell* on Sept. 21 have reconstructed the prehistory of humans on the continent, going back thousands of years. The findings shed light on which human populations lived in eastern and southern Africa between 8,000 and 1,000 years ago, the researchers say.

- [**Scientists sequence asexual tiny worm whose lineage stretches back 18 million years**](#) [周五, 22 9月 02:13]

A team of scientists has sequenced, for the first time, a tiny worm that belongs to a group of exclusively asexual species that originated approximately 18 million years ago -- making it one of the oldest living lineages of asexual animals known.

- [**Detecting cosmic rays from a galaxy far, far away**](#) [周五, 22 9月 02:12]

Where do cosmic rays come from? Solving a 50-year-old mystery, a collaboration of researchers has discovered it's much farther than the Milky Way.

- [**Jellyfish, with no brains, still seem to sleep**](#) [周五, 22 9月 02:12]

The discovery that primitive jellyfish sleep suggests that sleep is an ancient, evolutionarily conserved behavior.

- [**Why poison frogs don't poison themselves**](#) [周五, 22 9月 02:12]

Poison frogs harbor some of the most potent neurotoxins we know, yet scientists have long wondered -- how do these frogs keep from poisoning themselves? Scientists are now a step closer to resolving that head-scratcher. And the answer has potential consequences for the fight against pain and addiction.

- [**Reconstructing how Neanderthals grew, based on an El Sidrón child**](#) [周五, 22 9月 02:12]

How did Neanderthals grow? Does modern man develop in the same way as *Homo neanderthalensis* did? How does the size of the brain affect the development of the body? Researchers have studied the fossil

remains of a Neanderthal child's skeleton in order to establish whether there are differences between the growth of Neanderthals and that of sapiens.

- [**Early trilobites had stomachs, new fossil study finds**](#) [周五, 22 9月 02:12]

Exceptionally preserved trilobite fossils from China, dating back to more than 500 million years ago, have revealed new insights into the extinct marine animal's digestive system. The new study shows that at least two trilobite species evolved a stomach structure 20 million years earlier than previously thought.

- [**Dino-killing asteroid's impact on bird evolution**](#) [周五, 22 9月 00:11]

Human activities could change the pace of evolution, similar to what occurred 66 million years ago when a giant asteroid wiped out the dinosaurs, leaving modern birds as their only descendants.

- [**One in four girls is depressed at age 14**](#) [周四, 21 9月 23:07]

New research shows a quarter of girls (24%) and one in 10 boys (9%) are depressed at age 14.

- [**Surprising discovery: How the African tsetse fly really drinks your blood**](#) [周四, 21 9月 23:06]

Researchers have been taking a close-up look at the biting mouthparts of the African tsetse fly as part of ongoing work on the animal diseases it carries. Using a new high-powered scanning electron microscope, researchers were able to see the rows of sharp teeth and rasps that the fly uses to chew through the skin when it bites.

- [**Broad swath of US deemed environmentally suitable for mosquitoes that transmit disease**](#) [周四, 21 9月 22:42]

Three-quarters of counties in the contiguous United States present suitable environmental conditions for at least part of the year for either *Aedes aegypti* or *Aedes albopictus* mosquitoes to survive if introduced, according to researchers. The two mosquito species can transmit viruses that cause Zika, dengue, chikungunya, and yellow fever.

- [**Changing of the guard: Research sheds light on how plants breathe**](#) [周四, 21 9月 22:17]

New research is set to change the textbook understanding of how plants breathe. Researchers have developed the first full 3D model of a guard cell.

- [**Tiny Brazilian frogs are deaf to their own calls**](#) [周四, 21 9月 21:03]

Pumpkin toadlets, found on the leaf litter of Brazil's Atlantic forest, are among the smallest frogs in the world. Scientists have now discovered that two species of these tiny orange frogs cannot hear the sound of their own calls.

- [**Efforts to save sea turtles are a 'global conservation success story'**](#) [周四, 21 9月 06:21]

A new study of the world's seven sea turtle species provides evidence that their numbers are growing overall (unlike many endangered vertebrates), thanks to years of conservation efforts that have played a key role in sea turtle recovery -- even for small sea turtle populations.

- [**Mathematics predicts a sixth mass extinction**](#) [周四, 21 9月 06:21]

Scientists have analyzed significant changes in the carbon cycle over the last 540 million years, including the five mass extinction events. They have identified 'thresholds of catastrophe' in the carbon cycle that, if exceeded, would lead to an unstable environment, and ultimately, mass extinction.

- [**Immune system is critical to regeneration, study finds**](#) [周四, 21 9月 03:49]

The answer to the question of why some organisms can regenerate major body parts while others, such as humans, cannot may lie with the body's innate immune system, according to a new study of heart regeneration in the Mexican salamander.

- [**Unique type of object discovered in our solar system**](#) [周四, 21 9月 02:47]

Astronomers have observed the intriguing characteristics of an unusual type of object in the asteroid belt between Mars and Jupiter: two asteroids orbiting each other and exhibiting comet-like features, including a bright coma and a long tail. This is the first known binary asteroid also classified as a comet.

• [**Fly away home? Ice age may have clipped bird migration**](#) [周四, 21 9月 02:46]

The onset of the last ice age may have forced some bird species to abandon their northerly migrations for thousands of years, says new research led by an ornithologist. The study challenges a long-held presumption that birds merely shortened their migratory flights when glaciers advanced south to cover much of North America and northern Europe about 21,000 years ago.

• [**Species abundance: Winter restricts innovation**](#) [周四, 21 9月 01:17]

Why are there so many more species in the tropics? The 'storage effect' is stronger there than in temperate forests.

• [**Bite force research reveals dinosaur-eating frog**](#) [周四, 21 9月 01:17]

Scientists say that a large, now extinct, frog called *Beelzebufo* that lived about 68 million years ago in Madagascar would have been capable of eating small dinosaurs. The conclusion comes from a study of the bite force of South American horned frogs from the living genus *Ceratophrys*, known as Pacman frogs for their characteristic round shape and large mouth, similar to the video game character Pac-Man.

• [**Animal acoustic activity decline shows forest fire pollution wreaks havoc on wildlife**](#) [周四, 21 9月 01:17]

Forest fires in Southeast Asia during the El Niño droughts of 2015 caused considerable disruption to the biodiversity of the region due to the smoke-induced 'haze' they created, according to new research.

• [**New concept of terrestrial planet formation**](#) [周四, 21 9月 01:17]

Scientists are proposing a new way of understanding the cooling and transfer of heat from terrestrial planetary interiors and how that affects

the generation of the volcanic terrains that dominate the rocky planets.

- [**World's first 'molecular robot' capable of building molecules**](#) [周四, 21 9月 01:17]

Scientists have created the world's first 'molecular robot' that is capable of performing basic tasks including building other molecules.

- [**Dinosaur evolution: Lumbering giants had agile ancestors**](#) [周四, 21 9月 01:17]

The best known sauropod dinosaurs were huge herbivorous creatures, whose brain structures were markedly different from those of their evolutionary predecessors, for the earliest representatives of the group were small, lithe carnivores.

- [**Scientists make atoms-thick 'Post-It notes' for solar cells and circuits**](#) [周四, 21 9月 01:17]

A new study describes an innovative method to make stacks of semiconductors just a few atoms thick. The technique offers scientists and engineers a simple, cost-effective method to make thin, uniform layers of these materials, which could expand capabilities for devices from solar cells to cell phones.

- [**Brain cancer growth halted by absence of protein**](#) [周四, 21 9月 01:16]

The growth of certain aggressive brain tumors can be halted by cutting off their access to a signaling molecule produced by the brain's nerve cells, according to a new study.

- [**Millions of new genes in human microbiome**](#) [周四, 21 9月 01:16]

A new study of the human microbiome has uncovered millions of previously unknown genes from microbial communities in the human gut, skin, mouth, and vaginal microbiome, allowing for new insights into the role these microbes play in human health and disease.

- [**Genome editing reveals role of gene important for human embryo development**](#) [周四, 21 9月 01:16]

Researchers have used genome editing technology to reveal the role of a key gene in human embryos in the first few days of development. This is the first time that genome editing has been used to study gene function in human embryos, which could help scientists to better understand the biology of our early development.

- [**Is the Milky Way an 'outlier' galaxy? Studying its 'siblings' for clues**](#) [周三, 20 9月 23:33]

The most-studied galaxy in the universe -- the Milky Way -- might not be as 'typical' as previously thought, according to a new study. Early results from the Satellites Around Galactic Analogs (SAGA) Survey indicate that the Milky Way's satellites are much more tranquil than other systems of comparable luminosity and environment. Many satellites of those 'sibling' galaxies are actively pumping out new stars, but the Milky Way's satellites are mostly inert.

- [**How Teotihuacan's urban design was lost and found**](#) [周三, 20 9月 23:33]

A new article outlines how the urban design of the city of Teotihuacan differed from past and subsequent cities, only to be rediscovered and partially modeled on many centuries later by the Aztecs.

- [**10,000 year-old DNA proves when fish colonized our lakes**](#) [周三, 20 9月 22:45]

DNA in lake sediment forms a natural archive displaying when various fish species colonized lakes after the glacial period. Scientists' analyses of the prevalence of whitefish DNA in sediment reveal that the whitefish came to Lake Stora Lögdsjön in Västerbotten already 10,000 years ago, whereas Lake Hotagen in Jämtland had its whitefish only 2,200 years ago.

- [**Solving the Easter Island population puzzle**](#) [周三, 20 9月 22:01]

The nearly nine hundred giant stone statues discovered by the first Europeans to land on Easter Island seemed at odds with the small population found living there. It is believed a once thriving community witnessed sweeping ecological change and suffered internal conflict,

resulting in a population crash. A new detailed study of the farming potential of the Island suggests it could have sustained 17,500 people at its peak.

- [**Emerging disease further jeopardizes North American frogs**](#) [周三, 20 9月 04:02]

A deadly amphibian disease called severe Perkinsea infections, or SPI, is the cause of many large-scale frog die-offs in the United States, according to a new study.

- [**End-of-summer Arctic sea ice extent is eighth lowest on record**](#) [周三, 20 9月 04:01]

Arctic sea ice appeared to have reached its yearly lowest extent on Sept. 13, scientists have reported. Analysis of satellite data showed that at 1.79 million square miles (4.64 million square kilometers), this year's Arctic sea ice minimum extent is the eighth lowest in the consistent long-term satellite record, which began in 1978.

- [**North Atlantic right whales decline confirmed: 458 remaining**](#) [周三, 20 9月 02:04]

Marine biologists have developed a new model to improve estimates of abundance and population trends of endangered North Atlantic right whales, which have declined in numbers and productivity in recent years. Between 1990 and 2010 abundance increased to 482 animals, but since 2010 the numbers have declined to 458 in 2015, with 14 known deaths this year.

- [**Sleep deprivation is an effective anti-depressant for nearly half of depressed patients, study suggests**](#) [周三, 20 9月 02:04]

Sleep deprivation - typically administered in controlled, inpatient settings - rapidly reduces symptoms of depression in roughly half of depression patients, according the first meta-analysis on the subject in nearly 30 years.

- [**Mercury's poles may be icier than scientists**](#)

thought [周三, 20 9月 00:31]

A new study identifies three large surface ice deposits near Mercury's north pole, and suggests there could be many additional small-scale deposits that would dramatically increase the planet's surface ice inventory.

• **Getting emotional after failure helps you improve next time, study finds** [周二, 19 9月 23:12]

Emotional responses to failure rather than cognitive ones are more effective at improving people's results for the next time they tackle the next related task, new research indicates.

• **Playing American football before age 12 could have long-term health effects** [周二, 19 9月 22:25]

Playing American football before the age of 12 may have long-term consequences for players' mood and behavior, according to a study involving 214 professional and amateur football players.

• **Exposure to pet and pest allergens during infancy linked to reduced asthma risk** [周二, 19 9月 22:25]

Children exposed to high indoor levels of pet or pest allergens during infancy have a lower risk of developing asthma by 7 years of age, new research reveals. The findings may provide clues for the design of strategies to prevent asthma from developing.

• **New mirror-coating technology promises dramatic improvements in telescopes** [周二, 19 9月 10:23]

An electrical engineer has teamed up with astronomers to improve telescope mirrors using thin-film technology from the electronics industry. They are developing new protective coatings using an atomic layer deposition system large enough to accommodate telescope mirrors.

• **DNA triggers shape-shifting in hydrogels, opening a new way to make 'soft robots'** [周二, 19 9月 10:22]

Biochemical engineers have used sequences of DNA molecules to induce shape-changing in water-based gels, demonstrating a new tactic

to produce "soft" robots and "smart" medical devices that do not rely on cumbersome wires, batteries or tethers.

- [**Solar-to-fuel system recycles CO₂ to make ethanol and ethylene**](#) [周二, 19 9月 03:17]

Scientists have harnessed the power of photosynthesis to convert carbon dioxide into fuels and alcohols at efficiencies far greater than plants. The achievement marks a significant advance in the effort to move toward sustainable sources of fuel.

- [**Copper catalyst yields high efficiency CO₂-to-fuels conversion**](#) [周二, 19 9月 03:17]

Scientists have developed a new electrocatalyst that can directly convert carbon dioxide into multicarbon fuels and alcohols using record-low inputs of energy. The work is the latest in a round of studies tackling the challenge of a creating a clean chemical manufacturing system that can put carbon dioxide to good use.

- [**When it comes to the threat of extinction, size matters**](#) [周二, 19 9月 01:27]

Animals in the Goldilocks zone -- neither too big, nor too small, but just the right size -- face a lower risk of extinction than do those on both ends of the scale, according to an extensive global analysis.

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

- [**Mechanism that underlies age-associated bone loss**](#) [周六, 23 9月 03:05]

A major health problem in older people is age-associated osteoporosis -- the thinning of bone and the loss of bone density that increases the risk of fractures. Researchers have now detailed an underlying mechanism leading to that osteoporosis. When this mechanism malfunctions, progenitor cells stop creating bone-producing cells, and instead create fat cells. Knowledge of this mechanism can provide targets in the search for novel bone-loss.

- [**Two Group A Streptococcus genes linked to 'flesh-eating' bacterial infections**](#) [周六, 23 9月 03:05]

Group A Streptococcus bacteria cause illnesses ranging from mild nuisances like strep throat to life-threatening conditions such as flesh-eating disease, also known as necrotizing fasciitis. Life-threatening infections occur when the bacteria spread underneath the surface of the skin or throat and invade the underlying soft tissue. Researchers have found two group A Streptococcus genes involved in invasive infections, which may be potential targets for therapeutics.

- [**Our weight tells how we assess food**](#) [周五, 22 9月 23:17]

A new study demonstrated that people of normal weight tend to associate natural foods such as apples with their sensory characteristics. On the other hand, processed foods such as pizzas are generally associated with their function or the context in which they are eaten. But that's not all. The research also highlighted the ways in which underweight people pay greater attention to natural foods and

overweight people to processed foods.

- [**Residents: Frontline defenders against antibiotic resistance?**](#) [周五, 22 9月 23:17]

Residents often decide which antibiotics to start a patient on so they could become the first line of defense against antibiotic resistance.

- [**Strategy might prevent infections in patients with spinal cord injuries**](#) [周五, 22 9月 23:17]

A new study sheds light on how to reduce the number of infections in patients with spinal cord injuries without using antibiotics.

- [**Usher syndrome: Gene therapy restores hearing and balance**](#) [周五, 22 9月 23:17]

Scientists have recently restored hearing and balance in a mouse model of Usher syndrome type 1G characterized by profound congenital deafness and vestibular disorders caused by severe dysmorphogenesis of the mechano-electrical transduction apparatus of the inner ear's sensory cells. These findings open up new possibilities for the development of gene therapy treatments for hereditary forms of deafness.

- [**Stimuli fading away en route to consciousness**](#) [周五, 22 9月 21:40]

Whether or not we consciously perceive the stimuli projected onto our retina is decided in our brain. A recent study shows how some signals dissipate along the processing path to conscious perception. This process begins at rather late stages of signal processing. By contrast, in earlier stages there is hardly any difference in the reaction of neurons to conscious and unconscious stimuli.

- [**Flint's water crisis led to fewer babies and higher fetal death rates, researchers find**](#) [周五, 22 9月 21:16]

An estimated 275 fewer children were born in Flint, Michigan, while the city was using lead-contaminated water from the Flint River, according to new research findings.

- [**Breathing dirty air may harm kidneys**](#) [周五, 22 9月 21:16]

Outdoor air pollution may increase the risk of chronic kidney disease and contribute to kidney failure, say researchers. Scientists culled national VA databases to evaluate the effects of air pollution and kidney disease on nearly 2.5 million people over a period of 8.5 years, beginning in 2004. The scientists compared VA data on kidney function to air-quality levels collected by the Environmental Protection Agency (EPA) as well as the National Aeronautics and Space Administration (NASA).

• [Effective help is available for migraine sufferers](#)

[周五, 22 9月 21:15]

Although it's the third most prevalent illness in the world, migraine is widely misunderstood and frequently undiagnosed. Until quite recently a common "remedy" for migraine was to lie in a dark room and wait for the pain to pass. But today there are treatments that work – and new medications formulated specifically for migraine are in the pipeline.

• [Rainbow colors reveal cell history](#)

[周五, 22 9月 21:14]

A system called "Beta-bow", which allows the history of beta-cells to be traced by genetic bar-coding and multicolor imaging, has been developed by researchers.

• [New genetic syndrome predisposes the body to cancer](#)

[周五, 22 9月 21:14]

A new syndrome caused by biallelic mutations -- those produced in both gene copies inherited from the mother and father -- in the FANCM gene predisposes the body to the appearance of tumors and causes rejection to chemotherapy treatments. Contrary to what scientists believed, the gene does not cause Fanconi anemia. Researchers recommend modifying the clinical monitoring of patients with these mutations.

• [Improving techniques for joint defect treatment](#)

[周五, 22 9月 21:12]

Different surface topographies and materials provide interesting ways to study cell behavior and potentially provide novel solutions for treating joint defects. Tissue engineering methods that simulate native cartilage could prove useful to create cartilage implants in the laboratory, according to new research.

- **[Smartphone apps can reduce depression](#)** [周五, 22 9月 21:09]

New research has confirmed that smartphone apps are an effective treatment option for depression, paving the way for safe and accessible interventions for the millions of people around the world diagnosed with this condition.

- **[Party discipline for jumping genes](#)** [周五, 22 9月 21:09]

Jumping genes, transposons, are part of the genome of most organisms, aggregated into families and can damage the genome by jumping. How hosts suppress the jumping is well investigated. Why they still can jump has hardly been understood so far. Researchers investigated for the first time in all transposons of the host organism, which properties and host environments facilitate jumping. They showed that family affiliation is more important than position.

- **[Personality changes don't precede clinical onset of Alzheimer's, study shows](#)** [周五, 22 9月 21:09]

No evidence has been found to support the idea that personality changes begin before the clinical onset of mild cognitive impairment (MCI) or dementia, a new and comprehensive study reports.

- **[Quick test may speed antibiotic treatment, combat drug resistance](#)** [周五, 22 9月 21:09]

Researchers have demonstrated a potential new tactic for rapidly determining whether an antibiotic combats a given infection, thus hastening effective medical treatment and limiting the development of drug-resistant bacteria. Their method can quickly sense mechanical fluctuations of bacterial cells and any changes induced by an antibiotic.

- **[Positive, negative or neutral, it all matters: NASA explains space radiation](#)** [周五, 22 9月 21:09]

Charged particles may be small, but they matter to astronauts. NASA's Human Research Program (HRP) is investigating these particles to solve one of its biggest challenges for a human journey to Mars: space radiation and its effects on the human body.

- **[Being active saves lives whether a gym workout, walking to work or washing the floor](#)** [周五, 22 9月 06:50]

Any activity is good for people to meet the current guideline of 30 minutes of activity a day, or 150 minutes a week to raise the heart rate, new research indicates.

- **[Alternative splicing, an important mechanism for cancer](#)** [周五, 22 9月 06:50]

Scientists discover several alterations in this cellular process with implications in cancer by analyzing samples from more than 4,000 patients.

- **[Preterm children have more medical sleep problems but fall asleep more independently](#)** [周五, 22 9月 04:13]

A new study suggests that while healthy preterm children have more medical sleep problems than full-term children, they are more likely to fall asleep independently.

- **[Strong alcohol policies help reduce alcohol-involved homicides](#)** [周五, 22 9月 04:12]

Stronger alcohol policies, including taxes and sales restrictions, have been shown to reduce the likelihood of alcohol involvement among homicide victims, according to a new study.

- **[Babies can learn that hard work pays off](#)** [周五, 22 9月 04:12]

A new study reveals babies as young as 15 months can learn the value of hard work. Researchers found babies who watched an adult struggle to reach two different goals before succeeding tried harder at their own difficult task than babies who saw an adult succeed effortlessly.

- **['Labyrinth' chip could help monitor aggressive cancer stem cells](#)** [周五, 22 9月 04:12]

Inspired by the Labyrinth of Greek mythology, a new chip etched with fluid channels sends blood samples through a hydrodynamic maze to separate out rare circulating cancer cells into a relatively clean stream

for analysis. It is already in use in a breast cancer clinical trial.

- [**New hope for people with fibromyalgia**](#) [周五, 22 9月 04:12]

A novel psychological therapy that encourages addressing emotional experiences related to trauma, conflict and relationship problems has been found helpful for people with the chronic pain condition fibromyalgia.

- [**Unique gene therapy prevents, reverses multiple sclerosis in animal model**](#) [周五, 22 9月 04:12]

Multiple sclerosis can be inhibited or reversed using a novel gene therapy technique that stops the disease's immune response in mouse models, researchers have found.

- [**Into more thin air: Exploring the adaptation extremes of human high altitude sickness and fitness**](#) [周五, 22 9月 04:12]

Many research groups have explored human adaptation to high altitude living among three major far-flung global populations: Tibetans, Ethiopians and Peruvians. But few have simultaneously explored the other extreme---maladaptation---in the form of chronic mountain sickness (CMS). Now, in the largest whole genome study of its kind, an international research team led by University of California San Diego's Chairman of Pediatrics, Dr. Gabriel Haddad, has expanded on their recent study of understand...

- [**Synthetic molecule 'kicks and kills' some persistent HIV in mice**](#) [周五, 22 9月 02:13]

Scientists have designed a synthetic molecule that can reactivate dormant human immunodeficiency virus (HIV) in mice and lead to the death of some of the infected cells, according to a new study.

- [**Japanese encephalitis vaccine cuts disease rate in Nepal**](#) [周五, 22 9月 02:13]

From 2006 through 2011, Nepal conducted a mass immunization campaign against Japanese encephalitis -- a mosquito-borne viral

disease. Now, investigators have reported that the vaccination effort prevented thousands of cases of Japanese encephalitis (JE) and cut JE rates in Nepal by at least 78 percent.

• [**Your neurons register familiar faces, whether you notice them or not**](#) [周五, 22 9月 02:13]

When people see an image of a person they recognize particular cells light up in the brain. Now, researchers have found that those cells light up even when a person sees a familiar face or object but fails to notice it. The only difference is that the neural activity is weaker and delayed in comparison to what happens when an observer consciously registers and can recall having seen a particular image.

• [**A rapid alternative to standard safety tests for lentiviral vectors**](#) [周五, 22 9月 02:13]

A new, publicly available test to assess the safety of cell therapy products altered by lentivirus generates results within a few hours, potentially hastening the pace at which viral immunotherapies move into clinical trial. Current assays required by the US Food and Drug Administration take about six weeks to complete. The rapid test, which does not have a significant risk of false positives, is also a fraction of the cost of the standard approach.

• [**Why poison frogs don't poison themselves**](#) [周五, 22 9月 02:12]

Poison frogs harbor some of the most potent neurotoxins we know, yet scientists have long wondered -- how do these frogs keep from poisoning themselves? Scientists are now a step closer to resolving that head-scratcher. And the answer has potential consequences for the fight against pain and addiction.

• [**Neuron types in brain are defined by gene activity shaping their communication patterns**](#) [周五, 22 9月 02:12]

Neurons are the basic building blocks that wire up brain circuits supporting mental activities and behavior. In a major step forward, scientists have described a discovery about the molecular-genetic basis

of neuronal cell types. The study, which involves sophisticated computational analysis of the messages transcribed from genes that are active in a neuron, points to patterns of cell-to-cell communication as the core feature that makes possible rigorous distinctions among neuron types across the...

- [**Rapid hepatitis C testing may help better screen young adults**](#) [周五, 22 9月 02:12]

Routine and rapid hepatitis C virus testing among young adults who use injection drugs improves life expectancy and may provide a good use of limited resources, according to new research.

- [**Exosomes are the missing link to insulin resistance in diabetes**](#) [周五, 22 9月 02:11]

Chronic tissue inflammation resulting from obesity is an underlying cause of insulin resistance and type 2 diabetes. But the mechanism by which this occurs has remained cloaked, until now. In a new paper, researchers identified exosomes -- extremely small vesicles or sacs secreted from most cell types -- as the missing link.

- [**Locking down the big bang of immune cells**](#) [周五, 22 9月 01:44]

Ignored pieces of DNA play a critical role in the development of immune cells (T cells), scientists have found. These areas activate a change in the structure of DNA that brings together crucial elements necessary for T cell formation. This “big bang” discovery may aid in combating diseases.

- [**How staph cells dodge the body's immune system**](#) [周五, 22 9月 00:58]

For years, medical investigators have tried and failed to develop vaccines for a type of staph bacteria associated with the deadly superbug MRSA. But a new study shows how staph cells evade the body's immune system, offering a clearer picture of how a successful vaccine would work.

- [**Blood metal ion levels can identify hip**](#)

[replacement patients at low risk of ARMD](#) [周五, 22 9月 00:58]

Patients with 'metal on metal' artificial hips are at risk of complications caused by adverse reactions to metal debris (ARMD). A study confirms that blood metal ion levels specific to the type of hip implant used can help predict patients who are at low risk of ARMD.

• [Flu vaccine used in elderly may benefit middle-aged adults with chronic conditions](#) [周五, 22 9月 00:11]

Expanding the high-dose influenza vaccine recommendation to include middle-aged adults with chronic health conditions may make economic sense and save lives. The findings may justify for clinical trials of the high-dose and new recombinant trivalent influenza vaccines in 50- to 64-year-old adults with chronic illnesses, such as heart or lung disease, diabetes, or cancer, to determine if they do provide considerably better protection than the currently recommended standard dose quadrivalent vaccin...

• [One in four girls is depressed at age 14](#) [周四, 21 9月 23:07]

New research shows a quarter of girls (24%) and one in 10 boys (9%) are depressed at age 14.

• [Mitochondria drive cell survival in times of need](#) [周四, 21 9月 23:07]

Researchers have discovered a mechanism through which mitochondria, the energy factory of our body's cells, play a role in preventing cells from dying when the cells are deprived of nutrients -- a finding that points to a potential target for next-generation cancer drugs.

• [Broad swath of US deemed environmentally suitable for mosquitoes that transmit disease](#) [周四, 21 9月 22:42]

Three-quarters of counties in the contiguous United States present suitable environmental conditions for at least part of the year for either *Aedes aegypti* or *Aedes albopictus* mosquitoes to survive if introduced, according to researchers. The two mosquito species can transmit viruses that cause Zika, dengue, chikungunya, and yellow fever.

• [Brain inflammation linked to suicidal thinking](#)

in depression [周四, 21 9月 22:42]

Patients with major depressive disorder (MDD) have increased brain levels of a marker of microglial activation, a sign of inflammation, according to a new study. Scientists have found that the increase in the inflammatory marker was present specifically in patients with MDD who were experiencing suicidal thoughts, pinning the role of inflammation to suicidality rather than a diagnosis of MDD itself.

Production of key diabetes cells can be improved

[周四, 21 9月 22:17]

In the future diabetics might benefit from getting insulin-regulating beta cells transplanted into their body because their own beta cells are destroyed or less functional. However, according to new stem cell research, the current way of producing beta cells from stem cells has significant shortfalls. The beta cells produced have some features resembling alpha cells.

Whole food diet may help prevent colon cancer, other chronic conditions [周四, 21 9月 22:17]

A diet that includes plenty of colorful vegetables and fruits may contain compounds that can stop colon cancer and inflammatory bowel diseases in pigs, according to an international team of researchers. Understanding how these compounds work on a molecular level could be an initial step toward finding treatments for people with cancer, they added.

Increasing frequency of blood donation has no major side effects [周四, 21 9月 21:55]

Giving blood more frequently - up to every 8 weeks for men and every 12 weeks for women - has no major side effects and could help to increase blood stocks, according to the first ever randomized trial of blood donation involving more than 45000 people in England.

Treating asthma or COPD with steroid inhaler increases the risk of hard-to-treat infections [周四, 21 9月 21:55]

Older people who use steroid inhalers for asthma or chronic obstructive pulmonary disease (COPD) are more likely to suffer particular bacterial

infections, according to a large study.

- [**New genetic test for predicting cancer recurrence**](#) [周四, 21 9月 21:50]

Researchers have discovered a new genetic test which could help predict cancer recurrence - paving the way for more precise, personalised treatments.

- [**Cannabis, 'spice' – better think twice**](#) [周四, 21 9月 21:49]

Marijuana is the most commonly abused drug in the world, and the advent of synthetic cannabinoids creates additional challenges to the society because of their higher potency and ability to escape drug detection screenings. Scientists have a warning about a new danger coming from cannabinoid abuse.

- [**Football helmet smartfoam signals potential concussions in real time, study suggests**](#) [周四, 21 9月 21:03]

While football-related concussions have been top of mind in recent years, people have struggled to create technology to accurately measure them in real time. Engineers have now developed and tested a nano composite smartfoam that can be placed inside a football helmet (and pads) to more accurately test the impact and power of hits.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

- [**NASA'S OSIRIS-REx spacecraft slingshots past Earth**](#) [周六, 23 9月 04:25]

NASA's asteroid sample return spacecraft successfully used Earth's gravity on Friday to slingshot itself on a path toward the asteroid Bennu, for a rendezvous next August.

- [**Enhancing the sensing capabilities of diamonds with quantum properties**](#) [周六, 23 9月 00:29]

When a nitrogen atom is next to the space vacated by a carbon atom, it forms what is called a nitrogen-vacancy center. Now, researchers have shown how they can create more NV centers, which makes sensing magnetic fields easier, using a relatively simple method that can be done in many labs.

- [**A sustainable future powered by sea**](#) [周五, 22 9月 21:40]

Researchers develop turbines to convert the power of ocean waves into clean, renewable energy.

- [**Assembly of nanoparticles proceeds like a zipper**](#) [周五, 22 9月 21:40]

It has always been the Holy Grail of materials science to describe and control the material's structure-function relationship. Nanoparticles are an attractive class of components to be used in functional materials because they exhibit size-dependent properties, such as superparamagnetism and plasmonic absorption of light. Furthermore, controlling the arrangement of nanoparticles can result in unforeseen properties, but such studies are hard to carry out due to limited efficient approaches to prod...

- [**Smartphone apps can reduce depression**](#) [周五, 22 9月 21:09]

New research has confirmed that smartphone apps are an effective treatment option for depression, paving the way for safe and accessible interventions for the millions of people around the world diagnosed with this condition.

- [**Ultra-light aluminum: Chemist reports breakthrough in material design**](#) [周五, 22 9月 21:09]

Chemists report a new, metastable, ultra-light crystalline form of aluminum has been computationally designed using density functional calculations with imposing periodic boundary conditions.

- [**The math of doughnuts: 'Moonshine' sheds light on elliptic curves**](#) [周五, 22 9月 21:09]

Mathematicians have opened a new chapter in the theory of moonshine, one which begins to harness the power of the pariahs -- sporadic simple groups that previously had no known application.

- [**Positive, negative or neutral, it all matters: NASA explains space radiation**](#) [周五, 22 9月 21:09]

Charged particles may be small, but they matter to astronauts. NASA's Human Research Program (HRP) is investigating these particles to solve one of its biggest challenges for a human journey to Mars: space radiation and its effects on the human body.

- [**New technique accurately digitizes transparent objects**](#) [周五, 22 9月 04:12]

A new imaging technique makes it possible to precisely digitize clear objects and their surroundings, an achievement that has eluded current state-of-the-art 3-D rendering methods.

- [**'Labyrinth' chip could help monitor aggressive cancer stem cells**](#) [周五, 22 9月 04:12]

Inspired by the Labyrinth of Greek mythology, a new chip etched with fluid channels sends blood samples through a hydrodynamic maze to separate out rare circulating cancer cells into a relatively clean stream

for analysis. It is already in use in a breast cancer clinical trial.

- [**Dancing electrons lose the race**](#) [周五, 22 9月 02:13]

Ultrashort pulses of light were employed by physicists to start a race between electrons emitted from different initial states in a solid material. Timing this race revealed an unexpected result: the fastest electrons arrived in last place.

- [**Detecting cosmic rays from a galaxy far, far away**](#) [周五, 22 9月 02:12]

Where do cosmic rays come from? Solving a 50-year-old mystery, a collaboration of researchers has discovered it's much farther than the Milky Way.

- [**Breaking Coulomb's law: Scientists find a way around the rule that 'opposites attract'**](#) [周五, 22 9月 01:43]

Scientists have taken a big step towards creating the next generation of batteries, as well as more effective water treatment and better alternative energy after defying one of nature's most fundamental rules on an atomic scale.

- [**Quantum teleportation of patterns of light**](#) [周五, 22 9月 00:11]

Researchers have demonstrated entanglement swapping and teleportation of orbital angular momentum 'patterns' of light. This is a crucial step towards realizing a quantum repeater for high-dimensional entangled states.

- [**Rapid imaging of granular matter**](#) [周五, 22 9月 00:11]

Granular systems such as gravel or powders can be found everywhere, but studying them is not easy. Researchers have now developed a method by which pictures of the inside of granular systems can be taken 10,000 times faster than before.

- [**New analysis explains role of defects in metal oxides**](#) [周五, 22 9月 00:11]

Researchers have determined formulas to guide development of a promising new high-tech material, composed of insulating metal oxides

known as alkaline-earth-metal binary oxides, that could lead to better computer memory chips, refrigeration systems, and other devices.

• [**Hope to discover sure signs of life on Mars? New research says look for the element vanadium**](#) [周四, 21 9月 23:06]

A new article suggests NASA and others hunting for proof of Martian biology in the form of 'microfossils' could use the element vanadium in combination with Raman spectroscopy to confirm traces of extraterrestrial life.

• [**Better rechargeable batteries coming soon?**](#) [周四, 21 9月 22:17]

Novel lithium electrodes coated with indium could be the basis for more powerful, longer-lasting, rechargeable batteries. The coating hinders undesirable side-reactions between the electrode and electrolyte, provide a more uniform deposition of lithium when charging, and augments storage in the lithium anode via alloying reactions between lithium and indium. Their success stems from the good diffusion of lithium ions along the interfacial layer.

• [**Astonishing time limit for ultrafast perovskite solar cells set**](#) [周四, 21 9月 22:17]

Researchers have quantified the astonishingly high speeds at which future solar cells would have to operate in order to stretch what are presently seen as natural limits on their energy conversion efficiency.

• [**Diamonds show Earth still capable of 'superhot' surprises**](#) [周四, 21 9月 21:55]

Diamonds may be 'forever' but some may have formed more recently than geologists thought. A study of 26 diamonds, formed under extreme melting conditions in the Earth's mantle, found two populations, one of which has geologically 'young' ages. The results show that certain volcanic events on Earth may still be able to create super-heated conditions previously thought to have only existed early in the planet's history before it cooled. The findings may have implications for diamond prospecting.

- [**Solar eruption ‘photobombed’ Mars encounter with Comet Siding Spring**](#) [周四, 21 9月 21:50]

When Comet C/2013 A1 (Siding Spring) passed just 140,000 kilometers from Mars on 19th October 2014, depositing a large amount of debris in the Martian atmosphere, space agencies coordinated multiple spacecraft to witness the largest meteor shower in recorded history. It was a rare opportunity, as this kind of planetary event occurs only once every 100,000 years.

- [**Football helmet smartfoam signals potential concussions in real time, study suggests**](#) [周四, 21 9月 21:03]

While football-related concussions have been top of mind in recent years, people have struggled to create technology to accurately measure them in real time. Engineers have now developed and tested a nano composite smartfoam that can be placed inside a football helmet (and pads) to more accurately test the impact and power of hits.

- [**Precisely defined polymer chains now a reality**](#) [周四, 21 9月 21:03]

The materiality exhibited by humanmade polymers currently relies on simple chemical bonds and the sequence order taken by molecules in the polymer chain. We now no longer need to rely on fate to determine such materiality with this new technique for precisely defining polymer-chain order. This system uses highly specific 'grabber' ends on each molecule that bond with only one type of 'pin' end on another molecule.

- [**Mathematics predicts a sixth mass extinction**](#) [周四, 21 9月 06:21]

Scientists have analyzed significant changes in the carbon cycle over the last 540 million years, including the five mass extinction events. They have identified 'thresholds of catastrophe' in the carbon cycle that, if exceeded, would lead to an unstable environment, and ultimately, mass extinction.

- [**Bio-inspired approach to RNA delivery**](#) [周四, 21 9月 03:50]

A team of chemical engineers, inspired by the way that cells translate their own mRNA into proteins, has designed a synthetic delivery system

that is four times more effective than delivering mRNA on its own.

- [**Unique type of object discovered in our solar system**](#) [周四, 21 9月 02:47]

Astronomers have observed the intriguing characteristics of an unusual type of object in the asteroid belt between Mars and Jupiter: two asteroids orbiting each other and exhibiting comet-like features, including a bright coma and a long tail. This is the first known binary asteroid also classified as a comet.

- [**New biomaterial could replace plastic laminates, greatly reduce pollution**](#) [周四, 21 9月 02:47]

An inexpensive biomaterial that can be used to sustainably replace plastic barrier coatings in packaging and many other applications has been developed by researchers, who predict its adoption would greatly reduce pollution.

- [**Wave Glider surfs across stormy Drake Passage in Antarctica**](#) [周四, 21 9月 02:46]

A hardy ocean drone made a first-ever attempt to surf across Antarctica's stormy Drake Passage gathering data about ocean mixing.

- [**Automatic code reuse: System automatically modifies code for transfer to other programs**](#) [周四, 21 9月 02:46]

Researchers have developed a new system that allows programmers to transplant code from one program into another. The programmer can select the code from one program and an insertion point in a second program, and the system will automatically make modifications necessary -- such as changing variable names -- to integrate the code into its new context.

- [**New concept of terrestrial planet formation**](#) [周四, 21 9月 01:17]

Scientists are proposing a new way of understanding the cooling and transfer of heat from terrestrial planetary interiors and how that affects the generation of the volcanic terrains that dominate the rocky planets.

- [**World's first 'molecular robot' capable of building molecules**](#) [周四, 21 9月 01:17]

Scientists have created the world's first 'molecular robot' that is capable of performing basic tasks including building other molecules.

- [**Scientists make atoms-thick 'Post-It notes' for solar cells and circuits**](#) [周四, 21 9月 01:17]

A new study describes an innovative method to make stacks of semiconductors just a few atoms thick. The technique offers scientists and engineers a simple, cost-effective method to make thin, uniform layers of these materials, which could expand capabilities for devices from solar cells to cell phones.

- [**Unique property of critical methane-producing enzyme discovered**](#) [周三, 20 9月 23:53]

An unexpected discovery has given a group of scientists a greater understanding of an important methane-producing enzyme called methyl-coenzyme M reductase, or MCR. Their findings overturn what was previously believed to be true in the field: that a set of unique modifications present in MCR were essential to how the enzyme functions.

- [**Spinning a lighter, safer electrode**](#) [周三, 20 9月 23:35]

A fabric-like material electrode has been created that could help make energy storage devices -- batteries and supercapacitors -- faster and less susceptible to leaks or disastrous meltdowns. Their design for a new supercapacitor, which looks something like a furry sponge infused with gelatin, offers a unique alternative to the flammable electrolyte solution that is a common component in these devices.

- [**Straining the memory: Prototype strain engineered materials are the future of data storage**](#) [周三, 20 9月 23:34]

Researchers have strain-engineered a data storage material to store data by exploiting a process of avalanche atomic switching. Memory cells

using this material substantially outperform state-of-the-art phase change memory devices.

• [**Mathematicians ask: What's in a ripple?**](#) [周三, 20 9月 23:34]

When a fluid or a gas experiences a sudden disturbance, it often gives rise to a phenomenon known as an undular bore, which consists of a series of rapid oscillations that propagate and spread. But how to describe what transpires? New mathematics research brings us closer to finding an answer.

• [**Is the Milky Way an 'outlier' galaxy? Studying its 'siblings' for clues**](#) [周三, 20 9月 23:33]

The most-studied galaxy in the universe -- the Milky Way -- might not be as 'typical' as previously thought, according to a new study. Early results from the Satellites Around Galactic Analogs (SAGA) Survey indicate that the Milky Way's satellites are much more tranquil than other systems of comparable luminosity and environment. Many satellites of those 'sibling' galaxies are actively pumping out new stars, but the Milky Way's satellites are mostly inert.

• [**Real or fake? Creating fingers to protect identities**](#) [周三, 20 9月 23:33]

Biometric experts for the first time have designed and created a fake finger containing multiple key properties of human skin. Commonly called a spoof, this fake finger has been used to test two of the predominant types of fingerprint readers to help determine their resilience to spoof attacks.

• [**Mathematical simulations shed new light on epilepsy surgery**](#) [周三, 20 9月 22:43]

Results from an unexpected quarter is could help neurologists to identify which brain region to remove to eliminate an epilepsy patient's symptoms. Mathematicians have shown that it is sensible to examine the interconnections between different brain regions closely, instead of searching for abnormal regions only.

• [**Naked molecules dancing in liquid become**](#)

[**visible**](#) [周三, 20 9月 22:42]

Moving, vibrating and leaping molecules make up our world. However, capturing their movement is not an easy task. Scientists were able to see the movement of molecules stored inside a graphene pocket without the need to stain them. This study paves the way for observing the dynamics of life building blocks, like proteins and DNA, as well as the self-assembly of other materials.

• [**Gravity waves influence weather and climate**](#) [周三, 20 9月 22:00]

Gravity waves form in the atmosphere as a result of destabilizing processes. The effects of gravity waves can only be taken into consideration by including additional special components in the models.

• [**Getting to the heart of the matter: Nanogels for heart attack patients**](#) [周三, 20 9月 22:00]

Heart disease and heart-related illnesses are a leading cause of death around the world, but treatment options are limited. Now, one group reports that encapsulating stem cells in a nanogel could help repair damage to the heart.

• [**Risks vary widely in drone-human impacts**](#) [周三, 20 9月 04:03]

New research suggests there's wide variation in the risk that unmanned aircraft pose to people on the ground.

• [**Tiny lasers from a gallery of whispers**](#) [周三, 20 9月 04:03]

Whispering gallery mode resonators rely on a phenomenon similar to an effect observed in circular galleries, and the same phenomenon applies to light. When light is stored in ring-shaped or spherical active resonators, the waves superimpose in such a way that it can result in laser light. Investigators now report a new type of dye-doped WGM micro-laser that produces light with tunable wavelengths.

• [**Security cameras vulnerable to attacks using infrared light**](#) [周三, 20 9月 04:02]

Researchers have demonstrated that security cameras infected with malware can receive covert signals and leak sensitive information from

the very same surveillance devices used to protect facilities.

- [Clear tactics, but few easy solutions, for hospitals combating ransomware](#) [周三, 20 9月 02:48]

Hospitals facing the prospect of ransomware attacks like the one that afflicted British hospitals in May can take many concrete steps to better protect themselves, but some of the most important measures -- such as a national policy not to pay ransoms -- may be tougher to formulate.

- [Wikipedia used to give AI context clues](#) [周三, 20 9月 02:04]

A team of computer scientists is teaching artificial intelligence agents how to interact with the world in a way that makes sense.

- [Political polarization? Don't blame the web](#) [周三, 20 9月 02:04]

Despite the popular narrative that the web is to blame for rising political polarization, a study by economists has found that recent growth in polarization is greatest for demographic groups in which individuals are least likely to use the internet and social media. This means that data does not support the claim that the internet is the most significant driver of partisanship.

- [Mercury's poles may be icier than scientists thought](#) [周三, 20 9月 00:31]

A new study identifies three large surface ice deposits near Mercury's north pole, and suggests there could be many additional small-scale deposits that would dramatically increase the planet's surface ice inventory.

- [Advanced lithium-ion and metal-air batteries](#) [周三, 20 9月 00:31]

Engineers are developing energy storage technologies that are cheaper, safer and more efficient.

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Environment News

Top stories featured on ScienceDaily's Plants & Animals, Earth & Climate, and Fossils & Ruins sections.

- [**700 years old saint myth has been proven \(almost\) true**](#) [周五, 22 9月 23:17]

Scientists confirm that the age and content of an old sack is in accordance with a medieval myth about Saint Francis of Assisi.

- [**A sustainable future powered by sea**](#) [周五, 22 9月 21:40]

Researchers develop turbines to convert the power of ocean waves into clean, renewable energy.

- [**Ancient textiles reveal differences in Mediterranean fabrics in the 1st millennium BC**](#) [周五, 22 9月 21:40]

Analysis of Iron Age textiles indicates that during c. 1000-400 BC Italy shared the textile culture of Central Europe, while Greece was largely influenced by the traditions of ancient Near East.

- [**Crowning the 'king of the crops': Sequencing the white guinea yam genome**](#) [周五, 22 9月 21:40]

Scientists have, for the first time, provided a genome sequence for the white Guinea yam, a staple crop with huge economic and cultural significance on the African continent and a lifeline for millions of people.

- [**Winter cold extremes linked to high-altitude polar vortex weakening**](#) [周五, 22 9月 21:40]

When the strong winds that circle the Arctic slacken, cold polar air can escape and cause extreme winter chills in parts of the Northern

hemisphere. A new study finds that these weak states have become more persistent over the past four decades and can be linked to cold winters in Russia and Europe.

• [**Breathing dirty air may harm kidneys**](#) [周五, 22 9月 21:16]

Outdoor air pollution may increase the risk of chronic kidney disease and contribute to kidney failure, say researchers. Scientists culled national VA databases to evaluate the effects of air pollution and kidney disease on nearly 2.5 million people over a period of 8.5 years, beginning in 2004. The scientists compared VA data on kidney function to air-quality levels collected by the Environmental Protection Agency (EPA) as well as the National Aeronautics and Space Administration (NASA).

• [**Rainbow colors reveal cell history**](#) [周五, 22 9月 21:14]

A system called "Beta-bow", which allows the history of beta-cells to be traced by genetic bar-coding and multicolor imaging, has been developed by researchers.

• [**Party discipline for jumping genes**](#) [周五, 22 9月 21:09]

Jumping genes, transposons, are part of the genome of most organisms, aggregated into families and can damage the genome by jumping. How hosts suppress the jumping is well investigated. Why they still can jump has hardly been understood so far. Researchers investigated for the first time in all transposons of the host organism, which properties and host environments facilitate jumping. They showed that family affiliation is more important than position.

• [**Artificial orchid cultivation kit**](#) [周五, 22 9月 21:09]

Orchids are loved by gardeners around the world but are notoriously difficult to cultivate. Researchers have developed a new orchid cultivation kit and have succeeded in complete artificial cultivation of an autonomous orchid. Since this kit can be made cheaply, it can broaden the opportunities for orchid cultivation in general households. It is also expected to be useful in preserving the genetic diversity of orchidaceous plants, many of which are in danger of extinction.

• [**Ozark grasslands experience major increase in**](#)

trees and shrubs [周五, 22 9月 04:12]

Woody vegetation, such as trees and shrubs, has increased dramatically in Ozark grasslands over the past 75 years, according to a study. If these ecosystems continue to favor woody vegetation, will it be possible to maintain open grasslands for the foreseeable future?

Into more thin air: Exploring the adaptation extremes of human high altitude sickness and fitness [周五, 22 9月 04:12]

Many research groups have explored human adaptation to high altitude living among three major far-flung global populations: Tibetans, Ethiopians and Peruvians. But few have simultaneously explored the other extreme---maladaptation----in the form of chronic mountain sickness (CMS). Now, in the largest whole genome study of its kind, an international research team led by University of California San Diego's Chairman of Pediatrics, Dr. Gabriel Haddad, has expanded on their recent study of understand...

Ancient DNA data fills in thousands of years of human prehistory in Africa [周五, 22 9月 02:13]

By sequencing the ancient genomes of 15 individuals from different parts of Africa, researchers reporting in the journal Cell on Sept. 21 have reconstructed the prehistory of humans on the continent, going back thousands of years. The findings shed light on which human populations lived in eastern and southern Africa between 8,000 and 1,000 years ago, the researchers say.

Scientists sequence asexual tiny worm whose lineage stretches back 18 million years [周五, 22 9月 02:13]

A team of scientists has sequenced, for the first time, a tiny worm that belongs to a group of exclusively asexual species that originated approximately 18 million years ago -- making it one of the oldest living lineages of asexual animals known.

Green algae could hold clues for engineering

[**faster-growing crops**](#) [周五, 22 9月 02:13]

Two new studies provide a detailed look at an essential part of algae's growth machinery, with the eventual goal of applying this knowledge to improving the growth of crops.

• [**Jellyfish, with no brains, still seem to sleep**](#) [周五, 22 9月 02:12]

The discovery that primitive jellyfish sleep suggests that sleep is an ancient, evolutionarily conserved behavior.

• [**Why poison frogs don't poison themselves**](#) [周五, 22 9月 02:12]

Poison frogs harbor some of the most potent neurotoxins we know, yet scientists have long wondered -- how do these frogs keep from poisoning themselves? Scientists are now a step closer to resolving that head-scratcher. And the answer has potential consequences for the fight against pain and addiction.

• [**We must accelerate transitions for sustainability and climate change, experts say**](#) [周五, 22 9月 02:12]

We must move faster towards a low-carbon world if we are to limit global warming to 2 degrees C this century, experts have warned.

• [**Heat-loving Australian ants believe in diversity, hint 74 species new to science**](#) [周五, 22 9月 02:12]

A genus of Australian ants, many of whose members prefer to forage in blistering temperatures of up to 50°C (122°F), is revised to include 74 new species. The ants include seed-eaters, ant and termite raiders, 'honeypot ants' that store nectar and honeydew, and numerous others whose biology is not yet understood. Some are bizarre: one species has eyes like inverted ice-cream cones.

• [**Reconstructing how Neanderthals grew, based on an El Sidrón child**](#) [周五, 22 9月 02:12]

How did Neanderthals grow? Does modern man develop in the same way as Homo neanderthalensis did? How does the size of the brain affect the development of the body? Researchers have studied the fossil remains of a Neanderthal child's skeleton in order to establish whether

there are differences between the growth of Neanderthals and that of sapiens.

- [**Early trilobites had stomachs, new fossil study finds**](#) [周五, 22 9月 02:12]

Exceptionally preserved trilobite fossils from China, dating back to more than 500 million years ago, have revealed new insights into the extinct marine animal's digestive system. The new study shows that at least two trilobite species evolved a stomach structure 20 million years earlier than previously thought.

- [**Wildlife rangers: What motivates them?**](#) [周五, 22 9月 00:11]

Wildlife rangers are on the front lines protecting our most iconic species -- tigers, elephants, gorillas and many others. But their challenges involve more than confrontations with wild animals and poachers.

- [**Dino-killing asteroid's impact on bird evolution**](#) [周五, 22 9月 00:11]

Human activities could change the pace of evolution, similar to what occurred 66 million years ago when a giant asteroid wiped out the dinosaurs, leaving modern birds as their only descendants.

- [**Surprising discovery: How the African tsetse fly really drinks your blood**](#) [周四, 21 9月 23:06]

Researchers have been taking a close-up look at the biting mouthparts of the African tsetse fly as part of ongoing work on the animal diseases it carries. Using a new high-powered scanning electron microscope, researchers were able to see the rows of sharp teeth and rasps that the fly uses to chew through the skin when it bites.

- [**Hope to discover sure signs of life on Mars? New research says look for the element vanadium**](#) [周四, 21 9月 23:06]

A new article suggests NASA and others hunting for proof of Martian biology in the form of 'microfossils' could use the element vanadium in combination with Raman spectroscopy to confirm traces of extraterrestrial life.

• [**Broad swath of US deemed environmentally suitable for mosquitoes that transmit disease**](#) [周四, 21 9月 22:42]

Three-quarters of counties in the contiguous United States present suitable environmental conditions for at least part of the year for either *Aedes aegypti* or *Aedes albopictus* mosquitoes to survive if introduced, according to researchers. The two mosquito species can transmit viruses that cause Zika, dengue, chikungunya, and yellow fever.

• [**New hermit crab uses live coral as its home**](#) [周四, 21 9月 22:42]

A new hermit crab species can live in a walking coral's cavity in a reciprocal relationship, replacing the usual marine worm partner, according to a new study.

• [**Big herbivorous dinosaurs ate crustaceans as a side dish**](#) [周四, 21 9月 22:17]

Some big plant-eating dinosaurs roaming present-day Utah some 75 million years ago were slurping up crustaceans on the side, a behavior that may have been tied to reproductive activities, says a new study.

• [**Recipe for forest restoration discovered**](#) [周四, 21 9月 22:17]

A new study has uncovered some valuable information on ways to maximize the success of replanting efforts, bringing new hope for restoring these threatened ecosystems.

• [**Changing of the guard: Research sheds light on how plants breathe**](#) [周四, 21 9月 22:17]

New research is set to change the textbook understanding of how plants breathe. Researchers have developed the first full 3D model of a guard cell.

• [**Scientists and farmers work together to wipe out African lovegrass**](#) [周四, 21 9月 22:17]

New research and collaboration could lead to the eventual eradication of the highly invasive African lovegrass threatening pastures and native grasslands Australia-wide. What they discovered is that local knowledge

is the key to a successful management approach.

• [**Obese dogs helped by 'effective' weight loss trials**](#) [周四, 21 9月 22:17]

On average overweight dogs lose an average of 11 percent of their body weight when enrolled on a weight loss trial according to researchers who have conducted the largest international multi-center weight study.

• [**Lightning-fast trappers: Biomechanics of suction traps in carnivorous bladderworts**](#) [周四, 21 9月 22:17]

New findings have been gained on the biomechanics and evolution of suction traps in carnivorous bladderworts.

• [**Whole food diet may help prevent colon cancer, other chronic conditions**](#) [周四, 21 9月 22:17]

A diet that includes plenty of colorful vegetables and fruits may contain compounds that can stop colon cancer and inflammatory bowel diseases in pigs, according to an international team of researchers. Understanding how these compounds work on a molecular level could be an initial step toward finding treatments for people with cancer, they added.

• [**Diamonds show Earth still capable of 'superhot' surprises**](#) [周四, 21 9月 21:55]

Diamonds may be 'forever' but some may have formed more recently than geologists thought. A study of 26 diamonds, formed under extreme melting conditions in the Earth's mantle, found two populations, one of which has geologically 'young' ages. The results show that certain volcanic events on Earth may still be able to create super-heated conditions previously thought to have only existed early in the planet's history before it cooled. The findings may have implications for diamond prospecting.

• [**In times of climate change: What a lake's color can tell about its condition**](#) [周四, 21 9月 21:50]

With the help of satellite observations from 188 lakes worldwide, scientists have shown that the warming of large lakes amplifies their

color. Lakes which are green due to their high phytoplankton content tend to become greener in warm years as phytoplankton content increases. Clear, blue lakes with little phytoplankton, on the other hand, tend to become even bluer in warm years caused by declines in phytoplankton. Thus, contrary to previous assumptions, the warming of lakes tends to amplify thei...

- [**Cannabis, 'spice' – better think twice**](#) [周四, 21 9月 21:49]

Marijuana is the most commonly abused drug in the world, and the advent of synthetic cannabinoids creates additional challenges to the society because of their higher potency and ability to escape drug detection screenings. Scientists have a warning about a new danger coming from cannabinoid abuse.

- [**Tiny Brazilian frogs are deaf to their own calls**](#) [周四, 21 9月 21:03]

Pumpkin toadlets, found on the leaf litter of Brazil's Atlantic forest, are among the smallest frogs in the world. Scientists have now discovered that two species of these tiny orange frogs cannot hear the sound of their own calls.

- [**An extraordinary cave animal found in Eastern Turkmenistan**](#) [周四, 21 9月 21:02]

A remote cave in Eastern Turkmenistan was found to shelter a marvelous cave-adapted inhabitant that turned out to represent a species and genus new to science. This new troglodyte is the first of its order from Central Asia and the first strictly subterranean terrestrial creature recorded in the country.

- [**Going diving in the tropics? Don't eat the reef fish!**](#) [周四, 21 9月 21:02]

Reducing tourist consumption of reef fish is critical for Palau's ocean sustainability, finds a new study that suggests other small island nations might also consider adopting this strategy.

- [**Efforts to save sea turtles are a 'global conservation success story'**](#) [周四, 21 9月 06:21]

A new study of the world's seven sea turtle species provides evidence that their numbers are growing overall (unlike many endangered vertebrates), thanks to years of conservation efforts that have played a key role in sea turtle recovery -- even for small sea turtle populations.

• [**When residents take charge of their rainforests, fewer trees die**](#) [周四, 21 9月 06:21]

When the government gives citizens a personal stake in forested land, trees don't disappear as quickly and environmental harm slows down, research finds.

• [**Mathematics predicts a sixth mass extinction**](#) [周四, 21 9月 06:21]

Scientists have analyzed significant changes in the carbon cycle over the last 540 million years, including the five mass extinction events. They have identified 'thresholds of catastrophe' in the carbon cycle that, if exceeded, would lead to an unstable environment, and ultimately, mass extinction.

• [**3-D analysis of dog fossils sheds light on domestication debate**](#) [周四, 21 9月 06:20]

In an effort to settle the debate about the origin of dog domestication, a technique that uses 3-D scans of fossils is helping researchers determine the difference between dogs and wolves.

• [**Convergent evolution of mimetic butterflies confounds classification**](#) [周四, 21 9月 06:20]

A new paper on butterflies may revise the taxonomy of Asian palmflies in the genus *Elymnias* in light of a forthcoming study on the butterflies' evolutionary history.

• [**Protected waters foster resurgence of West Coast rockfish**](#) [周四, 21 9月 03:49]

West Coast rockfish species in deep collapse only 20 years ago have multiplied rapidly in large marine protected areas off Southern California, likely seeding surrounding waters with enough offspring to offer promise of renewed fishing, a new study has found.

- [**Immune system is critical to regeneration, study finds**](#) [周四, 21 9月 03:49]

The answer to the question of why some organisms can regenerate major body parts while others, such as humans, cannot may lie with the body's innate immune system, according to a new study of heart regeneration in the Mexican salamander.

- [**Plants combine color and fragrance to procure pollinators**](#) [周四, 21 9月 02:47]

Who knew that it's possible to predict the fragrance of a flower by looking at its color? This is true for many of the 41 insect-pollinated plant species growing in a Phrygana scrubland habitat on the Greek island of Lesbos.

- [**New biomaterial could replace plastic laminates, greatly reduce pollution**](#) [周四, 21 9月 02:47]

An inexpensive biomaterial that can be used to sustainably replace plastic barrier coatings in packaging and many other applications has been developed by researchers, who predict its adoption would greatly reduce pollution.

- [**Wave Glider surfs across stormy Drake Passage in Antarctica**](#) [周四, 21 9月 02:46]

A hardy ocean drone made a first-ever attempt to surf across Antarctica's stormy Drake Passage gathering data about ocean mixing.

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- [**Flint's water crisis led to fewer babies and higher fetal death rates, researchers find**](#) [周五, 22 9月 21:16]

An estimated 275 fewer children were born in Flint, Michigan, while the city was using lead-contaminated water from the Flint River, according to new research findings.

- [**Breathing dirty air may harm kidneys**](#) [周五, 22 9月 21:16]

Outdoor air pollution may increase the risk of chronic kidney disease and contribute to kidney failure, say researchers. Scientists culled national VA databases to evaluate the effects of air pollution and kidney disease on nearly 2.5 million people over a period of 8.5 years, beginning in 2004. The scientists compared VA data on kidney function to air-quality levels collected by the Environmental Protection Agency (EPA) as well as the National Aeronautics and Space Administration (NASA).

- [**Strong alcohol policies help reduce alcohol-involved homicides**](#) [周五, 22 9月 04:12]

Stronger alcohol policies, including taxes and sales restrictions, have been shown to reduce the likelihood of alcohol involvement among homicide victims, according to a new study.

- [**Babies can learn that hard work pays off**](#) [周五, 22 9月 04:12]

A new study reveals babies as young as 15 months can learn the value of hard work. Researchers found babies who watched an adult struggle to reach two different goals before succeeding tried harder at their own difficult task than babies who saw an adult succeed effortlessly.

- **[We must accelerate transitions for sustainability and climate change, experts say](#)** [周五, 22 9月 02:12]

We must move faster towards a low-carbon world if we are to limit global warming to 2 degrees C this century, experts have warned.

- **[Rapid hepatitis C testing may help better screen young adults](#)** [周五, 22 9月 02:12]

Routine and rapid hepatitis C virus testing among young adults who use injection drugs improves life expectancy and may provide a good use of limited resources, according to new research.

- **[Wildlife rangers: What motivates them?](#)** [周五, 22 9月 00:11]

Wildlife rangers are on the front lines protecting our most iconic species -- tigers, elephants, gorillas and many others. But their challenges involve more than confrontations with wild animals and poachers.

- **[Recipe for forest restoration discovered](#)** [周四, 21 9月 22:17]

A new study has uncovered some valuable information on ways to maximize the success of replanting efforts, bringing new hope for restoring these threatened ecosystems.

- **[Premature births cost health plans \\$6 billion annually](#)** [周四, 21 9月 21:02]

A new study estimates employer-sponsored health plans spent at least \$6 billion extra on infants born prematurely in 2013 and a substantial portion of that sum was spent on infants with major birth defects.

- **[Pay more, smoke less: Possible effects of raising tobacco taxes across the EU](#)** [周四, 21 9月 11:22]

Raising tobacco taxes to increase cigarette prices could reduce cigarette consumption and smoking-associated deaths (SADs) in all 28 EU countries, according to a new study. In higher income countries, raising tobacco taxes could increase revenues that could be spend on prevention and control programs, while in lower income countries tax revenues may be negatively affected, researchers suggest.

- [**When residents take charge of their rainforests, fewer trees die**](#) [周四, 21 9月 06:21]

When the government gives citizens a personal stake in forested land, trees don't disappear as quickly and environmental harm slows down, research finds.

- [**Communication among health care facilities key to preventing spread of drug-resistant bacteria**](#) [周四, 21 9月 02:47]

Communication breakdowns between care facilities can pave the way for outbreaks of infection, according to research on the spread of an extensively drug-resistant bacterium.

- [**Hold the phone: An ambulance might lower your chances of surviving some injuries**](#) [周四, 21 9月 01:16]

Victims of gunshots and stabbings are significantly less likely to die if they're taken to the trauma center by a private vehicle than ground emergency medical services (EMS), according to results of a new analysis.

- [**Building social communication skills in shy children helps with peer likeability**](#) [周三, 20 9月 22:00]

A new study has discovered that shy children with low English vocabulary skills, can still be popular among their peers if they have high-functioning social communication skills that enable them to engage and interact well with their peers in social settings.

- [**New tool to assess individual's level of wisdom**](#) [周三, 20 9月 21:59]

Researchers have developed a new tool called the San Diego Wisdom Scale (SD-WISE) to assess an individual's level of wisdom, based upon a conceptualization of wisdom as a trait with a neurobiological as well as psychosocial basis.

- [**Clear tactics, but few easy solutions, for hospitals combating ransomware**](#) [周三, 20 9月 02:48]

Hospitals facing the prospect of ransomware attacks like the one that

afflicted British hospitals in May can take many concrete steps to better protect themselves, but some of the most important measures -- such as a national policy not to pay ransoms -- may be tougher to formulate.

- [**Management studies: Dishonesty shift**](#) [周三, 20 9月 02:04]

Lying comes more easily to people in teams: Behavioral scientists have shown in an experimental study why groups are more likely to behave unethically than individuals.

- [**Political polarization? Don't blame the web**](#) [周三, 20 9月 02:04]

Despite the popular narrative that the web is to blame for rising political polarization, a study by economists has found that recent growth in polarization is greatest for demographic groups in which individuals are least likely to use the internet and social media. This means that data does not support the claim that the internet is the most significant driver of partisanship.

- [**Changes in non-extreme precipitation may have not-so-subtle consequences**](#) [周三, 20 9月 00:31]

Extreme floods and droughts receive a lot of attention. But what happens when precipitation -- or lack thereof -- occurs in a more measured way?

- [**UK oil and gas reserves may last only a decade, study suggests**](#) [周三, 20 9月 00:31]

The UK has low oil and gas resources and limited prospects for fracking, according to a new analysis by scientists, who recommend a shift towards greater use of renewable, clean energy.

- [**Students' self-concepts of ability in math, reading predict later math, reading attainment**](#) [周二, 19 9月 21:10]

A new longitudinal study looked at how youths' self-concepts are linked to their actual academic achievement in math and reading from middle childhood to adolescence. The study found that students' self-concepts of their abilities in these two academic domains play an important role in motivating their achievements over time and across levels of

achievement.

- [**Catching a diversity of fish species — instead of specializing — means more stable income for fishers**](#) [周二, 19 9月 11:23]

A team of scientists analyzed nearly 30 years of revenue and permitting records for individuals fishing in Alaskan waters and tracked how their fishing choices, in terms of permits purchased and species caught, influenced their year-to-year income volatility.

- [**The sublime challenge of jet noise**](#) [周二, 19 9月 11:22]

A scientist is using ALCF resources to create high fidelity simulations of jet turbulence to determine how and where noise is produced. The results may lead to novel engineering designs that reduce noise over commercial flight paths and on aircraft carrier decks.

- [**Fake news more likely to thrive online due to lowered fact-checking**](#) [周二, 19 9月 04:34]

Fake news is more likely to thrive online due to lowered fact-checking, according to new American research.

- [**Enzyme's worth to biofuels shown in recent research**](#) [周二, 19 9月 04:34]

A newly discovered enzyme proves adept at breaking down cellulose fibers regardless of whether their crystalline structure is simple or highly complex. No other enzyme has shown that ability.

- [**Reliance on 'gut feelings' linked to belief in fake news**](#) [周二, 19 9月 02:21]

People who tend to trust their intuition or to believe that the facts they hear are politically biased are more likely to stand behind inaccurate beliefs, a new study suggests.

- [**People's love of the seas could be the key for plastic pollution solution**](#) [周二, 19 9月 01:27]

Tapping into the public's passion for the ocean could be the key to

reducing the threats to it posed by plastic pollution.

· [5,000 deaths annually from Diesel-gate in Europe](#) [周一, 18 9月 21:33]

Excess emissions from diesel cars cause about 5,000 premature deaths annually across Europe, a new study shows. Higher exposure to secondary particles and ozone can be traced back to excess NOx emissions from diesel cars, vans and light commercial vehicles. With the EU's vehicle emission limits achieved on the road about 5,000 premature deaths could be avoided annually. If diesel cars emitted as little NOx as petrol cars, about 7,500 premature deaths could be avoided annually.

· [Parents not confident schools can assist child with chronic disease, mental health](#) [周一, 18 9月 21:08]

Most parents are sure schools would be able to provide basic first aid but are less confident about a school's ability to respond to more complex health situations, such as an asthma attack or mental health problem.

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [**Detecting cosmic rays from a galaxy far, far away**](#) [周五, 22 9月 02:12]

Where do cosmic rays come from? Solving a 50-year-old mystery, a collaboration of researchers has discovered it's much farther than the Milky Way.

- [**Early trilobites had stomachs, new fossil study finds**](#) [周五, 22 9月 02:12]

Exceptionally preserved trilobite fossils from China, dating back to more than 500 million years ago, have revealed new insights into the extinct marine animal's digestive system. The new study shows that at least two trilobite species evolved a stomach structure 20 million years earlier than previously thought.

- [**Hope to discover sure signs of life on Mars? New research says look for the element vanadium**](#) [周四, 21 9月 23:06]

A new article suggests NASA and others hunting for proof of Martian biology in the form of 'microfossils' could use the element vanadium in combination with Raman spectroscopy to confirm traces of extraterrestrial life.

- [**Big herbivorous dinosaurs ate crustaceans as a side dish**](#) [周四, 21 9月 22:17]

Some big plant-eating dinosaurs roaming present-day Utah some 75 million years ago were slurping up crustaceans on the side, a behavior that may have been tied to reproductive activities, says a new study.

• [**Tiny Brazilian frogs are deaf to their own calls**](#) [周四, 21 9月 21:03]

Pumpkin toadlets, found on the leaf litter of Brazil's Atlantic forest, are among the smallest frogs in the world. Scientists have now discovered that two species of these tiny orange frogs cannot hear the sound of their own calls.

• [**Unique type of object discovered in our solar system**](#) [周四, 21 9月 02:47]

Astronomers have observed the intriguing characteristics of an unusual type of object in the asteroid belt between Mars and Jupiter: two asteroids orbiting each other and exhibiting comet-like features, including a bright coma and a long tail. This is the first known binary asteroid also classified as a comet.

• [**Plants combine color and fragrance to procure pollinators**](#) [周四, 21 9月 02:47]

Who knew that it's possible to predict the fragrance of a flower by looking at its color? This is true for many of the 41 insect-pollinated plant species growing in a Phrygana scrubland habitat on the Greek island of Lesbos.

• [**Bite force research reveals dinosaur-eating frog**](#) [周四, 21 9月 01:17]

Scientists say that a large, now extinct, frog called Beelzebufo that lived about 68 million years ago in Madagascar would have been capable of eating small dinosaurs. The conclusion comes from a study of the bite force of South American horned frogs from the living genus Ceratophrys, known as Pacman frogs for their characteristic round shape and large mouth, similar to the video game character Pac-Man.

• [**World's first 'molecular robot' capable of building molecules**](#) [周四, 21 9月 01:17]

Scientists have created the world's first 'molecular robot' that is capable of performing basic tasks including building other molecules.

• [**Dinosaur evolution: Lumbering giants had agile**](#)

ancestors [周四, 21 9月 01:17]

The best known sauropod dinosaurs were huge herbivorous creatures, whose brain structures were markedly different from those of their evolutionary predecessors, for the earliest representatives of the group were small, lithe carnivores.

• **Scientists make atoms-thick 'Post-It notes' for solar cells and circuits** [周四, 21 9月 01:17]

A new study describes an innovative method to make stacks of semiconductors just a few atoms thick. The technique offers scientists and engineers a simple, cost-effective method to make thin, uniform layers of these materials, which could expand capabilities for devices from solar cells to cell phones.

• **Hold the phone: An ambulance might lower your chances of surviving some injuries** [周四, 21 9月 01:16]

Victims of gunshots and stabbings are significantly less likely to die if they're taken to the trauma center by a private vehicle than ground emergency medical services (EMS), according to results of a new analysis.

• **Is the Milky Way an 'outlier' galaxy? Studying its 'siblings' for clues** [周三, 20 9月 23:33]

The most-studied galaxy in the universe -- the Milky Way -- might not be as 'typical' as previously thought, according to a new study. Early results from the Satellites Around Galactic Analogs (SAGA) Survey indicate that the Milky Way's satellites are much more tranquil than other systems of comparable luminosity and environment. Many satellites of those 'sibling' galaxies are actively pumping out new stars, but the Milky Way's satellites are mostly inert.

• **Real or fake? Creating fingers to protect identities** [周三, 20 9月 23:33]

Biometric experts for the first time have designed and created a fake finger containing multiple key properties of human skin. Commonly

called a spoof, this fake finger has been used to test two of the predominant types of fingerprint readers to help determine their resilience to spoof attacks.

- [**Gravity waves influence weather and climate**](#) [周三, 20

9月 22:00]

Gravity waves form in the atmosphere as a result of destabilizing processes. The effects of gravity waves can only be taken into consideration by including additional special components in the models.

- [**Solar wind impacts on giant 'space hurricanes' may affect satellite safety**](#) [周二, 19 9月 21:10]

Could the flapping of a butterfly's wings in Costa Rica set off a hurricane in California? For most people, this hypothetical scenario may be difficult to imagine on Earth -- particularly when a real disaster strikes. Yet, in space, similarly small fluctuations in the solar wind as it streams toward the Earth's magnetic shield actually can affect the speed and strength of 'space hurricanes,' a researcher explains.

- [**DNA triggers shape-shifting in hydrogels, opening a new way to make 'soft robots'**](#) [周二, 19 9月 10:22]

Biochemical engineers have used sequences of DNA molecules to induce shape-changing in water-based gels, demonstrating a new tactic to produce "soft" robots and "smart" medical devices that do not rely on cumbersome wires, batteries or tethers.

- [**Scientists show molecular basis for ants acting as 'bodyguards' for plants**](#) [周二, 19 9月 00:35]

Though you might not think of ants as formidable bodyguards, some do an impressive job protecting plants from enemies. Examining the relationship between the Amazon rainforest plant *Cordia nodosa* in Peru and the ant species *Allomerus octoarticulatus*, scientists found the degree to which the ants express two genes significantly impacts the amount of protection they provide to their hosts.

- [**When radio galaxies collide, supermassive black holes form tightly bound pairs**](#) [周二, 19 9月 00:35]

Supermassive black holes found in the centers of galaxies can form gravitationally bound pairs when galaxies merge, according to a new study.

• [**More evidence of water on Mars**](#) [周二, 19 9月 00:35]

River deposits exist across the surface of Mars and record a surface environment from over 3.5 billion years ago that was able to support liquid water at the surface. A region of Mars named Aeolis Dorsa contains some of the most spectacular and densely packed river deposits seen on Mars.

• [**A solar cell you can put in the wash**](#) [周一, 18 9月 23:18]

Scientists have developed a new type of ultra-thin photovoltaic device, coated on both sides with stretchable and waterproof films, which can continue to provide electricity from sunlight even after being soaked in water or being stretched and compressed.

• [**Developing roads that can generate power from passing traffic**](#) [周一, 18 9月 23:18]

Researchers are looking at advanced materials for roads and pavements that could generate electricity from passing traffic. Engineers are working on smart materials such as 'piezoelectric' ceramics that when embedded in road surfaces would be able to harvest and convert vehicle vibration into electrical energy.

• [**New evidence for small, short-lived drops of early universe quark-gluon plasma?**](#) [周一, 18 9月 21:30]

Particles emerging from even the lowest energy collisions of small deuterons with large heavy nuclei at the Relativistic Heavy Ion Collider exhibit behavior scientists associate with the formation of a soup of quarks and gluons, the fundamental building blocks of nearly all visible matter.

• [**World first: 'Storing lightning inside thunder'**](#) [周一, 18 9月 21:07]

In a world first, researchers have stored photonic information on a microchip as an acoustic wave. This allows precious extra time to store, process and then redistribute the data without relying on electronics,

which produce excess heat. Such a hybrid chip could have a huge impact in cloud computing and telecommunication centers, which are overheating as we churn through data on our phones.

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- [**Chronic migraine cases are amplified by jawbone disorder**](#) [周日, 24 9月 22:37]

A new study shows patients with chronic migraine are three times as likely to suffer from severe temporomandibular disorder. Though not a primary cause, the disorder is thought to accentuate and perpetuate sensitivity to pain; therefore, researchers recommend in chronic migraine clinical practice the assessment of the disorder's symptoms.

- [**NASA'S OSIRIS-REx spacecraft slingshots past Earth**](#) [周六, 23 9月 04:25]

NASA's asteroid sample return spacecraft successfully used Earth's gravity on Friday to slingshot itself on a path toward the asteroid Bennu, for a rendezvous next August.

- [**Mechanism that underlies age-associated bone loss**](#) [周六, 23 9月 03:05]

A major health problem in older people is age-associated osteoporosis -- the thinning of bone and the loss of bone density that increases the risk of fractures. Researchers have now detailed an underlying mechanism leading to that osteoporosis. When this mechanism malfunctions, progenitor cells stop creating bone-producing cells, and instead create fat cells. Knowledge of this mechanism can provide targets in the search

for novel bone-loss.

- [**Two Group A Streptococcus genes linked to 'flesh-eating' bacterial infections**](#) [周六, 23 9月 03:05]

Group A Streptococcus bacteria cause illnesses ranging from mild nuisances like strep throat to life-threatening conditions such as flesh-eating disease, also known as necrotizing fasciitis. Life-threatening infections occur when the bacteria spread underneath the surface of the skin or throat and invade the underlying soft tissue. Researchers have found two group A Streptococcus genes involved in invasive infections, which may be potential targets for therapeutics.

- [**Enhancing the sensing capabilities of diamonds with quantum properties**](#) [周六, 23 9月 00:29]

When a nitrogen atom is next to the space vacated by a carbon atom, it forms what is called a nitrogen-vacancy center. Now, researchers have shown how they can create more NV centers, which makes sensing magnetic fields easier, using a relatively simple method that can be done in many labs.

- [**700 years old saint myth has been proven \(almost\) true**](#) [周五, 22 9月 23:17]

Scientists confirm that the age and content of an old sack is in accordance with a medieval myth about Saint Francis of Assisi.

- [**Our weight tells how we assess food**](#) [周五, 22 9月 23:17]

A new study demonstrated that people of normal weight tend to associate natural foods such as apples with their sensory characteristics. On the other hand, processed foods such as pizzas are generally associated with their function or the context in which they are eaten. But that's not all. The research also highlighted the ways in which underweight people pay greater attention to natural foods and overweight people to processed foods.

- [**Residents: Frontline defenders against antibiotic resistance?**](#) [周五, 22 9月 23:17]

Residents often decide which antibiotics to start a patient on so they could become the first line of defense against antibiotic resistance.

- [**Strategy might prevent infections in patients with spinal cord injuries**](#) [周五, 22 9月 23:17]

A new study sheds light on how to reduce the number of infections in patients with spinal cord injuries without using antibiotics.

- [**Usher syndrome: Gene therapy restores hearing and balance**](#) [周五, 22 9月 23:17]

Scientists have recently restored hearing and balance in a mouse model of Usher syndrome type 1G characterized by profound congenital deafness and vestibular disorders caused by severe dysmorphogenesis of the mechano-electrical transduction apparatus of the inner ear's sensory cells. These findings open up new possibilities for the development of gene therapy treatments for hereditary forms of deafness.

- [**A sustainable future powered by sea**](#) [周五, 22 9月 21:40]

Researchers develop turbines to convert the power of ocean waves into clean, renewable energy.

- [**Assembly of nanoparticles proceeds like a zipper**](#) [周五, 22 9月 21:40]

It has always been the Holy Grail of materials science to describe and control the material's structure-function relationship. Nanoparticles are an attractive class of components to be used in functional materials because they exhibit size-dependent properties, such as superparamagnetism and plasmonic absorption of light. Furthermore, controlling the arrangement of nanoparticles can result in unforeseen properties, but such studies are hard to carry out due to limited efficient approaches to prod...

- [**Stimuli fading away en route to consciousness**](#) [周五, 22 9月 21:40]

Whether or not we consciously perceive the stimuli projected onto our retina is decided in our brain. A recent study shows how some signals dissipate along the processing path to conscious perception. This process begins at rather late stages of signal processing. By contrast, in earlier

stages there is hardly any difference in the reaction of neurons to conscious and unconscious stimuli.

- [**Ancient textiles reveal differences in Mediterranean fabrics in the 1st millennium BC**](#)

[周五, 22 9月 21:40]

Analysis of Iron Age textiles indicates that during c. 1000-400 BC Italy shared the textile culture of Central Europe, while Greece was largely influenced by the traditions of ancient Near East.

- [**Crowning the 'king of the crops': Sequencing the white guinea yam genome**](#) [周五, 22 9月 21:40]

Scientists have, for the first time, provided a genome sequence for the white Guinea yam, a staple crop with huge economic and cultural significance on the African continent and a lifeline for millions of people.

- [**Winter cold extremes linked to high-altitude polar vortex weakening**](#) [周五, 22 9月 21:40]

When the strong winds that circle the Arctic slacken, cold polar air can escape and cause extreme winter chills in parts of the Northern hemisphere. A new study finds that these weak states have become more persistent over the past four decades and can be linked to cold winters in Russia and Europe.

- [**Flint's water crisis led to fewer babies and higher fetal death rates, researchers find**](#) [周五, 22 9月 21:16]

An estimated 275 fewer children were born in Flint, Michigan, while the city was using lead-contaminated water from the Flint River, according to new research findings.

- [**Breathing dirty air may harm kidneys**](#) [周五, 22 9月 21:16]

Outdoor air pollution may increase the risk of chronic kidney disease and contribute to kidney failure, say researchers. Scientists culled national VA databases to evaluate the effects of air pollution and kidney disease on nearly 2.5 million people over a period of 8.5 years, beginning in 2004. The scientists compared VA data on kidney function

to air-quality levels collected by the Environmental Protection Agency (EPA) as well as the National Aeronautics and Space Administration (NASA).

- **[Effective help is available for migraine sufferers](#)**

[周五, 22 9月 21:15]

Although it's the third most prevalent illness in the world, migraine is widely misunderstood and frequently undiagnosed. Until quite recently a common "remedy" for migraine was to lie in a dark room and wait for the pain to pass. But today there are treatments that work – and new medications formulated specifically for migraine are in the pipeline.

- **[Rainbow colors reveal cell history](#)**

[周五, 22 9月 21:14]

A system called "Beta-bow", which allows the history of beta-cells to be traced by genetic bar-coding and multicolor imaging, has been developed by researchers.

- **[New genetic syndrome predisposes the body to cancer](#)**

[周五, 22 9月 21:14]

A new syndrome caused by biallelic mutations -- those produced in both gene copies inherited from the mother and father -- in the FANCM gene predisposes the body to the appearance of tumors and causes rejection to chemotherapy treatments. Contrary to what scientists believed, the gene does not cause Fanconi anemia. Researchers recommend modifying the clinical monitoring of patients with these mutations.

- **[Improving techniques for joint defect treatment](#)**

[周五, 22 9月 21:12]

Different surface topographies and materials provide interesting ways to study cell behavior and potentially provide novel solutions for treating joint defects. Tissue engineering methods that simulate native cartilage could prove useful to create cartilage implants in the laboratory, according to new research.

- **[Smartphone apps can reduce depression](#)**

[周五, 22 9月 21:09]

New research has confirmed that smartphone apps are an effective treatment option for depression, paving the way for safe and accessible interventions for the millions of people around the world diagnosed with this condition.

- [**Party discipline for jumping genes**](#) [周五, 22 9月 21:09]

Jumping genes, transposons, are part of the genome of most organisms, aggregated into families and can damage the genome by jumping. How hosts suppress the jumping is well investigated. Why they still can jump has hardly been understood so far. Researchers investigated for the first time in all transposons of the host organism, which properties and host environments facilitate jumping. They showed that family affiliation is more important than position.

- [**Personality changes don't precede clinical onset of Alzheimer's, study shows**](#) [周五, 22 9月 21:09]

No evidence has been found to support the idea that personality changes begin before the clinical onset of mild cognitive impairment (MCI) or dementia, a new and comprehensive study reports.

- [**Ultra-light aluminum: Chemist reports breakthrough in material design**](#) [周五, 22 9月 21:09]

Chemists report a new, metastable, ultra-light crystalline form of aluminum has been computationally designed using density functional calculations with imposing periodic boundary conditions.

- [**Artificial orchid cultivation kit**](#) [周五, 22 9月 21:09]

Orchids are loved by gardeners around the world but are notoriously difficult to cultivate. Researchers have developed a new orchid cultivation kit and have succeeded in complete artificial cultivation of an autonomous orchid. Since this kit can be made cheaply, it can broaden the opportunities for orchid cultivation in general households. It is also expected to be useful in preserving the genetic diversity of orchidaceous plants, many of which are in danger of extinction.

- [**Quick test may speed antibiotic treatment, combat drug resistance**](#) [周五, 22 9月 21:09]

Researchers have demonstrated a potential new tactic for rapidly determining whether an antibiotic combats a given infection, thus hastening effective medical treatment and limiting the development of drug-resistant bacteria. Their method can quickly sense mechanical

fluctuations of bacterial cells and any changes induced by an antibiotic.

- [**The math of doughnuts: 'Moonshine' sheds light on elliptic curves**](#) [周五, 22 9月 21:09]

Mathematicians have opened a new chapter in the theory of moonshine, one which begins to harness the power of the pariahs -- sporadic simple groups that previously had no known application.

- [**Positive, negative or neutral, it all matters: NASA explains space radiation**](#) [周五, 22 9月 21:09]

Charged particles may be small, but they matter to astronauts. NASA's Human Research Program (HRP) is investigating these particles to solve one of its biggest challenges for a human journey to Mars: space radiation and its effects on the human body.

- [**Being active saves lives whether a gym workout, walking to work or washing the floor**](#) [周五, 22 9月 06:50]

Any activity is good for people to meet the current guideline of 30 minutes of activity a day, or 150 minutes a week to raise the heart rate, new research indicates.

- [**Alternative splicing, an important mechanism for cancer**](#) [周五, 22 9月 06:50]

Scientists discover several alterations in this cellular process with implications in cancer by analyzing samples from more than 4,000 patients.

- [**Preterm children have more medical sleep problems but fall asleep more independently**](#) [周五, 22 9月 04:13]

A new study suggests that while healthy preterm children have more medical sleep problems than full-term children, they are more likely to fall asleep independently.

- [**New technique accurately digitizes transparent objects**](#) [周五, 22 9月 04:12]

A new imaging technique makes it possible to precisely digitize clear

objects and their surroundings, an achievement that has eluded current state-of-the-art 3-D rendering methods.

- [**Strong alcohol policies help reduce alcohol-involved homicides**](#) [周五, 22 9月 04:12]

Stronger alcohol policies, including taxes and sales restrictions, have been shown to reduce the likelihood of alcohol involvement among homicide victims, according to a new study.

- [**Babies can learn that hard work pays off**](#) [周五, 22 9月 04:12]

A new study reveals babies as young as 15 months can learn the value of hard work. Researchers found babies who watched an adult struggle to reach two different goals before succeeding tried harder at their own difficult task than babies who saw an adult succeed effortlessly.

- [**Ozark grasslands experience major increase in trees and shrubs**](#) [周五, 22 9月 04:12]

Woody vegetation, such as trees and shrubs, has increased dramatically in Ozark grasslands over the past 75 years, according to a study. If these ecosystems continue to favor woody vegetation, will it be possible to maintain open grasslands for the foreseeable future?

- [**'Labyrinth' chip could help monitor aggressive cancer stem cells**](#) [周五, 22 9月 04:12]

Inspired by the Labyrinth of Greek mythology, a new chip etched with fluid channels sends blood samples through a hydrodynamic maze to separate out rare circulating cancer cells into a relatively clean stream for analysis. It is already in use in a breast cancer clinical trial.

- [**New hope for people with fibromyalgia**](#) [周五, 22 9月 04:12]

A novel psychological therapy that encourages addressing emotional experiences related to trauma, conflict and relationship problems has been found helpful for people with the chronic pain condition fibromyalgia.

- [**Unique gene therapy prevents, reverses multiple sclerosis in animal model**](#) [周五, 22 9月 04:12]

Multiple sclerosis can be inhibited or reversed using a novel gene therapy technique that stops the disease's immune response in mouse models, researchers have found.

- [**Into more thin air: Exploring the adaptation extremes of human high altitude sickness and fitness**](#) [周五, 22 9月 04:12]

Many research groups have explored human adaptation to high altitude living among three major far-flung global populations: Tibetans, Ethiopians and Peruvians. But few have simultaneously explored the other extreme---maladaptation---in the form of chronic mountain sickness (CMS). Now, in the largest whole genome study of its kind, an international research team led by University of California San Diego's Chairman of Pediatrics, Dr. Gabriel Haddad, has expanded on their recent study of understand...

- [**Synthetic molecule 'kicks and kills' some persistent HIV in mice**](#) [周五, 22 9月 02:13]

Scientists have designed a synthetic molecule that can reactivate dormant human immunodeficiency virus (HIV) in mice and lead to the death of some of the infected cells, according to a new study.

- [**Japanese encephalitis vaccine cuts disease rate in Nepal**](#) [周五, 22 9月 02:13]

From 2006 through 2011, Nepal conducted a mass immunization campaign against Japanese encephalitis -- a mosquito-borne viral disease. Now, investigators have reported that the vaccination effort prevented thousands of cases of Japanese encephalitis (JE) and cut JE rates in Nepal by at least 78 percent.

- [**Your neurons register familiar faces, whether you notice them or not**](#) [周五, 22 9月 02:13]

When people see an image of a person they recognize particular cells light up in the brain. Now, researchers have found that those cells light up even when a person sees a familiar face or object but fails to notice it.

The only difference is that the neural activity is weaker and delayed in comparison to what happens when an observer consciously registers and can recall having seen a particular image.

- [**Ancient DNA data fills in thousands of years of human prehistory in Africa**](#) [周五, 22 9月 02:13]

By sequencing the ancient genomes of 15 individuals from different parts of Africa, researchers reporting in the journal Cell on Sept. 21 have reconstructed the prehistory of humans on the continent, going back thousands of years. The findings shed light on which human populations lived in eastern and southern Africa between 8,000 and 1,000 years ago, the researchers say.

- [**A rapid alternative to standard safety tests for lentiviral vectors**](#) [周五, 22 9月 02:13]

A new, publicly available test to assess the safety of cell therapy products altered by lentivirus generates results within a few hours, potentially hastening the pace at which viral immunotherapies move into clinical trial. Current assays required by the US Food and Drug Administration take about six weeks to complete. The rapid test, which does not have a significant risk of false positives, is also a fraction of the cost of the standard approach.

- [**Scientists sequence asexual tiny worm whose lineage stretches back 18 million years**](#) [周五, 22 9月 02:13]

A team of scientists has sequenced, for the first time, a tiny worm that belongs to a group of exclusively asexual species that originated approximately 18 million years ago -- making it one of the oldest living lineages of asexual animals known.

- [**Green algae could hold clues for engineering faster-growing crops**](#) [周五, 22 9月 02:13]

Two new studies provide a detailed look at an essential part of algae's growth machinery, with the eventual goal of applying this knowledge to improving the growth of crops.

[. Detecting cosmic rays from a galaxy far, far away](#) [周五, 22 9月 02:12]

Where do cosmic rays come from? Solving a 50-year-old mystery, a collaboration of researchers has discovered it's much farther than the Milky Way.

Chronic migraine cases are amplified by jawbone disorder -- ScienceDaily

In a study, researchers at the University of São Paulo's Ribeirão Preto School of Medicine (FMRP-USP), in Brazil, finds that the more frequent the migraine attacks, the more severe will be the so-called temporomandibular disorder, or TMD. The temporomandibular joint acts like a sliding hinge connecting the jawbone to the skull, therefore the disorder's symptoms includes difficulty chewing and joint tension.

"Our study shows that patients with chronic migraine, meaning attacks occurring on more than 15 days per month, are three times as likely to report more severe symptoms of TMD than patients with episodic migraine," said Lidiane Florencio, the first author of the study, which is part of the Thematic Project "Association study of clinical, functional and neuroimaging in women with migraine," supported by the São Paulo Research Foundation -- FAPESP.

Previous studies already indicated that migraine is

somehow associated with pain in the chewing muscles. However, this research was the first to consider the frequency of migraine attacks when analyzing its connection with TMD: eighty-four women in their early to mid-thirties were assessed, being that 21 were chronic migraine patients, 32 had episodic migraine, while 32 with no history of migraine were included as controls -- the results were published in the *Journal of Manipulative and Physiological Therapeutics*.

Signs and symptoms of TMD were observed in 54% of the control participants without migraine, 80% of participants with episodic migraine, and 100% of those with chronic migraine.

For Florencio, central sensitization may explain the association between the frequency of migraine attacks and the severity of TMD.

"The repetition of migraine attacks may increase sensitivity to pain," she said. "Our hypothesis is that migraine acts as a factor that predisposes patients to TMD. On the other hand, TMD can be considered a potential perpetuating factor for migraine because it acts as a constant nociceptive input that contributes to maintaining central sensitization and abnormal pain

processes." Nociceptive pain is caused by a painful stimulus on special nerve endings called nociceptors.

Migraine and TMD have very similar pathological mechanisms. Migraine affects 15% of the general population, and progression to the chronic form is expected in about 2.5% of migraine sufferers. On the other hand TMD is stress-related as much as it has to do with muscle overload. Patients display joint symptoms -- such as joint pain, reduced jaw movement, clicking or popping of the temporomandibular joint -- but also develop a muscular condition, including muscle pain and fatigue, and/or radiating face and neck pain.

Which came first?

TMD and migraine are comorbidities. However, while people who suffer from migraine are predisposed to have TMD, people with TMD will not necessarily have migraine.

"Migraine patients are more likely to have signs and symptoms of TMD, but the reverse is not true. There are cases of patients with severe TMD who don't present with migraine," said Débora Grossi, the lead

researcher for the study and principal investigator for the Thematic Project.

The researchers believe that TMD may increase the frequency and severity of migraine attacks, even though it does not directly cause migraine.

"We do know migraine isn't caused by TMD," Florencio said. "Migraine is a neurological disease with multifactorial causes, whereas TMD, like cervicalgia -- neck pain -- and other musculoskeletal disorders, is a series of factors that intensify the sensitivity of migraine sufferers. Having TMD may worsen one's migraine attacks in terms of both severity and frequency."

The journal article concludes that an examination of TMD signs and symptoms should be clinically conducted in patients with migraine.

"Our findings show the association with TMD exists but is less frequent in patients with rare or episodic migraine," Grossi said. "This information alone should change the way clinicians examine patients with migraine. If migraine sufferers tend to have more severe TMD, then health professionals should assess

such patients specifically in terms of possible signs and symptoms of TMD."

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NASA'S OSIRIS-REx spacecraft slingshots past Earth -- ScienceDaily

NASA's asteroid sample return spacecraft successfully used Earth's gravity on Friday to slingshot itself on a path toward the asteroid Bennu, for a rendezvous next August.

At 12:52 p.m. EDT on Sept. 22, the OSIRIS-REx (Origins, Spectral Interpretation, Resource Identification, and Security -- Regolith Explorer) spacecraft came within 10,711 miles (17,237 km) of Antarctica, just south of Cape Horn, Chile, before following a route north over the Pacific Ocean.

OSIRIS-REx launched from Cape Canaveral Air Force Station in Florida on Sept. 8, 2016, on an Atlas V 411 rocket. Although the rocket provided the spacecraft with the all the momentum required to propel it forward to Bennu, OSIRIS-REx needed an extra boost from the Earth's gravity to change its orbital plane. Bennu's orbit around the Sun is tilted six degrees from Earth's orbit, and this maneuver changed the spacecraft's direction to put it on the path toward

Bennu.

As a result of the flyby, the velocity change to the spacecraft was 8,451 miles per hour (3.778 kilometers per second).

"The encounter with Earth is fundamental to our rendezvous with Bennu," said Rich Burns, OSIRIS-REx project manager at NASA's Goddard Space Flight Center in Greenbelt, Maryland. "The total velocity change from Earth's gravity far exceeds the total fuel load of the OSIRIS-REx propulsion system, so we are really leveraging our Earth flyby to make a massive change to the OSIRIS-REx trajectory, specifically changing the tilt of the orbit to match Bennu."

The mission team also is using OSIRIS-REx's Earth flyby as an opportunity to test and calibrate the spacecraft's instrument suite. Approximately four hours after the point of closest approach, and on three subsequent days over the next two weeks, the spacecraft's instruments will be turned on to scan Earth and the Moon. These data will be used to calibrate the spacecraft's science instruments in preparation for OSIRIS-REx's arrival at Bennu in late 2018.

"The opportunity to collect science data over the next two weeks provides the OSIRIS-REx mission team with an excellent opportunity to practice for operations at Bennu," said Dante Lauretta, OSIRIS-REx principal investigator at the University of Arizona, Tucson.

"During the Earth flyby, the science and operations teams are co-located, performing daily activities together as they will during the asteroid encounter."

The OSIRIS-REx spacecraft is currently on a seven-year journey to rendezvous with, study, and return a sample of Bennu to Earth. This sample of a primitive asteroid will help scientists understand the formation of our solar system more than 4.5 billion years ago.

NASA's Goddard Space Flight Center provides overall mission management, systems engineering and the safety and mission assurance for OSIRIS-REx. Dante Lauretta of the University of Arizona, Tucson, is the principal investigator, and the University of Arizona also leads the science team and the mission's science observation planning and data processing. Lockheed Martin Space Systems in Denver built the spacecraft and is providing flight operations. Goddard and KineticX Aerospace are responsible for navigating the OSIRIS-REx spacecraft. OSIRIS-REx is the third mission in

NASA's New Frontiers Program. NASA's Marshall Space Flight Center in Huntsville, Alabama, manages the agency's New Frontiers Program for the Science Mission Directorate in Washington.

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Mechanism that underlies age-associated bone loss -- ScienceDaily

A major health problem in older people is age-associated osteoporosis -- the thinning of bone and the loss of bone density that increases the risk of fractures. Often this is accompanied by an increase in fat cells in the bone marrow.

University of Alabama at Birmingham researchers have now detailed an underlying mechanism leading to that osteoporosis. When this mechanism malfunctions, progenitor cells stop creating bone-producing cells, and instead create fat cells. Knowledge of this mechanism can provide targets in the search for novel bone-loss therapeutics to treat human osteoporosis with minimal side effects.

The UAB researchers found that a protein called Cbf-beta plays a critical role in maintaining the bone-producing cells. Furthermore, examination of aged mice showed dramatically reduced levels of Cbf-beta in bone marrow cells, as compared to younger mice.

Thus, they propose, maintaining Cbf-beta may be essential to preventing human age-associated osteoporosis that is due to elevated creation of fat cells.

Bone is a living tissue that constantly rebuilds. Bones need a constant new creation of cells specific to their tissue, including the bone-producing cells called osteoblasts. Osteoblasts live only about three months and do not divide.

The progenitor cells for osteoblasts are bone marrow mesenchymal stem cells. Besides osteoblasts, mesenchymal stem cells can also differentiate into the chondrocyte cells that make cartilage, the myocyte cells that help form muscles and the adipocytes, or fat cells. Thus, the same progenitor cell has four possible tracks of differentiation.

UAB researchers and colleagues focused on the molecular mechanism that controls the lineage commitment switch between the osteoblast and adipocyte tracks. Led by Yi-Ping Li, Ph.D., UAB professor of pathology, and Wei Chen, M.D., UAB associate professor of pathology, they investigated the key role played by Cbf-beta, or core-binding factor subunit beta.

Study details

The team led by Li and Chen generated three mouse models by deleting Cbf-beta at various stages of the osteoblast lineage. All three mouse models showed severe osteoporosis with accumulation of fat cells in the bone marrow, a pathology that resembles aged bone from enhanced adipocyte creation.

Bone marrow mesenchymal stem cells and bone cells from the skulls of Cbf-beta-deficient mice showed increased expression of adipocyte genes.

Looking at the mechanism downstream, the researchers found that the loss of Cbf-beta impeded the canonical Wnt signaling pathway, particularly through decreased Wnt10b expression. In nonmutant mice, they found that the protein complex composed of Cbf-beta and the Runx2 transcription factor binds to the Wnt10b promoter to drive Wnt10b expression. The Cbf-beta/Runx2 complex also inhibited expression of the enhancer protein C/EBP-alpha that promotes differentiation of adipocytes.

In addition, the researchers showed that Cbf-beta maintains the osteoblast lineage commitment in two

ways -- through the Wnt paracrine pathway to affect nearby cells and through endogenous signaling within the cell to suppress adipogenesis gene expression.

Altogether, this knowledge of the mechanism driven by Cbf-beta can help explain the imbalance in bone maintenance seen in older people.

Story Source:

[Materials](#) provided by [University of Alabama at Birmingham](#). *Note: Content may be edited for style and length.*

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Two Group A Streptococcus genes linked to 'flesh-eating' bacterial infections -- ScienceDaily

Group A Streptococcus bacteria cause a variety of illnesses that range from mild nuisances like strep throat to life-threatening conditions including pneumonia, toxic shock syndrome and the flesh-eating disease formally known as necrotizing fasciitis. The life-threatening infections occur when the bacteria spread underneath the surface of the skin or throat and invade the underlying soft tissue. A 2005 study published in *The Lancet* attributed half a million deaths worldwide each year to group A Streptococcus.

"In 24 to 48 hours, you can go from being healthy to having a limb amputated to save your life," said Kevin McIver, professor of cell biology and molecular genetics at the University of Maryland, College Park. "And we don't really know why or how the bacteria do that."

In a new study, McIver's laboratory and researchers at

the University of Maryland School of Medicine identified two genes important for invasive group A Streptococcus infections in mice. The genes, subcutaneous fitness genes A (scfA) and B (scfB), may prove to be promising clinical targets in the fight against these infections, as there are no vaccines against group A Streptococcus or effective treatments for invasive infections. The study was published online on August 23, 2017, in the journal PLOS Pathogens.

Led by Yoann Le Breton, the study's first author and a research assistant professor in McIver's group, the researchers discovered scfA and scfB by performing transposon sequencing on the entire group A Streptococcus genome. Transposons, also known as jumping genes, are short sequences of DNA that physically move within a genome, mutating genes by jumping into them. If the mutation causes an interesting effect, scientists can identify the mutated gene by locating the transposon, sequencing the DNA surrounding the transposon and mapping its location in the genome.

"Invasion under the skin, or subcutaneously, is not the norm for group A Streptococcus bacteria; it's actually very rare," McIver explained. "We hypothesized that

there must be genes in the bacteria important for invading soft tissues and surviving under the skin. And we tested that theory by using transposons to make thousands of different individual mutants that we used to infect a subcutaneous environment in mice."

McIver and his colleagues used a transposon called Krmit -- which they created in a previous study -- to generate a collection of approximately 85,000 unique mutants in a group A Streptococcus strain. They injected the mutant strains into mice, which resulted in humanlike infections. The transposon was named for the Muppets character Kermit the frog, whose creator Jim Henson, a 1960 College Park alumnus, died of toxic shock syndrome following group A Streptococcal pneumonia.

"We were particularly interested in the mutations that didn't come out the other end -- the ones not found in the surviving bacteria from the infected tissue," McIver said. "These genes would be good targets for a vaccine or treatment because the bacteria missing these genes did not flourish in the infection site."

The researchers identified 273 scf genes as potentially involved in establishing infection under the skin, but

two genes stood out: scfA and scfB. Based on patterns in their DNA sequences, these genes likely encode proteins in the bacterial membrane. This is a prime location for gene products involved in infection because many dangerous bacteria secrete toxins or proteins through the membrane to attack the host. Additional experiments showed that bacteria lacking scfA or scfB had difficulty spreading from under the skin to the bloodstream and other organs.

The results suggest that these two genes are involved in the invasion process and may be potential targets for therapeutics.

"The next steps will be to expand the study to include multiple animal models, and these experiments are already underway," said Mark Shirtliff, a co-author of the study and a professor in the Department of Microbiology and Immunology at the University of Maryland School of Medicine and the Department of Microbial Pathogenesis at the University of Maryland School of Dentistry. "We can also begin to formulate improved therapies and vaccines against group A streptococcus infections and their complications such as rheumatic heart disease, pneumonia and necrotizing fasciitis."

McIver also looks forward to using transposon sequencing to study other ways bacteria attack humans.

"Transposon sequencing can be used to probe how bacteria infect humans in any environment you can think of," McIver said. "Like group A Streptococcus, many pathogenic bacteria have completely sequenced genomes, but we don't know what most of the genes are doing. We're excited to have a method to interrogate all that unknown genetic material to better understand human infections."

Story Source:

[Materials](#) provided by [University of Maryland](#). *Note: Content may be edited for style and length.*

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Enhancing the sensing capabilities of diamonds with quantum properties: Simple method can give diamonds the special properties needed for quantum applications such as sensing magnetic fields -- ScienceDaily

Pure diamond consists of carbon atoms in a perfect crystal lattice. But remove a few carbons and swap some others for nitrogen, and you get a diamond with special quantum-sensing properties. These properties are useful for quantum information applications and sensing magnetic fields, and as a platform for probing the mysteries of quantum physics.

When a nitrogen atom is next to the space vacated by a carbon atom, it forms what is called a nitrogen-vacancy (NV) center. Now, researchers have shown how they can create more NV centers, which makes sensing magnetic fields easier, using a relatively simple method that can be done in many labs. They describe their results this week in *Applied Physics Letters*, from AIP

Publishing.

Magnetic field sensing presents a prime example for the importance of this sensing. Green light can induce the NV centers to fluoresce and emit red light, but the amount of this fluorescence changes in the presence of a magnetic field. By measuring the brightness of the fluorescence, diamond NV centers can help determine magnetic field strength. Such a device can make magnetic images of a range of sample types, including rocks and biological tissue.

The sensitivity of this type of magnetic detection is determined by the concentration of NV centers while vacancies that are not paired with nitrogen create noise. Efficient conversion of vacancies into NV centers, therefore, as well as maximizing the concentration of NV centers, plays a key role in advancing these detection methods.

Researchers typically purchase nitrogen-doped diamonds from a separate company. They then bombard the diamond with electrons, protons or other particles, which strip away some of the carbon atoms, leaving behind vacancies. Finally, a heating process called annealing nudges the vacancies next to the

nitrogen atoms to form the NV centers. The problem is that irradiation often requires sending your sample to a separate facility, which is expensive and time-consuming.

"What is special about our approach is that it's very simple and very straightforward," said Dima Farfurnik of the Hebrew University of Jerusalem in Israel. "You get sufficiently high NV concentrations that are appropriate for many applications with a simple procedure that can be done in-house."

Their method uses high energy electron bombardment in a transmission electron microscope (TEM), an instrument accessible to many researchers, to locally create NV centers. Normally, a TEM is used to image materials down to subnanometer resolutions, but its narrow electron beam can also irradiate diamonds.

Others have shown TEMs can create NV centers in specialized diamond samples, but the researchers in this study successfully tested the method on several commercially available diamond samples.

In a typical, untreated sample, less than 1 percent of the nitrogen atoms form NV centers. But by using a TEM,

the researchers increased this conversion efficiency to as high as 10 percent. In certain cases, the samples reached their saturation limit, and more irradiation was no longer effective. For other samples, however, the researchers didn't hit this limit, suggesting that additional irradiation could boost efficiencies further. With higher conversion efficiencies, and small irradiation volumes possible with a TEM, devices like magnetic sensors could be more compact.

To make sure the method didn't hinder the effectiveness of NVs in applications like sensing magnetic fields, the researchers confirmed that the length of time the NV centers remain in their states -- the coherence time -- didn't change.

Packing enough NV centers in a diamond would allow physicists to probe the quantum interactions among the centers themselves. This research could enable the creation of a unique quantum state called a squeezed state, which has never been demonstrated before in a solid and could push the sensing capabilities of these systems beyond today's classical limits.

"We hope the enhanced number of NV centers due to irradiation will serve as a stepping stone for this long-

term and ambitious goal," Farfurnik said.

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All Top News

Top science stories featured on ScienceDaily's home page.

- [**Winter cold extremes linked to high-altitude polar vortex weakening**](#) [周五, 22 9月 21:40]

When the strong winds that circle the Arctic slacken, cold polar air can escape and cause extreme winter chills in parts of the Northern hemisphere. A new study finds that these weak states have become more persistent over the past four decades and can be linked to cold winters in Russia and Europe.

- [**Flint's water crisis led to fewer babies and higher fetal death rates, researchers find**](#) [周五, 22 9月 21:16]

An estimated 275 fewer children were born in Flint, Michigan, while the city was using lead-contaminated water from the Flint River, according to new research findings.

- [**Babies can learn that hard work pays off**](#) [周五, 22 9月 04:12]

A new study reveals babies as young as 15 months can learn the value of hard work. Researchers found babies who watched an adult struggle to reach two different goals before succeeding tried harder at their own difficult task than babies who saw an adult succeed effortlessly.

- [**Unique gene therapy prevents, reverses multiple sclerosis in animal model**](#) [周五, 22 9月 04:12]

Multiple sclerosis can be inhibited or reversed using a novel gene therapy technique that stops the disease's immune response in mouse models, researchers have found.

- [**Ancient DNA data fills in thousands of years of human prehistory in Africa**](#) [周五, 22 9月 02:13]

By sequencing the ancient genomes of 15 individuals from different parts of Africa, researchers reporting in the journal *Cell* on Sept. 21 have reconstructed the prehistory of humans on the continent, going back thousands of years. The findings shed light on which human populations lived in eastern and southern Africa between 8,000 and 1,000 years ago, the researchers say.

- [**Scientists sequence asexual tiny worm whose lineage stretches back 18 million years**](#) [周五, 22 9月 02:13]

A team of scientists has sequenced, for the first time, a tiny worm that belongs to a group of exclusively asexual species that originated approximately 18 million years ago -- making it one of the oldest living lineages of asexual animals known.

- [**Detecting cosmic rays from a galaxy far, far away**](#) [周五, 22 9月 02:12]

Where do cosmic rays come from? Solving a 50-year-old mystery, a collaboration of researchers has discovered it's much farther than the Milky Way.

- [**Jellyfish, with no brains, still seem to sleep**](#) [周五, 22 9月 02:12]

The discovery that primitive jellyfish sleep suggests that sleep is an ancient, evolutionarily conserved behavior.

- [**Why poison frogs don't poison themselves**](#) [周五, 22 9月 02:12]

Poison frogs harbor some of the most potent neurotoxins we know, yet scientists have long wondered -- how do these frogs keep from poisoning themselves? Scientists are now a step closer to resolving that head-scratcher. And the answer has potential consequences for the fight against pain and addiction.

- [**Reconstructing how Neanderthals grew, based on an El Sidrón child**](#) [周五, 22 9月 02:12]

How did Neanderthals grow? Does modern man develop in the same way as *Homo neanderthalensis* did? How does the size of the brain affect the development of the body? Researchers have studied the fossil

remains of a Neanderthal child's skeleton in order to establish whether there are differences between the growth of Neanderthals and that of sapiens.

- [**Early trilobites had stomachs, new fossil study finds**](#) [周五, 22 9月 02:12]

Exceptionally preserved trilobite fossils from China, dating back to more than 500 million years ago, have revealed new insights into the extinct marine animal's digestive system. The new study shows that at least two trilobite species evolved a stomach structure 20 million years earlier than previously thought.

- [**Dino-killing asteroid's impact on bird evolution**](#) [周五, 22 9月 00:11]

Human activities could change the pace of evolution, similar to what occurred 66 million years ago when a giant asteroid wiped out the dinosaurs, leaving modern birds as their only descendants.

- [**One in four girls is depressed at age 14**](#) [周四, 21 9月 23:07]

New research shows a quarter of girls (24%) and one in 10 boys (9%) are depressed at age 14.

- [**Surprising discovery: How the African tsetse fly really drinks your blood**](#) [周四, 21 9月 23:06]

Researchers have been taking a close-up look at the biting mouthparts of the African tsetse fly as part of ongoing work on the animal diseases it carries. Using a new high-powered scanning electron microscope, researchers were able to see the rows of sharp teeth and rasps that the fly uses to chew through the skin when it bites.

- [**Broad swath of US deemed environmentally suitable for mosquitoes that transmit disease**](#) [周四, 21 9月 22:42]

Three-quarters of counties in the contiguous United States present suitable environmental conditions for at least part of the year for either *Aedes aegypti* or *Aedes albopictus* mosquitoes to survive if introduced, according to researchers. The two mosquito species can transmit viruses that cause Zika, dengue, chikungunya, and yellow fever.

- [**Big herbivorous dinosaurs ate crustaceans as a side dish**](#) [周四, 21 9月 22:17]

Some big plant-eating dinosaurs roaming present-day Utah some 75 million years ago were slurping up crustaceans on the side, a behavior that may have been tied to reproductive activities, says a new study.

- [**Changing of the guard: Research sheds light on how plants breathe**](#) [周四, 21 9月 22:17]

New research is set to change the textbook understanding of how plants breathe. Researchers have developed the first full 3D model of a guard cell.

- [**Tiny Brazilian frogs are deaf to their own calls**](#) [周四, 21 9月 21:03]

Pumpkin toadlets, found on the leaf litter of Brazil's Atlantic forest, are among the smallest frogs in the world. Scientists have now discovered that two species of these tiny orange frogs cannot hear the sound of their own calls.

- [**Efforts to save sea turtles are a 'global conservation success story'**](#) [周四, 21 9月 06:21]

A new study of the world's seven sea turtle species provides evidence that their numbers are growing overall (unlike many endangered vertebrates), thanks to years of conservation efforts that have played a key role in sea turtle recovery -- even for small sea turtle populations.

- [**Mathematics predicts a sixth mass extinction**](#) [周四, 21 9月 06:21]

Scientists have analyzed significant changes in the carbon cycle over the last 540 million years, including the five mass extinction events. They have identified 'thresholds of catastrophe' in the carbon cycle that, if exceeded, would lead to an unstable environment, and ultimately, mass extinction.

- [**Immune system is critical to regeneration, study finds**](#) [周四, 21 9月 03:49]

The answer to the question of why some organisms can regenerate major

body parts while others, such as humans, cannot may lie with the body's innate immune system, according to a new study of heart regeneration in the Mexican salamander.

• [Unique type of object discovered in our solar system](#) [周四, 21 9月 02:47]

Astronomers have observed the intriguing characteristics of an unusual type of object in the asteroid belt between Mars and Jupiter: two asteroids orbiting each other and exhibiting comet-like features, including a bright coma and a long tail. This is the first known binary asteroid also classified as a comet.

• [Fly away home? Ice age may have clipped bird migration](#) [周四, 21 9月 02:46]

The onset of the last ice age may have forced some bird species to abandon their northerly migrations for thousands of years, says new research led by an ornithologist. The study challenges a long-held presumption that birds merely shortened their migratory flights when glaciers advanced south to cover much of North America and northern Europe about 21,000 years ago.

• [Species abundance: Winter restricts innovation](#) [周四, 21 9月 01:17]

Why are there so many more species in the tropics? The 'storage effect' is stronger there than in temperate forests.

• [Bite force research reveals dinosaur-eating frog](#) [周四, 21 9月 01:17]

Scientists say that a large, now extinct, frog called *Beelzebufo* that lived about 68 million years ago in Madagascar would have been capable of eating small dinosaurs. The conclusion comes from a study of the bite force of South American horned frogs from the living genus *Ceratophrys*, known as Pacman frogs for their characteristic round shape and large mouth, similar to the video game character Pac-Man.

• [Animal acoustic activity decline shows forest fire pollution wreaks havoc on wildlife](#) [周四, 21 9月 01:17]

Forest fires in Southeast Asia during the El Niño droughts of 2015

caused considerable disruption to the biodiversity of the region due to the smoke-induced 'haze' they created, according to new research.

- **[New concept of terrestrial planet formation](#)** [周四, 21 9月 01:17]

Scientists are proposing a new way of understanding the cooling and transfer of heat from terrestrial planetary interiors and how that affects the generation of the volcanic terrains that dominate the rocky planets.

- **[World's first 'molecular robot' capable of building molecules](#)** [周四, 21 9月 01:17]

Scientists have created the world's first 'molecular robot' that is capable of performing basic tasks including building other molecules.

- **[Dinosaur evolution: Lumbering giants had agile ancestors](#)** [周四, 21 9月 01:17]

The best known sauropod dinosaurs were huge herbivorous creatures, whose brain structures were markedly different from those of their evolutionary predecessors, for the earliest representatives of the group were small, lithe carnivores.

- **[Brain cancer growth halted by absence of protein](#)** [周四, 21 9月 01:16]

The growth of certain aggressive brain tumors can be halted by cutting off their access to a signaling molecule produced by the brain's nerve cells, according to a new study.

- **[Millions of new genes in human microbiome](#)** [周四, 21 9月 01:16]

A new study of the human microbiome has uncovered millions of previously unknown genes from microbial communities in the human gut, skin, mouth, and vaginal microbiome, allowing for new insights into the role these microbes play in human health and disease.

- **[Genome editing reveals role of gene important for human embryo development](#)** [周四, 21 9月 01:16]

Researchers have used genome editing technology to reveal the role of a key gene in human embryos in the first few days of development. This is

the first time that genome editing has been used to study gene function in human embryos, which could help scientists to better understand the biology of our early development.

- [**Is the Milky Way an 'outlier' galaxy? Studying its 'siblings' for clues**](#) [周三, 20 9月 23:33]

The most-studied galaxy in the universe -- the Milky Way -- might not be as 'typical' as previously thought, according to a new study. Early results from the Satellites Around Galactic Analogs (SAGA) Survey indicate that the Milky Way's satellites are much more tranquil than other systems of comparable luminosity and environment. Many satellites of those 'sibling' galaxies are actively pumping out new stars, but the Milky Way's satellites are mostly inert.

- [**How Teotihuacan's urban design was lost and found**](#) [周三, 20 9月 23:33]

A new article outlines how the urban design of the city of Teotihuacan differed from past and subsequent cities, only to be rediscovered and partially modeled on many centuries later by the Aztecs.

- [**10,000 year-old DNA proves when fish colonized our lakes**](#) [周三, 20 9月 22:45]

DNA in lake sediment forms a natural archive displaying when various fish species colonized lakes after the glacial period. Scientists' analyses of the prevalence of whitefish DNA in sediment reveal that the whitefish came to Lake Stora Lögdsjön in Västerbotten already 10,000 years ago, whereas Lake Hotagen in Jämtland had its whitefish only 2,200 years ago.

- [**Solving the Easter Island population puzzle**](#) [周三, 20 9月 22:01]

The nearly nine hundred giant stone statues discovered by the first Europeans to land on Easter Island seemed at odds with the small population found living there. It is believed a once thriving community witnessed sweeping ecological change and suffered internal conflict, resulting in a population crash. A new detailed study of the farming potential of the Island suggests it could have sustained 17,500 people at

its peak.

- [**Emerging disease further jeopardizes North American frogs**](#) [周三, 20 9月 04:02]

A deadly amphibian disease called severe Perkinsea infections, or SPI, is the cause of many large-scale frog die-offs in the United States, according to a new study.

- [**End-of-summer Arctic sea ice extent is eighth lowest on record**](#) [周三, 20 9月 04:01]

Arctic sea ice appeared to have reached its yearly lowest extent on Sept. 13, scientists have reported. Analysis of satellite data showed that at 1.79 million square miles (4.64 million square kilometers), this year's Arctic sea ice minimum extent is the eighth lowest in the consistent long-term satellite record, which began in 1978.

- [**North Atlantic right whales decline confirmed: 458 remaining**](#) [周三, 20 9月 02:04]

Marine biologists have developed a new model to improve estimates of abundance and population trends of endangered North Atlantic right whales, which have declined in numbers and productivity in recent years. Between 1990 and 2010 abundance increased to 482 animals, but since 2010 the numbers have declined to 458 in 2015, with 14 known deaths this year.

- [**Sleep deprivation is an effective anti-depressant for nearly half of depressed patients, study suggests**](#) [周三, 20 9月 02:04]

Sleep deprivation - typically administered in controlled, inpatient settings - rapidly reduces symptoms of depression in roughly half of depression patients, according the first meta-analysis on the subject in nearly 30 years.

- [**Mercury's poles may be icier than scientists thought**](#) [周三, 20 9月 00:31]

A new study identifies three large surface ice deposits near Mercury's

north pole, and suggests there could be many additional small-scale deposits that would dramatically increase the planet's surface ice inventory.

- [**Getting emotional after failure helps you improve next time, study finds**](#) [周二, 19 9月 23:12]

Emotional responses to failure rather than cognitive ones are more effective at improving people's results for the next time they tackle the next related task, new research indicates.

- [**Playing American football before age 12 could have long-term health effects**](#) [周二, 19 9月 22:25]

Playing American football before the age of 12 may have long-term consequences for players' mood and behavior, according to a study involving 214 professional and amateur football players.

- [**Exposure to pet and pest allergens during infancy linked to reduced asthma risk**](#) [周二, 19 9月 22:25]

Children exposed to high indoor levels of pet or pest allergens during infancy have a lower risk of developing asthma by 7 years of age, new research reveals. The findings may provide clues for the design of strategies to prevent asthma from developing.

- [**New mirror-coating technology promises dramatic improvements in telescopes**](#) [周二, 19 9月 10:23]

An electrical engineer has teamed up with astronomers to improve telescope mirrors using thin-film technology from the electronics industry. They are developing new protective coatings using an atomic layer deposition system large enough to accommodate telescope mirrors.

- [**DNA triggers shape-shifting in hydrogels, opening a new way to make 'soft robots'**](#) [周二, 19 9月 10:22]

Biochemical engineers have used sequences of DNA molecules to induce shape-changing in water-based gels, demonstrating a new tactic to produce "soft" robots and "smart" medical devices that do not rely on cumbersome wires, batteries or tethers.

- [**Solar-to-fuel system recycles CO2 to make ethanol and ethylene**](#) [周二, 19 9月 03:17]

Scientists have harnessed the power of photosynthesis to convert carbon dioxide into fuels and alcohols at efficiencies far greater than plants. The achievement marks a significant advance in the effort to move toward sustainable sources of fuel.

- [**Copper catalyst yields high efficiency CO2-to-fuels conversion**](#) [周二, 19 9月 03:17]

Scientists have developed a new electrocatalyst that can directly convert carbon dioxide into multicarbon fuels and alcohols using record-low inputs of energy. The work is the latest in a round of studies tackling the challenge of creating a clean chemical manufacturing system that can put carbon dioxide to good use.

- [**When it comes to the threat of extinction, size matters**](#) [周二, 19 9月 01:27]

Animals in the Goldilocks zone -- neither too big, nor too small, but just the right size -- face a lower risk of extinction than do those on both ends of the scale, according to an extensive global analysis.

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

- [**Chronic migraine cases are amplified by jawbone disorder**](#) [周日, 24 9月 22:37]

A new study shows patients with chronic migraine are three times as likely to suffer from severe temporomandibular disorder. Though not a primary cause, the disorder is thought to accentuate and perpetuate sensitivity to pain; therefore, researchers recommend in chronic migraine clinical practice the assessment of the disorder's symptoms.

- [**Mechanism that underlies age-associated bone loss**](#) [周六, 23 9月 03:05]

A major health problem in older people is age-associated osteoporosis -- the thinning of bone and the loss of bone density that increases the risk of fractures. Researchers have now detailed an underlying mechanism leading to that osteoporosis. When this mechanism malfunctions, progenitor cells stop creating bone-producing cells, and instead create fat cells. Knowledge of this mechanism can provide targets in the search for novel bone-loss.

- [**Two Group A Streptococcus genes linked to 'flesh-eating' bacterial infections**](#) [周六, 23 9月 03:05]

Group A Streptococcus bacteria cause illnesses ranging from mild nuisances like strep throat to life-threatening conditions such as flesh-eating disease, also known as necrotizing fasciitis. Life-threatening infections occur when the bacteria spread underneath the surface of the skin or throat and invade the underlying soft tissue. Researchers have found two group A Streptococcus genes involved in invasive infections,

which may be potential targets for therapeutics.

- [**Our weight tells how we assess food**](#) [周五, 22 9月 23:17]

A new study demonstrated that people of normal weight tend to associate natural foods such as apples with their sensory characteristics. On the other hand, processed foods such as pizzas are generally associated with their function or the context in which they are eaten. But that's not all. The research also highlighted the ways in which underweight people pay greater attention to natural foods and overweight people to processed foods.

- [**Residents: Frontline defenders against antibiotic resistance?**](#) [周五, 22 9月 23:17]

Residents often decide which antibiotics to start a patient on so they could become the first line of defense against antibiotic resistance.

- [**Strategy might prevent infections in patients with spinal cord injuries**](#) [周五, 22 9月 23:17]

A new study sheds light on how to reduce the number of infections in patients with spinal cord injuries without using antibiotics.

- [**Usher syndrome: Gene therapy restores hearing and balance**](#) [周五, 22 9月 23:17]

Scientists have recently restored hearing and balance in a mouse model of Usher syndrome type 1G characterized by profound congenital deafness and vestibular disorders caused by severe dysmorphogenesis of the mechano-electrical transduction apparatus of the inner ear's sensory cells. These findings open up new possibilities for the development of gene therapy treatments for hereditary forms of deafness.

- [**Stimuli fading away en route to consciousness**](#) [周五, 22 9月 21:40]

Whether or not we consciously perceive the stimuli projected onto our retina is decided in our brain. A recent study shows how some signals dissipate along the processing path to conscious perception. This process begins at rather late stages of signal processing. By contrast, in earlier stages there is hardly any difference in the reaction of neurons to

conscious and unconscious stimuli.

- [**Flint's water crisis led to fewer babies and higher fetal death rates, researchers find**](#) [周五, 22 9月 21:16]

An estimated 275 fewer children were born in Flint, Michigan, while the city was using lead-contaminated water from the Flint River, according to new research findings.

- [**Breathing dirty air may harm kidneys**](#) [周五, 22 9月 21:16]

Outdoor air pollution may increase the risk of chronic kidney disease and contribute to kidney failure, say researchers. Scientists culled national VA databases to evaluate the effects of air pollution and kidney disease on nearly 2.5 million people over a period of 8.5 years, beginning in 2004. The scientists compared VA data on kidney function to air-quality levels collected by the Environmental Protection Agency (EPA) as well as the National Aeronautics and Space Administration (NASA).

- [**Effective help is available for migraine sufferers**](#) [周五, 22 9月 21:15]

Although it's the third most prevalent illness in the world, migraine is widely misunderstood and frequently undiagnosed. Until quite recently a common "remedy" for migraine was to lie in a dark room and wait for the pain to pass. But today there are treatments that work – and new medications formulated specifically for migraine are in the pipeline.

- [**Rainbow colors reveal cell history**](#) [周五, 22 9月 21:14]

A system called "Beta-bow", which allows the history of beta-cells to be traced by genetic bar-coding and multicolor imaging, has been developed by researchers.

- [**New genetic syndrome predisposes the body to cancer**](#) [周五, 22 9月 21:14]

A new syndrome caused by biallelic mutations -- those produced in both gene copies inherited from the mother and father -- in the FANCM gene predisposes the body to the appearance of tumors and causes rejection to chemotherapy treatments. Contrary to what scientists believed, the gene does not cause Fanconi anemia. Researchers recommend modifying the

clinical monitoring of patients with these mutations.

- **[Improving techniques for joint defect treatment](#)**

[周五, 22 9月 21:12]

Different surface topographies and materials provide interesting ways to study cell behavior and potentially provide novel solutions for treating joint defects. Tissue engineering methods that simulate native cartilage could prove useful to create cartilage implants in the laboratory, according to new research.

- **[Smartphone apps can reduce depression](#)**

[周五, 22 9月 21:09]

New research has confirmed that smartphone apps are an effective treatment option for depression, paving the way for safe and accessible interventions for the millions of people around the world diagnosed with this condition.

- **[Party discipline for jumping genes](#)**

[周五, 22 9月 21:09]

Jumping genes, transposons, are part of the genome of most organisms, aggregated into families and can damage the genome by jumping. How hosts suppress the jumping is well investigated. Why they still can jump has hardly been understood so far. Researchers investigated for the first time in all transposons of the host organism, which properties and host environments facilitate jumping. They showed that family affiliation is more important than position.

- **[Personality changes don't precede clinical onset of Alzheimer's, study shows](#)**

[周五, 22 9月 21:09]

No evidence has been found to support the idea that personality changes begin before the clinical onset of mild cognitive impairment (MCI) or dementia, a new and comprehensive study reports.

- **[Quick test may speed antibiotic treatment, combat drug resistance](#)**

[周五, 22 9月 21:09]

Researchers have demonstrated a potential new tactic for rapidly determining whether an antibiotic combats a given infection, thus hastening effective medical treatment and limiting the development of drug-resistant bacteria. Their method can quickly sense mechanical fluctuations of bacterial cells and any changes induced by an antibiotic.

- [**Positive, negative or neutral, it all matters: NASA explains space radiation**](#) [周五, 22 9月 21:09]

Charged particles may be small, but they matter to astronauts. NASA's Human Research Program (HRP) is investigating these particles to solve one of its biggest challenges for a human journey to Mars: space radiation and its effects on the human body.

- [**Alternative splicing, an important mechanism for cancer**](#) [周五, 22 9月 06:50]

Scientists discover several alterations in this cellular process with implications in cancer by analyzing samples from more than 4,000 patients.

- [**Preterm children have more medical sleep problems but fall asleep more independently**](#) [周五, 22 9月 04:13]

A new study suggests that while healthy preterm children have more medical sleep problems than full-term children, they are more likely to fall asleep independently.

- [**Strong alcohol policies help reduce alcohol-involved homicides**](#) [周五, 22 9月 04:12]

Stronger alcohol policies, including taxes and sales restrictions, have been shown to reduce the likelihood of alcohol involvement among homicide victims, according to a new study.

- [**Babies can learn that hard work pays off**](#) [周五, 22 9月 04:12]

A new study reveals babies as young as 15 months can learn the value of hard work. Researchers found babies who watched an adult struggle to reach two different goals before succeeding tried harder at their own difficult task than babies who saw an adult succeed effortlessly.

- [**'Labyrinth' chip could help monitor aggressive cancer stem cells**](#) [周五, 22 9月 04:12]

Inspired by the Labyrinth of Greek mythology, a new chip etched with fluid channels sends blood samples through a hydrodynamic maze to

separate out rare circulating cancer cells into a relatively clean stream for analysis. It is already in use in a breast cancer clinical trial.

- [**New hope for people with fibromyalgia**](#) [周五, 22 9月 04:12]

A novel psychological therapy that encourages addressing emotional experiences related to trauma, conflict and relationship problems has been found helpful for people with the chronic pain condition fibromyalgia.

- [**Unique gene therapy prevents, reverses multiple sclerosis in animal model**](#) [周五, 22 9月 04:12]

Multiple sclerosis can be inhibited or reversed using a novel gene therapy technique that stops the disease's immune response in mouse models, researchers have found.

- [**Into more thin air: Exploring the adaptation extremes of human high altitude sickness and fitness**](#) [周五, 22 9月 04:12]

Many research groups have explored human adaptation to high altitude living among three major far-flung global populations: Tibetans, Ethiopians and Peruvians. But few have simultaneously explored the other extreme---maladaptation---in the form of chronic mountain sickness (CMS). Now, in the largest whole genome study of its kind, an international research team led by University of California San Diego's Chairman of Pediatrics, Dr. Gabriel Haddad, has expanded on their recent study of understand...

- [**Synthetic molecule 'kicks and kills' some persistent HIV in mice**](#) [周五, 22 9月 02:13]

Scientists have designed a synthetic molecule that can reactivate dormant human immunodeficiency virus (HIV) in mice and lead to the death of some of the infected cells, according to a new study.

- [**Japanese encephalitis vaccine cuts disease rate in Nepal**](#) [周五, 22 9月 02:13]

From 2006 through 2011, Nepal conducted a mass immunization

campaign against Japanese encephalitis -- a mosquito-borne viral disease. Now, investigators have reported that the vaccination effort prevented thousands of cases of Japanese encephalitis (JE) and cut JE rates in Nepal by at least 78 percent.

• [**Your neurons register familiar faces, whether you notice them or not**](#) [周五, 22 9月 02:13]

When people see an image of a person they recognize particular cells light up in the brain. Now, researchers have found that those cells light up even when a person sees a familiar face or object but fails to notice it. The only difference is that the neural activity is weaker and delayed in comparison to what happens when an observer consciously registers and can recall having seen a particular image.

• [**A rapid alternative to standard safety tests for lentiviral vectors**](#) [周五, 22 9月 02:13]

A new, publicly available test to assess the safety of cell therapy products altered by lentivirus generates results within a few hours, potentially hastening the pace at which viral immunotherapies move into clinical trial. Current assays required by the US Food and Drug Administration take about six weeks to complete. The rapid test, which does not have a significant risk of false positives, is also a fraction of the cost of the standard approach.

• [**Why poison frogs don't poison themselves**](#) [周五, 22 9月 02:12]

Poison frogs harbor some of the most potent neurotoxins we know, yet scientists have long wondered -- how do these frogs keep from poisoning themselves? Scientists are now a step closer to resolving that head-scratcher. And the answer has potential consequences for the fight against pain and addiction.

• [**Neuron types in brain are defined by gene activity shaping their communication patterns**](#) [周五, 22 9月 02:12]

Neurons are the basic building blocks that wire up brain circuits supporting mental activities and behavior. In a major step forward,

scientists have described a discovery about the molecular-genetic basis of neuronal cell types. The study, which involves sophisticated computational analysis of the messages transcribed from genes that are active in a neuron, points to patterns of cell-to-cell communication as the core feature that makes possible rigorous distinctions among neuron types across the...

- [**Rapid hepatitis C testing may help better screen young adults**](#) [周五, 22 9月 02:12]

Routine and rapid hepatitis C virus testing among young adults who use injection drugs improves life expectancy and may provide a good use of limited resources, according to new research.

- [**Exosomes are the missing link to insulin resistance in diabetes**](#) [周五, 22 9月 02:11]

Chronic tissue inflammation resulting from obesity is an underlying cause of insulin resistance and type 2 diabetes. But the mechanism by which this occurs has remained cloaked, until now. In a new paper, researchers identified exosomes -- extremely small vesicles or sacs secreted from most cell types -- as the missing link.

- [**Locking down the big bang of immune cells**](#) [周五, 22 9月 01:44]

Ignored pieces of DNA play a critical role in the development of immune cells (T cells), scientists have found. These areas activate a change in the structure of DNA that brings together crucial elements necessary for T cell formation. This “big bang” discovery may aid in combating diseases.

- [**How staph cells dodge the body's immune system**](#) [周五, 22 9月 00:58]

For years, medical investigators have tried and failed to develop vaccines for a type of staph bacteria associated with the deadly superbug MRSA. But a new study shows how staph cells evade the body's immune system, offering a clearer picture of how a successful vaccine would work.

• [**Blood metal ion levels can identify hip replacement patients at low risk of ARMD**](#) [周五, 22 9月 00:58]

Patients with 'metal on metal' artificial hips are at risk of complications caused by adverse reactions to metal debris (ARMD). A study confirms that blood metal ion levels specific to the type of hip implant used can help predict patients who are at low risk of ARMD.

• [**Flu vaccine used in elderly may benefit middle-aged adults with chronic conditions**](#) [周五, 22 9月 00:11]

Expanding the high-dose influenza vaccine recommendation to include middle-aged adults with chronic health conditions may make economic sense and save lives. The findings may justify for clinical trials of the high-dose and new recombinant trivalent influenza vaccines in 50- to 64-year-old adults with chronic illnesses, such as heart or lung disease, diabetes, or cancer, to determine if they do provide considerably better protection than the currently recommended standard dose quadrivalent vaccin...

• [**One in four girls is depressed at age 14**](#) [周四, 21 9月 23:07]

New research shows a quarter of girls (24%) and one in 10 boys (9%) are depressed at age 14.

• [**Mitochondria drive cell survival in times of need**](#) [周四, 21 9月 23:07]

Researchers have discovered a mechanism through which mitochondria, the energy factory of our body's cells, play a role in preventing cells from dying when the cells are deprived of nutrients -- a finding that points to a potential target for next-generation cancer drugs.

• [**Broad swath of US deemed environmentally suitable for mosquitoes that transmit disease**](#) [周四, 21 9月 22:42]

Three-quarters of counties in the contiguous United States present suitable environmental conditions for at least part of the year for either *Aedes aegypti* or *Aedes albopictus* mosquitoes to survive if introduced, according to researchers. The two mosquito species can transmit viruses that cause Zika, dengue, chikungunya, and yellow fever.

• [Brain inflammation linked to suicidal thinking in depression](#) [周四, 21 9月 22:42]

Patients with major depressive disorder (MDD) have increased brain levels of a marker of microglial activation, a sign of inflammation, according to a new study. Scientists have found that the increase in the inflammatory marker was present specifically in patients with MDD who were experiencing suicidal thoughts, pinning the role of inflammation to suicidality rather than a diagnosis of MDD itself.

• [Production of key diabetes cells can be improved](#)

[周四, 21 9月 22:17]

In the future diabetics might benefit from getting insulin-regulating beta cells transplanted into their body because their own beta cells are destroyed or less functional. However, according to new stem cell research, the current way of producing beta cells from stem cells has significant shortfalls. The beta cells produced have some features resembling alpha cells.

• [Whole food diet may help prevent colon cancer, other chronic conditions](#) [周四, 21 9月 22:17]

A diet that includes plenty of colorful vegetables and fruits may contain compounds that can stop colon cancer and inflammatory bowel diseases in pigs, according to an international team of researchers. Understanding how these compounds work on a molecular level could be an initial step toward finding treatments for people with cancer, they added.

• [Treating asthma or COPD with steroid inhaler increases the risk of hard-to-treat infections](#) [周四, 21 9月 21:55]

[周四, 21 9月 21:55]

Older people who use steroid inhalers for asthma or chronic obstructive pulmonary disease (COPD) are more likely to suffer particular bacterial infections, according to a large study.

• [New genetic test for predicting cancer recurrence](#) [周四, 21 9月 21:50]

Researchers have discovered a new genetic test which could help predict cancer recurrence - paving the way for more precise, personalised

treatments.

• [**Cannabis, 'spice' – better think twice**](#) [周四, 21 9月 21:49]

Marijuana is the most commonly abused drug in the world, and the advent of synthetic cannabinoids creates additional challenges to the society because of their higher potency and ability to escape drug detection screenings. Scientists have a warning about a new danger coming from cannabinoid abuse.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

- [**NASA'S OSIRIS-REx spacecraft slingshots past Earth**](#) [周六, 23 9月 04:25]

NASA's asteroid sample return spacecraft successfully used Earth's gravity on Friday to slingshot itself on a path toward the asteroid Bennu, for a rendezvous next August.

- [**Enhancing the sensing capabilities of diamonds with quantum properties**](#) [周六, 23 9月 00:29]

When a nitrogen atom is next to the space vacated by a carbon atom, it forms what is called a nitrogen-vacancy center. Now, researchers have shown how they can create more NV centers, which makes sensing magnetic fields easier, using a relatively simple method that can be done in many labs.

- [**A sustainable future powered by sea**](#) [周五, 22 9月 21:40]

Researchers develop turbines to convert the power of ocean waves into clean, renewable energy.

- [**Assembly of nanoparticles proceeds like a zipper**](#) [周五, 22 9月 21:40]

It has always been the Holy Grail of materials science to describe and control the material's structure-function relationship. Nanoparticles are an attractive class of components to be used in functional materials because they exhibit size-dependent properties, such as superparamagnetism and plasmonic absorption of light. Furthermore, controlling the arrangement of nanoparticles can result in unforeseen properties, but such studies are hard to carry out due to limited efficient approaches to prod...

- [**Smartphone apps can reduce depression**](#) [周五, 22 9月 21:09]

New research has confirmed that smartphone apps are an effective treatment option for depression, paving the way for safe and accessible interventions for the millions of people around the world diagnosed with this condition.

- [**Ultra-light aluminum: Chemist reports breakthrough in material design**](#) [周五, 22 9月 21:09]

Chemists report a new, metastable, ultra-light crystalline form of aluminum has been computationally designed using density functional calculations with imposing periodic boundary conditions.

- [**The math of doughnuts: 'Moonshine' sheds light on elliptic curves**](#) [周五, 22 9月 21:09]

Mathematicians have opened a new chapter in the theory of moonshine, one which begins to harness the power of the pariahs -- sporadic simple groups that previously had no known application.

- [**Positive, negative or neutral, it all matters: NASA explains space radiation**](#) [周五, 22 9月 21:09]

Charged particles may be small, but they matter to astronauts. NASA's Human Research Program (HRP) is investigating these particles to solve one of its biggest challenges for a human journey to Mars: space radiation and its effects on the human body.

- [**New technique accurately digitizes transparent objects**](#) [周五, 22 9月 04:12]

A new imaging technique makes it possible to precisely digitize clear objects and their surroundings, an achievement that has eluded current state-of-the-art 3-D rendering methods.

- [**'Labyrinth' chip could help monitor aggressive cancer stem cells**](#) [周五, 22 9月 04:12]

Inspired by the Labyrinth of Greek mythology, a new chip etched with fluid channels sends blood samples through a hydrodynamic maze to separate out rare circulating cancer cells into a relatively clean stream

for analysis. It is already in use in a breast cancer clinical trial.

- [**Dancing electrons lose the race**](#) [周五, 22 9月 02:13]

Ultrashort pulses of light were employed by physicists to start a race between electrons emitted from different initial states in a solid material. Timing this race revealed an unexpected result: the fastest electrons arrived in last place.

- [**Detecting cosmic rays from a galaxy far, far away**](#) [周五, 22 9月 02:12]

Where do cosmic rays come from? Solving a 50-year-old mystery, a collaboration of researchers has discovered it's much farther than the Milky Way.

- [**Breaking Coulomb's law: Scientists find a way around the rule that 'opposites attract'**](#) [周五, 22 9月 01:43]

Scientists have taken a big step towards creating the next generation of batteries, as well as more effective water treatment and better alternative energy after defying one of nature's most fundamental rules on an atomic scale.

- [**Quantum teleportation of patterns of light**](#) [周五, 22 9月 00:11]

Researchers have demonstrated entanglement swapping and teleportation of orbital angular momentum 'patterns' of light. This is a crucial step towards realizing a quantum repeater for high-dimensional entangled states.

- [**Rapid imaging of granular matter**](#) [周五, 22 9月 00:11]

Granular systems such as gravel or powders can be found everywhere, but studying them is not easy. Researchers have now developed a method by which pictures of the inside of granular systems can be taken 10,000 times faster than before.

- [**New analysis explains role of defects in metal oxides**](#) [周五, 22 9月 00:11]

Researchers have determined formulas to guide development of a promising new high-tech material, composed of insulating metal oxides

known as alkaline-earth-metal binary oxides, that could lead to better computer memory chips, refrigeration systems, and other devices.

• [**Hope to discover sure signs of life on Mars? New research says look for the element vanadium**](#) [周四, 21 9月 23:06]

A new article suggests NASA and others hunting for proof of Martian biology in the form of 'microfossils' could use the element vanadium in combination with Raman spectroscopy to confirm traces of extraterrestrial life.

• [**Better rechargeable batteries coming soon?**](#) [周四, 21 9月 22:17]

Novel lithium electrodes coated with indium could be the basis for more powerful, longer-lasting, rechargeable batteries. The coating hinders undesirable side-reactions between the electrode and electrolyte, provide a more uniform deposition of lithium when charging, and augments storage in the lithium anode via alloying reactions between lithium and indium. Their success stems from the good diffusion of lithium ions along the interfacial layer.

• [**Astonishing time limit for ultrafast perovskite solar cells set**](#) [周四, 21 9月 22:17]

Researchers have quantified the astonishingly high speeds at which future solar cells would have to operate in order to stretch what are presently seen as natural limits on their energy conversion efficiency.

• [**Diamonds show Earth still capable of 'superhot' surprises**](#) [周四, 21 9月 21:55]

Diamonds may be 'forever' but some may have formed more recently than geologists thought. A study of 26 diamonds, formed under extreme melting conditions in the Earth's mantle, found two populations, one of which has geologically 'young' ages. The results show that certain volcanic events on Earth may still be able to create super-heated conditions previously thought to have only existed early in the planet's history before it cooled. The findings may have implications for diamond prospecting.

- [**Solar eruption ‘photobombed’ Mars encounter with Comet Siding Spring**](#) [周四, 21 9月 21:50]

When Comet C/2013 A1 (Siding Spring) passed just 140,000 kilometers from Mars on 19th October 2014, depositing a large amount of debris in the Martian atmosphere, space agencies coordinated multiple spacecraft to witness the largest meteor shower in recorded history. It was a rare opportunity, as this kind of planetary event occurs only once every 100,000 years.

- [**Football helmet smartfoam signals potential concussions in real time, study suggests**](#) [周四, 21 9月 21:03]

While football-related concussions have been top of mind in recent years, people have struggled to create technology to accurately measure them in real time. Engineers have now developed and tested a nano composite smartfoam that can be placed inside a football helmet (and pads) to more accurately test the impact and power of hits.

- [**Precisely defined polymer chains now a reality**](#) [周四, 21 9月 21:03]

The materiality exhibited by humanmade polymers currently relies on simple chemical bonds and the sequence order taken by molecules in the polymer chain. We now no longer need to rely on fate to determine such materiality with this new technique for precisely defining polymer-chain order. This system uses highly specific 'grabber' ends on each molecule that bond with only one type of 'pin' end on another molecule.

- [**Mathematics predicts a sixth mass extinction**](#) [周四, 21 9月 06:21]

Scientists have analyzed significant changes in the carbon cycle over the last 540 million years, including the five mass extinction events. They have identified 'thresholds of catastrophe' in the carbon cycle that, if exceeded, would lead to an unstable environment, and ultimately, mass extinction.

- [**Bio-inspired approach to RNA delivery**](#) [周四, 21 9月 03:50]

A team of chemical engineers, inspired by the way that cells translate their own mRNA into proteins, has designed a synthetic delivery system

that is four times more effective than delivering mRNA on its own.

- [**Unique type of object discovered in our solar system**](#) [周四, 21 9月 02:47]

Astronomers have observed the intriguing characteristics of an unusual type of object in the asteroid belt between Mars and Jupiter: two asteroids orbiting each other and exhibiting comet-like features, including a bright coma and a long tail. This is the first known binary asteroid also classified as a comet.

- [**New biomaterial could replace plastic laminates, greatly reduce pollution**](#) [周四, 21 9月 02:47]

An inexpensive biomaterial that can be used to sustainably replace plastic barrier coatings in packaging and many other applications has been developed by researchers, who predict its adoption would greatly reduce pollution.

- [**Wave Glider surfs across stormy Drake Passage in Antarctica**](#) [周四, 21 9月 02:46]

A hardy ocean drone made a first-ever attempt to surf across Antarctica's stormy Drake Passage gathering data about ocean mixing.

- [**Automatic code reuse: System automatically modifies code for transfer to other programs**](#) [周四, 21 9月 02:46]

Researchers have developed a new system that allows programmers to transplant code from one program into another. The programmer can select the code from one program and an insertion point in a second program, and the system will automatically make modifications necessary -- such as changing variable names -- to integrate the code into its new context.

- [**New concept of terrestrial planet formation**](#) [周四, 21 9月 01:17]

Scientists are proposing a new way of understanding the cooling and transfer of heat from terrestrial planetary interiors and how that affects the generation of the volcanic terrains that dominate the rocky planets.

- [**World's first 'molecular robot' capable of building molecules**](#) [周四, 21 9月 01:17]

Scientists have created the world's first 'molecular robot' that is capable of performing basic tasks including building other molecules.

- [**Scientists make atoms-thick 'Post-It notes' for solar cells and circuits**](#) [周四, 21 9月 01:17]

A new study describes an innovative method to make stacks of semiconductors just a few atoms thick. The technique offers scientists and engineers a simple, cost-effective method to make thin, uniform layers of these materials, which could expand capabilities for devices from solar cells to cell phones.

- [**Unique property of critical methane-producing enzyme discovered**](#) [周三, 20 9月 23:53]

An unexpected discovery has given a group of scientists a greater understanding of an important methane-producing enzyme called methyl-coenzyme M reductase, or MCR. Their findings overturn what was previously believed to be true in the field: that a set of unique modifications present in MCR were essential to how the enzyme functions.

- [**Spinning a lighter, safer electrode**](#) [周三, 20 9月 23:35]

A fabric-like material electrode has been created that could help make energy storage devices -- batteries and supercapacitors -- faster and less susceptible to leaks or disastrous meltdowns. Their design for a new supercapacitor, which looks something like a furry sponge infused with gelatin, offers a unique alternative to the flammable electrolyte solution that is a common component in these devices.

- [**Straining the memory: Prototype strain engineered materials are the future of data storage**](#) [周三, 20 9月 23:34]

Researchers have strain-engineered a data storage material to store data by exploiting a process of avalanche atomic switching. Memory cells

using this material substantially outperform state-of-the-art phase change memory devices.

• [**Mathematicians ask: What's in a ripple?**](#) [周三, 20 9月 23:34]

When a fluid or a gas experiences a sudden disturbance, it often gives rise to a phenomenon known as an undular bore, which consists of a series of rapid oscillations that propagate and spread. But how to describe what transpires? New mathematics research brings us closer to finding an answer.

• [**Is the Milky Way an 'outlier' galaxy? Studying its 'siblings' for clues**](#) [周三, 20 9月 23:33]

The most-studied galaxy in the universe -- the Milky Way -- might not be as 'typical' as previously thought, according to a new study. Early results from the Satellites Around Galactic Analogs (SAGA) Survey indicate that the Milky Way's satellites are much more tranquil than other systems of comparable luminosity and environment. Many satellites of those 'sibling' galaxies are actively pumping out new stars, but the Milky Way's satellites are mostly inert.

• [**Real or fake? Creating fingers to protect identities**](#) [周三, 20 9月 23:33]

Biometric experts for the first time have designed and created a fake finger containing multiple key properties of human skin. Commonly called a spoof, this fake finger has been used to test two of the predominant types of fingerprint readers to help determine their resilience to spoof attacks.

• [**Mathematical simulations shed new light on epilepsy surgery**](#) [周三, 20 9月 22:43]

Results from an unexpected quarter is could help neurologists to identify which brain region to remove to eliminate an epilepsy patient's symptoms. Mathematicians have shown that it is sensible to examine the interconnections between different brain regions closely, instead of searching for abnormal regions only.

• [**Naked molecules dancing in liquid become**](#)

[visible](#) [周三, 20 9月 22:42]

Moving, vibrating and leaping molecules make up our world. However, capturing their movement is not an easy task. Scientists were able to see the movement of molecules stored inside a graphene pocket without the need to stain them. This study paves the way for observing the dynamics of life building blocks, like proteins and DNA, as well as the self-assembly of other materials.

• [Gravity waves influence weather and climate](#) [周三, 20 9月 22:00]

Gravity waves form in the atmosphere as a result of destabilizing processes. The effects of gravity waves can only be taken into consideration by including additional special components in the models.

• [Halogen bonding-mediated metal-free controlled cationic polymerization](#) [周三, 20 9月 22:00]

Chemists report a metal-free method to control cationic polymerization that provides a new framework for higher quality industrial polymers. The reaction depends on weak halogen bonding and the addition of a small amount of ammonium salt to produce long, homogeneous polymers.

• [Getting to the heart of the matter: Nanogels for heart attack patients](#) [周三, 20 9月 22:00]

Heart disease and heart-related illnesses are a leading cause of death around the world, but treatment options are limited. Now, one group reports that encapsulating stem cells in a nanogel could help repair damage to the heart.

• [Risks vary widely in drone-human impacts](#) [周三, 20 9月 04:03]

New research suggests there's wide variation in the risk that unmanned aircraft pose to people on the ground.

• [Tiny lasers from a gallery of whispers](#) [周三, 20 9月 04:03]

Whispering gallery mode resonators rely on a phenomenon similar to an effect observed in circular galleries, and the same phenomenon applies to light. When light is stored in ring-shaped or spherical active

resonators, the waves superimpose in such a way that it can result in laser light. Investigators now report a new type of dye-doped WGM micro-laser that produces light with tunable wavelengths.

- [**Security cameras vulnerable to attacks using infrared light**](#) [周三, 20 9月 04:02]

Researchers have demonstrated that security cameras infected with malware can receive covert signals and leak sensitive information from the very same surveillance devices used to protect facilities.

- [**Clear tactics, but few easy solutions, for hospitals combating ransomware**](#) [周三, 20 9月 02:48]

Hospitals facing the prospect of ransomware attacks like the one that afflicted British hospitals in May can take many concrete steps to better protect themselves, but some of the most important measures -- such as a national policy not to pay ransoms -- may be tougher to formulate.

- [**Wikipedia used to give AI context clues**](#) [周三, 20 9月 02:04]

A team of computer scientists is teaching artificial intelligence agents how to interact with the world in a way that makes sense.

- [**Political polarization? Don't blame the web**](#) [周三, 20 9月 02:04]

Despite the popular narrative that the web is to blame for rising political polarization, a study by economists has found that recent growth in polarization is greatest for demographic groups in which individuals are least likely to use the internet and social media. This means that data does not support the claim that the internet is the most significant driver of partisanship.

- [**Mercury's poles may be icier than scientists thought**](#) [周三, 20 9月 00:31]

A new study identifies three large surface ice deposits near Mercury's north pole, and suggests there could be many additional small-scale deposits that would dramatically increase the planet's surface ice inventory.

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Environment News

Top stories featured on ScienceDaily's Plants & Animals, Earth & Climate, and Fossils & Ruins sections.

- [**700 years old saint myth has been proven \(almost\) true**](#) [周五, 22 9月 23:17]

Scientists confirm that the age and content of an old sack is in accordance with a medieval myth about Saint Francis of Assisi.

- [**A sustainable future powered by sea**](#) [周五, 22 9月 21:40]

Researchers develop turbines to convert the power of ocean waves into clean, renewable energy.

- [**Ancient textiles reveal differences in Mediterranean fabrics in the 1st millennium BC**](#)

[周五, 22 9月 21:40]

Analysis of Iron Age textiles indicates that during c. 1000-400 BC Italy shared the textile culture of Central Europe, while Greece was largely influenced by the traditions of ancient Near East.

- [**Crowning the 'king of the crops': Sequencing the white guinea yam genome**](#) [周五, 22 9月 21:40]

Scientists have, for the first time, provided a genome sequence for the white Guinea yam, a staple crop with huge economic and cultural significance on the African continent and a lifeline for millions of people.

- [**Winter cold extremes linked to high-altitude polar vortex weakening**](#) [周五, 22 9月 21:40]

When the strong winds that circle the Arctic slacken, cold polar air can escape and cause extreme winter chills in parts of the Northern

hemisphere. A new study finds that these weak states have become more persistent over the past four decades and can be linked to cold winters in Russia and Europe.

- [**Breathing dirty air may harm kidneys**](#) [周五, 22 9月 21:16]

Outdoor air pollution may increase the risk of chronic kidney disease and contribute to kidney failure, say researchers. Scientists culled national VA databases to evaluate the effects of air pollution and kidney disease on nearly 2.5 million people over a period of 8.5 years, beginning in 2004. The scientists compared VA data on kidney function to air-quality levels collected by the Environmental Protection Agency (EPA) as well as the National Aeronautics and Space Administration (NASA).

- [**Rainbow colors reveal cell history**](#) [周五, 22 9月 21:14]

A system called "Beta-bow", which allows the history of beta-cells to be traced by genetic bar-coding and multicolor imaging, has been developed by researchers.

- [**Party discipline for jumping genes**](#) [周五, 22 9月 21:09]

Jumping genes, transposons, are part of the genome of most organisms, aggregated into families and can damage the genome by jumping. How hosts suppress the jumping is well investigated. Why they still can jump has hardly been understood so far. Researchers investigated for the first time in all transposons of the host organism, which properties and host environments facilitate jumping. They showed that family affiliation is more important than position.

- [**Artificial orchid cultivation kit**](#) [周五, 22 9月 21:09]

Orchids are loved by gardeners around the world but are notoriously difficult to cultivate. Researchers have developed a new orchid cultivation kit and have succeeded in complete artificial cultivation of an autonomous orchid. Since this kit can be made cheaply, it can broaden the opportunities for orchid cultivation in general households. It is also expected to be useful in preserving the genetic diversity of orchidaceous plants, many of which are in danger of extinction.

- [**Ozark grasslands experience major increase in**](#)

trees and shrubs [周五, 22 9月 04:12]

Woody vegetation, such as trees and shrubs, has increased dramatically in Ozark grasslands over the past 75 years, according to a study. If these ecosystems continue to favor woody vegetation, will it be possible to maintain open grasslands for the foreseeable future?

Into more thin air: Exploring the adaptation extremes of human high altitude sickness and fitness [周五, 22 9月 04:12]

Many research groups have explored human adaptation to high altitude living among three major far-flung global populations: Tibetans, Ethiopians and Peruvians. But few have simultaneously explored the other extreme---maladaptation----in the form of chronic mountain sickness (CMS). Now, in the largest whole genome study of its kind, an international research team led by University of California San Diego's Chairman of Pediatrics, Dr. Gabriel Haddad, has expanded on their recent study of understand...

Ancient DNA data fills in thousands of years of human prehistory in Africa [周五, 22 9月 02:13]

By sequencing the ancient genomes of 15 individuals from different parts of Africa, researchers reporting in the journal Cell on Sept. 21 have reconstructed the prehistory of humans on the continent, going back thousands of years. The findings shed light on which human populations lived in eastern and southern Africa between 8,000 and 1,000 years ago, the researchers say.

Scientists sequence asexual tiny worm whose lineage stretches back 18 million years [周五, 22 9月 02:13]

A team of scientists has sequenced, for the first time, a tiny worm that belongs to a group of exclusively asexual species that originated approximately 18 million years ago -- making it one of the oldest living lineages of asexual animals known.

Green algae could hold clues for engineering

[**faster-growing crops**](#) [周五, 22 9月 02:13]

Two new studies provide a detailed look at an essential part of algae's growth machinery, with the eventual goal of applying this knowledge to improving the growth of crops.

• [**Jellyfish, with no brains, still seem to sleep**](#) [周五, 22 9月 02:12]

The discovery that primitive jellyfish sleep suggests that sleep is an ancient, evolutionarily conserved behavior.

• [**Why poison frogs don't poison themselves**](#) [周五, 22 9月 02:12]

Poison frogs harbor some of the most potent neurotoxins we know, yet scientists have long wondered -- how do these frogs keep from poisoning themselves? Scientists are now a step closer to resolving that head-scratcher. And the answer has potential consequences for the fight against pain and addiction.

• [**We must accelerate transitions for sustainability and climate change, experts say**](#) [周五, 22 9月 02:12]

We must move faster towards a low-carbon world if we are to limit global warming to 2 degrees C this century, experts have warned.

• [**Heat-loving Australian ants believe in diversity, hint 74 species new to science**](#) [周五, 22 9月 02:12]

A genus of Australian ants, many of whose members prefer to forage in blistering temperatures of up to 50°C (122°F), is revised to include 74 new species. The ants include seed-eaters, ant and termite raiders, 'honeypot ants' that store nectar and honeydew, and numerous others whose biology is not yet understood. Some are bizarre: one species has eyes like inverted ice-cream cones.

• [**Reconstructing how Neanderthals grew, based on an El Sidrón child**](#) [周五, 22 9月 02:12]

How did Neanderthals grow? Does modern man develop in the same way as Homo neanderthalensis did? How does the size of the brain affect the development of the body? Researchers have studied the fossil remains of a Neanderthal child's skeleton in order to establish whether

there are differences between the growth of Neanderthals and that of sapiens.

- [**Early trilobites had stomachs, new fossil study finds**](#) [周五, 22 9月 02:12]

Exceptionally preserved trilobite fossils from China, dating back to more than 500 million years ago, have revealed new insights into the extinct marine animal's digestive system. The new study shows that at least two trilobite species evolved a stomach structure 20 million years earlier than previously thought.

- [**Wildlife rangers: What motivates them?**](#) [周五, 22 9月 00:11]

Wildlife rangers are on the front lines protecting our most iconic species -- tigers, elephants, gorillas and many others. But their challenges involve more than confrontations with wild animals and poachers.

- [**Dino-killing asteroid's impact on bird evolution**](#) [周五, 22 9月 00:11]

Human activities could change the pace of evolution, similar to what occurred 66 million years ago when a giant asteroid wiped out the dinosaurs, leaving modern birds as their only descendants.

- [**Surprising discovery: How the African tsetse fly really drinks your blood**](#) [周四, 21 9月 23:06]

Researchers have been taking a close-up look at the biting mouthparts of the African tsetse fly as part of ongoing work on the animal diseases it carries. Using a new high-powered scanning electron microscope, researchers were able to see the rows of sharp teeth and rasps that the fly uses to chew through the skin when it bites.

- [**Hope to discover sure signs of life on Mars? New research says look for the element vanadium**](#) [周四, 21 9月 23:06]

A new article suggests NASA and others hunting for proof of Martian biology in the form of 'microfossils' could use the element vanadium in combination with Raman spectroscopy to confirm traces of extraterrestrial life.

• [**Broad swath of US deemed environmentally suitable for mosquitoes that transmit disease**](#) [周四, 21 9月 22:42]

Three-quarters of counties in the contiguous United States present suitable environmental conditions for at least part of the year for either *Aedes aegypti* or *Aedes albopictus* mosquitoes to survive if introduced, according to researchers. The two mosquito species can transmit viruses that cause Zika, dengue, chikungunya, and yellow fever.

• [**New hermit crab uses live coral as its home**](#) [周四, 21 9月 22:42]

A new hermit crab species can live in a walking coral's cavity in a reciprocal relationship, replacing the usual marine worm partner, according to a new study.

• [**Big herbivorous dinosaurs ate crustaceans as a side dish**](#) [周四, 21 9月 22:17]

Some big plant-eating dinosaurs roaming present-day Utah some 75 million years ago were slurping up crustaceans on the side, a behavior that may have been tied to reproductive activities, says a new study.

• [**Recipe for forest restoration discovered**](#) [周四, 21 9月 22:17]

A new study has uncovered some valuable information on ways to maximize the success of replanting efforts, bringing new hope for restoring these threatened ecosystems.

• [**Changing of the guard: Research sheds light on how plants breathe**](#) [周四, 21 9月 22:17]

New research is set to change the textbook understanding of how plants breathe. Researchers have developed the first full 3D model of a guard cell.

• [**Scientists and farmers work together to wipe out African lovegrass**](#) [周四, 21 9月 22:17]

New research and collaboration could lead to the eventual eradication of the highly invasive African lovegrass threatening pastures and native grasslands Australia-wide. What they discovered is that local knowledge

is the key to a successful management approach.

• [**Obese dogs helped by 'effective' weight loss trials**](#) [周四, 21 9月 22:17]

On average overweight dogs lose an average of 11 percent of their body weight when enrolled on a weight loss trial according to researchers who have conducted the largest international multi-center weight study.

• [**Lightning-fast trappers: Biomechanics of suction traps in carnivorous bladderworts**](#) [周四, 21 9月 22:17]

New findings have been gained on the biomechanics and evolution of suction traps in carnivorous bladderworts.

• [**Whole food diet may help prevent colon cancer, other chronic conditions**](#) [周四, 21 9月 22:17]

A diet that includes plenty of colorful vegetables and fruits may contain compounds that can stop colon cancer and inflammatory bowel diseases in pigs, according to an international team of researchers. Understanding how these compounds work on a molecular level could be an initial step toward finding treatments for people with cancer, they added.

• [**Diamonds show Earth still capable of 'superhot' surprises**](#) [周四, 21 9月 21:55]

Diamonds may be 'forever' but some may have formed more recently than geologists thought. A study of 26 diamonds, formed under extreme melting conditions in the Earth's mantle, found two populations, one of which has geologically 'young' ages. The results show that certain volcanic events on Earth may still be able to create super-heated conditions previously thought to have only existed early in the planet's history before it cooled. The findings may have implications for diamond prospecting.

• [**In times of climate change: What a lake's color can tell about its condition**](#) [周四, 21 9月 21:50]

With the help of satellite observations from 188 lakes worldwide, scientists have shown that the warming of large lakes amplifies their

color. Lakes which are green due to their high phytoplankton content tend to become greener in warm years as phytoplankton content increases. Clear, blue lakes with little phytoplankton, on the other hand, tend to become even bluer in warm years caused by declines in phytoplankton. Thus, contrary to previous assumptions, the warming of lakes tends to amplify thei...

- [**Cannabis, 'spice' – better think twice**](#) [周四, 21 9月 21:49]

Marijuana is the most commonly abused drug in the world, and the advent of synthetic cannabinoids creates additional challenges to the society because of their higher potency and ability to escape drug detection screenings. Scientists have a warning about a new danger coming from cannabinoid abuse.

- [**Tiny Brazilian frogs are deaf to their own calls**](#) [周四, 21 9月 21:03]

Pumpkin toadlets, found on the leaf litter of Brazil's Atlantic forest, are among the smallest frogs in the world. Scientists have now discovered that two species of these tiny orange frogs cannot hear the sound of their own calls.

- [**An extraordinary cave animal found in Eastern Turkmenistan**](#) [周四, 21 9月 21:02]

A remote cave in Eastern Turkmenistan was found to shelter a marvelous cave-adapted inhabitant that turned out to represent a species and genus new to science. This new troglodyte is the first of its order from Central Asia and the first strictly subterranean terrestrial creature recorded in the country.

- [**Going diving in the tropics? Don't eat the reef fish!**](#) [周四, 21 9月 21:02]

Reducing tourist consumption of reef fish is critical for Palau's ocean sustainability, finds a new study that suggests other small island nations might also consider adopting this strategy.

- [**Efforts to save sea turtles are a 'global conservation success story'**](#) [周四, 21 9月 06:21]

A new study of the world's seven sea turtle species provides evidence that their numbers are growing overall (unlike many endangered vertebrates), thanks to years of conservation efforts that have played a key role in sea turtle recovery -- even for small sea turtle populations.

• [**When residents take charge of their rainforests, fewer trees die**](#) [周四, 21 9月 06:21]

When the government gives citizens a personal stake in forested land, trees don't disappear as quickly and environmental harm slows down, research finds.

• [**Mathematics predicts a sixth mass extinction**](#) [周四, 21 9月 06:21]

Scientists have analyzed significant changes in the carbon cycle over the last 540 million years, including the five mass extinction events. They have identified 'thresholds of catastrophe' in the carbon cycle that, if exceeded, would lead to an unstable environment, and ultimately, mass extinction.

• [**3-D analysis of dog fossils sheds light on domestication debate**](#) [周四, 21 9月 06:20]

In an effort to settle the debate about the origin of dog domestication, a technique that uses 3-D scans of fossils is helping researchers determine the difference between dogs and wolves.

• [**Convergent evolution of mimetic butterflies confounds classification**](#) [周四, 21 9月 06:20]

A new paper on butterflies may revise the taxonomy of Asian palmflies in the genus *Elymnias* in light of a forthcoming study on the butterflies' evolutionary history.

• [**Protected waters foster resurgence of West Coast rockfish**](#) [周四, 21 9月 03:49]

West Coast rockfish species in deep collapse only 20 years ago have multiplied rapidly in large marine protected areas off Southern California, likely seeding surrounding waters with enough offspring to offer promise of renewed fishing, a new study has found.

- [**Immune system is critical to regeneration, study finds**](#) [周四, 21 9月 03:49]

The answer to the question of why some organisms can regenerate major body parts while others, such as humans, cannot may lie with the body's innate immune system, according to a new study of heart regeneration in the Mexican salamander.

- [**Plants combine color and fragrance to procure pollinators**](#) [周四, 21 9月 02:47]

Who knew that it's possible to predict the fragrance of a flower by looking at its color? This is true for many of the 41 insect-pollinated plant species growing in a Phrygana scrubland habitat on the Greek island of Lesbos.

- [**New biomaterial could replace plastic laminates, greatly reduce pollution**](#) [周四, 21 9月 02:47]

An inexpensive biomaterial that can be used to sustainably replace plastic barrier coatings in packaging and many other applications has been developed by researchers, who predict its adoption would greatly reduce pollution.

- [**Wave Glider surfs across stormy Drake Passage in Antarctica**](#) [周四, 21 9月 02:46]

A hardy ocean drone made a first-ever attempt to surf across Antarctica's stormy Drake Passage gathering data about ocean mixing.

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- [**Flint's water crisis led to fewer babies and higher fetal death rates, researchers find**](#) [周五, 22 9月 21:16]

An estimated 275 fewer children were born in Flint, Michigan, while the city was using lead-contaminated water from the Flint River, according to new research findings.

- [**Breathing dirty air may harm kidneys**](#) [周五, 22 9月 21:16]

Outdoor air pollution may increase the risk of chronic kidney disease and contribute to kidney failure, say researchers. Scientists culled national VA databases to evaluate the effects of air pollution and kidney disease on nearly 2.5 million people over a period of 8.5 years, beginning in 2004. The scientists compared VA data on kidney function to air-quality levels collected by the Environmental Protection Agency (EPA) as well as the National Aeronautics and Space Administration (NASA).

- [**Strong alcohol policies help reduce alcohol-involved homicides**](#) [周五, 22 9月 04:12]

Stronger alcohol policies, including taxes and sales restrictions, have been shown to reduce the likelihood of alcohol involvement among homicide victims, according to a new study.

- [**Babies can learn that hard work pays off**](#) [周五, 22 9月 04:12]

A new study reveals babies as young as 15 months can learn the value of hard work. Researchers found babies who watched an adult struggle to reach two different goals before succeeding tried harder at their own difficult task than babies who saw an adult succeed effortlessly.

- [**We must accelerate transitions for sustainability and climate change, experts say**](#) [周五, 22 9月 02:12]

We must move faster towards a low-carbon world if we are to limit global warming to 2 degrees C this century, experts have warned.

- [**Rapid hepatitis C testing may help better screen young adults**](#) [周五, 22 9月 02:12]

Routine and rapid hepatitis C virus testing among young adults who use injection drugs improves life expectancy and may provide a good use of limited resources, according to new research.

- [**Wildlife rangers: What motivates them?**](#) [周五, 22 9月 00:11]

Wildlife rangers are on the front lines protecting our most iconic species -- tigers, elephants, gorillas and many others. But their challenges involve more than confrontations with wild animals and poachers.

- [**Recipe for forest restoration discovered**](#) [周四, 21 9月 22:17]

A new study has uncovered some valuable information on ways to maximize the success of replanting efforts, bringing new hope for restoring these threatened ecosystems.

- [**Premature births cost health plans \\$6 billion annually**](#) [周四, 21 9月 21:02]

A new study estimates employer-sponsored health plans spent at least \$6 billion extra on infants born prematurely in 2013 and a substantial portion of that sum was spent on infants with major birth defects.

- [**Pay more, smoke less: Possible effects of raising tobacco taxes across the EU**](#) [周四, 21 9月 11:22]

Raising tobacco taxes to increase cigarette prices could reduce cigarette consumption and smoking-associated deaths (SADs) in all 28 EU countries, according to a new study. In higher income countries, raising tobacco taxes could increase revenues that could be spend on prevention and control programs, while in lower income countries tax revenues may be negatively affected, researchers suggest.

- [**When residents take charge of their rainforests, fewer trees die**](#) [周四, 21 9月 06:21]

When the government gives citizens a personal stake in forested land, trees don't disappear as quickly and environmental harm slows down, research finds.

- [**Communication among health care facilities key to preventing spread of drug-resistant bacteria**](#) [周四, 21 9月 02:47]

Communication breakdowns between care facilities can pave the way for outbreaks of infection, according to research on the spread of an extensively drug-resistant bacterium.

- [**Hold the phone: An ambulance might lower your chances of surviving some injuries**](#) [周四, 21 9月 01:16]

Victims of gunshots and stabbings are significantly less likely to die if they're taken to the trauma center by a private vehicle than ground emergency medical services (EMS), according to results of a new analysis.

- [**Building social communication skills in shy children helps with peer likeability**](#) [周三, 20 9月 22:00]

A new study has discovered that shy children with low English vocabulary skills, can still be popular among their peers if they have high-functioning social communication skills that enable them to engage and interact well with their peers in social settings.

- [**New tool to assess individual's level of wisdom**](#) [周三, 20 9月 21:59]

Researchers have developed a new tool called the San Diego Wisdom Scale (SD-WISE) to assess an individual's level of wisdom, based upon a conceptualization of wisdom as a trait with a neurobiological as well as psychosocial basis.

- [**Clear tactics, but few easy solutions, for hospitals combating ransomware**](#) [周三, 20 9月 02:48]

Hospitals facing the prospect of ransomware attacks like the one that

afflicted British hospitals in May can take many concrete steps to better protect themselves, but some of the most important measures -- such as a national policy not to pay ransoms -- may be tougher to formulate.

• [**Management studies: Dishonesty shift**](#) [周三, 20 9月 02:04]

Lying comes more easily to people in teams: Behavioral scientists have shown in an experimental study why groups are more likely to behave unethically than individuals.

• [**Political polarization? Don't blame the web**](#) [周三, 20 9月 02:04]

Despite the popular narrative that the web is to blame for rising political polarization, a study by economists has found that recent growth in polarization is greatest for demographic groups in which individuals are least likely to use the internet and social media. This means that data does not support the claim that the internet is the most significant driver of partisanship.

• [**Changes in non-extreme precipitation may have not-so-subtle consequences**](#) [周三, 20 9月 00:31]

Extreme floods and droughts receive a lot of attention. But what happens when precipitation -- or lack thereof -- occurs in a more measured way?

• [**UK oil and gas reserves may last only a decade, study suggests**](#) [周三, 20 9月 00:31]

The UK has low oil and gas resources and limited prospects for fracking, according to a new analysis by scientists, who recommend a shift towards greater use of renewable, clean energy.

• [**Students' self-concepts of ability in math, reading predict later math, reading attainment**](#) [周二, 19 9月 21:10]

A new longitudinal study looked at how youths' self-concepts are linked to their actual academic achievement in math and reading from middle childhood to adolescence. The study found that students' self-concepts of their abilities in these two academic domains play an important role in motivating their achievements over time and across levels of

achievement.

- [**Catching a diversity of fish species — instead of specializing — means more stable income for fishers**](#) [周二, 19 9月 11:23]

A team of scientists analyzed nearly 30 years of revenue and permitting records for individuals fishing in Alaskan waters and tracked how their fishing choices, in terms of permits purchased and species caught, influenced their year-to-year income volatility.

- [**The sublime challenge of jet noise**](#) [周二, 19 9月 11:22]

A scientist is using ALCF resources to create high fidelity simulations of jet turbulence to determine how and where noise is produced. The results may lead to novel engineering designs that reduce noise over commercial flight paths and on aircraft carrier decks.

- [**Fake news more likely to thrive online due to lowered fact-checking**](#) [周二, 19 9月 04:34]

Fake news is more likely to thrive online due to lowered fact-checking, according to new American research.

- [**Enzyme's worth to biofuels shown in recent research**](#) [周二, 19 9月 04:34]

A newly discovered enzyme proves adept at breaking down cellulose fibers regardless of whether their crystalline structure is simple or highly complex. No other enzyme has shown that ability.

- [**Reliance on 'gut feelings' linked to belief in fake news**](#) [周二, 19 9月 02:21]

People who tend to trust their intuition or to believe that the facts they hear are politically biased are more likely to stand behind inaccurate beliefs, a new study suggests.

- [**People's love of the seas could be the key for plastic pollution solution**](#) [周二, 19 9月 01:27]

Tapping into the public's passion for the ocean could be the key to

reducing the threats to it posed by plastic pollution.

· [5,000 deaths annually from Diesel-gate in Europe](#) [周一, 18 9月 21:33]

Excess emissions from diesel cars cause about 5,000 premature deaths annually across Europe, a new study shows. Higher exposure to secondary particles and ozone can be traced back to excess NOx emissions from diesel cars, vans and light commercial vehicles. With the EU's vehicle emission limits achieved on the road about 5,000 premature deaths could be avoided annually. If diesel cars emitted as little NOx as petrol cars, about 7,500 premature deaths could be avoided annually.

· [Parents not confident schools can assist child with chronic disease, mental health](#) [周一, 18 9月 21:08]

Most parents are sure schools would be able to provide basic first aid but are less confident about a school's ability to respond to more complex health situations, such as an asthma attack or mental health problem.

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [**Detecting cosmic rays from a galaxy far, far away**](#) [周五, 22 9月 02:12]

Where do cosmic rays come from? Solving a 50-year-old mystery, a collaboration of researchers has discovered it's much farther than the Milky Way.

- [**Early trilobites had stomachs, new fossil study finds**](#) [周五, 22 9月 02:12]

Exceptionally preserved trilobite fossils from China, dating back to more than 500 million years ago, have revealed new insights into the extinct marine animal's digestive system. The new study shows that at least two trilobite species evolved a stomach structure 20 million years earlier than previously thought.

- [**Hope to discover sure signs of life on Mars? New research says look for the element vanadium**](#) [周四, 21 9月 23:06]

A new article suggests NASA and others hunting for proof of Martian biology in the form of 'microfossils' could use the element vanadium in combination with Raman spectroscopy to confirm traces of extraterrestrial life.

- [**Big herbivorous dinosaurs ate crustaceans as a side dish**](#) [周四, 21 9月 22:17]

Some big plant-eating dinosaurs roaming present-day Utah some 75 million years ago were slurping up crustaceans on the side, a behavior that may have been tied to reproductive activities, says a new study.

• [**Tiny Brazilian frogs are deaf to their own calls**](#) [周四, 21 9月 21:03]

Pumpkin toadlets, found on the leaf litter of Brazil's Atlantic forest, are among the smallest frogs in the world. Scientists have now discovered that two species of these tiny orange frogs cannot hear the sound of their own calls.

• [**Unique type of object discovered in our solar system**](#) [周四, 21 9月 02:47]

Astronomers have observed the intriguing characteristics of an unusual type of object in the asteroid belt between Mars and Jupiter: two asteroids orbiting each other and exhibiting comet-like features, including a bright coma and a long tail. This is the first known binary asteroid also classified as a comet.

• [**Plants combine color and fragrance to procure pollinators**](#) [周四, 21 9月 02:47]

Who knew that it's possible to predict the fragrance of a flower by looking at its color? This is true for many of the 41 insect-pollinated plant species growing in a Phrygana scrubland habitat on the Greek island of Lesbos.

• [**Bite force research reveals dinosaur-eating frog**](#) [周四, 21 9月 01:17]

Scientists say that a large, now extinct, frog called Beelzebufo that lived about 68 million years ago in Madagascar would have been capable of eating small dinosaurs. The conclusion comes from a study of the bite force of South American horned frogs from the living genus Ceratophrys, known as Pacman frogs for their characteristic round shape and large mouth, similar to the video game character Pac-Man.

• [**World's first 'molecular robot' capable of building molecules**](#) [周四, 21 9月 01:17]

Scientists have created the world's first 'molecular robot' that is capable of performing basic tasks including building other molecules.

• [**Dinosaur evolution: Lumbering giants had agile**](#)

ancestors [周四, 21 9月 01:17]

The best known sauropod dinosaurs were huge herbivorous creatures, whose brain structures were markedly different from those of their evolutionary predecessors, for the earliest representatives of the group were small, lithe carnivores.

• **Scientists make atoms-thick 'Post-It notes' for solar cells and circuits** [周四, 21 9月 01:17]

A new study describes an innovative method to make stacks of semiconductors just a few atoms thick. The technique offers scientists and engineers a simple, cost-effective method to make thin, uniform layers of these materials, which could expand capabilities for devices from solar cells to cell phones.

• **Hold the phone: An ambulance might lower your chances of surviving some injuries** [周四, 21 9月 01:16]

Victims of gunshots and stabbings are significantly less likely to die if they're taken to the trauma center by a private vehicle than ground emergency medical services (EMS), according to results of a new analysis.

• **Is the Milky Way an 'outlier' galaxy? Studying its 'siblings' for clues** [周三, 20 9月 23:33]

The most-studied galaxy in the universe -- the Milky Way -- might not be as 'typical' as previously thought, according to a new study. Early results from the Satellites Around Galactic Analogs (SAGA) Survey indicate that the Milky Way's satellites are much more tranquil than other systems of comparable luminosity and environment. Many satellites of those 'sibling' galaxies are actively pumping out new stars, but the Milky Way's satellites are mostly inert.

• **Real or fake? Creating fingers to protect identities** [周三, 20 9月 23:33]

Biometric experts for the first time have designed and created a fake finger containing multiple key properties of human skin. Commonly

called a spoof, this fake finger has been used to test two of the predominant types of fingerprint readers to help determine their resilience to spoof attacks.

- [**Gravity waves influence weather and climate**](#) [周三, 20

9月 22:00]

Gravity waves form in the atmosphere as a result of destabilizing processes. The effects of gravity waves can only be taken into consideration by including additional special components in the models.

- [**Solar wind impacts on giant 'space hurricanes' may affect satellite safety**](#) [周二, 19 9月 21:10]

Could the flapping of a butterfly's wings in Costa Rica set off a hurricane in California? For most people, this hypothetical scenario may be difficult to imagine on Earth -- particularly when a real disaster strikes. Yet, in space, similarly small fluctuations in the solar wind as it streams toward the Earth's magnetic shield actually can affect the speed and strength of 'space hurricanes,' a researcher explains.

- [**DNA triggers shape-shifting in hydrogels, opening a new way to make 'soft robots'**](#) [周二, 19 9月 10:22]

Biochemical engineers have used sequences of DNA molecules to induce shape-changing in water-based gels, demonstrating a new tactic to produce "soft" robots and "smart" medical devices that do not rely on cumbersome wires, batteries or tethers.

- [**Scientists show molecular basis for ants acting as 'bodyguards' for plants**](#) [周二, 19 9月 00:35]

Though you might not think of ants as formidable bodyguards, some do an impressive job protecting plants from enemies. Examining the relationship between the Amazon rainforest plant *Cordia nodosa* in Peru and the ant species *Allomerus octoarticulatus*, scientists found the degree to which the ants express two genes significantly impacts the amount of protection they provide to their hosts.

- [**When radio galaxies collide, supermassive black holes form tightly bound pairs**](#) [周二, 19 9月 00:35]

Supermassive black holes found in the centers of galaxies can form gravitationally bound pairs when galaxies merge, according to a new study.

• [**More evidence of water on Mars**](#) [周二, 19 9月 00:35]

River deposits exist across the surface of Mars and record a surface environment from over 3.5 billion years ago that was able to support liquid water at the surface. A region of Mars named Aeolis Dorsa contains some of the most spectacular and densely packed river deposits seen on Mars.

• [**A solar cell you can put in the wash**](#) [周一, 18 9月 23:18]

Scientists have developed a new type of ultra-thin photovoltaic device, coated on both sides with stretchable and waterproof films, which can continue to provide electricity from sunlight even after being soaked in water or being stretched and compressed.

• [**Developing roads that can generate power from passing traffic**](#) [周一, 18 9月 23:18]

Researchers are looking at advanced materials for roads and pavements that could generate electricity from passing traffic. Engineers are working on smart materials such as 'piezoelectric' ceramics that when embedded in road surfaces would be able to harvest and convert vehicle vibration into electrical energy.

• [**New evidence for small, short-lived drops of early universe quark-gluon plasma?**](#) [周一, 18 9月 21:30]

Particles emerging from even the lowest energy collisions of small deuterons with large heavy nuclei at the Relativistic Heavy Ion Collider exhibit behavior scientists associate with the formation of a soup of quarks and gluons, the fundamental building blocks of nearly all visible matter.

• [**World first: 'Storing lightning inside thunder'**](#) [周一, 18 9月 21:07]

In a world first, researchers have stored photonic information on a microchip as an acoustic wave. This allows precious extra time to store, process and then redistribute the data without relying on electronics,

which produce excess heat. Such a hybrid chip could have a huge impact in cloud computing and telecommunication centers, which are overheating as we churn through data on our phones.

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ScienceDaily

周二, 26 9月 2017

ScienceDaily

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- [**Quitting daily aspirin therapy may increase second heart attack, stroke risk**](#) [周二, 26 9月 04:32]

Stopping long-term, low-dose aspirin therapy may increase your risk of suffering a cardiovascular event, research indicates. Risk increases shortly after stopping and does not appear to diminish over time.

- [**Penguin-mounted video captures gastronomic close encounters of the gelatinous kind**](#) [周二, 26 9月 04:32]

Footage from penguin-mounted mini video recorders shows four species of penguin eating jellyfish and other gelatinous animals of the open ocean, a food source penguins were not previously believed to partake of, scientists report.

- [**Snails bred in lab help species crawl back from brink of extinction**](#) [周二, 26 9月 04:06]

Work to restore the endangered Chittenango ovate amber snail, found only in one location inside a Central New York state park, continued this month with the release of tagged adult snails raised in a laboratory.

- [**Being in a good mood for your flu jab boosts its effectiveness**](#) [周二, 26 9月 03:47]

New research by a team of health experts has found evidence that being

in a positive mood on the day of your flu jab can increase its protective effect.

• [Brain's anterior cingulate cortex and its tie to human learning](#) [周二, 26 9月 03:14]

After four years of lab testing and complex neuro-decoding, a research team has struck a major breakthrough that could open the floodgates for research into the anterior cingulate cortex, or ACC, and how human brains learn.

• [Prostaglandin EI inhibits leukemia stem cells](#) [周二, 26 9月 03:14]

Two drugs, already approved for safe use in people, may be able to improve therapy for chronic myeloid leukemia (CML), a blood cancer that affects myeloid cells, according to new results.

• [Antarctica: The wind sublimates snowflakes](#) [周二, 26 9月 03:14]

A team of researchers has collected new data that shows a significant decrease in snow precipitation close to the ground in Antarctica, which has an impact on the ice sheet surface mass balance.

• [Mechanism of asexual reproduction in flatworms](#) [周二, 26 9月 03:14]

Scientists have nailed the biomechanics of a centuries-long puzzle on how freshwater flatworms known as planarians reproduce. The asexual freshwater worms, notoriously difficult to study, tear themselves into two pieces that go on to form two new worms. Researchers are now able to predict where planarian fission occurs based on its anatomy as well as explain how the process happens using a relatively simple mechanical model.

• [Creative use of noise brings bio-inspired electronic improvement](#) [周二, 26 9月 03:14]

Researchers are working to exploit stochastic resonance to enhance signal transmission for a new generation of devices, using single-walled carbon nanotubes. They created a summing network SR device that detects subthreshold signals, fabricated to include a self-noise

component.

- [**Holograms for molecules**](#) [周二, 26 9月 01:30]

Scientists have developed a completely new method for the analysis of molecules in liquids on a chip. The possible applications of this technology are immense. It has the potential, inter alia, to revolutionize medical diagnostics.

- [**Metabolism directly impacts the odds of developing malaria**](#) [周二, 26 9月 01:30]

Researchers have found that the host's susceptibility to develop malaria depends on his or her metabolic state, which can be easily manipulated through external stimuli such as dietary patterns.

- [**Ticks are even tougher and nastier than you thought**](#) [周二, 26 9月 01:30]

Studies are showing how ticks can survive drought and cold northern winters.

- [**Creating brain cells to detect Tourette's**](#) [周二, 26 9月 01:30]

Scientists have used a genetic engineering technique for the first time to create brain cells from the blood cells of individuals in a three-generation family with Tourette syndrome to help determine what causes the disease.

- [**Study examines legacies of rainforest burning in British Columbia**](#) [周二, 26 9月 01:30]

Analyses of temperate rain forests located on the central coast of British Columbia, Canada, suggest that for centuries, humans have intentionally used fire to manage plant life.

- [**Click beetles inspire design of self-righting robots**](#) [周二, 26 9月 01:30]

Robots perform many tasks that humans can't or don't want to perform, getting around on intricately designed wheels and limbs. If they tip over, however, they are rendered almost useless. Mechanical engineers and entomologists are looking to click beetles, who can right themselves

without the use of their legs, to solve this robotics challenge.

- [**Bone marrow concentrate improves joint transplants**](#) [周二, 26 9月 01:30]

Biologic joint restoration using donor tissue instead of traditional metal and plastic may be an option for active patients with joint defects. Researchers have found in a group of patients that treating donor grafts with bone marrow aspirate concentrate before surgery improves bone integration and speeds recovery.

- [**New non-contact, remote biometric tool could be next advance in computer security**](#) [周二, 26 9月 01:30]

Forget fingerprint computer identification or retinal scanning. Scientists have now developed a computer security system using the dimensions of your heart as your identifier. The system uses low-level Doppler radar to measure your heart, and then continually monitors your heart to make sure no one else has stepped in to run your computer.

- [**IceCube helps demystify strange radio bursts from deep space**](#) [周二, 26 9月 01:29]

Scientists are turning IceCube, the world's most sensitive neutrino telescope, to the task of helping demystify powerful pulses of radio energy generated up to billions of light-years from Earth.

- [**The material that obscures supermassive black holes**](#) [周二, 26 9月 01:29]

New research examines the material that obscures active galactic nuclei obtained from infrared and X-ray observations.

- [**Discovering what makes organelles connect could help explain neurodegenerative diseases**](#) [周二, 26 9月 01:29]

Organelles must exchange signals and materials to make the cell operate correctly. New technologies are allowing researchers to see and understand the networks that connect these organelles, allowing them to build maps of the trade routes that exist within a cell.

- **[Violent crime increases during warmer weather, no matter the season, study finds](#)** [周二, 26 9月 01:29]

A study analyzing crime data in Philadelphia for 10 years found that rates of violent crime and disorderly conduct are higher when the weather is warmer and more pleasant, even rising sharply during warmer-than-typical winter days.

- **[Streamlined process opens drug development to a new class of steroids](#)** [周二, 26 9月 01:29]

Researchers have developed a technique to produce synthetic steroids that could pave the way for a cascade of new drug discoveries, significantly reducing the expense and time needed to develop therapeutics from an underexplored collection of molecules.

- **[After 15 years in a vegetative state, nerve stimulation restores consciousness](#)** [周二, 26 9月 01:29]

A 35-year-old man who had been in a vegetative state for 15 years after a car accident has shown signs of consciousness after neurosurgeons implanted a vagus nerve stimulator into his chest. The findings show that vagus nerve stimulation (VNS) -- a treatment already in use for epilepsy and depression--can help to restore consciousness even after many years in a vegetative state.

- **[Tension makes the heart grow stronger](#)** [周二, 26 9月 01:29]

By taking videos of a tiny beating zebrafish heart as it reconstructs its covering in a petri dish, scientists have captured unexpected dynamics of cells involved in tissue regeneration. They found that the depleted heart tissue regenerates in a wave, led by a front of fast-moving, supersized cells and trailed by smaller cells that multiply to produce others. The nature of this wavefront is determined by mechanical tension on the cells.

- **[Are children who see movie characters use guns more likely to use them?](#)** [周二, 26 9月 01:29]

Children who watched a PG-rated movie clip containing guns played

with a disabled real gun longer and pulled the trigger more often than children who saw the same movie not containing guns.

- [**Big brains in birds provides survival advantage**](#) [周二, 26 9月 01:29]

Scientists have discovered that brainier birds are better able to colonize inhospitable places.

- [**Antibody protects against Zika and dengue, mouse study shows**](#) [周二, 26 9月 01:29]

The same countries hard hit by Zika virus -- which can cause brain damage in babies infected before birth -- are also home to dengue virus. Researchers now report that they have found an antibody that protects against both viruses. These findings, in mice, could be a step towards an antibody-based preventative drug to protect fetuses from brain damage, while also protecting their mothers from both Zika and dengue disease.

- [**Physicists demonstrate using a laser to control a current in graphene within just one femtosecond**](#) [周二, 26 9月 01:28]

Controlling electronic current is essential to modern electronics, as data and signals are transferred by streams of electrons which are controlled at high speed. Demands on transmission speeds are also increasing as technology develops. Scientists have now succeeded in switching on a current with a desired direction in graphene using a single laser pulse within a femtosecond. This is more than a thousand times faster compared to the most efficient transistors today.

- [**Bacterial nanosized speargun works like a power drill**](#) [周二, 26 9月 01:28]

In order to get rid of unpleasant competitors, some bacteria use a sophisticated weapon -- a nanosized speargun. Researchers have now gained new insights into the construction, mode of action and recycling of this weapon. The speargun drills a hole into the neighboring cells in only a few thousandths of a second and injects a cocktail of toxins.

- [**Adding radiation to chemotherapy may dramatically improve survival for advanced**](#)

NSCLC [周一, 25 9月 23:33]

Combining radiation therapy with chemotherapy for patients with limited metastatic non-small cell lung cancer (NSCLC) may curb disease progression dramatically when compared to NSCLC patients who only receive chemotherapy, according to a new randomized phase II clinical trial.

• **Study raises expectations for improved language skills in the deaf and hard-of-hearing** [周一, 25 9月 23:33]

Universal screening of newborns for hearing loss before they leave the hospital is not enough to improve language skills of children who are deaf and hard of hearing. At least 40 percent of children with a hearing loss have the capacity for higher language levels -- beyond what test scores indicate.

• **Climate insurance is rarely well thought out in agriculture** [周一, 25 9月 23:33]

Internationally subsidised agricultural insurance is intended to protect farmers in developing countries from the effects of climate change. However, it can also lead to undesirable ecological and social side effects, as researchers have now explained. Their article also contains recommendations for improved insurance schemes which in future should also take account of ecological and social aspects in addition to economic issues.

• **Group project? Taking turns, working with friends may improve grades** [周一, 25 9月 23:33]

A new study with college students has found that the social dynamics of a group, such as whether one person dominates the conversation or whether students work with a friend, affect academic performance. Put simply, the more comfortable students are, the better they do, which yields benefits beyond the classroom.

• **Lava tubes: Hidden sites for future human habitats on the Moon and Mars** [周一, 25 9月 23:28]

Lava tubes, underground caves created by volcanic activity, could provide protected habitats large enough to house streets on Mars or even towns on the Moon, according to new research. A further study shows how the next generation of lunar orbiters will be able to use radar to locate these structures under the Moon's surface.

• [**Diabetes medicine reduces Parkinson's risk**](#) [周一, 25 9月 23:16]

Taking diabetes medicine reduces the risk of getting Parkinson's disease, new research demonstrates. Researchers have discovered that medical treatment against diabetes reduces the risk of getting Parkinson's disease by 35 per cent.

• [**New treatment for chronic throat irritation and globus sensation in the gullet**](#) [周一, 25 9月 23:16]

Chronic throat irritation, a permanent globus sensation, a sore or dry sensation in the throat are common symptoms, which are often trivialized and wrongly attributed to gastro-oesophageal reflux disease. However, these are also the characteristic symptoms of patients suffering from displaced gastric mucosa in the oesophagus (ectopic mucosa). A recent study has now brought a break-through in the treatment of patients with this condition. For the first time in the world, the new radiofrequency abl...

• [**Climate change can goad volcanoes into life**](#) [周一, 25 9月 23:14]

Geologists have analyzed volcanic data from the Messinian salinity crisis in the Mediterranean Sea, when the Strait of Gibraltar was blocked and the Mediterranean temporarily isolated from the Atlantic. After testing various scenarios, the geologists concluded that the increase in magmatic activity could only be explained by the almost total drying out of the Mediterranean.

• [**Clarifying perspectives to promote action on loss and damage from climate change**](#) [周一, 25 9月 23:13]

The hurricanes Harvey, Irma and Maria highlight the potential for the climate system to cause loss and damage. 'Loss and damage' is a phrase used in different ways by people who work on climate policy,

negotiation and adaptation/resilience. A new study clarifies these different perspectives which is a key issue now that the United Nations Framework Convention on Climate Change, UNFCCC, is encouraging creation and implementation of actions to address loss and damage from climate change.

- [**Likely scenarios for global spread of devastating crop disease**](#) [周一, 25 9月 23:13]

New research reveals the most likely months and routes for the spread of new strains of airborne 'wheat stem rust' that could endanger global food security by ravaging wheat production across Africa, the Middle East, Asia and the wider world.

- [**Visual attention drawn to meaning, not what stands out**](#) [周一, 25 9月 23:13]

Our visual attention is drawn to parts of a scene that have meaning, rather than to those that are salient or 'stick out,' according to new research. The findings overturn the widely held model of visual attention.

- [**New technique uses light to separate mirrored molecules**](#) [周一, 25 9月 23:13]

Left- and right-handed versions of molecules can be hard to tell apart but can have devastatingly different effects. Researchers are developing an optical filter to sort these molecules, which could lead to purer and safer drugs and agrichemicals.

- [**Nanoparticle supersoap creates 'bijel' with potential as sculptable fluid**](#) [周一, 25 9月 23:13]

A new type of 'bijel' could one day lead to applications in soft robotics, liquid circuitry, and a host of other applications that could benefit from shape-shifting fluids.

- [**New type of supercomputer could be based on 'magic dust' combination of light and matter**](#) [周一, 25 9月 23:13]

Scientists have successfully demonstrated that a type of 'magic dust'

which combines light and matter can be used to solve complex problems and could eventually surpass the capabilities of even the most powerful supercomputers.

- **[Panda habitat shrinking, becoming more fragmented](#)** [周一, 25 9月 23:13]

Using remote sensing data, Chinese and US scientists have re-assessed the conservation status of the giant panda. Their analysis shows that while panda numbers are increasing, their habitat still covers less area and is more fragmented than it was in 1988, when the species was listed as endangered on the IUCN Red List.

- **[World's botanic gardens contain a third of all known plant species, and help protect the most threatened](#)** [周一, 25 9月 23:13]

The most in-depth species survey to date finds an 'astonishing array' of plant diversity in the global botanic garden network, including 41 percent of all endangered species. However, researchers find a significant imbalance between tropical and temperate plants, and say even more capacity should be given to conservation, as there is 'no technical reason for plant species to become extinct.'

- **[Diet, in addition to alcohol consumption, may play important role in liver problems](#)** [周一, 25 9月 23:13]

A new study finds that mice bred to consume high amounts of alcohol, but controlled by diet, did not necessarily develop the most severe liver injuries, suggesting that diet may play an important role in liver injury development.

- **[Child abuse affects brain wiring](#)** [周一, 25 9月 23:13]

For the first time, researchers have been able to see changes in the neural structures in specific areas of the brains of people who suffered severe abuse as children. The researchers believe that these changes may contribute to the emergence of depressive disorders and suicidal behavior.

· [**Genes are controlled by 'Nano footballs,' scientists discover**](#) [周一, 25 9月 23:12]

Genes are controlled by 'nano footballs' -- structures that look like footballs but 10 million times smaller than the average ball -- new research has revealed.

· [**The rat race is over: New livestock model for stroke could speed discovery**](#) [周一, 25 9月 22:57]

Researchers have developed the first US pig model for stroke treatments.

· [**Scientists monitor Silicon Valley's underground water reserves -- from space**](#) [周一, 25 9月 22:57]

Scientists monitoring Silicon Valley's underground water reserves from space have found that water levels rebounded quickly after a severe drought that lasted from 2012-15. The research points to the success of aggressive conservation measures. It also helps to lay the groundwork for low-cost monitoring of subterranean water reserves in California and elsewhere in the world.

Quitting daily aspirin therapy may increase second heart attack, stroke risk -- ScienceDaily

Stopping long-term, low-dose aspirin therapy may increase your risk of suffering a cardiovascular event, according to new research in the American Heart Association's journal *Circulation*.

Aspirin, taken in low doses, is used to help reduce the risk for recurrent heart attack or stroke. Aspirin inhibits clotting, lowering the risk of cardiovascular events. Nearly 10 to 20 percent of heart attack survivors stop daily aspirin use within the first three years following their event. In broader patient settings, discontinuation rates of up to 30 percent and poor aspirin compliance in up to 50 percent of patients have been reported.

To study the health effects of stopping aspirin therapy, Swedish researchers examined the records of 601,527 people who took low-dose aspirin for heart attack and stroke prevention between 2005 and 2009. Participants were older than 40, cancer-free and had an adherence

rate of greater than 80 percent in the first year of treatment.

In three years of follow-up, there were 62,690 cardiovascular events. Researchers also found:

- one out of every 74 patients who stopped taking aspirin had an additional cardiovascular event per year;
- a 37 percent higher rate of cardiovascular events for those who stopped aspirin therapy compared to those who continued; and
- an elevated risk of cardiovascular events that increased shortly after discontinuation of therapy and did not appear to diminish over time.

"Low-dose aspirin therapy is a simple and inexpensive treatment," said Johan Sundstrom, M.D., Ph.D., lead author and professor of epidemiology at Uppsala University in Sweden. "As long as there's no bleeding or any major surgery scheduled, our research shows the significant public health benefits that can be gained when patients stay on aspirin therapy."

Studies have suggested patient's experience a "rebound effect" after stopping aspirin treatment, this is possibly

due to increased clotting levels from the loss of aspirin's blood-thinning effects. Because of the large number of patients on aspirin and the high number who stop treatment, the importance of a rebound effect may be significant, Sundstrom said.

"We hope our research may help physicians, healthcare providers and patients make informed decisions on whether or not to stop aspirin use," Sundstrom said.

The American Heart Association recommends that people at high risk of heart attack should take a daily low-dose of aspirin (if told to by their healthcare provider) and that heart attack survivors also take low-dose aspirin regularly.

Story Source:

[Materials](#) provided by [American Heart Association](#).

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Penguin-mounted video captures gastronomic close encounters of the gelatinous kind: Penguins caught on camera eating jellyfish -- ScienceDaily

Footage from penguin-mounted mini video recorders shows four species of penguin eating jellyfish and other gelatinous animals of the open ocean, a food source penguins were not previously believed to partake of, scientists report this month in the Ecological Society of America's peer-reviewed journal *Frontiers in Ecology and the Environment*. The article, part of the October issue of the journal, is available online ahead of print.

Video logs confirmed that penguins targeted gelatinous animals for meals; the birds did not merely ingest them accidentally, while aiming for fish or other prey. Connecting this link in the food web helps ecologists understand the ecological niche of "gelata," a group the authors have defined based on shared gelatinous physique and ocean habitat, though it includes organisms from very different branches of the tree of

life

Gelata may play an underrated role in the carbon cycle, say Jean-Baptiste Thiebot, a postdoctoral fellow at the National Institute of Polar Research in Tokyo, Japan, and 16 colleagues.

Though gelata pack a relatively low caloric punch, a diet of them can sustain large animals such as sea turtles and ocean sunfish. Penguins, warm-blooded animals with high energetic demands, can now be added to the list of confirmed "jellyvores."

Thiebot and teammates from 5 countries fitted thumbdrive-sized video data loggers to 106 penguins at seven breeding sites in the southern oceans (ocean waters south of 30 degrees South latitude) ranging in habitat from the polar regions to more temperate waters. Adélie penguins (*Pygoscelis adeliae*), yellow-eyed penguins (*Megadyptes antipodes*), Magellanic penguins (*Spheniscus magellanicus*), and little penguins (*Eudyptula minor*) starred in the live-action first-penguin hunter videos. Over 350 hours of footage documented nearly 200 penguin attacks on gelata.

The miniature video-loggers were in place for only one

sea outing per penguin, to minimize potential disturbance to the birds.

Thiebot and colleagues estimate that gelatinous organisms provide more than 1 percent the the daily energy needs for Adélie, Magellanic, and yellow-eyed penguins, and up to 2 percent for little penguins.

Penguins appeared to selectively target the carnivores among the gelata, which include species of "true" jellyfish (Cnidaria) and "comb jellies" (Ctenophora). All four penguin species enjoyed true jellyfish, consuming an observed 187 species. Magellanic and little penguins also ate 11 comb jelly species.

Vegetarian gelata species known as salps, filter feeders more closely related to humans than jellyfish they resemble, are also common gelatinous denizens of the southern oceans. These little jet-propelled jelly tubes feed on phytoplankton, the floating, green, single-celled organisms that get energy from light, like plants. In the congregational phase of their lives, they form great chains, tubes, and wheels, sometimes 60 feet long. Although salps appeared in video, penguins did not pursue them.

In the southern oceans, salp population explosions

sometimes absorb a big portion of the tiny plankton which would otherwise feed krill, and, in turn, penguins, whales, and seals. Carnivorous jellyfish populations also oscillate worldwide, blooming in cycles that have not been deeply researched in the southern oceans. Thiebot and colleagues' video evidence has shown that penguins can make use of the gelatinous biomass. But whether the penguins could subsist on a strict gelatum diet during massive blooms is currently unknown.

Story Source:

[Materials](#) provided by [Ecological Society of America](#).

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Snails bred in lab help species crawl back from brink of extinction -- ScienceDaily

Work to restore the endangered Chittenango ovate amber snail, found only in one location inside a Central New York state park, continued this month with the release of tagged adult snails raised in a laboratory at the College of Environmental Science and Forestry (ESF).

Called the "Chit" by those interested in its well being, the rare snail has been the subject of a conservation-focused collaboration with the U.S. Fish and Wildlife Service (USFWS), New York State Department of Environmental Conservation (NYSDEC), New York State Office of Parks, Recreation and Historic Preservation (Parks), Rosamond Gifford Zoo in Syracuse and Seneca Park Zoo in Rochester.

The snail survives exclusively alongside Chittenango Falls within Chittenango Falls State Park, about 22 miles southeast of Syracuse. Biologists have feared that

a single catastrophic event could wipe out the entire population.

To address this threat, Cody Gilbertson, an ESF graduate and lead research technician in the laboratory of Dr. Rebecca Rundell, has established a captive breeding population in an ESF laboratory. She is working in ESF's Center for Integrated Research and Teaching in Aquatic Science.

In 2015, 270 laboratory-raised hatchlings were released at the park. The difference this time is that the snails are adults and large enough to be tagged so researchers can follow their life in the field.

"The fact that they're tagged is special," said Rundell, "because when we conduct our surveys next summer we will hopefully be able to track them." She is also hoping the snails will overwinter and then begin reproducing in the summer of 2018. The snails are marked with tiny numbered tags, small and light enough to be glued to a shell.

"This backup population can supplement their wild population and prevent extinction in case of a destructive event such as a storm or rockslide," said

Gilbertson.

Gilbertson likens raising the snails in the lab to the Head Start program that prepares children for kindergarten. "Like a child, if you bring them to a certain stage we hope they [the snails] are more likely to succeed," said Gilbertson.

She has spent four years researching snail husbandry from their diet to their reproductive cycles. "Their diet is incredibly important," she said, since it affects their size, shell quality and reproductive health. She found the snails prefer decomposed leaves from oak, hickory, cherry and sugar maple trees (known to biologists as "leaf litter"), but the snails only like a certain degree of leaf decomposition and leaf thickness. The preferred leaves are collected in the late spring and stored in bins to be fed to the snails during the year. This work is labor-intensive and involves the help of many ESF undergraduate biology majors, volunteers from Syracuse and Rochester zoos, and other conservation partners.

When the terrariums are changed weekly, Gilbertson layers the leaves to create a "leaf lasagna" for the snails. "They like the thin, decomposed leaves the best

because they're easier to eat," she said, "and they eat around the veins of the leaves."

"Once we got that [the diet] figured out, we got high reproduction in the lab," Gilbertson said.

The USFWS is pleased with the progress Gilbertson and crew are making. "With the Chit found in just a single location in the wild, this work is critical," said Robyn Niver, endangered species biologist. "We're taking steps toward boosting the numbers of snails at Chittenango Falls, and growing the captive population. Thanks to an excellent partnership with ESF, DEC, Parks, and the zoos, the Chit is crawling its way back from the brink of extinction."

NYSDEC is also excited about the work on the Chittenango ovate amber snail. "DEC's habitat conservation efforts are a key component to protecting declining species and keeping them from becoming endangered," said DEC Commissioner Basil Seggos. "The demonstration that these captive-raised snails can be successfully released at Chittenango Falls is the ultimate success for managing a species that is only known from a single location. The maintenance of captive-raised populations will help ensure this rare

snail is part of New York's fauna for generations to come."

The goal for these efforts is to boost the population, which is of great interest for the conservation partners involved, as well as the local community. The species is named for its home and its opaque, egg-shaped, amber-colored shell.

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Being in a good mood for your flu jab boosts its effectiveness -- ScienceDaily

New research by a team of health experts at the University of Nottingham has found evidence that being in a positive mood on the day of your flu jab can increase its protective effect.

Flu vaccination is estimated to only be effective in 17-53% of older adults compared to 70-90% of younger people. With the onset of winter and so-called 'flu season', the research is likely to be of interest to everyone having their autumn flu jab.

This new Nottingham-based study is the first to examine several psychological and behavioural factors that have been shown to affect how well vaccinations work. The researchers set out to understand which factor, or combination of factors has the greatest impact on the ability of vaccinations to protect against disease.

The team measured negative mood, positive mood, physical activity, diet and sleep three times a week

over a 6 week period in a group of 138 older people due to have their flu jab. Then they examined how well the jab was working by measuring the amount of influenza antibody in the blood at 4 weeks and 16 weeks after the vaccination.

The results showed that of all of the factors measured, only positive mood over the 6 week observational period predicted how well the jab worked – with good mood associated with higher levels of antibody. In fact, when the researchers looked at influences on the day of vaccination itself, they found an even greater effect on how well it worked, accounting for between 8 and 14% of the variability in antibody levels.

Professor Kavita Vedhara, from the University's Division of Primary Care, said: "Vaccinations are an incredibly effective way of reducing the likelihood of catching infectious diseases. But their Achilles heel is that their ability to protect against disease is affected by how well an individual's immune system works. So people with less effective immune systems, such as the elderly, may find vaccines don't work as well for them as they do in the young.

"We have known for many years that a number of

psychological and behavioural factors such as stress, physical activity and diet influence how well the immune system works and these factors have also been shown to influence how well vaccines protect against disease..”

The study, published in *Brain, Behavior and Immunity*, was unusual in that, by chance, the vaccination that participants received was identical to the one they had received in the previous year. This has happened only once before since the turn of the century. As a result, the researchers found that participants had very high levels of antibody – and therefore protection – for two out of three of the viruses present in the vaccination, even before they were vaccinated.

This so-called ‘ceiling effect’ meant that this study was unlikely to see further large increases in antibody levels for these two viruses and therefore was unlikely to reveal an effect of psychological and behavioural factors. As a result the team focused its analyses on the one strain which was the least ‘immunogenic’ i.e. the strain with low levels of antibody prior to vaccination.

The researchers say the approach of focusing on individual viral strains is not uncommon, but

recommend that future research is best conducted in the context of a vaccination with more novel viral strains to further confirm the positive mood effect on vaccination.

The project was funded by National Institute for Health Research School for Primary Care Research (NIHR SPCR) and the Medical Research Council (MRC).

Story Source:

[Materials](#) provided by [University of Nottingham](#).

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Brain's anterior cingulate cortex and its tie to human learning: New research advances understanding of the function of the brain's anterior cingulate cortex and its tie to human learning -- ScienceDaily

After four years of lab testing and complex neuro-decoding, a research team led by UNLV psychology professor James Hyman has struck a major breakthrough that could open the floodgates for research into the anterior cingulate cortex, or ACC, and how human brains learn.

The research, published this summer in the neuroscience journal *Neuron*, offers new insight into the ACC's role in guiding the brain's response and adaptation to unexpected outcomes. The study also showed the first cellular correlates of the extensively studied human phenomena known as feedback negativity. Hyman had previously found in 2015 conclusive evidence that the ACC in rodent brains

reacts in the same manner as in humans to reward probability and outcome expectancy.

The study garnered a special preview article in the journal from Bruno Averbeck, a leading expert in the field from the National Institutes of Health.

The function of the brain's ACC is heavily studied, but many scientists believe it contributes to behavioral adaptation, detection of conflict and responding to and managing emotional reactions.

According to Hyman, the ACC essentially creates expectations about what's going to happen. Then, when the result of our actions leads to an outcome, our brain assesses whether that outcome was the same as what we expected. The ACC is integrally involved in this process. If the outcome is not what we expected, the ACC reacts with a larger electrical charge -- known as feedback negativity -- than if the outcome was expected.

The research team showed that when an expected outcome was not delivered, a neural signal in the brain's ACC was detected. This signal offers clues to the cellular origin of feedback negativity, and that the

phenomenon may be generated as the neurons in the ACC shift from encoding expected to actual outcomes.

Our brains are constantly doing this, Hyman said.

"Generally, the ACC always has a negative electrical change to outcomes, it's just the size of this change varies by whether the outcome was the expected one or not and whether it was better or worse than expected," said Hyman. "Every single thing we do involves making predictions about what's going to happen next. Usually facile little things, such as opening an unlocked door," Hyman said.

For instance, if you go to open what you believe to be an unlocked door by its handle, your ACC is predicting the outcome that the door will open and you will walk in. If the door handle is locked and it does not open as predicted, an electrical reaction occurs that is readable. The ACC will then learn from the unexpected outcome of its initial prediction.

Now imagine you were playing a slot machine with a 75 percent chance of winning (we're pretending here). If the percentage was changed without you knowing to 25 percent, your ACC would still predict a positive

outcome. When you start losing, the ACC would react to the unexpected outcome. And, most importantly, you would realize something's not right, learn from the outcome, and potentially adjust your behavior.

Through the course of the study, Hyman also discovered a correlation between feedback-related negativity in in both human and rodent models.

"It took as few as two consecutive unexpected events for cells to change and start making the opposite prediction," Hyman said. The testing mirrored what has been done in humans and opens the possibility that findings from rodent models can contribute to our understanding of the ACC function in humans.

Additional research on the ACC could lead to new solutions to assist in the cognitive control problems that are associated with a host of psychiatric disorders such as depression, schizophrenia, and drug addiction.

According to Hyman, this discovery will help in further understanding our ability to detect the situations where we have the most learning. "Understanding those mechanics could make us learn faster," he said.

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All Top News

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- [**After 15 years in a vegetative state, nerve stimulation restores consciousness**](#) [周二, 26 9月 01:29]

A 35-year-old man who had been in a vegetative state for 15 years after a car accident has shown signs of consciousness after neurosurgeons implanted a vagus nerve stimulator into his chest. The findings show that vagus nerve stimulation (VNS) -- a treatment already in use for epilepsy and depression--can help to restore consciousness even after many years in a vegetative state.

- [**Antibody protects against Zika and dengue, mouse study shows**](#) [周二, 26 9月 01:29]

The same countries hard hit by Zika virus -- which can cause brain damage in babies infected before birth -- are also home to dengue virus. Researchers now report that they have found an antibody that protects against both viruses. These findings, in mice, could be a step towards an antibody-based preventative drug to protect fetuses from brain damage, while also protecting their mothers from both Zika and dengue disease.

- [**Lava tubes: Hidden sites for future human habitats on the Moon and Mars**](#) [周一, 25 9月 23:28]

Lava tubes, underground caves created by volcanic activity, could provide protected habitats large enough to house streets on Mars or even towns on the Moon, according to new research. A further study shows how the next generation of lunar orbiters will be able to use radar to locate these structures under the Moon's surface.

- [**Visual attention drawn to meaning, not what**](#)

stands out [周一, 25 9月 23:13]

Our visual attention is drawn to parts of a scene that have meaning, rather than to those that are salient or 'stick out,' according to new research. The findings overturn the widely held model of visual attention.

• **Panda habitat shrinking, becoming more fragmented** [周一, 25 9月 23:13]

Using remote sensing data, Chinese and US scientists have re-assessed the conservation status of the giant panda. Their analysis shows that while panda numbers are increasing, their habitat still covers less area and is more fragmented than it was in 1988, when the species was listed as endangered on the IUCN Red List.

• **Child abuse affects brain wiring** [周一, 25 9月 23:13]

For the first time, researchers have been able to see changes in the neural structures in specific areas of the brains of people who suffered severe abuse as children. The researchers believe that these changes may contribute to the emergence of depressive disorders and suicidal behavior.

• **Genes are controlled by 'Nano footballs,' scientists discover** [周一, 25 9月 23:12]

Genes are controlled by 'nano footballs' -- structures that look like footballs but 10 million times smaller than the average ball -- new research has revealed.

• **Brain damage in fish from plastic nanoparticles in water** [周一, 25 9月 22:47]

A new study shows that plastic particles in water may end up inside fish brains. The plastic can cause brain damage, which is the likely cause of behavioral disorders observed in the fish.

• **Brain guides body much sooner than previously believed** [周一, 25 9月 21:54]

The brain plays an active role much earlier than previously thought.

Long before movement or other behaviors occur, the nascent brain of an embryonic frog instructs normal muscle and nerve patterning and protects the embryo from agents that cause developmental defects. In addition to identifying these essential functions for the first time, researchers successfully rescued defects caused by lack of a brain by using widely available, human-approved drugs.

- [**Winter cold extremes linked to high-altitude polar vortex weakening**](#) [周五, 22 9月 21:40]

When the strong winds that circle the Arctic slacken, cold polar air can escape and cause extreme winter chills in parts of the Northern hemisphere. A new study finds that these weak states have become more persistent over the past four decades and can be linked to cold winters in Russia and Europe.

- [**Flint's water crisis led to fewer babies and higher fetal death rates, researchers find**](#) [周五, 22 9月 21:16]

An estimated 275 fewer children were born in Flint, Michigan, while the city was using lead-contaminated water from the Flint River, according to new research findings.

- [**Babies can learn that hard work pays off**](#) [周五, 22 9月 04:12]

A new study reveals babies as young as 15 months can learn the value of hard work. Researchers found babies who watched an adult struggle to reach two different goals before succeeding tried harder at their own difficult task than babies who saw an adult succeed effortlessly.

- [**Unique gene therapy prevents, reverses multiple sclerosis in animal model**](#) [周五, 22 9月 04:12]

Multiple sclerosis can be inhibited or reversed using a novel gene therapy technique that stops the disease's immune response in mouse models, researchers have found.

- [**Ancient DNA data fills in thousands of years of human prehistory in Africa**](#) [周五, 22 9月 02:13]

By sequencing the ancient genomes of 15 individuals from different

parts of Africa, researchers reporting in the journal Cell on Sept. 21 have reconstructed the prehistory of humans on the continent, going back thousands of years. The findings shed light on which human populations lived in eastern and southern Africa between 8,000 and 1,000 years ago, the researchers say.

- [**Scientists sequence asexual tiny worm whose lineage stretches back 18 million years**](#) [周五, 22 9月 02:13]

A team of scientists has sequenced, for the first time, a tiny worm that belongs to a group of exclusively asexual species that originated approximately 18 million years ago -- making it one of the oldest living lineages of asexual animals known.

- [**Detecting cosmic rays from a galaxy far, far away**](#) [周五, 22 9月 02:12]

Where do cosmic rays come from? Solving a 50-year-old mystery, a collaboration of researchers has discovered it's much farther than the Milky Way.

- [**Jellyfish, with no brains, still seem to sleep**](#) [周五, 22 9月 02:12]

The discovery that primitive jellyfish sleep suggests that sleep is an ancient, evolutionarily conserved behavior.

- [**Why poison frogs don't poison themselves**](#) [周五, 22 9月 02:12]

Poison frogs harbor some of the most potent neurotoxins we know, yet scientists have long wondered -- how do these frogs keep from poisoning themselves? Scientists are now a step closer to resolving that head-scratcher. And the answer has potential consequences for the fight against pain and addiction.

- [**Reconstructing how Neanderthals grew, based on an El Sidrón child**](#) [周五, 22 9月 02:12]

How did Neanderthals grow? Does modern man develop in the same way as Homo neanderthalensis did? How does the size of the brain affect the development of the body? Researchers have studied the fossil remains of a Neanderthal child's skeleton in order to establish whether

there are differences between the growth of Neanderthals and that of sapiens.

- [**Early trilobites had stomachs, new fossil study finds**](#) [周五, 22 9月 02:12]

Exceptionally preserved trilobite fossils from China, dating back to more than 500 million years ago, have revealed new insights into the extinct marine animal's digestive system. The new study shows that at least two trilobite species evolved a stomach structure 20 million years earlier than previously thought.

- [**Dino-killing asteroid's impact on bird evolution**](#) [周五, 22 9月 00:11]

Human activities could change the pace of evolution, similar to what occurred 66 million years ago when a giant asteroid wiped out the dinosaurs, leaving modern birds as their only descendants.

- [**One in four girls is depressed at age 14**](#) [周四, 21 9月 23:07]

New research shows a quarter of girls (24%) and one in 10 boys (9%) are depressed at age 14.

- [**Surprising discovery: How the African tsetse fly really drinks your blood**](#) [周四, 21 9月 23:06]

Researchers have been taking a close-up look at the biting mouthparts of the African tsetse fly as part of ongoing work on the animal diseases it carries. Using a new high-powered scanning electron microscope, researchers were able to see the rows of sharp teeth and rasps that the fly uses to chew through the skin when it bites.

- [**Broad swath of US deemed environmentally suitable for mosquitoes that transmit disease**](#) [周四, 21 9月 22:42]

Three-quarters of counties in the contiguous United States present suitable environmental conditions for at least part of the year for either *Aedes aegypti* or *Aedes albopictus* mosquitoes to survive if introduced, according to researchers. The two mosquito species can transmit viruses that cause Zika, dengue, chikungunya, and yellow fever.

- [**Big herbivorous dinosaurs ate crustaceans as a side dish**](#) [周四, 21 9月 22:17]

Some big plant-eating dinosaurs roaming present-day Utah some 75 million years ago were slurping up crustaceans on the side, a behavior that may have been tied to reproductive activities, says a new study.

- [**Changing of the guard: Research sheds light on how plants breathe**](#) [周四, 21 9月 22:17]

New research is set to change the textbook understanding of how plants breathe. Researchers have developed the first full 3D model of a guard cell.

- [**Tiny Brazilian frogs are deaf to their own calls**](#) [周四, 21 9月 21:03]

Pumpkin toadlets, found on the leaf litter of Brazil's Atlantic forest, are among the smallest frogs in the world. Scientists have now discovered that two species of these tiny orange frogs cannot hear the sound of their own calls.

- [**Efforts to save sea turtles are a 'global conservation success story'**](#) [周四, 21 9月 06:21]

A new study of the world's seven sea turtle species provides evidence that their numbers are growing overall (unlike many endangered vertebrates), thanks to years of conservation efforts that have played a key role in sea turtle recovery -- even for small sea turtle populations.

- [**Mathematics predicts a sixth mass extinction**](#) [周四, 21 9月 06:21]

Scientists have analyzed significant changes in the carbon cycle over the last 540 million years, including the five mass extinction events. They have identified 'thresholds of catastrophe' in the carbon cycle that, if exceeded, would lead to an unstable environment, and ultimately, mass extinction.

- [**Immune system is critical to regeneration, study finds**](#) [周四, 21 9月 03:49]

The answer to the question of why some organisms can regenerate major

body parts while others, such as humans, cannot may lie with the body's innate immune system, according to a new study of heart regeneration in the Mexican salamander.

• [Unique type of object discovered in our solar system](#) [周四, 21 9月 02:47]

Astronomers have observed the intriguing characteristics of an unusual type of object in the asteroid belt between Mars and Jupiter: two asteroids orbiting each other and exhibiting comet-like features, including a bright coma and a long tail. This is the first known binary asteroid also classified as a comet.

• [Fly away home? Ice age may have clipped bird migration](#) [周四, 21 9月 02:46]

The onset of the last ice age may have forced some bird species to abandon their northerly migrations for thousands of years, says new research led by an ornithologist. The study challenges a long-held presumption that birds merely shortened their migratory flights when glaciers advanced south to cover much of North America and northern Europe about 21,000 years ago.

• [Species abundance: Winter restricts innovation](#) [周四, 21 9月 01:17]

Why are there so many more species in the tropics? The 'storage effect' is stronger there than in temperate forests.

• [Bite force research reveals dinosaur-eating frog](#) [周四, 21 9月 01:17]

Scientists say that a large, now extinct, frog called *Beelzebufo* that lived about 68 million years ago in Madagascar would have been capable of eating small dinosaurs. The conclusion comes from a study of the bite force of South American horned frogs from the living genus *Ceratophrys*, known as Pacman frogs for their characteristic round shape and large mouth, similar to the video game character Pac-Man.

• [Animal acoustic activity decline shows forest fire pollution wreaks havoc on wildlife](#) [周四, 21 9月 01:17]

Forest fires in Southeast Asia during the El Niño droughts of 2015

caused considerable disruption to the biodiversity of the region due to the smoke-induced 'haze' they created, according to new research.

- [**New concept of terrestrial planet formation**](#) [周四, 21 9月 01:17]

Scientists are proposing a new way of understanding the cooling and transfer of heat from terrestrial planetary interiors and how that affects the generation of the volcanic terrains that dominate the rocky planets.

- [**World's first 'molecular robot' capable of building molecules**](#) [周四, 21 9月 01:17]

Scientists have created the world's first 'molecular robot' that is capable of performing basic tasks including building other molecules.

- [**Dinosaur evolution: Lumbering giants had agile ancestors**](#) [周四, 21 9月 01:17]

The best known sauropod dinosaurs were huge herbivorous creatures, whose brain structures were markedly different from those of their evolutionary predecessors, for the earliest representatives of the group were small, lithe carnivores.

- [**Scientists make atoms-thick 'Post-It notes' for solar cells and circuits**](#) [周四, 21 9月 01:17]

A new study describes an innovative method to make stacks of semiconductors just a few atoms thick. The technique offers scientists and engineers a simple, cost-effective method to make thin, uniform layers of these materials, which could expand capabilities for devices from solar cells to cell phones.

- [**Brain cancer growth halted by absence of protein**](#) [周四, 21 9月 01:16]

The growth of certain aggressive brain tumors can be halted by cutting off their access to a signaling molecule produced by the brain's nerve cells, according to a new study.

- [**Millions of new genes in human microbiome**](#) [周四, 21 9月 01:16]

A new study of the human microbiome has uncovered millions of

previously unknown genes from microbial communities in the human gut, skin, mouth, and vaginal microbiome, allowing for new insights into the role these microbes play in human health and disease.

- [**Genome editing reveals role of gene important for human embryo development**](#) [周四, 21 9月 01:16]

Researchers have used genome editing technology to reveal the role of a key gene in human embryos in the first few days of development. This is the first time that genome editing has been used to study gene function in human embryos, which could help scientists to better understand the biology of our early development.

- [**Is the Milky Way an 'outlier' galaxy? Studying its 'siblings' for clues**](#) [周三, 20 9月 23:33]

The most-studied galaxy in the universe -- the Milky Way -- might not be as 'typical' as previously thought, according to a new study. Early results from the Satellites Around Galactic Analogs (SAGA) Survey indicate that the Milky Way's satellites are much more tranquil than other systems of comparable luminosity and environment. Many satellites of those 'sibling' galaxies are actively pumping out new stars, but the Milky Way's satellites are mostly inert.

- [**How Teotihuacan's urban design was lost and found**](#) [周三, 20 9月 23:33]

A new article outlines how the urban design of the city of Teotihuacan differed from past and subsequent cities, only to be rediscovered and partially modeled on many centuries later by the Aztecs.

- [**10,000 year-old DNA proves when fish colonized our lakes**](#) [周三, 20 9月 22:45]

DNA in lake sediment forms a natural archive displaying when various fish species colonized lakes after the glacial period. Scientists' analyses of the prevalence of whitefish DNA in sediment reveal that the whitefish came to Lake Stora Lögdsjön in Västerbotten already 10,000 years ago, whereas Lake Hotagen in Jämtland had its whitefish only 2,200 years ago.

• [**Solving the Easter Island population puzzle**](#) [周三, 20 9月 22:01]

The nearly nine hundred giant stone statues discovered by the first Europeans to land on Easter Island seemed at odds with the small population found living there. It is believed a once thriving community witnessed sweeping ecological change and suffered internal conflict, resulting in a population crash. A new detailed study of the farming potential of the Island suggests it could have sustained 17,500 people at its peak.

• [**Emerging disease further jeopardizes North American frogs**](#) [周三, 20 9月 04:02]

A deadly amphibian disease called severe Perkinsea infections, or SPI, is the cause of many large-scale frog die-offs in the United States, according to a new study.

• [**End-of-summer Arctic sea ice extent is eighth lowest on record**](#) [周三, 20 9月 04:01]

Arctic sea ice appeared to have reached its yearly lowest extent on Sept. 13, scientists have reported. Analysis of satellite data showed that at 1.79 million square miles (4.64 million square kilometers), this year's Arctic sea ice minimum extent is the eighth lowest in the consistent long-term satellite record, which began in 1978.

• [**North Atlantic right whales decline confirmed: 458 remaining**](#) [周三, 20 9月 02:04]

Marine biologists have developed a new model to improve estimates of abundance and population trends of endangered North Atlantic right whales, which have declined in numbers and productivity in recent years. Between 1990 and 2010 abundance increased to 482 animals, but since 2010 the numbers have declined to 458 in 2015, with 14 known deaths this year.

• [**Sleep deprivation is an effective anti-depressant for nearly half of depressed patients, study suggests**](#) [周三, 20 9月 02:04]

Sleep deprivation - typically administered in controlled, inpatient settings - rapidly reduces symptoms of depression in roughly half of depression patients, according the first meta-analysis on the subject in nearly 30 years.

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

- [**Quitting daily aspirin therapy may increase second heart attack, stroke risk**](#) [周二, 26 9月 04:32]

Stopping long-term, low-dose aspirin therapy may increase your risk of suffering a cardiovascular event, research indicates. Risk increases shortly after stopping and does not appear to diminish over time.

- [**Being in a good mood for your flu jab boosts its effectiveness**](#) [周二, 26 9月 03:47]

New research by a team of health experts has found evidence that being in a positive mood on the day of your flu jab can increase its protective effect.

- [**Brain's anterior cingulate cortex and its tie to human learning**](#) [周二, 26 9月 03:14]

After four years of lab testing and complex neuro-decoding, a research team has struck a major breakthrough that could open the floodgates for research into the anterior cingulate cortex, or ACC, and how human brains learn.

- [**Prostaglandin EI inhibits leukemia stem cells**](#) [周二, 26 9月 03:14]

Two drugs, already approved for safe use in people, may be able to improve therapy for chronic myeloid leukemia (CML), a blood cancer that affects myeloid cells, according to new results.

- [**Metabolism directly impacts the odds of developing malaria**](#) [周二, 26 9月 01:30]

Researchers have found that the host's susceptibility to develop malaria depends on his or her metabolic state, which can be easily manipulated through external stimuli such as dietary patterns.

- [**Creating brain cells to detect Tourette's**](#) [周二, 26 9月 01:30]

Scientists have used a genetic engineering technique for the first time to create brain cells from the blood cells of individuals in a three-generation family with Tourette syndrome to help determine what causes the disease.

- [**Bone marrow concentrate improves joint transplants**](#) [周二, 26 9月 01:30]

Biologic joint restoration using donor tissue instead of traditional metal and plastic may be an option for active patients with joint defects. Researchers have found in a group of patients that treating donor grafts with bone marrow aspirate concentrate before surgery improves bone integration and speeds recovery.

- [**Discovering what makes organelles connect could help explain neurodegenerative diseases**](#) [周二, 26 9月 01:29]

Organelles must exchange signals and materials to make the cell operate correctly. New technologies are allowing researchers to see and understand the networks that connect these organelles, allowing them to build maps of the trade routes that exist within a cell.

- [**Violent crime increases during warmer weather, no matter the season, study finds**](#) [周二, 26 9月 01:29]

A study analyzing crime data in Philadelphia for 10 years found that rates of violent crime and disorderly conduct are higher when the weather is warmer and more pleasant, even rising sharply during warmer-than-typical winter days.

- [**Streamlined process opens drug development to a new class of steroids**](#) [周二, 26 9月 01:29]

Researchers have developed a technique to produce synthetic steroids that could pave the way for a cascade of new drug discoveries,

significantly reducing the expense and time needed to develop therapeutics from an underexplored collection of molecules.

• [**After 15 years in a vegetative state, nerve stimulation restores consciousness**](#) [周二, 26 9月 01:29]

A 35-year-old man who had been in a vegetative state for 15 years after a car accident has shown signs of consciousness after neurosurgeons implanted a vagus nerve stimulator into his chest. The findings show that vagus nerve stimulation (VNS) -- a treatment already in use for epilepsy and depression--can help to restore consciousness even after many years in a vegetative state.

• [**Tension makes the heart grow stronger**](#) [周二, 26 9月 01:29]

By taking videos of a tiny beating zebrafish heart as it reconstructs its covering in a petri dish, scientists have captured unexpected dynamics of cells involved in tissue regeneration. They found that the depleted heart tissue regenerates in a wave, led by a front of fast-moving, supersized cells and trailed by smaller cells that multiply to produce others. The nature of this wavefront is determined by mechanical tension on the cells.

• [**Are children who see movie characters use guns more likely to use them?**](#) [周二, 26 9月 01:29]

Children who watched a PG-rated movie clip containing guns played with a disabled real gun longer and pulled the trigger more often than children who saw the same movie not containing guns.

• [**Antibody protects against Zika and dengue, mouse study shows**](#) [周二, 26 9月 01:29]

The same countries hard hit by Zika virus -- which can cause brain damage in babies infected before birth -- are also home to dengue virus. Researchers now report that they have found an antibody that protects against both viruses. These findings, in mice, could be a step towards an antibody-based preventative drug to protect fetuses from brain damage, while also protecting their mothers from both Zika and dengue disease.

• [**Adding radiation to chemotherapy may**](#)

[**dramatically improve survival for advanced NSCLC**](#) [周一, 25 9月 23:33]

Combining radiation therapy with chemotherapy for patients with limited metastatic non-small cell lung cancer (NSCLC) may curb disease progression dramatically when compared to NSCLC patients who only receive chemotherapy, according to a new randomized phase II clinical trial.

[**Study raises expectations for improved language skills in the deaf and hard-of-hearing**](#) [周一, 25 9月 23:33]

Universal screening of newborns for hearing loss before they leave the hospital is not enough to improve language skills of children who are deaf and hard of hearing. At least 40 percent of children with a hearing loss have the capacity for higher language levels -- beyond what test scores indicate.

[**Group project? Taking turns, working with friends may improve grades**](#) [周一, 25 9月 23:33]

A new study with college students has found that the social dynamics of a group, such as whether one person dominates the conversation or whether students work with a friend, affect academic performance. Put simply, the more comfortable students are, the better they do, which yields benefits beyond the classroom.

[**Diabetes medicine reduces Parkinson's risk**](#) [周一, 25 9月 23:16]

Taking diabetes medicine reduces the risk of getting Parkinson's disease, new research demonstrates. Researchers have discovered that medical treatment against diabetes reduces the risk of getting Parkinson's disease by 35 per cent.

[**New treatment for chronic throat irritation and globus sensation in the gullet**](#) [周一, 25 9月 23:16]

Chronic throat irritation, a permanent globus sensation, a sore or dry sensation in the throat are common symptoms, which are often trivialized and wrongly attributed to gastro-oesophageal reflux disease.

However, these are also the characteristic symptoms of patients suffering from displaced gastric mucosa in the oesophagus (ectopic mucosa). A recent study has now brought a break-through in the treatment of patients with this condition. For the first time in the world, the new radiofrequency abl...

- [**Visual attention drawn to meaning, not what stands out**](#) [周一, 25 9月 23:13]

Our visual attention is drawn to parts of a scene that have meaning, rather than to those that are salient or 'stick out,' according to new research. The findings overturn the widely held model of visual attention.

- [**Diet, in addition to alcohol consumption, may play important role in liver problems**](#) [周一, 25 9月 23:13]

A new study finds that mice bred to consume high amounts of alcohol, but controlled by diet, did not necessarily develop the most severe liver injuries, suggesting that diet may play an important role in liver injury development.

- [**Child abuse affects brain wiring**](#) [周一, 25 9月 23:13]

For the first time, researchers have been able to see changes in the neural structures in specific areas of the brains of people who suffered severe abuse as children. The researchers believe that these changes may contribute to the emergence of depressive disorders and suicidal behavior.

- [**Genes are controlled by 'Nano footballs,' scientists discover**](#) [周一, 25 9月 23:12]

Genes are controlled by 'nano footballs' -- structures that look like footballs but 10 million times smaller than the average ball -- new research has revealed.

- [**The rat race is over: New livestock model for stroke could speed discovery**](#) [周一, 25 9月 22:57]

Researchers have developed the first US pig model for stroke

treatments.

- [**Minority public managers prefer integrating social equity, traditional public values**](#) [周一, 25 9月 22:57]

Minority public managers place more emphasis on both traditional values, like efficiency and effectiveness, and social equity when compared with their white counterparts, according to a new study.

- [**Open-ended laboratory tests for cyclists could help athletes train better**](#) [周一, 25 9月 22:47]

Scientists have discovered that cyclists can perform better when they do not have to pace their efforts. Using 17 experienced male cyclists in a series of tests, they compared open-ended Time-To-Exhaustion (TTE) trials that are often used in laboratories with race-like Time-Trials to measure endurance performance. All of the cyclists were blinded to elapsed time, power output, cadence and heart rate.

- [**A 'social control' system guarantees embryonic stem cell purity**](#) [周一, 25 9月 22:47]

A sophisticated system of 'social control' operating between neighboring cells allows embryos to protect the purity of their pluripotent cell population, which is able to generate all body tissues.

- [**Drug targeting technique could aid therapies for immune diseases**](#) [周一, 25 9月 22:47]

A new technique that targets drugs to specific cells could lead to improved therapies for diseases caused by an overactive immune response. The research could help people affected by conditions such as arthritis and inflammatory bowel diseases, where the body's own immune system mistakenly attacks healthy tissues.

- [**Maternal diet could affect kids' brain reward circuitry**](#) [周一, 25 9月 22:47]

Researchers have found that rats who ate junk food during pregnancy had heavier pups that strongly preferred fat straight after weaning. However, a balanced diet in childhood seemed to reduce the pups' desire

for fat. The pups also showed altered brain reward circuitry into adulthood. The findings could have implications for childhood nutrition and obesity in Western countries.

- [**Electronic triage tool improves patient care in emergency departments**](#) [周一, 25 9月 22:47]

When a patient arrives in any emergency department, one of the first steps in their care process is triage, an opportunity for a care team member to identify critically ill patients and assign priority treatment levels.

- [**Gene associated with schizophrenia risk regulates early brain development**](#) [周一, 25 9月 22:47]

A gene associated with the risk of schizophrenia regulates critical components of early brain development, according to a new study. The gene is involved in the translation of proteins from RNA and in the proliferation and migration of neurons in the brain. Understanding the function of this gene could lead to more effective treatments for schizophrenia.

- [**Thinking 'out-of-the-box' may build a better brain and prevent dementia**](#) [周一, 25 9月 21:55]

With disease-modifying treatment trials for Alzheimer's disease (AD) currently unsuccessful and only medications to treat symptoms available, what now? A leading neuroscientist has developed the

- [**Fresh blood for damaged tissues via alginate hydrogels**](#) [周一, 25 9月 21:55]

A team of researchers has engineered an alginate hydrogel infused with VEGF and IGF in order to promote vascularization in the ischemic hind limbs of aged mice and young rabbits and increase perfusion, or blood flow in the damaged tissue.

- [**Regenerating tissues with gene-targeting molecules**](#) [周一, 25 9月 21:55]

Researchers have constructed a synthetic molecule that can recognize

and bind with a specific DNA sequence and promotes differentiation of hiPSCs into heart muscle cells.

- **Wound care: Patch could improve healing and reduce scarring** [周一, 25 9月 21:54]

Scientists have developed a new gel patch prototype that could speed up the healing of a skin wound while minimizing the formation of scars.

- **Newly revealed autism-related genes include genes involved in cancer** [周一, 25 9月 21:54]

Researchers have applied a computational technique that accounts for how genes interact, to find new networks of related genes that may be involved in autism spectrum disorder. Some of the genes have not been previously linked to the disorder, and could help scientists to better understand it and develop new treatments.

- **Brain guides body much sooner than previously believed** [周一, 25 9月 21:54]

The brain plays an active role much earlier than previously thought. Long before movement or other behaviors occur, the nascent brain of an embryonic frog instructs normal muscle and nerve patterning and protects the embryo from agents that cause developmental defects. In addition to identifying these essential functions for the first time, researchers successfully rescued defects caused by lack of a brain by using widely available, human-approved drugs.

- **Up to one-quarter of cancer patients use marijuana** [周一, 25 9月 21:54]

A new study conducted in a cancer center in a state with legalized medicinal and recreational marijuana found that approximately one-quarter of surveyed patients used marijuana in the past year, mostly for physical and psychological symptoms.

- **For a better 'I,' there needs to be a supportive 'we'** [周一, 25 9月 21:54]

If you're one of those lucky individuals with high motivation and who

actively pursues personal growth goals, thank your family and friends who support you.

- [**MRI contrast agent locates and distinguishes aggressive from slow-growing breast cancer**](#) [周一, 25 9月 21:54]

A new magnetic resonance imaging contrast agent being tested by researchers not only pinpoints breast cancers at early stages but differentiates between aggressive and slow-growing types.

- [**A brain-system that builds confidence in what we see, hear and touch**](#) [周一, 25 9月 21:53]

A series of experiments provide conclusive evidence that the brain uses a single mechanism (supramodality) to estimate confidence in different senses such as audition, touch, or vision.

- [**Chronic migraine cases are amplified by jawbone disorder**](#) [周日, 24 9月 22:37]

A new study shows patients with chronic migraine are three times as likely to suffer from severe temporomandibular disorder. Though not a primary cause, the disorder is thought to accentuate and perpetuate sensitivity to pain; therefore, researchers recommend in chronic migraine clinical practice the assessment of the disorder's symptoms.

- [**First large scale study of cocaine users leads to breakthrough in drug testing**](#) [周六, 23 9月 07:31]

A rapid and highly sensitive fingerprint test has been developed that can take just seconds to confirm whether someone has used cocaine.

- [**Antibiotics, biocidal cleaners may spread multidrug resistance in MRSA**](#) [周六, 23 9月 03:05]

Antibiotic use on people or pets, and use of biocidal cleaning products such as bleach, are associated with multidrug resistance in methicillin-resistant *Staphylococcus aureus* (MRSA) in the home. This contamination of the home environment may contribute to reinfection of both humans and animals with MRSA, and to subsequent failure of treatment.

• [**Mechanism that underlies age-associated bone loss**](#) [周六, 23 9月 03:05]

A major health problem in older people is age-associated osteoporosis -- the thinning of bone and the loss of bone density that increases the risk of fractures. Researchers have now detailed an underlying mechanism leading to that osteoporosis. When this mechanism malfunctions, progenitor cells stop creating bone-producing cells, and instead create fat cells. Knowledge of this mechanism can provide targets in the search for novel bone-loss.

• [**Two Group A Streptococcus genes linked to 'flesh-eating' bacterial infections**](#) [周六, 23 9月 03:05]

Group A Streptococcus bacteria cause illnesses ranging from mild nuisances like strep throat to life-threatening conditions such as flesh-eating disease, also known as necrotizing fasciitis. Life-threatening infections occur when the bacteria spread underneath the surface of the skin or throat and invade the underlying soft tissue. Researchers have found two group A Streptococcus genes involved in invasive infections, which may be potential targets for therapeutics.

• [**Emergency contraception not as accessible as it should be, say researchers**](#) [周六, 23 9月 00:53]

Efforts to remove barriers to accessing emergency contraception (EC) scored victories in 2013, when the US Food and Drug Administration removed age restrictions on over-the-counter sales of the levonogestrel drug Plan B.

• [**Dentistry study pinpoints role of proteins that produce pearls**](#) [周六, 23 9月 00:29]

While it is known that pearls are made of calcium carbonate with an organic matrix core, the role of the proteins modulating the organization of these crystals has, until recently, been unclear. Researchers report the role of two such proteins that regulate the processes leading up to the formation of pearl.

. [Our weight tells how we assess food](#) [周五, 22 9月 23:17]

A new study demonstrated that people of normal weight tend to associate natural foods such as apples with their sensory characteristics. On the other hand, processed foods such as pizzas are generally associated with their function or the context in which they are eaten. But that's not all. The research also highlighted the ways in which underweight people pay greater attention to natural foods and overweight people to processed foods.

. [Residents: Frontline defenders against antibiotic resistance?](#) [周五, 22 9月 23:17]

Residents often decide which antibiotics to start a patient on so they could become the first line of defense against antibiotic resistance.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

- [**Creative use of noise brings bio-inspired electronic improvement**](#) [周二, 26 9月 03:14]

Researchers are working to exploit stochastic resonance to enhance signal transmission for a new generation of devices, using single-walled carbon nanotubes. They created a summing network SR device that detects subthreshold signals, fabricated to include a self-noise component.

- [**Holograms for molecules**](#) [周二, 26 9月 01:30]

Scientists have developed a completely new method for the analysis of molecules in liquids on a chip. The possible applications of this technology are immense. It has the potential, inter alia, to revolutionize medical diagnostics.

- [**Click beetles inspire design of self-righting robots**](#) [周二, 26 9月 01:30]

Robots perform many tasks that humans can't or don't want to perform, getting around on intricately designed wheels and limbs. If they tip over, however, they are rendered almost useless. Mechanical engineers and entomologists are looking to click beetles, who can right themselves without the use of their legs, to solve this robotics challenge.

- [**New non-contact, remote biometric tool could be next advance in computer security**](#) [周二, 26 9月 01:30]

Forget fingerprint computer identification or retinal scanning. Scientists have now developed a computer security system using the dimensions of your heart as your identifier. The system uses low-level Doppler radar to

measure your heart, and then continually monitors your heart to make sure no one else has stepped in to run your computer.

- **[IceCube helps demystify strange radio bursts from deep space](#)** [周二, 26 9月 01:29]

Scientists are turning IceCube, the world's most sensitive neutrino telescope, to the task of helping demystify powerful pulses of radio energy generated up to billions of light-years from Earth.

- **[The material that obscures supermassive black holes](#)** [周二, 26 9月 01:29]

New research examines the material that obscures active galactic nuclei obtained from infrared and X-ray observations.

- **[Are children who see movie characters use guns more likely to use them?](#)** [周二, 26 9月 01:29]

Children who watched a PG-rated movie clip containing guns played with a disabled real gun longer and pulled the trigger more often than children who saw the same movie not containing guns.

- **[Physicists demonstrate using a laser to control a current in graphene within just one femtosecond](#)** [周二, 26 9月 01:28]

Controlling electronic current is essential to modern electronics, as data and signals are transferred by streams of electrons which are controlled at high speed. Demands on transmission speeds are also increasing as technology develops. Scientists have now succeeded in switching on a current with a desired direction in graphene using a single laser pulse within a femtosecond. This is more than a thousand times faster compared to the most efficient transistors today.

- **[Climate insurance is rarely well thought out in agriculture](#)** [周一, 25 9月 23:33]

Internationally subsidised agricultural insurance is intended to protect farmers in developing countries from the effects of climate change. However, it can also lead to undesirable ecological and social side effects, as researchers have now explained. Their article also contains

recommendations for improved insurance schemes which in future should also take account of ecological and social aspects in addition to economic issues.

- [**Lava tubes: Hidden sites for future human habitats on the Moon and Mars**](#) [周一, 25 9月 23:28]

Lava tubes, underground caves created by volcanic activity, could provide protected habitats large enough to house streets on Mars or even towns on the Moon, according to new research. A further study shows how the next generation of lunar orbiters will be able to use radar to locate these structures under the Moon's surface.

- [**New technique uses light to separate mirrored molecules**](#) [周一, 25 9月 23:13]

Left- and right-handed versions of molecules can be hard to tell apart but can have devastatingly different effects. Researchers are developing an optical filter to sort these molecules, which could lead to purer and safer drugs and agrichemicals.

- [**Nanoparticle supersoap creates 'bijel' with potential as sculptable fluid**](#) [周一, 25 9月 23:13]

A new type of 'bijel' could one day lead to applications in soft robotics, liquid circuitry, and a host of other applications that could benefit from shape-shifting fluids.

- [**New type of supercomputer could be based on 'magic dust' combination of light and matter**](#) [周一, 25 9月 23:13]

Scientists have successfully demonstrated that a type of 'magic dust' which combines light and matter can be used to solve complex problems and could eventually surpass the capabilities of even the most powerful supercomputers.

- [**Scientists monitor Silicon Valley's underground water reserves -- from space**](#) [周一, 25 9月 22:57]

Scientists monitoring Silicon Valley's underground water reserves from space have found that water levels rebounded quickly after a severe

drought that lasted from 2012-15. The research points to the success of aggressive conservation measures. It also helps to lay the groundwork for low-cost monitoring of subterranean water reserves in California and elsewhere in the world.

• [**Filter may be a match for fracking water**](#) [周一, 25 9月 22:47]

A superhydrophilic filter has proven able to remove more than 90 percent of contaminants from water used in hydraulic fracturing operations at shale oil and gas wells.

• [**With extra sugar, leaves get fat too**](#) [周一, 25 9月 22:47]

Eat too much without exercising and you'll probably put on a few pounds. As it turns out, plant leaves do something similar. A new study shows that retaining sugars in plant leaves can make them get fat too. In plants, this extra fat accumulation could be a good thing. It could help turn plants into factories for making biofuels and other useful chemicals.

• [**Semitransparent and flexible: Solar cells made from atomically thin sheet**](#) [周一, 25 9月 21:55]

A new method for fabricating semitransparent, flexible solar cells has greatly improved power conversion efficiency.

• [**New synthesis method for click chemistry**](#) [周一, 25 9月 21:55]

Scientists have developed a new way to advance click chemistry.

• [**Wound care: Patch could improve healing and reduce scarring**](#) [周一, 25 9月 21:54]

Scientists have developed a new gel patch prototype that could speed up the healing of a skin wound while minimizing the formation of scars.

• [**A preparative-scale reaction using platinum clusters with a single-digit atomicity realized**](#) [周一, 25 9月 21:54]

Scientists have recently developed a fully scalable method for the synthesis of atom-precise platinum clusters for potential use in catalytic applications. This method could provide a new pathway for large-scale production of atom-precise clusters. To demonstrate this, the

hydrogenation of styrene was performed.

- [**How aerial thermal imagery is revolutionizing archaeology**](#) [周日, 24 9月 22:37]

A new study has demonstrated how the latest aerial thermal imagery is transforming archaeology due to advancements in technology. Today's thermal cameras, commercial drones and photogrammetric software has introduced a new realm of possibilities for collecting site data-- field survey data across a much larger area can now be obtained in much less time. The findings serve as a manual on how to use aerial thermography.

- [**NASA'S OSIRIS-REx spacecraft slingshots past Earth**](#) [周六, 23 9月 04:25]

NASA's asteroid sample return spacecraft successfully used Earth's gravity on Friday to slingshot itself on a path toward the asteroid Bennu, for a rendezvous next August.

- [**Twitter bots for good: Study reveals how information spreads on social media**](#) [周六, 23 9月 03:05]

Twitter bots have earned a bad reputation. But not all bots are bad, suggests a new study.

- [**Enhancing the sensing capabilities of diamonds with quantum properties**](#) [周六, 23 9月 00:29]

When a nitrogen atom is next to the space vacated by a carbon atom, it forms what is called a nitrogen-vacancy center. Now, researchers have shown how they can create more NV centers, which makes sensing magnetic fields easier, using a relatively simple method that can be done in many labs.

- [**A sustainable future powered by sea**](#) [周五, 22 9月 21:40]

Researchers develop turbines to convert the power of ocean waves into clean, renewable energy.

- [**Assembly of nanoparticles proceeds like a zipper**](#) [周五, 22 9月 21:40]

It has always been the Holy Grail of materials science to describe and

control the material's structure-function relationship. Nanoparticles are an attractive class of components to be used in functional materials because they exhibit size-dependent properties, such as superparamagnetism and plasmonic absorption of light. Furthermore, controlling the arrangement of nanoparticles can result in unforeseen properties, but such studies are hard to carry out due to limited efficient approaches to prod...

- [**Smartphone apps can reduce depression**](#) [周五, 22 9月 21:09]

New research has confirmed that smartphone apps are an effective treatment option for depression, paving the way for safe and accessible interventions for the millions of people around the world diagnosed with this condition.

- [**Ultra-light aluminum: Chemist reports breakthrough in material design**](#) [周五, 22 9月 21:09]

Chemists report a new, metastable, ultra-light crystalline form of aluminum has been computationally designed using density functional calculations with imposing periodic boundary conditions.

- [**The math of doughnuts: 'Moonshine' sheds light on elliptic curves**](#) [周五, 22 9月 21:09]

Mathematicians have opened a new chapter in the theory of moonshine, one which begins to harness the power of the pariahs -- sporadic simple groups that previously had no known application.

- [**Positive, negative or neutral, it all matters: NASA explains space radiation**](#) [周五, 22 9月 21:09]

Charged particles may be small, but they matter to astronauts. NASA's Human Research Program (HRP) is investigating these particles to solve one of its biggest challenges for a human journey to Mars: space radiation and its effects on the human body.

- [**New technique accurately digitizes transparent objects**](#) [周五, 22 9月 04:12]

A new imaging technique makes it possible to precisely digitize clear

objects and their surroundings, an achievement that has eluded current state-of-the-art 3-D rendering methods.

- [**'Labyrinth' chip could help monitor aggressive cancer stem cells**](#) [周五, 22 9月 04:12]

Inspired by the Labyrinth of Greek mythology, a new chip etched with fluid channels sends blood samples through a hydrodynamic maze to separate out rare circulating cancer cells into a relatively clean stream for analysis. It is already in use in a breast cancer clinical trial.

- [**Dancing electrons lose the race**](#) [周五, 22 9月 02:13]

Ultrashort pulses of light were employed by physicists to start a race between electrons emitted from different initial states in a solid material. Timing this race revealed an unexpected result: the fastest electrons arrived in last place.

- [**Detecting cosmic rays from a galaxy far, far away**](#) [周五, 22 9月 02:12]

Where do cosmic rays come from? Solving a 50-year-old mystery, a collaboration of researchers has discovered it's much farther than the Milky Way.

- [**Breaking Coulomb's law: Scientists find a way around the rule that 'opposites attract'**](#) [周五, 22 9月 01:43]

Scientists have taken a big step towards creating the next generation of batteries, as well as more effective water treatment and better alternative energy after defying one of nature's most fundamental rules on an atomic scale.

- [**Quantum teleportation of patterns of light**](#) [周五, 22 9月 00:11]

Researchers have demonstrated entanglement swapping and teleportation of orbital angular momentum 'patterns' of light. This is a crucial step towards realizing a quantum repeater for high-dimensional entangled states.

- [**Rapid imaging of granular matter**](#) [周五, 22 9月 00:11]

Granular systems such as gravel or powders can be found everywhere,

but studying them is not easy. Researchers have now developed a method by which pictures of the inside of granular systems can be taken 10,000 times faster than before.

- [**New analysis explains role of defects in metal oxides**](#) [周五, 22 9月 00:11]

Researchers have determined formulas to guide development of a promising new high-tech material, composed of insulating metal oxides known as alkaline-earth-metal binary oxides, that could lead to better computer memory chips, refrigeration systems, and other devices.

- [**Hope to discover sure signs of life on Mars? New research says look for the element vanadium**](#) [周四, 21 9月 23:06]

A new article suggests NASA and others hunting for proof of Martian biology in the form of 'microfossils' could use the element vanadium in combination with Raman spectroscopy to confirm traces of extraterrestrial life.

- [**Better rechargeable batteries coming soon?**](#) [周四, 21 9月 22:17]

Novel lithium electrodes coated with indium could be the basis for more powerful, longer-lasting, rechargeable batteries. The coating hinders undesirable side-reactions between the electrode and electrolyte, provide a more uniform deposition of lithium when charging, and augments storage in the lithium anode via alloying reactions between lithium and indium. Their success stems from the good diffusion of lithium ions along the interfacial layer.

- [**Astonishing time limit for ultrafast perovskite solar cells set**](#) [周四, 21 9月 22:17]

Researchers have quantified the astonishingly high speeds at which future solar cells would have to operate in order to stretch what are presently seen as natural limits on their energy conversion efficiency.

- [**Diamonds show Earth still capable of 'superhot' surprises**](#) [周四, 21 9月 21:55]

Diamonds may be 'forever' but some may have formed more recently

than geologists thought. A study of 26 diamonds, formed under extreme melting conditions in the Earth's mantle, found two populations, one of which has geologically 'young' ages. The results show that certain volcanic events on Earth may still be able to create super-heated conditions previously thought to have only existed early in the planet's history before it cooled. The findings may have implications for diamond prospecting.

- [**Solar eruption 'photobombed' Mars encounter with Comet Siding Spring**](#) [周四, 21 9月 21:50]

When Comet C/2013 A1 (Siding Spring) passed just 140,000 kilometers from Mars on 19th October 2014, depositing a large amount of debris in the Martian atmosphere, space agencies coordinated multiple spacecraft to witness the largest meteor shower in recorded history. It was a rare opportunity, as this kind of planetary event occurs only once every 100,000 years.

- [**Football helmet smartfoam signals potential concussions in real time, study suggests**](#) [周四, 21 9月 21:03]

While football-related concussions have been top of mind in recent years, people have struggled to create technology to accurately measure them in real time. Engineers have now developed and tested a nano composite smartfoam that can be placed inside a football helmet (and pads) to more accurately test the impact and power of hits.

- [**Precisely defined polymer chains now a reality**](#) [周四, 21 9月 21:03]

The materiality exhibited by humanmade polymers currently relies on simple chemical bonds and the sequence order taken by molecules in the polymer chain. We now no longer need to rely on fate to determine such materiality with this new technique for precisely defining polymer-chain order. This system uses highly specific 'grabber' ends on each molecule that bond with only one type of 'pin' end on another molecule.

- [**Mathematics predicts a sixth mass extinction**](#) [周四, 21 9月 06:21]

Scientists have analyzed significant changes in the carbon cycle over the last 540 million years, including the five mass extinction events. They

have identified 'thresholds of catastrophe' in the carbon cycle that, if exceeded, would lead to an unstable environment, and ultimately, mass extinction.

- [**Bio-inspired approach to RNA delivery**](#) [周四, 21 9月 03:50]

A team of chemical engineers, inspired by the way that cells translate their own mRNA into proteins, has designed a synthetic delivery system that is four times more effective than delivering mRNA on its own.

- [**Unique type of object discovered in our solar system**](#) [周四, 21 9月 02:47]

Astronomers have observed the intriguing characteristics of an unusual type of object in the asteroid belt between Mars and Jupiter: two asteroids orbiting each other and exhibiting comet-like features, including a bright coma and a long tail. This is the first known binary asteroid also classified as a comet.

- [**New biomaterial could replace plastic laminates, greatly reduce pollution**](#) [周四, 21 9月 02:47]

An inexpensive biomaterial that can be used to sustainably replace plastic barrier coatings in packaging and many other applications has been developed by researchers, who predict its adoption would greatly reduce pollution.

- [**Wave Glider surfs across stormy Drake Passage in Antarctica**](#) [周四, 21 9月 02:46]

A hardy ocean drone made a first-ever attempt to surf across Antarctica's stormy Drake Passage gathering data about ocean mixing.

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Environment News

Top stories featured on ScienceDaily's Plants & Animals, Earth & Climate, and Fossils & Ruins sections.

- [**Penguin-mounted video captures gastronomic close encounters of the gelatinous kind**](#) [周二, 26 9月 04:32]

Footage from penguin-mounted mini video recorders shows four species of penguin eating jellyfish and other gelatinous animals of the open ocean, a food source penguins were not previously believed to partake of, scientists report.

- [**Snails bred in lab help species crawl back from brink of extinction**](#) [周二, 26 9月 04:06]

Work to restore the endangered Chittenango ovate amber snail, found only in one location inside a Central New York state park, continued this month with the release of tagged adult snails raised in a laboratory.

- [**Antarctica: The wind sublimates snowflakes**](#) [周二, 26 9月 03:14]

A team of researchers has collected new data that shows a significant decrease in snow precipitation close to the ground in Antarctica, which has an impact on the ice sheet surface mass balance.

- [**Mechanism of asexual reproduction in flatworms**](#) [周二, 26 9月 03:14]

Scientists have nailed the biomechanics of a centuries-long puzzle on how freshwater flatworms known as planarians reproduce. The asexual freshwater worms, notoriously difficult to study, tear themselves into two pieces that go on to form two new worms. Researchers are now able to predict where planarian fission occurs based on its anatomy as well as explain how the process happens using a relatively simple mechanical

model.

- [**Metabolism directly impacts the odds of developing malaria**](#) [周二, 26 9月 01:30]

Researchers have found that the host's susceptibility to develop malaria depends on his or her metabolic state, which can be easily manipulated through external stimuli such as dietary patterns.

- [**Ticks are even tougher and nastier than you thought**](#) [周二, 26 9月 01:30]

Studies are showing how ticks can survive drought and cold northern winters.

- [**Study examines legacies of rainforest burning in British Columbia**](#) [周二, 26 9月 01:30]

Analyses of temperate rain forests located on the central coast of British Columbia, Canada, suggest that for centuries, humans have intentionally used fire to manage plant life.

- [**Discovering what makes organelles connect could help explain neurodegenerative diseases**](#) [周二, 26 9月 01:29]

Organelles must exchange signals and materials to make the cell operate correctly. New technologies are allowing researchers to see and understand the networks that connect these organelles, allowing them to build maps of the trade routes that exist within a cell.

- [**Tension makes the heart grow stronger**](#) [周二, 26 9月 01:29]

By taking videos of a tiny beating zebrafish heart as it reconstructs its covering in a petri dish, scientists have captured unexpected dynamics of cells involved in tissue regeneration. They found that the depleted heart tissue regenerates in a wave, led by a front of fast-moving, supersized cells and trailed by smaller cells that multiply to produce others. The nature of this wavefront is determined by mechanical tension on the cells.

- [**Big brains in birds provides survival advantage**](#) [周二, 26 9月 01:29]

Scientists have discovered that brainier birds are better able to colonize inhospitable places.

- [**Bacterial nanosized speargun works like a power drill**](#) [周二, 26 9月 01:28]

In order to get rid of unpleasant competitors, some bacteria use a sophisticated weapon -- a nanosized speargun. Researchers have now gained new insights into the construction, mode of action and recycling of this weapon. The speargun drills a hole into the neighboring cells in only a few thousandths of a second and injects a cocktail of toxins.

- [**Climate insurance is rarely well thought out in agriculture**](#) [周一, 25 9月 23:33]

Internationally subsidised agricultural insurance is intended to protect farmers in developing countries from the effects of climate change. However, it can also lead to undesirable ecological and social side effects, as researchers have now explained. Their article also contains recommendations for improved insurance schemes which in future should also take account of ecological and social aspects in addition to economic issues.

- [**Climate change can goad volcanoes into life**](#) [周一, 25 9月 23:14]

Geologists have analyzed volcanic data from the Messinian salinity crisis in the Mediterranean Sea, when the Strait of Gibraltar was blocked and the Mediterranean temporarily isolated from the Atlantic. After testing various scenarios, the geologists concluded that the increase in magmatic activity could only be explained by the almost total drying out of the Mediterranean.

- [**Clarifying perspectives to promote action on loss and damage from climate change**](#) [周一, 25 9月 23:13]

The hurricanes Harvey, Irma and Maria highlight the potential for the climate system to cause loss and damage. 'Loss and damage' is a phrase used in different ways by people who work on climate policy, negotiation and adaptation/resilience. A new study clarifies these different perspectives which is a key issue now that the United Nations

Framework Convention on Climate Change, UNFCCC, is encouraging creation and implementation of actions to address loss and damage from climate change.

- [**Likely scenarios for global spread of devastating crop disease**](#) [周一, 25 9月 23:13]

New research reveals the most likely months and routes for the spread of new strains of airborne 'wheat stem rust' that could endanger global food security by ravaging wheat production across Africa, the Middle East, Asia and the wider world.

- [**Panda habitat shrinking, becoming more fragmented**](#) [周一, 25 9月 23:13]

Using remote sensing data, Chinese and US scientists have re-assessed the conservation status of the giant panda. Their analysis shows that while panda numbers are increasing, their habitat still covers less area and is more fragmented than it was in 1988, when the species was listed as endangered on the IUCN Red List.

- [**World's botanic gardens contain a third of all known plant species, and help protect the most threatened**](#) [周一, 25 9月 23:13]

The most in-depth species survey to date finds an 'astonishing array' of plant diversity in the global botanic garden network, including 41 percent of all endangered species. However, researchers find a significant imbalance between tropical and temperate plants, and say even more capacity should be given to conservation, as there is 'no technical reason for plant species to become extinct.'

- [**Genes are controlled by 'Nano footballs,' scientists discover**](#) [周一, 25 9月 23:12]

Genes are controlled by 'nano footballs' -- structures that look like footballs but 10 million times smaller than the average ball -- new research has revealed.

- [**The rat race is over: New livestock model for**](#)

[stroke could speed discovery](#) [周一, 25 9月 22:57]

Researchers have developed the first US pig model for stroke treatments.

• [Scientists monitor Silicon Valley's underground water reserves -- from space](#) [周一, 25 9月 22:57]

Scientists monitoring Silicon Valley's underground water reserves from space have found that water levels rebounded quickly after a severe drought that lasted from 2012-15. The research points to the success of aggressive conservation measures. It also helps to lay the groundwork for low-cost monitoring of subterranean water reserves in California and elsewhere in the world.

• [Scientists call for more research on how human activities affect the seabed](#) [周一, 25 9月 22:47]

Extensive research has been released into how industry and environmental change are affecting our seafloors. Researchers say more work is needed to help safeguard these complex ecosystems and the benefits they provide to people for the future.

• [Getting the measure of mud](#) [周一, 25 9月 22:47]

For the first time, researchers have been able to use mud deposited on the depths of the ocean floor to measure changes in the speed of deep-sea currents. Using mud as a current meter could help scientists to identify fluctuating patterns in ocean current speeds stretching back into prehistory, enabling climate change researchers to get a better sense of how currents behave over time.

• [Brain damage in fish from plastic nanoparticles in water](#) [周一, 25 9月 22:47]

A new study shows that plastic particles in water may end up inside fish brains. The plastic can cause brain damage, which is the likely cause of behavioral disorders observed in the fish.

• [Filter may be a match for fracking water](#) [周一, 25 9月 22:47]

A superhydrophilic filter has proven able to remove more than 90

percent of contaminants from water used in hydraulic fracturing operations at shale oil and gas wells.

- **[With extra sugar, leaves get fat too](#)** [周一, 25 9月 22:47]

Eat too much without exercising and you'll probably put on a few pounds. As it turns out, plant leaves do something similar. A new study shows that retaining sugars in plant leaves can make them get fat too. In plants, this extra fat accumulation could be a good thing. It could help turn plants into factories for making biofuels and other useful chemicals.

- **[Semitransparent and flexible: Solar cells made from atomically thin sheet](#)** [周一, 25 9月 21:55]

A new method for fabricating semitransparent, flexible solar cells has greatly improved power conversion efficiency.

- **[Regenerating tissues with gene-targeting molecules](#)** [周一, 25 9月 21:55]

Researchers have constructed a synthetic molecule that can recognize and bind with a specific DNA sequence and promotes differentiation of hiPSCs into heart muscle cells.

- **[Organic consumers mean business](#)** [周一, 25 9月 21:54]

Organic consumers are standing fast and are buying more and more organic products following an increasingly predictable pattern.

- **[Discovery of a new group of sponges could help measure impact of deep-sea mining](#)** [周一, 25 9月 21:54]

A completely new group of sponges has been discovered, which scientists believe could be a key indicator species in measuring future mining impact in a region targeted for deep-sea mining of polymetallic (metal-rich) nodules. They are likely to be the most abundant nodule-dwelling animal in the area.

- **[Fish have surprisingly complex personalities](#)** [周一, 25 9月 21:54]

Tiny fish called Trinidadian guppies have individual 'personalities', new research shows.

• [**Brain guides body much sooner than previously believed**](#) [周一, 25 9月 21:54]

The brain plays an active role much earlier than previously thought. Long before movement or other behaviors occur, the nascent brain of an embryonic frog instructs normal muscle and nerve patterning and protects the embryo from agents that cause developmental defects. In addition to identifying these essential functions for the first time, researchers successfully rescued defects caused by lack of a brain by using widely available, human-approved drugs.

• [**Up to one-quarter of cancer patients use marijuana**](#) [周一, 25 9月 21:54]

A new study conducted in a cancer center in a state with legalized medicinal and recreational marijuana found that approximately one-quarter of surveyed patients used marijuana in the past year, mostly for physical and psychological symptoms.

• [**New technique spots warning signs of extreme events**](#) [周日, 24 9月 22:38]

Engineers have devised a framework for identifying key patterns that precede an extreme event. The framework can be applied to a wide range of complicated, multidimensional systems to pick out the warning signs that are most likely to occur in the real world.

• [**How aerial thermal imagery is revolutionizing archaeology**](#) [周日, 24 9月 22:37]

A new study has demonstrated how the latest aerial thermal imagery is transforming archaeology due to advancements in technology. Today's thermal cameras, commercial drones and photogrammetric software has introduced a new realm of possibilities for collecting site data-- field survey data across a much larger area can now be obtained in much less time. The findings serve as a manual on how to use aerial thermography.

• [**Study finds no-tillage not sufficient alone to prevent water pollution from nitrate**](#) [周六, 23 9月 04:25]

A new study answers a long-debated agricultural question: whether no-tillage alone is sufficient to prevent water pollution from nitrate. The answer is no.

- [**Antibiotics, biocidal cleaners may spread multidrug resistance in MRSA**](#) [周六, 23 9月 03:05]

Antibiotic use on people or pets, and use of biocidal cleaning products such as bleach, are associated with multidrug resistance in methicillin-resistant *Staphylococcus aureus* (MRSA) in the home. This contamination of the home environment may contribute to reinfection of both humans and animals with MRSA, and to subsequent failure of treatment.

- [**Dentistry study pinpoints role of proteins that produce pearls**](#) [周六, 23 9月 00:29]

While it is known that pearls are made of calcium carbonate with an organic matrix core, the role of the proteins modulating the organization of these crystals has, until recently, been unclear. Researchers report the role of two such proteins that regulate the processes leading up to the formation of pearl.

- [**700 years old saint myth has been proven \(almost\) true**](#) [周五, 22 9月 23:17]

Scientists confirm that the age and content of an old sack is in accordance with a medieval myth about Saint Francis of Assisi.

- [**A sustainable future powered by sea**](#) [周五, 22 9月 21:40]

Researchers develop turbines to convert the power of ocean waves into clean, renewable energy.

- [**Ancient textiles reveal differences in Mediterranean fabrics in the 1st millennium BC**](#) [周五, 22 9月 21:40]

Analysis of Iron Age textiles indicates that during c. 1000-400 BC Italy shared the textile culture of Central Europe, while Greece was largely influenced by the traditions of ancient Near East.

- [**Crowning the 'king of the crops': Sequencing the white guinea yam genome**](#) [周五, 22 9月 21:40]

Scientists have, for the first time, provided a genome sequence for the white Guinea yam, a staple crop with huge economic and cultural significance on the African continent and a lifeline for millions of people.

- [**Winter cold extremes linked to high-altitude polar vortex weakening**](#) [周五, 22 9月 21:40]

When the strong winds that circle the Arctic slacken, cold polar air can escape and cause extreme winter chills in parts of the Northern hemisphere. A new study finds that these weak states have become more persistent over the past four decades and can be linked to cold winters in Russia and Europe.

- [**Breathing dirty air may harm kidneys**](#) [周五, 22 9月 21:16]

Outdoor air pollution may increase the risk of chronic kidney disease and contribute to kidney failure, say researchers. Scientists culled national VA databases to evaluate the effects of air pollution and kidney disease on nearly 2.5 million people over a period of 8.5 years, beginning in 2004. The scientists compared VA data on kidney function to air-quality levels collected by the Environmental Protection Agency (EPA) as well as the National Aeronautics and Space Administration (NASA).

- [**Rainbow colors reveal cell history**](#) [周五, 22 9月 21:14]

A system called "Beta-bow", which allows the history of beta-cells to be traced by genetic bar-coding and multicolor imaging, has been developed by researchers.

- [**Party discipline for jumping genes**](#) [周五, 22 9月 21:09]

Jumping genes, transposons, are part of the genome of most organisms, aggregated into families and can damage the genome by jumping. How hosts suppress the jumping is well investigated. Why they still can jump has hardly been understood so far. Researchers investigated for the first time in all transposons of the host organism, which properties and host

environments facilitate jumping. They showed that family affiliation is more important than position.

• [**Artificial orchid cultivation kit**](#) [周五, 22 9月 21:09]

Orchids are loved by gardeners around the world but are notoriously difficult to cultivate. Researchers have developed a new orchid cultivation kit and have succeeded in complete artificial cultivation of an autonomous orchid. Since this kit can be made cheaply, it can broaden the opportunities for orchid cultivation in general households. It is also expected to be useful in preserving the genetic diversity of orchidaceous plants, many of which are in danger of extinction.

• [**Ozark grasslands experience major increase in trees and shrubs**](#) [周五, 22 9月 04:12]

Woody vegetation, such as trees and shrubs, has increased dramatically in Ozark grasslands over the past 75 years, according to a study. If these ecosystems continue to favor woody vegetation, will it be possible to maintain open grasslands for the foreseeable future?

• [**Into more thin air: Exploring the adaptation extremes of human high altitude sickness and fitness**](#) [周五, 22 9月 04:12]

Many research groups have explored human adaptation to high altitude living among three major far-flung global populations: Tibetans, Ethiopians and Peruvians. But few have simultaneously explored the other extreme---maladaptation---in the form of chronic mountain sickness (CMS). Now, in the largest whole genome study of its kind, an international research team led by University of California San Diego's Chairman of Pediatrics, Dr. Gabriel Haddad, has expanded on their recent study of understand...

• [**Ancient DNA data fills in thousands of years of human prehistory in Africa**](#) [周五, 22 9月 02:13]

By sequencing the ancient genomes of 15 individuals from different parts of Africa, researchers reporting in the journal Cell on Sept. 21 have reconstructed the prehistory of humans on the continent, going back

thousands of years. The findings shed light on which human populations lived in eastern and southern Africa between 8,000 and 1,000 years ago, the researchers say.

[Scientists sequence asexual tiny worm whose lineage stretches back 18 million years](#) [周五, 22 9月 02:13]

A team of scientists has sequenced, for the first time, a tiny worm that belongs to a group of exclusively asexual species that originated approximately 18 million years ago -- making it one of the oldest living lineages of asexual animals known.

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- [**Are children who see movie characters use guns more likely to use them?**](#) [周二, 26 9月 01:29]

Children who watched a PG-rated movie clip containing guns played with a disabled real gun longer and pulled the trigger more often than children who saw the same movie not containing guns.

- [**Climate insurance is rarely well thought out in agriculture**](#) [周一, 25 9月 23:33]

Internationally subsidised agricultural insurance is intended to protect farmers in developing countries from the effects of climate change. However, it can also lead to undesirable ecological and social side effects, as researchers have now explained. Their article also contains recommendations for improved insurance schemes which in future should also take account of ecological and social aspects in addition to economic issues.

- [**Group project? Taking turns, working with friends may improve grades**](#) [周一, 25 9月 23:33]

A new study with college students has found that the social dynamics of a group, such as whether one person dominates the conversation or whether students work with a friend, affect academic performance. Put simply, the more comfortable students are, the better they do, which yields benefits beyond the classroom.

- [**Clarifying perspectives to promote action on loss and damage from climate change**](#) [周一, 25 9月 23:13]

The hurricanes Harvey, Irma and Maria highlight the potential for the climate system to cause loss and damage. 'Loss and damage' is a phrase used in different ways by people who work on climate policy, negotiation and adaptation/resilience. A new study clarifies these different perspectives which is a key issue now that the United Nations Framework Convention on Climate Change, UNFCCC, is encouraging creation and implementation of actions to address loss and damage from climate change.

- **[Visual attention drawn to meaning, not what stands out](#)** [周一, 25 9月 23:13]

Our visual attention is drawn to parts of a scene that have meaning, rather than to those that are salient or 'stick out,' according to new research. The findings overturn the widely held model of visual attention.

- **[World's botanic gardens contain a third of all known plant species, and help protect the most threatened](#)** [周一, 25 9月 23:13]

The most in-depth species survey to date finds an 'astonishing array' of plant diversity in the global botanic garden network, including 41 percent of all endangered species. However, researchers find a significant imbalance between tropical and temperate plants, and say even more capacity should be given to conservation, as there is 'no technical reason for plant species to become extinct.'

- **[Minority public managers prefer integrating social equity, traditional public values](#)** [周一, 25 9月 22:57]

Minority public managers place more emphasis on both traditional values, like efficiency and effectiveness, and social equity when compared with their white counterparts, according to a new study.

- **[Scientists call for more research on how human activities affect the seabed](#)** [周一, 25 9月 22:47]

Extensive research has been released into how industry and

environmental change are affecting our seafloors. Researchers say more work is needed to help safeguard these complex ecosystems and the benefits they provide to people for the future.

- [**New technique spots warning signs of extreme events**](#) [周日, 24 9月 22:38]

Engineers have devised a framework for identifying key patterns that precede an extreme event. The framework can be applied to a wide range of complicated, multidimensional systems to pick out the warning signs that are most likely to occur in the real world.

- [**Study finds no-tillage not sufficient alone to prevent water pollution from nitrate**](#) [周六, 23 9月 04:25]

A new study answers a long-debated agricultural question: whether no-tillage alone is sufficient to prevent water pollution from nitrate. The answer is no.

- [**Flint's water crisis led to fewer babies and higher fetal death rates, researchers find**](#) [周五, 22 9月 21:16]

An estimated 275 fewer children were born in Flint, Michigan, while the city was using lead-contaminated water from the Flint River, according to new research findings.

- [**Breathing dirty air may harm kidneys**](#) [周五, 22 9月 21:16]

Outdoor air pollution may increase the risk of chronic kidney disease and contribute to kidney failure, say researchers. Scientists culled national VA databases to evaluate the effects of air pollution and kidney disease on nearly 2.5 million people over a period of 8.5 years, beginning in 2004. The scientists compared VA data on kidney function to air-quality levels collected by the Environmental Protection Agency (EPA) as well as the National Aeronautics and Space Administration (NASA).

- [**Strong alcohol policies help reduce alcohol-involved homicides**](#) [周五, 22 9月 04:12]

Stronger alcohol policies, including taxes and sales restrictions, have

been shown to reduce the likelihood of alcohol involvement among homicide victims, according to a new study.

- **[Babies can learn that hard work pays off](#)** [周五, 22 9月 04:12]

A new study reveals babies as young as 15 months can learn the value of hard work. Researchers found babies who watched an adult struggle to reach two different goals before succeeding tried harder at their own difficult task than babies who saw an adult succeed effortlessly.

- **[We must accelerate transitions for sustainability and climate change, experts say](#)** [周五, 22 9月 02:12]

We must move faster towards a low-carbon world if we are to limit global warming to 2 degrees C this century, experts have warned.

- **[Rapid hepatitis C testing may help better screen young adults](#)** [周五, 22 9月 02:12]

Routine and rapid hepatitis C virus testing among young adults who use injection drugs improves life expectancy and may provide a good use of limited resources, according to new research.

- **[Wildlife rangers: What motivates them?](#)** [周五, 22 9月 00:11]

Wildlife rangers are on the front lines protecting our most iconic species -- tigers, elephants, gorillas and many others. But their challenges involve more than confrontations with wild animals and poachers.

- **[Recipe for forest restoration discovered](#)** [周四, 21 9月 22:17]

A new study has uncovered some valuable information on ways to maximize the success of replanting efforts, bringing new hope for restoring these threatened ecosystems.

- **[Premature births cost health plans \\$6 billion annually](#)** [周四, 21 9月 21:02]

A new study estimates employer-sponsored health plans spent at least \$6 billion extra on infants born prematurely in 2013 and a substantial portion of that sum was spent on infants with major birth defects.

- **[Pay more, smoke less: Possible effects of raising](#)**

[tobacco taxes across the EU](#) [周四, 21 9月 11:22]

Raising tobacco taxes to increase cigarette prices could reduce cigarette consumption and smoking-associated deaths (SADs) in all 28 EU countries, according to a new study. In higher income countries, raising tobacco taxes could increase revenues that could be spend on prevention and control programs, while in lower income countries tax revenues may be negatively affected, researchers suggest.

• [When residents take charge of their rainforests, fewer trees die](#) [周四, 21 9月 06:21]

When the government gives citizens a personal stake in forested land, trees don't disappear as quickly and environmental harm slows down, research finds.

• [Communication among health care facilities key to preventing spread of drug-resistant bacteria](#) [周四, 21 9月 02:47]

Communication breakdowns between care facilities can pave the way for outbreaks of infection, according to research on the spread of an extensively drug-resistant bacterium.

• [Hold the phone: An ambulance might lower your chances of surviving some injuries](#) [周四, 21 9月 01:16]

Victims of gunshots and stabbings are significantly less likely to die if they're taken to the trauma center by a private vehicle than ground emergency medical services (EMS), according to results of a new analysis.

• [Building social communication skills in shy children helps with peer likeability](#) [周三, 20 9月 22:00]

A new study has discovered that shy children with low English vocabulary skills, can still be popular among their peers if they have high-functioning social communication skills that enable them to engage and interact well with their peers in social settings.

• [New tool to assess individual's level of wisdom](#) [周三, 20 9月 21:59]

Researchers have developed a new tool called the San Diego Wisdom Scale (SD-WISE) to assess an individual's level of wisdom, based upon a conceptualization of wisdom as a trait with a neurobiological as well as psychosocial basis.

- [**Clear tactics, but few easy solutions, for hospitals combating ransomware**](#) [周三, 20 9月 02:48]

Hospitals facing the prospect of ransomware attacks like the one that afflicted British hospitals in May can take many concrete steps to better protect themselves, but some of the most important measures -- such as a national policy not to pay ransoms -- may be tougher to formulate.

- [**Management studies: Dishonesty shift**](#) [周三, 20 9月 02:04]

Lying comes more easily to people in teams: Behavioral scientists have shown in an experimental study why groups are more likely to behave unethically than individuals.

- [**Political polarization? Don't blame the web**](#) [周三, 20 9月 02:04]

Despite the popular narrative that the web is to blame for rising political polarization, a study by economists has found that recent growth in polarization is greatest for demographic groups in which individuals are least likely to use the internet and social media. This means that data does not support the claim that the internet is the most significant driver of partisanship.

- [**Changes in non-extreme precipitation may have not-so-subtle consequences**](#) [周三, 20 9月 00:31]

Extreme floods and droughts receive a lot of attention. But what happens when precipitation -- or lack thereof -- occurs in a more measured way?

- [**UK oil and gas reserves may last only a decade, study suggests**](#) [周三, 20 9月 00:31]

The UK has low oil and gas resources and limited prospects for fracking, according to a new analysis by scientists, who recommend a shift towards greater use of renewable, clean energy.

[Students' self-concepts of ability in math, reading predict later math, reading attainment](#) [周二, 19 9月 21:10]

A new longitudinal study looked at how youths' self-concepts are linked to their actual academic achievement in math and reading from middle childhood to adolescence. The study found that students' self-concepts of their abilities in these two academic domains play an important role in motivating their achievements over time and across levels of achievement.

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [**After 15 years in a vegetative state, nerve stimulation restores consciousness**](#) [周二, 26 9月 01:29]

A 35-year-old man who had been in a vegetative state for 15 years after a car accident has shown signs of consciousness after neurosurgeons implanted a vagus nerve stimulator into his chest. The findings show that vagus nerve stimulation (VNS) -- a treatment already in use for epilepsy and depression--can help to restore consciousness even after many years in a vegetative state.

- [**Bacterial nanosized speargun works like a power drill**](#) [周二, 26 9月 01:28]

In order to get rid of unpleasant competitors, some bacteria use a sophisticated weapon -- a nanosized speargun. Researchers have now gained new insights into the construction, mode of action and recycling of this weapon. The speargun drills a hole into the neighboring cells in only a few thousandths of a second and injects a cocktail of toxins.

- [**Lava tubes: Hidden sites for future human habitats on the Moon and Mars**](#) [周一, 25 9月 23:28]

Lava tubes, underground caves created by volcanic activity, could provide protected habitats large enough to house streets on Mars or even towns on the Moon, according to new research. A further study shows how the next generation of lunar orbiters will be able to use radar to locate these structures under the Moon's surface.

- [**Genes are controlled by 'Nano footballs,'**](#)

[scientists discover](#) [周一, 25 9月 23:12]

Genes are controlled by 'nano footballs' -- structures that look like footballs but 10 million times smaller than the average ball -- new research has revealed.

• [Fish have surprisingly complex personalities](#) [周一, 25 9月 21:54]

Tiny fish called Trinidadian guppies have individual 'personalities', new research shows.

• [Detecting cosmic rays from a galaxy far, far away](#) [周五, 22 9月 02:12]

Where do cosmic rays come from? Solving a 50-year-old mystery, a collaboration of researchers has discovered it's much farther than the Milky Way.

• [Early trilobites had stomachs, new fossil study finds](#) [周五, 22 9月 02:12]

Exceptionally preserved trilobite fossils from China, dating back to more than 500 million years ago, have revealed new insights into the extinct marine animal's digestive system. The new study shows that at least two trilobite species evolved a stomach structure 20 million years earlier than previously thought.

• [Hope to discover sure signs of life on Mars? New research says look for the element vanadium](#) [周四, 21 9月 23:06]

A new article suggests NASA and others hunting for proof of Martian biology in the form of 'microfossils' could use the element vanadium in combination with Raman spectroscopy to confirm traces of extraterrestrial life.

• [Big herbivorous dinosaurs ate crustaceans as a side dish](#) [周四, 21 9月 22:17]

Some big plant-eating dinosaurs roaming present-day Utah some 75 million years ago were slurping up crustaceans on the side, a behavior that may have been tied to reproductive activities, says a new study.

• [**Tiny Brazilian frogs are deaf to their own calls**](#) [周四, 21 9月 21:03]

Pumpkin toadlets, found on the leaf litter of Brazil's Atlantic forest, are among the smallest frogs in the world. Scientists have now discovered that two species of these tiny orange frogs cannot hear the sound of their own calls.

• [**Unique type of object discovered in our solar system**](#) [周四, 21 9月 02:47]

Astronomers have observed the intriguing characteristics of an unusual type of object in the asteroid belt between Mars and Jupiter: two asteroids orbiting each other and exhibiting comet-like features, including a bright coma and a long tail. This is the first known binary asteroid also classified as a comet.

• [**Plants combine color and fragrance to procure pollinators**](#) [周四, 21 9月 02:47]

Who knew that it's possible to predict the fragrance of a flower by looking at its color? This is true for many of the 41 insect-pollinated plant species growing in a Phrygana scrubland habitat on the Greek island of Lesbos.

• [**Bite force research reveals dinosaur-eating frog**](#) [周四, 21 9月 01:17]

Scientists say that a large, now extinct, frog called Beelzebufo that lived about 68 million years ago in Madagascar would have been capable of eating small dinosaurs. The conclusion comes from a study of the bite force of South American horned frogs from the living genus Ceratophrys, known as Pacman frogs for their characteristic round shape and large mouth, similar to the video game character Pac-Man.

• [**World's first 'molecular robot' capable of building molecules**](#) [周四, 21 9月 01:17]

Scientists have created the world's first 'molecular robot' that is capable of performing basic tasks including building other molecules.

• [**Dinosaur evolution: Lumbering giants had agile**](#)

ancestors [周四, 21 9月 01:17]

The best known sauropod dinosaurs were huge herbivorous creatures, whose brain structures were markedly different from those of their evolutionary predecessors, for the earliest representatives of the group were small, lithe carnivores.

• **Scientists make atoms-thick 'Post-It notes' for solar cells and circuits** [周四, 21 9月 01:17]

A new study describes an innovative method to make stacks of semiconductors just a few atoms thick. The technique offers scientists and engineers a simple, cost-effective method to make thin, uniform layers of these materials, which could expand capabilities for devices from solar cells to cell phones.

• **Hold the phone: An ambulance might lower your chances of surviving some injuries** [周四, 21 9月 01:16]

Victims of gunshots and stabbings are significantly less likely to die if they're taken to the trauma center by a private vehicle than ground emergency medical services (EMS), according to results of a new analysis.

• **Is the Milky Way an 'outlier' galaxy? Studying its 'siblings' for clues** [周三, 20 9月 23:33]

The most-studied galaxy in the universe -- the Milky Way -- might not be as 'typical' as previously thought, according to a new study. Early results from the Satellites Around Galactic Analogs (SAGA) Survey indicate that the Milky Way's satellites are much more tranquil than other systems of comparable luminosity and environment. Many satellites of those 'sibling' galaxies are actively pumping out new stars, but the Milky Way's satellites are mostly inert.

• **Real or fake? Creating fingers to protect identities** [周三, 20 9月 23:33]

Biometric experts for the first time have designed and created a fake finger containing multiple key properties of human skin. Commonly

called a spoof, this fake finger has been used to test two of the predominant types of fingerprint readers to help determine their resilience to spoof attacks.

• [**Gravity waves influence weather and climate**](#) [周三, 20

9月 22:00]

Gravity waves form in the atmosphere as a result of destabilizing processes. The effects of gravity waves can only be taken into consideration by including additional special components in the models.

• [**Solar wind impacts on giant 'space hurricanes' may affect satellite safety**](#) [周二, 19 9月 21:10]

Could the flapping of a butterfly's wings in Costa Rica set off a hurricane in California? For most people, this hypothetical scenario may be difficult to imagine on Earth -- particularly when a real disaster strikes. Yet, in space, similarly small fluctuations in the solar wind as it streams toward the Earth's magnetic shield actually can affect the speed and strength of 'space hurricanes,' a researcher explains.

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周三, 27 9月 2017

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Latest Science News

Breaking science news and articles on global warming, extrasolar planets, stem cells, bird flu, autism, nanotechnology, dinosaurs, evolution -- the latest discoveries in astronomy, anthropology, biology, chemistry, climate and environment, computers, engineering, health and medicine, math, physics, psychology, technology, and more -- from the world's leading universities and research organizations.

- [Near-Earth asteroid CubeSat goes full sail](#) [周三, 27 9月 01:39]

NASA's Near-Earth Asteroid Scout, a small satellite the size of a shoebox, designed to study asteroids close to Earth, recently performed a full-scale solar sail deployment test. The test was performed in an indoor clean room to ensure the deployment mechanism's functionality after recent environmental testing.

- [Innovative control system paves the way for large scale universal quantum computing](#) [周三, 27 9月 01:30]

Future quantum computers promise exponential scaling in computing power with linearly increasing number of qubits. However, harnessing this power is challenging due to the complexity of controlling a large number of qubits simultaneously. A solution to this problem has now been engineered.

- [Energy harvested from evaporation could power much of US](#) [周三, 27 9月 00:51]

In the first evaluation of evaporation as a renewable energy source, researchers find that US lakes and reservoirs could generate 325 gigawatts of power, nearly 70 percent of what the United States currently produces.

• [**Quantum communications bend to our needs**](#) [周三, 27 9月 00:51]

The potential for photon entanglement in quantum computing and communications has been known for decades. One issue impeding immediate application is that many photon entanglement platforms don't operate within the range used by most forms of telecommunication. Researchers have started to unravel the mysteries of entangled photons, demonstrating a technique that uses semiconductor quantum dots to bend photons to the wavelengths used by today's popular C-band standards.

• [**Some marine species more vulnerable to climate change than others**](#) [周三, 27 9月 00:51]

Certain marine species will fare much worse than others as they become more vulnerable to the effects of climate change, a new study has found.

• [**Antibiotics warranted for kids with minor staph infections**](#) [周三, 27 9月 00:51]

The overuse of antibiotics has left some doctors questioning whether to give such drugs to children diagnosed with uncomplicated *Staphylococcus aureus* (staph) infections. Now, research indicates that prescribing antibiotics -- in addition to lancing and draining staph-infected areas -- reduces the risk of recurrent infections.

• [**Amount of water in stem cells can determine its fate as fat or bone**](#) [周三, 27 9月 00:51]

Adding or removing water from a stem cell can change the destiny of the cell to either pre-fat cells or pre-bone cells, researchers have discovered in a new study.

• [**Scientists unlock mysteries of how Ebola uses people's immune defenses to cause infection**](#) [周三, 27 9月 00:51]

Scientists have gained new insight into how the Ebola virus uses the body's natural defenses to speed the rate of infection and unleash its lethal disease, according to a new report.

- [**Fisheries sustainability linked to gender roles among traders**](#) [周二, 26 9月 23:59]

A new study of fish traders in coastal Kenya shows that women largely occupied fisheries with the lowest profits and are not saving money while working in these fisheries.

- [**Two Caribbean bird-catcher trees named after two women with overlooked botanical works**](#) [周二, 26 9月 23:59]

Known for their biodiversity richness, the Caribbean Islands are now adding two new species of bird-catcher trees to their list of botanical treasures. The new species were named after two women who self-engaged for decades on educational projects in botany, but whose remarkable work was never properly made known and accredited.

- [**Injection alternative: Model predicts performance of glucose-responsive insulin**](#) [周二, 26 9月 23:59]

Researchers have created a computer model that can predict how glucose-responsive insulin will affect patients' blood sugar based on chemical traits such as how quickly it becomes activated in the presence of glucose. This could help scientists design insulin that lingers in a patient's bloodstream and becomes active only when needed, such as right after a meal.

- [**Warm Northwest waters draw spawning fish north**](#) [周二, 26 9月 23:59]

Unusually warm ocean conditions off the Pacific Northwest in the last few years led anchovies, sardines and hake to begin spawning in Northwest waters much earlier in the year and, for anchovy, longer than biologists have ever recorded before, new research has found.

- [**A fresh set of eyes: Rotating plant inspectors reduces risk of medical device recalls**](#) [周二, 26 9月 23:59]

More frequent rotation of plant inspectors at medical device manufacturing facilities could benefit consumers and lead to fewer

product recalls, finds new research.

- [**One in 5 teens report having had a concussion in their lifetime**](#) [周二, 26 9月 23:20]

A new study confirms what many hospital emergency rooms nationwide are seeing: teens playing contact sports suffer from concussions.

- [**Does your back feel stiff? Well, it may not actually be stiff, study finds**](#) [周二, 26 9月 23:20]

The feeling of stiffness in your back may mean something else is going, warns a new report.

- [**Biochemists discover mechanism that helps flu viruses evolve**](#) [周二, 26 9月 23:20]

Flu viruses' rapid evolution relies in part on hijacking some of the cellular machinery of the infected host cell -- a group of proteins called chaperones, which help other proteins fold into the correct shape. When viruses are unable to get help from these proteins, they do not evolve as rapidly, research shows.

- [**Wearable solar thermoelectric generator created**](#) [周二, 26 9月 22:55]

Engineers have introduced a new advanced energy harvesting system, capable of generating electricity by simply being attached to clothes, windows, and outer walls of a building.

- [**Lactation hormone also helps a mother's brain**](#) [周二, 26 9月 22:55]

The same hormone that stimulates milk production for lactation, also acts in a particular part of the brain to help establish the nurturing link between mother and baby, researchers have revealed.

- [**Researchers identify novel way to target Ebola**](#) [周二, 26 9月 22:55]

Researchers have identified a potential new way to attack Ebola. Scientists have discovered that a protein called Tim-1 (T-cell immunoglobulin and mucin domain-containing protein 1) plays a key role in the development of the cytokine storm seen in the last stages of Ebola infection.

- [**Predatory bacteria found in study of cystic fibrosis patients' lung microbiome**](#) [周二, 26 9月 22:55]

Cystic fibrosis patients have a wide variety of bacteria in their lungs, including two 'predators' not detected before, according to a new study.

- [**Artificial intelligence for obtaining chemical fingerprints**](#) [周二, 26 9月 22:54]

Researchers have succeeded in developing a method for predicting molecular infrared spectra based on artificial intelligence. These chemical 'fingerprints' could only be simulated by common prediction techniques for small molecules in high quality. The team was able to carry out simulations that were previously not possible.

- [**Understanding football violence could help the fight against terror**](#) [周二, 26 9月 22:54]

Football has long been tarnished by outbreaks of fan violence. Although media headlines often link the behavior to 'hooliganism,' the activity could stem from potentially more positive motivations, such as passionate commitment to the group and the desire to belong. Understanding the root cause of the behavior may therefore help in tackling the violence and channeling it into something more positive, scientists suggest.

- [**Interventions for reducing hepatitis C infection in people who inject drugs**](#) [周二, 26 9月 22:54]

The first global review to quantify the impact of needle syringe programs (NSP) and opioid substitution treatment (OST) in reducing the risk of becoming infected with the hepatitis C virus has now been published. The study has implications for millions of people who are 'at risk' from infection.

- [**Older drivers adapt their thinking to improve road hazard detection**](#) [周二, 26 9月 22:54]

A recent study finds older drivers adapt their responses in heavy traffic to better identify road hazards.

• [**Household chores: Women still do more**](#) [周二, 26 9月 22:54]

Women of all ages still tend to do more household chores than their male partners, no matter how much they work or earn in a job outside the home. New findings demonstrate the persistent gendered nature of how housework is divided.

• [**The drying of peatlands is reducing bird diversity**](#) [周二, 26 9月 22:54]

The populations of peatland birds in Finland, Sweden, Norway, Estonia and Latvia have decreased by a third during the past three decades, a recent international study indicates. The situation in Finland is the most dire, and the species in most trouble is the Finnish ruff, as the population has fallen to approximately 3 percent of what it was at the beginning of the study period.

• [**Preschool teachers need better training in science**](#) [周二, 26 9月 22:54]

Preschool instructors appear to lack the knowledge, skills and confidence to effectively teach their young students science -- a problem that is likely contributing to America's poor global performance in this crucially important subject.

• [**No evidence of hidden hearing loss from common recreational noise**](#) [周二, 26 9月 22:54]

The first study to look for a causal relationship between recreational noise exposure and auditory function in humans finds that while hearing is temporarily affected in young adults after attending a loud recreational event, there is no evidence of auditory nerve injury or permanent hearing difficulties.

• [**Nerves control the body's bacterial community**](#) [周二, 26 9月 22:54]

Using the freshwater polyp Hydra as a model organism, researchers have investigated how the simple nervous system of these animals interacts with the microbiome. They were able to demonstrate, for the first time, that small molecules secreted by nerve cells help to regulate

the composition and colonization of specific types of beneficial bacteria along the Hydra's body column.

- [**Doctors gain a greater understanding of skin cancer using tattoos**](#) [周二, 26 9月 22:54]

Cancer is on the rise and the need to be empathetic when giving a patient their diagnosis and throughout treatment is imperative. Now, a collaborative study, with a Huddersfield professor, has enabled future doctors to experience some of the challenges patients living with skin cancer can face to develop a greater empathy for their patients.

- [**'Hypermotators' drive pathogenic fungi to evolve more rapidly**](#) [周二, 26 9月 22:54]

For nearly two decades, a rare but potentially deadly fungus called *Cryptococcus deuterogattii* has gained a foothold in the Pacific Northwest and Vancouver Island. Researchers recently showed that lineages of the fungal pathogen *Cryptococcus deuterogattii* house a specific mutation in their DNA that increases their mutation rate. These hypermutators, as they are called, rapidly develop resistance to the antifungal drugs FK506 and rapamycin.

- [**Chronic wasting disease**](#) [周二, 26 9月 22:54]

New research summarizes the efforts in disease surveillance and risk management of chronic wasting disease (CWD) in deer and shows that past management strategies such as selective culling, herd reduction, and hunter surveillance have had only limited effectiveness. The summary points towards new advice for optimal, cost-effective strategies in aggressive disease control.

- [**Cartography of the Cosmos**](#) [周二, 26 9月 21:16]

There are hundreds of billions of stars in our own Milky Way galaxy, interspersed with all manner of matter, from the dark to the sublime. This is the universe that one group of researchers is trying to reconstruct, structure by structure, combining telescope surveys with next-generation data analysis and simulation techniques currently being primed for exascale computing.

- **[Milk-alternative drinks do not replace the iodine in cows' milk](#)** [周二, 26 9月 21:14]

Consumers of milk-alternative drinks may be at risk of iodine deficiency, according to the findings of a new study.

- **[Agent Orange still linked to hormone imbalances in babies in Vietnam](#)** [周二, 26 9月 21:14]

Could herbicides that were sprayed during the Vietnam War still be causing health problems?

- **[The motor protein dancing in all our cells](#)** [周二, 26 9月 21:14]

Biologists have invented optical tweezers to follow the motions of molecular machines measured in nanometers.

- **[Higher risk of heart failure in cold weather](#)** [周二, 26 9月 21:14]

Could decreases in temperature cause heart failure and death?

- **[New 'bioactive' glass puts minerals back into damaged teeth](#)** [周二, 26 9月 21:12]

Dental researchers have now developed a very fast dissolving 'bioactive' glass which they are putting in toothpaste to repair decayed teeth.

- **[Even open-label placebos work, if they are explained](#)** [周二, 26 9月 21:05]

For some medical complaints, open-label placebos work just as well as deceptive ones. As psychologists report, the accompanying rationale plays an important role when administering a placebo.

- **[Drought: A cause of riots](#)** [周二, 26 9月 21:05]

The scientific community has been working on the possibility of a relationship between periods of drought and rioting for several years. Now a team has formally verified this hypothesis by studying almost 1,800 riots that occurred over a 20-year period in sub-Saharan Africa. The researchers observed a systematic link between the sudden depletion of water resources and the outbreak of unrest. They also

succeeded in quantifying the impact of geographic and social factors on the same link.

- [**Pigeons better at multitasking than humans**](#) [周二, 26 9月 21:05]

Pigeons are capable of switching between two tasks as quickly as humans -- and even more quickly in certain situations. These are the findings of biopsychologists who had performed the same behavioral experiments to test birds and humans. The authors hypothesize that the cause of the slight multitasking advantage in birds is their higher neuronal density.

- [**Physicists achieve rapid magnetic switching with lasers**](#) [周二, 26 9月 21:00]

New research shows control over composition of ferrimagnetic materials offers new ways of switching their magnetism.

- [**People are reluctant to use public defibrillators to treat cardiac arrests**](#) [周二, 26 9月 20:59]

A new study suggests that people are reluctant to use public-access defibrillators to treat cardiac arrests.

- [**Larger-dose opioid prescriptions not coming from emergency departments, study shows**](#) [周二, 26 9月 20:59]

Opioid prescriptions from the emergency department (ED) are written for a shorter duration and smaller dose than those written elsewhere, shows new research. The study also demonstrates that patients who receive an opioid prescription in the ED are less likely to progress to long-term use.

- [**Discovering potential therapeutic protein inhibitors for Chagas disease**](#) [周二, 26 9月 20:59]

Scientists have identified four potential protein inhibitors and unlocked drug discovery strategies for the treatment of Chagas disease by using advanced three-dimensional computer simulation by supercomputer TSUBAME in combination with in vitro experiments and X-ray crystallography.

- [**Weight loss for adults at any age leads to cost savings, study suggests**](#) [周二, 26 9月 20:59]

Helping an adult lose weight leads to significant cost savings at any age, with those savings peaking at age 50, suggests a new study.

- [**Quitting daily aspirin therapy may increase second heart attack, stroke risk**](#) [周二, 26 9月 04:32]

Stopping long-term, low-dose aspirin therapy may increase your risk of suffering a cardiovascular event, research indicates. Risk increases shortly after stopping and does not appear to diminish over time.

- [**Psychological impacts of natural disasters on youth**](#) [周二, 26 9月 04:32]

A researcher is fully aware of children's reaction to trauma. Her research focuses on the impact of disasters on youth since Hurricane Andrew in 1992. La Greca has been evaluating how best to define post-traumatic stress disorder (PTSD) in children. This line of research will help to quickly identify the children who need support services post-disaster and identify key aspects of the post-disaster environment that facilitate their recovery.

- [**Penguin-mounted video captures gastronomic close encounters of the gelatinous kind**](#) [周二, 26 9月 04:32]

Footage from penguin-mounted mini video recorders shows four species of penguin eating jellyfish and other gelatinous animals of the open ocean, a food source penguins were not previously believed to partake of, scientists report.

- [**Snails bred in lab help species crawl back from brink of extinction**](#) [周二, 26 9月 04:06]

Work to restore the endangered Chittenango ovate amber snail, found only in one location inside a Central New York state park, continued this month with the release of tagged adult snails raised in a laboratory.

Near-Earth asteroid CubeSat goes full sail -- ScienceDaily

NASA's Near-Earth Asteroid Scout, a small satellite the size of a shoebox, designed to study asteroids close to Earth, performed a full-scale solar sail deployment test at ManTech NeXolve's facility in Huntsville, Alabama, Sept. 13. The test was performed in an indoor clean room to ensure the deployment mechanism's functionality after recent environmental testing.

NEA Scout is a six-unit CubeSat that relies on an innovative solar sail for propulsion. It is one of 13 secondary science payloads NASA selected to fly on the initial launch of NASA's Space Launch System rocket. When deployed, the sail is square in shape with each side about the length of a school bus, and harnesses solar energy to use as propulsion to move through space. Instead of wind, solar sails reflect sunlight for thrust, minimizing the need for fuel. This method results in cost savings due to the reduced weight and size of the payload with reduced fuel and

provides the satellite with the ability to travel through space. The NEA Scout solar sail will deploy from the spacecraft using four arms -- called booms -- to hold the sail, much like a sail on a ship.

"Last year, we did a deployment test on a half-scale prototype of the solar sail. We used the findings to make several improvements to the spacecraft's sail deployment mechanism," said Tiffany Lockett, a NEA Scout sail systems engineer at NASA's Marshall Space Flight Center in Huntsville, Alabama. "We incorporated a larger motor to help retract the booms after deployment and upgraded the software to perform the test. Also, we improved the sail restraint tab that holds the sail in place prior to deployment for easier sail deployment, upgraded the connection between the sail and the booms, and included a pin puller to help lock the sail spool during transportation."

To minimize the amount of human intervention needed to deploy the sail in a gravity environment, the team had to come up with a way to reduce friction where possible. Engineers used improved sliders to allow the booms to glide easily across the surface of the table with less friction.

"We learned a lot from the results of today's test. The motor performed as anticipated and three of the four sail restraint tabs released on time. The new improved booms operated much better under less friction," said Alex Few, NEA Scout sail systems mechanical designer at Marshall. "We look forward to analyzing the results further in the coming weeks."

The team will use these findings to make final adjustments to the testing of the solar sail that will be used in flight, scheduled for testing later this year.

"NEA Scout will perform a reconnaissance fly-by and take pictures of an asteroid to learn more about the risks and challenges they may pose to future human exploration missions," said Les Johnson, NEA Scout's solar sail principal investigator at Marshall. "It will deploy from the rocket after the Orion spacecraft is separated from the upper stage."

Story Source:

[Materials](#) provided by [NASA](#). *Note: Content may be edited for style and length.*

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Innovative control system paves the way for large scale universal quantum computing -- ScienceDaily

Future quantum computers promise exponential scaling in computing power with linearly increasing number of qubits. However, harnessing this power is challenging due to the complexity of controlling a large number of qubits simultaneously. A solution to this problem has been engineered by Richard Versluis, principal scientist at TNO, Leo DiCarlo, associate professor at TU Delft and postdoc Stefano Poletto with support of colleagues from TNO and TU Delft at QuTech and Intel. They invented a control methodology for fault-tolerant quantum computing based on a basic building block of eight qubits with a fixed set of control hardware. This basic building block can be reproduced to large arrays of qubits, without any increase or changes to the control hardware.

With this new method, qubit error correction and logical operations, needed to execute complex algorithms on large scale quantum computers, are now

made possible on any number of qubits.

Plenty of room at the bottom

Nobel-prize winning physicist Richard Feynman famous quote 'there is plenty of room at the bottom' indicated that there is a whole world to explore at the quantum scale. He was one of the first to note that the complexity to model quantum mechanical systems could also be turned into a powerful resource: since it takes many parameters to adequately model coupled quantum-mechanical systems, one can look at coupled quantum-mechanical systems as systems that can store and manipulate huge amounts of data. Since that time, people have come up with clever algorithms for quantum computers that will outperform regular supercomputers on various problems, such as code cracking, data finding and data analysis and determining properties of chemical substances. Such algorithms require millions of qubits, and the quest to scale the number of controllable qubits is challenging.

Large-scale quantum computers require smart hardware

A major challenge for quantum computers, which now

consist of a handful of qubits, is their scalability. In order to execute quantum algorithms with a reasonable success rate, you need millions of qubits in order to overcome the inherent instability of qubits and correct errors in the system. Up to now, qubit control systems typically got bigger and more complex with the growing number of qubits. This is not a major problem in experimental quantum chips with a small number of qubits, but no concepts were available to control the thousands to millions of qubits, while at the same time performing error correction on the qubits.

Any number of qubits controlled by a single set of hardware

The researchers from QuTech, a collaboration founded by TU Delft and TNO, established a solution to this scaling challenge for superconducting qubits. The solution uses control hardware with the size of a small bookcase, to control a basic set of eight qubits. By copying and pasting the eight qubits on the chip, the same single control system can control any number of qubits individually, from 8 to 8 million or more, and execute the gates required for quantum error correction. This enables quantum computer programmers to execute quantum algorithms on any

number of qubits. The next goal at QuTech is to apply this method to realize a 17-qubit quantum processor with error correction in an ongoing project. This would constitute a world-record number of qubits with both individual control and error correction.

Story Source:

[Materialscrwuxrrxyyfaxsaw](#) provided by **TU Delft**.

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Energy harvested from evaporation could power much of US: Other potential benefits include reliability and water savings -- ScienceDaily

In the first evaluation of evaporation as a renewable energy source, researchers at Columbia University find that U.S. lakes and reservoirs could generate 325 gigawatts of power, nearly 70 percent of what the United States currently produces.

Though still limited to experiments in the lab, evaporation-harvested power could in principle be made on demand, day or night, overcoming the intermittency problems plaguing solar and wind energy. The researchers' calculations are outlined in the Sept. issue of *Nature Communications*.

"We have the technology to harness energy from wind, water and the sun, but evaporation is just as powerful," says the study's senior author Ozgur Sahin, a biophysicist at Columbia. "We can now put a number on its potential."

Evaporation is nature's way of cycling water between land and air. Sahin has previously shown how this basic process can be exploited to do work. One machine developed in his lab, the so-called Evaporation Engine, controls humidity with a shutter that opens and closes, prompting bacterial spores to expand and contract. The spores' contractions are transferred to a generator that makes electricity. The current study was designed to test how much power this process could theoretically produce.

One benefit of evaporation is that it can be generated only when needed. Solar and wind power, by contrast, require batteries to supply power when the sun isn't shining and wind isn't blowing. Batteries are also expensive and require toxic materials to manufacture.

"Evaporation comes with a natural battery," said study lead author, Ahmet-Hamdi Cavusoglu, a graduate student at Columbia. "You can make it your main source of power and draw on solar and wind when they're available." Evaporation technology can also save water. In the study, researchers estimate that half of the water that evaporates naturally from lakes and reservoirs into the atmosphere could be saved during the energy-harvesting process. In their model, that

came to 25 trillion gallons a year, or about a fifth of the water Americans consume.

States with growing populations and sunnier weather can best capitalize on evaporation's capacity to generate power and reduce water waste, in part because evaporation packs more energy in warm and dry conditions, the researchers say. Drought-prone California, Nevada and Arizona could benefit most.

The researchers simplified their model in several ways to test evaporation's potential. They limited their calculations to the United States, where weather station data are readily accessible, and excluded prime locations such as farmland, rivers, the Great Lakes, and coastlines, to limit errors associated with modeling more complex interactions. They also made the assumption that technology to harvest energy from evaporation efficiently is fully developed.

Klaus Lackner, a physicist at Arizona State University who was not involved in the study, expressed support for the team's findings. Lackner is developing artificial trees that draw carbon dioxide from the air, in part, by harnessing the power of evaporation.

"Evaporation has the potential to do a lot of work," he said. "It's nice to see that drying and wetting cycles can also be used to collect mechanical energy."

The researchers are working to improve the energy efficiency of their spore-studded materials and hope to eventually test their concept on a lake, reservoir, or even a greenhouse, where the technology could be used to simultaneously make power and limit water loss.

Story Source:

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Quantum communications bend to our needs: By changing the wavelengths of entangled photons to those used in telecommunications, researchers see quantum technology take a major leap forward -- ScienceDaily

The potential for photon entanglement in quantum computing and communications has been known for decades. One of the issues impeding its immediate application is the fact that many photon entanglement platforms do not operate within the range used by most forms of telecommunication.

An international team of researchers has started to unravel the mysteries of entangled photons, demonstrating a new nanoscale technique that uses semiconductor quantum dots to bend photons to the wavelengths used by today's popular C-band standards. They report their work this week in *Applied Physics Letters*, from AIP Publishing.

"We have demonstrated the emission of polarization-entangled photons from a quantum dot at 1550 nanometers for the first time ever," said Simone Luca Portalupi, one of the work's authors and a senior scientist at the Institute of Semiconductor Optics and Functional Interfaces at the University of Stuttgart.

"We are now on the wavelength that can actually carry quantum communication over long distances with existing telecommunication technology."

The researchers used quantum dots created from an indium arsenide and gallium arsenide platform, producing pure single photons and entangled photons. Unlike parametric down-conversion techniques, quantum dots allow for photons to be emitted only one at a time and on demand, crucial properties for quantum computing. A distributed Bragg reflector, which is made from multiple layered materials and reflects over a wide spectrum, then directed the photons to a microscope objective, allowing them to be collected and measured.

Researchers and industry leaders have found that the C-band -- a specific range of infrared wavelengths -- has become an electromagnetic sweet spot in telecommunications. Photons traveling through both

optical fibers and the atmosphere within this range experience significantly less absorption, making them perfect for relaying signals across long distances.

"The telecom C-band window has the absolute minimum absorption we can achieve for signal transmission," said Fabian Olbrich, another of the paper's authors. "As scientists have made discoveries, industry has improved technology, which has let scientists make more discoveries, and so now we have a standard that works very well and has low dispersion."

Most entangled photons originating from quantum dots, however, operate near 900 nanometers, closer to wavelengths we can see with the naked eye.

The researchers were impressed by the quality of the signal, Olbrich said. Other efforts to shift the emission wavelength of polarization-entangled photons of quantum dots toward the C-band tended to increase the exciton fine-structure splitting (FSS), a quantity that should be close to zero for entanglement generation. Olbrich's team reports their experiment experienced less than one-fifth as much FSS as other studies in the literature.

"The chance to find a quantum dot that is able to emit polarization-entangled photons with high fidelity is quite high for our specific study," Olbrich said.

With each successful experiment, the quantum communications community is seeing its field bend toward greater applicability in today's telecommunications industry. Researchers hope that one day, entangled photons will impact cryptography and secure satellite communications.

"The hard part now is to combine all the advantages of the system and fulfill prerequisites such as high photon indistinguishability, high temperature operation, increased photon flux and out coupling efficiency that would make them work," Olbrich said.

Story Source:

Materials provided by [American Institute of Physics](#).

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Some marine species more vulnerable to climate change than others -- ScienceDaily

Certain marine species will fare much worse than others as they become more vulnerable to the effects of climate change, a new UBC study has found.

After analyzing the biological characteristics of 1,074 marine fish and shellfish, the study identified 294 species that are most at-risk due to climate change by 2050. Species most at-risk include the Eastern Australian salmon, yellowbar angelfish, toli shad, sohal surgeonfish and spotted grouper.

"We hope that this study will highlight the marine species that are most in need of management and conservation actions under climate change," said William Cheung, associate professor in the Institute for the Oceans and Fisheries and director of science for the Nippon Foundation -- UBC Nereus Program.

As part of the study, UBC researchers created a

database that examines the long-term vulnerability of marine species that are important to fisheries around the world. The database was developed with an approach that uses "fuzzy logic" to combine information about the biological sensitivity of these species to environmental changes as well as their projected exposure to changes in the ocean including temperature and oxygen and acidity levels.

"How susceptible are Atlantic cod to climate change compared to skipjack tuna? How about smaller fishes such as anchovy and pilchard?" asked Cheung. "We know that some characteristics of the species make them more sensitive and less resilient to climate change."

The factors that restrict whether fish or shellfish can adapt to climate change include their preferred temperature range, restrictions on their geographic range, how long it takes to reproduce, and specific habitat requirements such as needing kelp or coral reef to survive.

"Eastern Australian salmon is highly vulnerable because their distribution is limited to shallow coastal and estuarine waters in southern Australia and New

Zealand," said Miranda Jones, the study's lead author, who was a postdoctoral fellow in the Institute for the Oceans and Fisheries when the study was underway. "The species lives in habitats that are exposed to large changes in ocean conditions and have limited scope to avoid these changes."

In Canada, sockeye salmon, along with the alewife, Pacific bonito, and sharks such as the porbeagle and thresher, are identified as at risk to climate change impacts. In contrast, some species such as the Pacific sanddab, blue crab and Pacific sandlance have less vulnerable biological characteristics and live in areas that are relatively less affected by climate change.

Story Source:

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All Top News

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- [**Energy harvested from evaporation could power much of US**](#) [周三, 27 9月 00:51]

In the first evaluation of evaporation as a renewable energy source, researchers find that US lakes and reservoirs could generate 325 gigawatts of power, nearly 70 percent of what the United States currently produces.

- [**Amount of water in stem cells can determine its fate as fat or bone**](#) [周三, 27 9月 00:51]

Adding or removing water from a stem cell can change the destiny of the cell to either pre-fat cells or pre-bone cells, researchers have discovered in a new study.

- [**Wearable solar thermoelectric generator created**](#) [周二, 26 9月 22:55]

Engineers have introduced a new advanced energy harvesting system, capable of generating electricity by simply being attached to clothes, windows, and outer walls of a building.

- [**Cartography of the Cosmos**](#) [周二, 26 9月 21:16]

There are hundreds of billions of stars in our own Milky Way galaxy, interspersed with all manner of matter, from the dark to the sublime. This is the universe that one group of researchers is trying to reconstruct, structure by structure, combining telescope surveys with next-generation data analysis and simulation techniques currently being primed for exascale computing.

- [**Pigeons better at multitasking than humans**](#) [周二, 26 9月 21:05]

Pigeons are capable of switching between two tasks as quickly as

humans -- and even more quickly in certain situations. These are the findings of biopsychologists who had performed the same behavioral experiments to test birds and humans. The authors hypothesize that the cause of the slight multitasking advantage in birds is their higher neuronal density.

- [**After 15 years in a vegetative state, nerve stimulation restores consciousness**](#) [周二, 26 9月 01:29]

A 35-year-old man who had been in a vegetative state for 15 years after a car accident has shown signs of consciousness after neurosurgeons implanted a vagus nerve stimulator into his chest. The findings show that vagus nerve stimulation (VNS) -- a treatment already in use for epilepsy and depression--can help to restore consciousness even after many years in a vegetative state.

- [**Antibody protects against Zika and dengue, mouse study shows**](#) [周二, 26 9月 01:29]

The same countries hard hit by Zika virus -- which can cause brain damage in babies infected before birth -- are also home to dengue virus. Researchers now report that they have found an antibody that protects against both viruses. These findings, in mice, could be a step towards an antibody-based preventative drug to protect fetuses from brain damage, while also protecting their mothers from both Zika and dengue disease.

- [**Lava tubes: Hidden sites for future human habitats on the Moon and Mars**](#) [周一, 25 9月 23:28]

Lava tubes, underground caves created by volcanic activity, could provide protected habitats large enough to house streets on Mars or even towns on the Moon, according to new research. A further study shows how the next generation of lunar orbiters will be able to use radar to locate these structures under the Moon's surface.

- [**Visual attention drawn to meaning, not what stands out**](#) [周一, 25 9月 23:13]

Our visual attention is drawn to parts of a scene that have meaning, rather than to those that are salient or 'stick out,' according to new

research. The findings overturn the widely held model of visual attention.

- [**Panda habitat shrinking, becoming more fragmented**](#) [周一, 25 9月 23:13]

Using remote sensing data, Chinese and US scientists have re-assessed the conservation status of the giant panda. Their analysis shows that while panda numbers are increasing, their habitat still covers less area and is more fragmented than it was in 1988, when the species was listed as endangered on the IUCN Red List.

- [**Child abuse affects brain wiring**](#) [周一, 25 9月 23:13]

For the first time, researchers have been able to see changes in the neural structures in specific areas of the brains of people who suffered severe abuse as children. The researchers believe that these changes may contribute to the emergence of depressive disorders and suicidal behavior.

- [**Genes are controlled by 'Nano footballs,' scientists discover**](#) [周一, 25 9月 23:12]

Genes are controlled by 'nano footballs' -- structures that look like footballs but 10 million times smaller than the average ball -- new research has revealed.

- [**Brain damage in fish from plastic nanoparticles in water**](#) [周一, 25 9月 22:47]

A new study shows that plastic particles in water may end up inside fish brains. The plastic can cause brain damage, which is the likely cause of behavioral disorders observed in the fish.

- [**Brain guides body much sooner than previously believed**](#) [周一, 25 9月 21:54]

The brain plays an active role much earlier than previously thought. Long before movement or other behaviors occur, the nascent brain of an embryonic frog instructs normal muscle and nerve patterning and protects the embryo from agents that cause developmental defects. In

addition to identifying these essential functions for the first time, researchers successfully rescued defects caused by lack of a brain by using widely available, human-approved drugs.

- [**Winter cold extremes linked to high-altitude polar vortex weakening**](#) [周五, 22 9月 21:40]

When the strong winds that circle the Arctic slacken, cold polar air can escape and cause extreme winter chills in parts of the Northern hemisphere. A new study finds that these weak states have become more persistent over the past four decades and can be linked to cold winters in Russia and Europe.

- [**Flint's water crisis led to fewer babies and higher fetal death rates, researchers find**](#) [周五, 22 9月 21:16]

An estimated 275 fewer children were born in Flint, Michigan, while the city was using lead-contaminated water from the Flint River, according to new research findings.

- [**Babies can learn that hard work pays off**](#) [周五, 22 9月 04:12]

A new study reveals babies as young as 15 months can learn the value of hard work. Researchers found babies who watched an adult struggle to reach two different goals before succeeding tried harder at their own difficult task than babies who saw an adult succeed effortlessly.

- [**Unique gene therapy prevents, reverses multiple sclerosis in animal model**](#) [周五, 22 9月 04:12]

Multiple sclerosis can be inhibited or reversed using a novel gene therapy technique that stops the disease's immune response in mouse models, researchers have found.

- [**Ancient DNA data fills in thousands of years of human prehistory in Africa**](#) [周五, 22 9月 02:13]

By sequencing the ancient genomes of 15 individuals from different parts of Africa, researchers reporting in the journal Cell on Sept. 21 have reconstructed the prehistory of humans on the continent, going back thousands of years. The findings shed light on which human populations

lived in eastern and southern Africa between 8,000 and 1,000 years ago, the researchers say.

- [**Scientists sequence asexual tiny worm whose lineage stretches back 18 million years**](#) [周五, 22 9月 02:13]

A team of scientists has sequenced, for the first time, a tiny worm that belongs to a group of exclusively asexual species that originated approximately 18 million years ago -- making it one of the oldest living lineages of asexual animals known.

- [**Detecting cosmic rays from a galaxy far, far away**](#) [周五, 22 9月 02:12]

Where do cosmic rays come from? Solving a 50-year-old mystery, a collaboration of researchers has discovered it's much farther than the Milky Way.

- [**Jellyfish, with no brains, still seem to sleep**](#) [周五, 22 9月 02:12]

The discovery that primitive jellyfish sleep suggests that sleep is an ancient, evolutionarily conserved behavior.

- [**Why poison frogs don't poison themselves**](#) [周五, 22 9月 02:12]

Poison frogs harbor some of the most potent neurotoxins we know, yet scientists have long wondered -- how do these frogs keep from poisoning themselves? Scientists are now a step closer to resolving that head-scratcher. And the answer has potential consequences for the fight against pain and addiction.

- [**Reconstructing how Neanderthals grew, based on an El Sidrón child**](#) [周五, 22 9月 02:12]

How did Neanderthals grow? Does modern man develop in the same way as Homo neanderthalensis did? How does the size of the brain affect the development of the body? Researchers have studied the fossil remains of a Neanderthal child's skeleton in order to establish whether there are differences between the growth of Neanderthals and that of sapiens.

- [**Early trilobites had stomachs, new fossil study finds**](#) [周五, 22 9月 02:12]

Exceptionally preserved trilobite fossils from China, dating back to more than 500 million years ago, have revealed new insights into the extinct marine animal's digestive system. The new study shows that at least two trilobite species evolved a stomach structure 20 million years earlier than previously thought.

- [**Dino-killing asteroid's impact on bird evolution**](#)

[周五, 22 9月 00:11]

Human activities could change the pace of evolution, similar to what occurred 66 million years ago when a giant asteroid wiped out the dinosaurs, leaving modern birds as their only descendants.

- [**One in four girls is depressed at age 14**](#) [周四, 21 9月 23:07]

New research shows a quarter of girls (24%) and one in 10 boys (9%) are depressed at age 14.

- [**Surprising discovery: How the African tsetse fly really drinks your blood**](#) [周四, 21 9月 23:06]

Researchers have been taking a close-up look at the biting mouthparts of the African tsetse fly as part of ongoing work on the animal diseases it carries. Using a new high-powered scanning electron microscope, researchers were able to see the rows of sharp teeth and rasps that the fly uses to chew through the skin when it bites.

- [**Broad swath of US deemed environmentally suitable for mosquitoes that transmit disease**](#) [周四, 21 9月 22:42]

Three-quarters of counties in the contiguous United States present suitable environmental conditions for at least part of the year for either *Aedes aegypti* or *Aedes albopictus* mosquitoes to survive if introduced, according to researchers. The two mosquito species can transmit viruses that cause Zika, dengue, chikungunya, and yellow fever.

- [**Big herbivorous dinosaurs ate crustaceans as a side dish**](#) [周四, 21 9月 22:17]

Some big plant-eating dinosaurs roaming present-day Utah some 75 million years ago were slurping up crustaceans on the side, a behavior that may have been tied to reproductive activities, says a new study.

• [**Changing of the guard: Research sheds light on how plants breathe**](#) [周四, 21 9月 22:17]

New research is set to change the textbook understanding of how plants breathe. Researchers have developed the first full 3D model of a guard cell.

• [**Tiny Brazilian frogs are deaf to their own calls**](#) [周四, 21 9月 21:03]

Pumpkin toadlets, found on the leaf litter of Brazil's Atlantic forest, are among the smallest frogs in the world. Scientists have now discovered that two species of these tiny orange frogs cannot hear the sound of their own calls.

• [**Efforts to save sea turtles are a 'global conservation success story'**](#) [周四, 21 9月 06:21]

A new study of the world's seven sea turtle species provides evidence that their numbers are growing overall (unlike many endangered vertebrates), thanks to years of conservation efforts that have played a key role in sea turtle recovery -- even for small sea turtle populations.

• [**Mathematics predicts a sixth mass extinction**](#) [周四, 21 9月 06:21]

Scientists have analyzed significant changes in the carbon cycle over the last 540 million years, including the five mass extinction events. They have identified 'thresholds of catastrophe' in the carbon cycle that, if exceeded, would lead to an unstable environment, and ultimately, mass extinction.

• [**Immune system is critical to regeneration, study finds**](#) [周四, 21 9月 03:49]

The answer to the question of why some organisms can regenerate major body parts while others, such as humans, cannot may lie with the body's innate immune system, according to a new study of heart regeneration in the Mexican salamander.

- [**Unique type of object discovered in our solar system**](#) [周四, 21 9月 02:47]

Astronomers have observed the intriguing characteristics of an unusual type of object in the asteroid belt between Mars and Jupiter: two asteroids orbiting each other and exhibiting comet-like features, including a bright coma and a long tail. This is the first known binary asteroid also classified as a comet.

- [**Fly away home? Ice age may have clipped bird migration**](#) [周四, 21 9月 02:46]

The onset of the last ice age may have forced some bird species to abandon their northerly migrations for thousands of years, says new research led by an ornithologist. The study challenges a long-held presumption that birds merely shortened their migratory flights when glaciers advanced south to cover much of North America and northern Europe about 21,000 years ago.

- [**Species abundance: Winter restricts innovation**](#) [周四, 21 9月 01:17]

Why are there so many more species in the tropics? The 'storage effect' is stronger there than in temperate forests.

- [**Bite force research reveals dinosaur-eating frog**](#) [周四, 21 9月 01:17]

Scientists say that a large, now extinct, frog called Beelzebufo that lived about 68 million years ago in Madagascar would have been capable of eating small dinosaurs. The conclusion comes from a study of the bite force of South American horned frogs from the living genus *Ceratophrys*, known as Pacman frogs for their characteristic round shape and large mouth, similar to the video game character Pac-Man.

- [**Animal acoustic activity decline shows forest fire pollution wreaks havoc on wildlife**](#) [周四, 21 9月 01:17]

Forest fires in Southeast Asia during the El Niño droughts of 2015 caused considerable disruption to the biodiversity of the region due to the smoke-induced 'haze' they created, according to new research.

- [**New concept of terrestrial planet formation**](#) [周四, 21 9月]

01:17]

Scientists are proposing a new way of understanding the cooling and transfer of heat from terrestrial planetary interiors and how that affects the generation of the volcanic terrains that dominate the rocky planets.

- [**World's first 'molecular robot' capable of building molecules**](#) [周四, 21 9月 01:17]

Scientists have created the world's first 'molecular robot' that is capable of performing basic tasks including building other molecules.

- [**Dinosaur evolution: Lumbering giants had agile ancestors**](#) [周四, 21 9月 01:17]

The best known sauropod dinosaurs were huge herbivorous creatures, whose brain structures were markedly different from those of their evolutionary predecessors, for the earliest representatives of the group were small, lithe carnivores.

- [**Scientists make atoms-thick 'Post-It notes' for solar cells and circuits**](#) [周四, 21 9月 01:17]

A new study describes an innovative method to make stacks of semiconductors just a few atoms thick. The technique offers scientists and engineers a simple, cost-effective method to make thin, uniform layers of these materials, which could expand capabilities for devices from solar cells to cell phones.

- [**Brain cancer growth halted by absence of protein**](#) [周四, 21 9月 01:16]

The growth of certain aggressive brain tumors can be halted by cutting off their access to a signaling molecule produced by the brain's nerve cells, according to a new study.

- [**Millions of new genes in human microbiome**](#) [周四, 21 9月 01:16]

A new study of the human microbiome has uncovered millions of previously unknown genes from microbial communities in the human gut, skin, mouth, and vaginal microbiome, allowing for new insights into the role these microbes play in human health and disease.

• [Genome editing reveals role of gene important for human embryo development](#) [周四, 21 9月 01:16]

Researchers have used genome editing technology to reveal the role of a key gene in human embryos in the first few days of development. This is the first time that genome editing has been used to study gene function in human embryos, which could help scientists to better understand the biology of our early development.

• [Is the Milky Way an 'outlier' galaxy? Studying its 'siblings' for clues](#) [周三, 20 9月 23:33]

The most-studied galaxy in the universe -- the Milky Way -- might not be as 'typical' as previously thought, according to a new study. Early results from the Satellites Around Galactic Analogs (SAGA) Survey indicate that the Milky Way's satellites are much more tranquil than other systems of comparable luminosity and environment. Many satellites of those 'sibling' galaxies are actively pumping out new stars, but the Milky Way's satellites are mostly inert.

• [How Teotihuacan's urban design was lost and found](#) [周三, 20 9月 23:33]

A new article outlines how the urban design of the city of Teotihuacan differed from past and subsequent cities, only to be rediscovered and partially modeled on many centuries later by the Aztecs.

• [10,000 year-old DNA proves when fish colonized our lakes](#) [周三, 20 9月 22:45]

DNA in lake sediment forms a natural archive displaying when various fish species colonized lakes after the glacial period. Scientists' analyses of the prevalence of whitefish DNA in sediment reveal that the whitefish came to Lake Stora Lögdasjön in Västerbotten already 10,000 years ago, whereas Lake Hotagen in Jämtland had its whitefish only 2,200 years ago.

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

- [**Antibiotics warranted for kids with minor staph infections**](#) [周三, 27 9月 00:51]

The overuse of antibiotics has left some doctors questioning whether to give such drugs to children diagnosed with uncomplicated Staphylococcus aureus (staph) infections. Now, research indicates that prescribing antibiotics -- in addition to lancing and draining staph-infected areas -- reduces the risk of recurrent infections.

- [**Amount of water in stem cells can determine its fate as fat or bone**](#) [周三, 27 9月 00:51]

Adding or removing water from a stem cell can change the destiny of the cell to either pre-fat cells or pre-bone cells, researchers have discovered in a new study.

- [**Scientists unlock mysteries of how Ebola uses people's immune defenses to cause infection**](#) [周三, 27 9月 00:51]

Scientists have gained new insight into how the Ebola virus uses the body's natural defenses to speed the rate of infection and unleash its lethal disease, according to a new report.

- [**Injection alternative: Model predicts performance of glucose-responsive insulin**](#) [周二, 26 9月 23:59]

Researchers have created a computer model that can predict how glucose-responsive insulin will affect patients' blood sugar based on chemical traits such as how quickly it becomes activated in the presence of glucose. This could help scientists design insulin that lingers in a

patient's bloodstream and becomes active only when needed, such as right after a meal.

- [**A fresh set of eyes: Rotating plant inspectors reduces risk of medical device recalls**](#) [周二, 26 9月 23:59]

More frequent rotation of plant inspectors at medical device manufacturing facilities could benefit consumers and lead to fewer product recalls, finds new research.

- [**One in 5 teens report having had a concussion in their lifetime**](#) [周二, 26 9月 23:20]

A new study confirms what many hospital emergency rooms nationwide are seeing: teens playing contact sports suffer from concussions.

- [**Does your back feel stiff? Well, it may not actually be stiff, study finds**](#) [周二, 26 9月 23:20]

The feeling of stiffness in your back may mean something else is going, warns a new report.

- [**Biochemists discover mechanism that helps flu viruses evolve**](#) [周二, 26 9月 23:20]

Flu viruses' rapid evolution relies in part on hijacking some of the cellular machinery of the infected host cell -- a group of proteins called chaperones, which help other proteins fold into the correct shape. When viruses are unable to get help from these proteins, they do not evolve as rapidly, research shows.

- [**Lactation hormone also helps a mother's brain**](#) [周二, 26 9月 22:55]

The same hormone that stimulates milk production for lactation, also acts in a particular part of the brain to help establish the nurturing link between mother and baby, researchers have revealed.

- [**Researchers identify novel way to target Ebola**](#) [周二, 26 9月 22:55]

Researchers have identified a potential new way to attack Ebola. Scientists have discovered that a protein called Tim-1 (T-cell immunoglobulin and mucin domain-containing protein 1) plays a key

role in the development of the cytokine storm seen in the last stages of Ebola infection.

- [**Predatory bacteria found in study of cystic fibrosis patients' lung microbiome**](#) [周二, 26 9月 22:55]

Cystic fibrosis patients have a wide variety of bacteria in their lungs, including two 'predators' not detected before, according to a new study.

- [**Understanding football violence could help the fight against terror**](#) [周二, 26 9月 22:54]

Football has long been tarnished by outbreaks of fan violence. Although media headlines often link the behavior to 'hooliganism,' the activity could stem from potentially more positive motivations, such as passionate commitment to the group and the desire to belong.

Understanding the root cause of the behavior may therefore help in tackling the violence and channeling it into something more positive, scientists suggest.

- [**Interventions for reducing hepatitis C infection in people who inject drugs**](#) [周二, 26 9月 22:54]

The first global review to quantify the impact of needle syringe programs (NSP) and opioid substitution treatment (OST) in reducing the risk of becoming infected with the hepatitis C virus has now been published. The study has implications for millions of people who are 'at risk' from infection.

- [**Older drivers adapt their thinking to improve road hazard detection**](#) [周二, 26 9月 22:54]

A recent study finds older drivers adapt their responses in heavy traffic to better identify road hazards.

- [**Household chores: Women still do more**](#) [周二, 26 9月 22:54]

Women of all ages still tend to do more household chores than their male partners, no matter how much they work or earn in a job outside the home. New findings demonstrate the persistent gendered nature of how housework is divided.

• [Preschool teachers need better training in science](#) [周二, 26 9月 22:54]

Preschool instructors appear to lack the knowledge, skills and confidence to effectively teach their young students science -- a problem that is likely contributing to America's poor global performance in this crucially important subject.

• [No evidence of hidden hearing loss from common recreational noise](#) [周二, 26 9月 22:54]

The first study to look for a causal relationship between recreational noise exposure and auditory function in humans finds that while hearing is temporarily affected in young adults after attending a loud recreational event, there is no evidence of auditory nerve injury or permanent hearing difficulties.

• [Nerves control the body's bacterial community](#) [周二, 26 9月 22:54]

Using the freshwater polyp Hydra as a model organism, researchers have investigated how the simple nervous system of these animals interacts with the microbiome. They were able to demonstrate, for the first time, that small molecules secreted by nerve cells help to regulate the composition and colonization of specific types of beneficial bacteria along the Hydra's body column.

• [Doctors gain a greater understanding of skin cancer using tattoos](#) [周二, 26 9月 22:54]

Cancer is on the rise and the need to be empathetic when giving a patient their diagnosis and throughout treatment is imperative. Now, a collaborative study, with a Huddersfield professor, has enabled future doctors to experience some of the challenges patients living with skin cancer can face to develop a greater empathy for their patients.

• [Chronic wasting disease](#) [周二, 26 9月 22:54]

New research summarizes the efforts in disease surveillance and risk management of chronic wasting disease (CWD) in deer and shows that past management strategies such as selective culling, herd reduction, and

hunter surveillance have had only limited effectiveness. The summary points towards new advice for optimal, cost-effective strategies in aggressive disease control.

- [**Milk-alternative drinks do not replace the iodine in cows' milk**](#) [周二, 26 9月 21:14]

Consumers of milk-alternative drinks may be at of risk iodine deficiency, according to the findings of a new study.

- [**Agent Orange still linked to hormone imbalances in babies in Vietnam**](#) [周二, 26 9月 21:14]

Could herbicides that were sprayed during the Vietnam War still be causing health problems?

- [**The motor protein dancing in all our cells**](#) [周二, 26 9月 21:14]

Biologists have invented optical tweezers to follow the motions of molecular machines measured in nanometers.

- [**Higher risk of heart failure in cold weather**](#) [周二, 26 9月 21:14]

Could decreases in temperature cause heart failure and death?

- [**New 'bioactive' glass puts minerals back into damaged teeth**](#) [周二, 26 9月 21:12]

Dental researchers have now developed a very fast dissolving 'bioactive' glass which they are putting in toothpaste to repair decayed teeth.

- [**Even open-label placebos work, if they are explained**](#) [周二, 26 9月 21:05]

For some medical complaints, open-label placebos work just as well as deceptive ones. As psychologists report, the accompanying rationale plays an important role when administering a placebo.

- [**People are reluctant to use public defibrillators to treat cardiac arrests**](#) [周二, 26 9月 20:59]

A new study suggests that people are reluctant to use public-access

defibrillators to treat cardiac arrests.

- [**Larger-dose opioid prescriptions not coming from emergency departments, study shows**](#) [周二, 26 9月 20:59]

Opioid prescriptions from the emergency department (ED) are written for a shorter duration and smaller dose than those written elsewhere, shows new research. The study also demonstrates that patients who receive an opioid prescription in the ED are less likely to progress to long-term use.

- [**Discovering potential therapeutic protein inhibitors for Chagas disease**](#) [周二, 26 9月 20:59]

Scientists have identified four potential protein inhibitors and unlocked drug discovery strategies for the treatment of Chagas disease by using advanced three-dimensional computer simulation by supercomputer TSUBAME in combination with in vitro experiments and X-ray crystallography.

- [**Weight loss for adults at any age leads to cost savings, study suggests**](#) [周二, 26 9月 20:59]

Helping an adult lose weight leads to significant cost savings at any age, with those savings peaking at age 50, suggests a new study.

- [**Quitting daily aspirin therapy may increase second heart attack, stroke risk**](#) [周二, 26 9月 04:32]

Stopping long-term, low-dose aspirin therapy may increase your risk of suffering a cardiovascular event, research indicates. Risk increases shortly after stopping and does not appear to diminish over time.

- [**Psychological impacts of natural disasters on youth**](#) [周二, 26 9月 04:32]

A researcher is fully aware of children's reaction to trauma. Her research focuses on the impact of disasters on youth since Hurricane Andrew in 1992. La Greca has been evaluating how best to define post-traumatic stress disorder (PTSD) in children. This line of research will help to quickly identify the children who need support services post-disaster and

identify key aspects of the post-disaster environment that facilitate their recovery.

- [**Three or more cups of coffee daily halves mortality risk in patients with both HIV, HCV**](#) [周二, 26 9月 03:47]

A novel five-year study highlights importance of behaviors such as coffee drinking and not smoking on health and survival of HIV-infected patients, report investigators.

- [**Being in a good mood for your flu jab boosts its effectiveness**](#) [周二, 26 9月 03:47]

New research by a team of health experts has found evidence that being in a positive mood on the day of your flu jab can increase its protective effect.

- [**Brain's anterior cingulate cortex and its tie to human learning**](#) [周二, 26 9月 03:14]

After four years of lab testing and complex neuro-decoding, a research team has struck a major breakthrough that could open the floodgates for research into the anterior cingulate cortex, or ACC, and how human brains learn.

- [**Prostaglandin E1 inhibits leukemia stem cells**](#) [周二, 26 9月 03:14]

Two drugs, already approved for safe use in people, may be able to improve therapy for chronic myeloid leukemia (CML), a blood cancer that affects myeloid cells, according to new results.

- [**Metabolism directly impacts the odds of developing malaria**](#) [周二, 26 9月 01:30]

Researchers have found that the host's susceptibility to develop malaria depends on his or her metabolic state, which can be easily manipulated through external stimuli such as dietary patterns.

- [**Creating brain cells to detect Tourette's**](#) [周二, 26 9月 01:30]

Scientists have used a genetic engineering technique for the first time to create brain cells from the blood cells of individuals in a three-

generation family with Tourette syndrome to help determine what causes the disease.

- [**Bone marrow concentrate improves joint transplants**](#) [周二, 26 9月 01:30]

Biologic joint restoration using donor tissue instead of traditional metal and plastic may be an option for active patients with joint defects. Researchers have found in a group of patients that treating donor grafts with bone marrow aspirate concentrate before surgery improves bone integration and speeds recovery.

- [**Discovering what makes organelles connect could help explain neurodegenerative diseases**](#) [周二, 26 9月 01:29]

Organelles must exchange signals and materials to make the cell operate correctly. New technologies are allowing researchers to see and understand the networks that connect these organelles, allowing them to build maps of the trade routes that exist within a cell.

- [**Violent crime increases during warmer weather, no matter the season, study finds**](#) [周二, 26 9月 01:29]

A study analyzing crime data in Philadelphia for 10 years found that rates of violent crime and disorderly conduct are higher when the weather is warmer and more pleasant, even rising sharply during warmer-than-typical winter days.

- [**Streamlined process opens drug development to a new class of steroids**](#) [周二, 26 9月 01:29]

Researchers have developed a technique to produce synthetic steroids that could pave the way for a cascade of new drug discoveries, significantly reducing the expense and time needed to develop therapeutics from an underexplored collection of molecules.

- [**After 15 years in a vegetative state, nerve stimulation restores consciousness**](#) [周二, 26 9月 01:29]

A 35-year-old man who had been in a vegetative state for 15 years after a car accident has shown signs of consciousness after neurosurgeons

implanted a vagus nerve stimulator into his chest. The findings show that vagus nerve stimulation (VNS) -- a treatment already in use for epilepsy and depression--can help to restore consciousness even after many years in a vegetative state.

- [**Are children who see movie characters use guns more likely to use them?**](#) [周二, 26 9月 01:29]

Children who watched a PG-rated movie clip containing guns played with a disabled real gun longer and pulled the trigger more often than children who saw the same movie not containing guns.

- [**Antibody protects against Zika and dengue, mouse study shows**](#) [周二, 26 9月 01:29]

The same countries hard hit by Zika virus -- which can cause brain damage in babies infected before birth -- are also home to dengue virus. Researchers now report that they have found an antibody that protects against both viruses. These findings, in mice, could be a step towards an antibody-based preventative drug to protect fetuses from brain damage, while also protecting their mothers from both Zika and dengue disease.

- [**Autism's gender patterns**](#) [周二, 26 9月 01:29]

Having one child with autism is a well-known risk factor for having another one with the same disorder, but whether and how a sibling's gender influences this risk has remained largely unknown. Now new research has, for the first time, successfully quantified the likelihood that a family who has one child with autism would have another one with the same disorder based on the siblings' gender.

- [**High-fidelity recording of molecular geometry with DNA 'nanoscopy'**](#) [周一, 25 9月 23:33]

A research team has now developed a DNA nanotechnology-based method that allows for repeated, non-destructive recording of uniquely barcoded molecular pairings, rendering a detailed view of their components and geometries. In the future, the approach could help researchers understand how changes in molecular complexes control biological processes in living cells.

[Adding radiation to chemotherapy may dramatically improve survival for advanced NSCLC](#) [周一, 25 9月 23:33]

Combining radiation therapy with chemotherapy for patients with limited metastatic non-small cell lung cancer (NSCLC) may curb disease progression dramatically when compared to NSCLC patients who only receive chemotherapy, according to a new randomized phase II clinical trial.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

- [Near-Earth asteroid CubeSat goes full sail](#) [周三, 27 9月 01:39]

NASA's Near-Earth Asteroid Scout, a small satellite the size of a shoebox, designed to study asteroids close to Earth, recently performed a full-scale solar sail deployment test. The test was performed in an indoor clean room to ensure the deployment mechanism's functionality after recent environmental testing.

- [Innovative control system paves the way for large scale universal quantum computing](#) [周三, 27 9月 01:30]

Future quantum computers promise exponential scaling in computing power with linearly increasing number of qubits. However, harnessing this power is challenging due to the complexity of controlling a large number of qubits simultaneously. A solution to this problem has now been engineered.

- [Energy harvested from evaporation could power much of US](#) [周三, 27 9月 00:51]

In the first evaluation of evaporation as a renewable energy source, researchers find that US lakes and reservoirs could generate 325 gigawatts of power, nearly 70 percent of what the United States currently produces.

- [Quantum communications bend to our needs](#) [周三, 27 9月 00:51]

The potential for photon entanglement in quantum computing and communications has been known for decades. One issue impeding immediate application is that many photon entanglement platforms don't

operate within the range used by most forms of telecommunication. Researchers have started to unravel the mysteries of entangled photons, demonstrating a technique that uses semiconductor quantum dots to bend photons to the wavelengths used by today's popular C-band standards.

- [**A fresh set of eyes: Rotating plant inspectors reduces risk of medical device recalls**](#) [周二, 26 9月 23:59]

More frequent rotation of plant inspectors at medical device manufacturing facilities could benefit consumers and lead to fewer product recalls, finds new research.

- [**Wearable solar thermoelectric generator created**](#) [周二, 26 9月 22:55]

Engineers have introduced a new advanced energy harvesting system, capable of generating electricity by simply being attached to clothes, windows, and outer walls of a building.

- [**Artificial intelligence for obtaining chemical fingerprints**](#) [周二, 26 9月 22:54]

Researchers have succeeded in developing a method for predicting molecular infrared spectra based on artificial intelligence. These chemical 'fingerprints' could only be simulated by common prediction techniques for small molecules in high quality. The team was able to carry out simulations that were previously not possible.

- [**Understanding football violence could help the fight against terror**](#) [周二, 26 9月 22:54]

Football has long been tarnished by outbreaks of fan violence. Although media headlines often link the behavior to 'hooliganism,' the activity could stem from potentially more positive motivations, such as passionate commitment to the group and the desire to belong. Understanding the root cause of the behavior may therefore help in tackling the violence and channeling it into something more positive, scientists suggest.

- [**Cartography of the Cosmos**](#) [周二, 26 9月 21:16]

There are hundreds of billions of stars in our own Milky Way galaxy, interspersed with all manner of matter, from the dark to the sublime. This is the universe that one group of researchers is trying to reconstruct, structure by structure, combining telescope surveys with next-generation data analysis and simulation techniques currently being primed for exascale computing.

- [**The motor protein dancing in all our cells**](#) [周二, 26 9月 21:14]

Biologists have invented optical tweezers to follow the motions of molecular machines measured in nanometers.

- [**Physicists achieve rapid magnetic switching with lasers**](#) [周二, 26 9月 21:00]

New research shows control over composition of ferrimagnetic materials offers new ways of switching their magnetism.

- [**Creative use of noise brings bio-inspired electronic improvement**](#) [周二, 26 9月 03:14]

Researchers are working to exploit stochastic resonance to enhance signal transmission for a new generation of devices, using single-walled carbon nanotubes. They created a summing network SR device that detects subthreshold signals, fabricated to include a self-noise component.

- [**Holograms for molecules**](#) [周二, 26 9月 01:30]

Scientists have developed a completely new method for the analysis of molecules in liquids on a chip. The possible applications of this technology are immense. It has the potential, inter alia, to revolutionize medical diagnostics.

- [**Click beetles inspire design of self-righting robots**](#) [周二, 26 9月 01:30]

Robots perform many tasks that humans can't or don't want to perform, getting around on intricately designed wheels and limbs. If they tip over, however, they are rendered almost useless. Mechanical engineers and entomologists are looking to click beetles, who can right themselves

without the use of their legs, to solve this robotics challenge.

- [**New non-contact, remote biometric tool could be next advance in computer security**](#) [周二, 26 9月 01:30]

Forget fingerprint computer identification or retinal scanning. Scientists have now developed a computer security system using the dimensions of your heart as your identifier. The system uses low-level Doppler radar to measure your heart, and then continually monitors your heart to make sure no one else has stepped in to run your computer.

- [**IceCube helps demystify strange radio bursts from deep space**](#) [周二, 26 9月 01:29]

Scientists are turning IceCube, the world's most sensitive neutrino telescope, to the task of helping demystify powerful pulses of radio energy generated up to billions of light-years from Earth.

- [**The material that obscures supermassive black holes**](#) [周二, 26 9月 01:29]

New research examines the material that obscures active galactic nuclei obtained from infrared and X-ray observations.

- [**Are children who see movie characters use guns more likely to use them?**](#) [周二, 26 9月 01:29]

Children who watched a PG-rated movie clip containing guns played with a disabled real gun longer and pulled the trigger more often than children who saw the same movie not containing guns.

- [**Physicists demonstrate using a laser to control a current in graphene within just one femtosecond**](#) [周二, 26 9月 01:28]

Controlling electronic current is essential to modern electronics, as data and signals are transferred by streams of electrons which are controlled at high speed. Demands on transmission speeds are also increasing as technology develops. Scientists have now succeeded in switching on a current with a desired direction in graphene using a single laser pulse within a femtosecond. This is more than a thousand times faster compared to the most efficient transistors today.

- [**High-fidelity recording of molecular geometry with DNA 'nanoscopy'**](#) [周一, 25 9月 23:33]

A research team has now developed a DNA nanotechnology-based method that allows for repeated, non-destructive recording of uniquely barcoded molecular pairings, rendering a detailed view of their components and geometries. In the future, the approach could help researchers understand how changes in molecular complexes control biological processes in living cells.

- [**Climate insurance is rarely well thought out in agriculture**](#) [周一, 25 9月 23:33]

Internationally subsidised agricultural insurance is intended to protect farmers in developing countries from the effects of climate change. However, it can also lead to undesirable ecological and social side effects, as researchers have now explained. Their article also contains recommendations for improved insurance schemes which in future should also take account of ecological and social aspects in addition to economic issues.

- [**Lava tubes: Hidden sites for future human habitats on the Moon and Mars**](#) [周一, 25 9月 23:28]

Lava tubes, underground caves created by volcanic activity, could provide protected habitats large enough to house streets on Mars or even towns on the Moon, according to new research. A further study shows how the next generation of lunar orbiters will be able to use radar to locate these structures under the Moon's surface.

- [**Fully renewable India in 2050 can take a shortcut to emission-free future**](#) [周一, 25 9月 23:16]

India can function on a fully renewable electricity system in 2050, research indicates. The study shows that developing countries that have an abundance of renewable resources do not need to take the path of the western countries where increasing living standards have been coupled with heavy emissions from electricity generation and other industry. They can move straight to renewable systems and do it cheaply.

- [**New technique uses light to separate mirrored molecules**](#) [周一, 25 9月 23:13]

Left- and right-handed versions of molecules can be hard to tell apart but can have devastatingly different effects. Researchers are developing an optical filter to sort these molecules, which could lead to purer and safer drugs and agrichemicals.

- [**Nanoparticle supersoap creates 'bijel' with potential as sculptable fluid**](#) [周一, 25 9月 23:13]

A new type of 'bijel' could one day lead to applications in soft robotics, liquid circuitry, and a host of other applications that could benefit from shape-shifting fluids.

- [**New type of supercomputer could be based on 'magic dust' combination of light and matter**](#) [周一, 25 9月 23:13]

Scientists have successfully demonstrated that a type of 'magic dust' which combines light and matter can be used to solve complex problems and could eventually surpass the capabilities of even the most powerful supercomputers.

- [**Scientists monitor Silicon Valley's underground water reserves -- from space**](#) [周一, 25 9月 22:57]

Scientists monitoring Silicon Valley's underground water reserves from space have found that water levels rebounded quickly after a severe drought that lasted from 2012-15. The research points to the success of aggressive conservation measures. It also helps to lay the groundwork for low-cost monitoring of subterranean water reserves in California and elsewhere in the world.

- [**Filter may be a match for fracking water**](#) [周一, 25 9月 22:47]

A superhydrophilic filter has proven able to remove more than 90 percent of contaminants from water used in hydraulic fracturing operations at shale oil and gas wells.

- [**With extra sugar, leaves get fat too**](#) [周一, 25 9月 22:47]

Eat too much without exercising and you'll probably put on a few pounds. As it turns out, plant leaves do something similar. A new study shows that retaining sugars in plant leaves can make them get fat too. In plants, this extra fat accumulation could be a good thing. It could help turn plants into factories for making biofuels and other useful chemicals.

- [**Semitransparent and flexible: Solar cells made from atomically thin sheet**](#) [周一, 25 9月 21:55]

A new method for fabricating semitransparent, flexible solar cells has greatly improved power conversion efficiency.

- [**New synthesis method for click chemistry**](#) [周一, 25 9月 21:55]

Scientists have developed a new way to advance click chemistry.

- [**Wound care: Patch could improve healing and reduce scarring**](#) [周一, 25 9月 21:54]

Scientists have developed a new gel patch prototype that could speed up the healing of a skin wound while minimizing the formation of scars.

- [**A preparative-scale reaction using platinum clusters with a single-digit atomicity realized**](#) [周一, 25 9月 21:54]

Scientists have recently developed a fully scalable method for the synthesis of atom-precise platinum clusters for potential use in catalytic applications. This method could provide a new pathway for large-scale production of atom-precise clusters. To demonstrate this, the hydrogenation of styrene was performed.

- [**How aerial thermal imagery is revolutionizing archaeology**](#) [周日, 24 9月 22:37]

A new study has demonstrated how the latest aerial thermal imagery is transforming archaeology due to advancements in technology. Today's thermal cameras, commercial drones and photogrammetric software has introduced a new realm of possibilities for collecting site data-- field survey data across a much larger area can now be obtained in much less time. The findings serve as a manual on how to use aerial thermography.

- [**NASA'S OSIRIS-REx spacecraft slingshots past Earth**](#) [周六, 23 9月 04:25]

NASA's asteroid sample return spacecraft successfully used Earth's gravity on Friday to slingshot itself on a path toward the asteroid Bennu, for a rendezvous next August.

- [**Twitter bots for good: Study reveals how information spreads on social media**](#) [周六, 23 9月 03:05]

Twitter bots have earned a bad reputation. But not all bots are bad, suggests a new study.

- [**Enhancing the sensing capabilities of diamonds with quantum properties**](#) [周六, 23 9月 00:29]

When a nitrogen atom is next to the space vacated by a carbon atom, it forms what is called a nitrogen-vacancy center. Now, researchers have shown how they can create more NV centers, which makes sensing magnetic fields easier, using a relatively simple method that can be done in many labs.

- [**A sustainable future powered by sea**](#) [周五, 22 9月 21:40]

Researchers develop turbines to convert the power of ocean waves into clean, renewable energy.

- [**Assembly of nanoparticles proceeds like a zipper**](#) [周五, 22 9月 21:40]

It has always been the Holy Grail of materials science to describe and control the material's structure-function relationship. Nanoparticles are an attractive class of components to be used in functional materials because they exhibit size-dependent properties, such as superparamagnetism and plasmonic absorption of light. Furthermore, controlling the arrangement of nanoparticles can result in unforeseen properties, but such studies are hard to carry out due to limited efficient approaches to prod...

- [**Smartphone apps can reduce depression**](#) [周五, 22 9月 21:09]

New research has confirmed that smartphone apps are an effective treatment option for depression, paving the way for safe and accessible

interventions for the millions of people around the world diagnosed with this condition.

- [**Ultra-light aluminum: Chemist reports breakthrough in material design**](#) [周五, 22 9月 21:09]

Chemists report a new, metastable, ultra-light crystalline form of aluminum has been computationally designed using density functional calculations with imposing periodic boundary conditions.

- [**The math of doughnuts: 'Moonshine' sheds light on elliptic curves**](#) [周五, 22 9月 21:09]

Mathematicians have opened a new chapter in the theory of moonshine, one which begins to harness the power of the pariahs -- sporadic simple groups that previously had no known application.

- [**Positive, negative or neutral, it all matters: NASA explains space radiation**](#) [周五, 22 9月 21:09]

Charged particles may be small, but they matter to astronauts. NASA's Human Research Program (HRP) is investigating these particles to solve one of its biggest challenges for a human journey to Mars: space radiation and its effects on the human body.

- [**New technique accurately digitizes transparent objects**](#) [周五, 22 9月 04:12]

A new imaging technique makes it possible to precisely digitize clear objects and their surroundings, an achievement that has eluded current state-of-the-art 3-D rendering methods.

- [**'Labyrinth' chip could help monitor aggressive cancer stem cells**](#) [周五, 22 9月 04:12]

Inspired by the Labyrinth of Greek mythology, a new chip etched with fluid channels sends blood samples through a hydrodynamic maze to separate out rare circulating cancer cells into a relatively clean stream for analysis. It is already in use in a breast cancer clinical trial.

- [**Dancing electrons lose the race**](#) [周五, 22 9月 02:13]

Ultrashort pulses of light were employed by physicists to start a race between electrons emitted from different initial states in a solid material. Timing this race revealed an unexpected result: the fastest electrons arrived in last place.

- [**Detecting cosmic rays from a galaxy far, far away**](#) [周五, 22 9月 02:12]

Where do cosmic rays come from? Solving a 50-year-old mystery, a collaboration of researchers has discovered it's much farther than the Milky Way.

- [**Breaking Coulomb's law: Scientists find a way around the rule that 'opposites attract'**](#) [周五, 22 9月 01:43]

Scientists have taken a big step towards creating the next generation of batteries, as well as more effective water treatment and better alternative energy after defying one of nature's most fundamental rules on an atomic scale.

- [**Quantum teleportation of patterns of light**](#) [周五, 22 9月 00:11]

Researchers have demonstrated entanglement swapping and teleportation of orbital angular momentum 'patterns' of light. This is a crucial step towards realizing a quantum repeater for high-dimensional entangled states.

- [**Rapid imaging of granular matter**](#) [周五, 22 9月 00:11]

Granular systems such as gravel or powders can be found everywhere, but studying them is not easy. Researchers have now developed a method by which pictures of the inside of granular systems can be taken 10,000 times faster than before.

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- [**Energy harvested from evaporation could power much of US**](#) [周三, 27 9月 00:51]

In the first evaluation of evaporation as a renewable energy source, researchers find that US lakes and reservoirs could generate 325 gigawatts of power, nearly 70 percent of what the United States currently produces.

- [**Some marine species more vulnerable to climate change than others**](#) [周三, 27 9月 00:51]

Certain marine species will fare much worse than others as they become more vulnerable to the effects of climate change, a new study has found.

- [**Amount of water in stem cells can determine its fate as fat or bone**](#) [周三, 27 9月 00:51]

Adding or removing water from a stem cell can change the destiny of the cell to either pre-fat cells or pre-bone cells, researchers have discovered in a new study.

- [**Scientists unlock mysteries of how Ebola uses people's immune defenses to cause infection**](#) [周三, 27 9月 00:51]

Scientists have gained new insight into how the Ebola virus uses the body's natural defenses to speed the rate of infection and unleash its lethal disease, according to a new report.

- [**Fisheries sustainability linked to gender roles among traders**](#) [周二, 26 9月 23:59]

A new study of fish traders in coastal Kenya shows that women largely occupied fisheries with the lowest profits and are not saving money while working in these fisheries.

• [**Two Caribbean bird-catcher trees named after two women with overlooked botanical works**](#) [周二, 26 9月 23:59]

Known for their biodiversity richness, the Caribbean Islands are now adding two new species of bird-catcher trees to their list of botanical treasures. The new species were named after two women who self-engaged for decades on educational projects in botany, but whose remarkable work was never properly made known and accredited.

• [**Warm Northwest waters draw spawning fish north**](#) [周二, 26 9月 23:59]

Unusually warm ocean conditions off the Pacific Northwest in the last few years led anchovies, sardines and hake to begin spawning in Northwest waters much earlier in the year and, for anchovy, longer than biologists have ever recorded before, new research has found.

• [**Biochemists discover mechanism that helps flu viruses evolve**](#) [周二, 26 9月 23:20]

Flu viruses' rapid evolution relies in part on hijacking some of the cellular machinery of the infected host cell -- a group of proteins called chaperones, which help other proteins fold into the correct shape. When viruses are unable to get help from these proteins, they do not evolve as rapidly, research shows.

• [**Wearable solar thermoelectric generator created**](#) [周二, 26 9月 22:55]

Engineers have introduced a new advanced energy harvesting system, capable of generating electricity by simply being attached to clothes, windows, and outer walls of a building.

• [**Researchers identify novel way to target Ebola**](#) [周二, 26 9月 22:55]

Researchers have identified a potential new way to attack Ebola. Scientists have discovered that a protein called Tim-1 (T-cell immunoglobulin and mucin domain-containing protein 1) plays a key

role in the development of the cytokine storm seen in the last stages of Ebola infection.

- [**Predatory bacteria found in study of cystic fibrosis patients' lung microbiome**](#) [周二, 26 9月 22:55]

Cystic fibrosis patients have a wide variety of bacteria in their lungs, including two 'predators' not detected before, according to a new study.

- [**The drying of peatlands is reducing bird diversity**](#) [周二, 26 9月 22:54]

The populations of peatland birds in Finland, Sweden, Norway, Estonia and Latvia have decreased by a third during the past three decades, a recent international study indicates. The situation in Finland is the most dire, and the species in most trouble is the Finnish ruff, as the population has fallen to approximately 3 percent of what it was at the beginning of the study period.

- [**Nerves control the body's bacterial community**](#) [周二, 26 9月 22:54]

Using the freshwater polyp Hydra as a model organism, researchers have investigated how the simple nervous system of these animals interacts with the microbiome. They were able to demonstrate, for the first time, that small molecules secreted by nerve cells help to regulate the composition and colonization of specific types of beneficial bacteria along the Hydra's body column.

- [**'Hypermutators' drive pathogenic fungi to evolve more rapidly**](#) [周二, 26 9月 22:54]

For nearly two decades, a rare but potentially deadly fungus called *Cryptococcus deuterogattii* has gained a foothold in the Pacific Northwest and Vancouver Island. Researchers recently showed that lineages of the fungal pathogen *Cryptococcus deuterogattii* house a specific mutation in their DNA that increases their mutation rate. These hypermutators, as they are called, rapidly develop resistance to the antifungal drugs FK506 and rapamycin.

- [**Chronic wasting disease**](#) [周二, 26 9月 22:54]

New research summarizes the efforts in disease surveillance and risk management of chronic wasting disease (CWD) in deer and shows that past management strategies such as selective culling, herd reduction, and hunter surveillance have had only limited effectiveness. The summary points towards new advice for optimal, cost-effective strategies in aggressive disease control.

- [**Milk-alternative drinks do not replace the iodine in cows' milk**](#) [周二, 26 9月 21:14]

Consumers of milk-alternative drinks may be at risk of iodine deficiency, according to the findings of a new study.

- [**Agent Orange still linked to hormone imbalances in babies in Vietnam**](#) [周二, 26 9月 21:14]

Could herbicides that were sprayed during the Vietnam War still be causing health problems?

- [**The motor protein dancing in all our cells**](#) [周二, 26 9月 21:14]

Biologists have invented optical tweezers to follow the motions of molecular machines measured in nanometers.

- [**Higher risk of heart failure in cold weather**](#) [周二, 26 9月 21:14]

Could decreases in temperature cause heart failure and death?

- [**New 'bioactive' glass puts minerals back into damaged teeth**](#) [周二, 26 9月 21:12]

Dental researchers have now developed a very fast dissolving 'bioactive' glass which they are putting in toothpaste to repair decayed teeth.

- [**Drought: A cause of riots**](#) [周二, 26 9月 21:05]

The scientific community has been working on the possibility of a relationship between periods of drought and rioting for several years. Now a team has formally verified this hypothesis by studying almost 1,800 riots that occurred over a 20-year period in sub-Saharan Africa. The researchers observed a systematic link between the sudden

depletion of water resources and the outbreak of unrest. They also succeeded in quantifying the impact of geographic and social factors on the same link.

- [**Pigeons better at multitasking than humans**](#) [周二, 26 9月 21:05]

Pigeons are capable of switching between two tasks as quickly as humans -- and even more quickly in certain situations. These are the findings of biopsychologists who had performed the same behavioral experiments to test birds and humans. The authors hypothesize that the cause of the slight multitasking advantage in birds is their higher neuronal density.

- [**Penguin-mounted video captures gastronomic close encounters of the gelatinous kind**](#) [周二, 26 9月 04:32]

Footage from penguin-mounted mini video recorders shows four species of penguin eating jellyfish and other gelatinous animals of the open ocean, a food source penguins were not previously believed to partake of, scientists report.

- [**Snails bred in lab help species crawl back from brink of extinction**](#) [周二, 26 9月 04:06]

Work to restore the endangered Chittenango ovate amber snail, found only in one location inside a Central New York state park, continued this month with the release of tagged adult snails raised in a laboratory.

- [**Antarctica: The wind sublimates snowflakes**](#) [周二, 26 9月 03:14]

A team of researchers has collected new data that shows a significant decrease in snow precipitation close to the ground in Antarctica, which has an impact on the ice sheet surface mass balance.

- [**Mechanism of asexual reproduction in flatworms**](#) [周二, 26 9月 03:14]

Scientists have nailed the biomechanics of a centuries-long puzzle on how freshwater flatworms known as planarians reproduce. The asexual freshwater worms, notoriously difficult to study, tear themselves into two pieces that go on to form two new worms. Researchers are now able

to predict where planarian fission occurs based on its anatomy as well as explain how the process happens using a relatively simple mechanical model.

- [**Metabolism directly impacts the odds of developing malaria**](#) [周二, 26 9月 01:30]

Researchers have found that the host's susceptibility to develop malaria depends on his or her metabolic state, which can be easily manipulated through external stimuli such as dietary patterns.

- [**Ticks are even tougher and nastier than you thought**](#) [周二, 26 9月 01:30]

Studies are showing how ticks can survive drought and cold northern winters.

- [**Study examines legacies of rainforest burning in British Columbia**](#) [周二, 26 9月 01:30]

Analyses of temperate rain forests located on the central coast of British Columbia, Canada, suggest that for centuries, humans have intentionally used fire to manage plant life.

- [**Discovering what makes organelles connect could help explain neurodegenerative diseases**](#) [周二, 26 9月 01:29]

Organelles must exchange signals and materials to make the cell operate correctly. New technologies are allowing researchers to see and understand the networks that connect these organelles, allowing them to build maps of the trade routes that exist within a cell.

- [**Big brains in birds provides survival advantage**](#) [周二, 26 9月 01:29]

Scientists have discovered that brainier birds are better able to colonize inhospitable places.

- [**Bacterial nanosized speargun works like a power drill**](#) [周二, 26 9月 01:28]

In order to get rid of unpleasant competitors, some bacteria use a sophisticated weapon -- a nanosized speargun. Researchers have now

gained new insights into the construction, mode of action and recycling of this weapon. The speargun drills a hole into the neighboring cells in only a few thousandths of a second and injects a cocktail of toxins.

• [**High-fidelity recording of molecular geometry with DNA 'nanoscopy'**](#) [周一, 25 9月 23:33]

A research team has now developed a DNA nanotechnology-based method that allows for repeated, non-destructive recording of uniquely barcoded molecular pairings, rendering a detailed view of their components and geometries. In the future, the approach could help researchers understand how changes in molecular complexes control biological processes in living cells.

• [**Climate insurance is rarely well thought out in agriculture**](#) [周一, 25 9月 23:33]

Internationally subsidised agricultural insurance is intended to protect farmers in developing countries from the effects of climate change. However, it can also lead to undesirable ecological and social side effects, as researchers have now explained. Their article also contains recommendations for improved insurance schemes which in future should also take account of ecological and social aspects in addition to economic issues.

• [**Fully renewable India in 2050 can take a shortcut to emission-free future**](#) [周一, 25 9月 23:16]

India can function on a fully renewable electricity system in 2050, research indicates. The study shows that developing countries that have an abundance of renewable resources do not need to take the path of the western countries where increasing living standards have been coupled with heavy emissions from electricity generation and other industry. They can move straight to renewable systems and do it cheaply.

• [**Climate change can goad volcanoes into life**](#) [周一, 25 9月 23:14]

Geologists have analyzed volcanic data from the Messinian salinity crisis in the Mediterranean Sea, when the Strait of Gibraltar was blocked and the Mediterranean temporarily isolated from the Atlantic. After

testing various scenarios, the geologists concluded that the increase in magmatic activity could only be explained by the almost total drying out of the Mediterranean.

- [**Clarifying perspectives to promote action on loss and damage from climate change**](#) [周一, 25 9月 23:13]

The hurricanes Harvey, Irma and Maria highlight the potential for the climate system to cause loss and damage. 'Loss and damage' is a phrase used in different ways by people who work on climate policy, negotiation and adaptation/resilience. A new study clarifies these different perspectives which is a key issue now that the United Nations Framework Convention on Climate Change, UNFCCC, is encouraging creation and implementation of actions to address loss and damage from climate change.

- [**Likely scenarios for global spread of devastating crop disease**](#) [周一, 25 9月 23:13]

New research reveals the most likely months and routes for the spread of new strains of airborne 'wheat stem rust' that could endanger global food security by ravaging wheat production across Africa, the Middle East, Asia and the wider world.

- [**Panda habitat shrinking, becoming more fragmented**](#) [周一, 25 9月 23:13]

Using remote sensing data, Chinese and US scientists have re-assessed the conservation status of the giant panda. Their analysis shows that while panda numbers are increasing, their habitat still covers less area and is more fragmented than it was in 1988, when the species was listed as endangered on the IUCN Red List.

- [**World's botanic gardens contain a third of all known plant species, and help protect the most threatened**](#) [周一, 25 9月 23:13]

The most in-depth species survey to date finds an 'astonishing array' of plant diversity in the global botanic garden network, including 41

percent of all endangered species. However, researchers find a significant imbalance between tropical and temperate plants, and say even more capacity should be given to conservation, as there is 'no technical reason for plant species to become extinct.'

- [**Genes are controlled by 'Nano footballs,' scientists discover**](#) [周一, 25 9月 23:12]

Genes are controlled by 'nano footballs' -- structures that look like footballs but 10 million times smaller than the average ball -- new research has revealed.

- [**The rat race is over: New livestock model for stroke could speed discovery**](#) [周一, 25 9月 22:57]

Researchers have developed the first US pig model for stroke treatments.

- [**Scientists monitor Silicon Valley's underground water reserves -- from space**](#) [周一, 25 9月 22:57]

Scientists monitoring Silicon Valley's underground water reserves from space have found that water levels rebounded quickly after a severe drought that lasted from 2012-15. The research points to the success of aggressive conservation measures. It also helps to lay the groundwork for low-cost monitoring of subterranean water reserves in California and elsewhere in the world.

- [**Scientists call for more research on how human activities affect the seabed**](#) [周一, 25 9月 22:47]

Extensive research has been released into how industry and environmental change are affecting our seafloors. Researchers say more work is needed to help safeguard these complex ecosystems and the benefits they provide to people for the future.

- [**Getting the measure of mud**](#) [周一, 25 9月 22:47]

For the first time, researchers have been able to use mud deposited on the depths of the ocean floor to measure changes in the speed of deep-sea currents. Using mud as a current meter could help scientists to

identify fluctuating patterns in ocean current speeds stretching back into prehistory, enabling climate change researchers to get a better sense of how currents behave over time.

• [**Brain damage in fish from plastic nanoparticles in water**](#) [周一, 25 9月 22:47]

A new study shows that plastic particles in water may end up inside fish brains. The plastic can cause brain damage, which is the likely cause of behavioral disorders observed in the fish.

• [**Filter may be a match for fracking water**](#) [周一, 25 9月 22:47]

A superhydrophilic filter has proven able to remove more than 90 percent of contaminants from water used in hydraulic fracturing operations at shale oil and gas wells.

• [**With extra sugar, leaves get fat too**](#) [周一, 25 9月 22:47]

Eat too much without exercising and you'll probably put on a few pounds. As it turns out, plant leaves do something similar. A new study shows that retaining sugars in plant leaves can make them get fat too. In plants, this extra fat accumulation could be a good thing. It could help turn plants into factories for making biofuels and other useful chemicals.

• [**Semitransparent and flexible: Solar cells made from atomically thin sheet**](#) [周一, 25 9月 21:55]

A new method for fabricating semitransparent, flexible solar cells has greatly improved power conversion efficiency.

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- [**Interventions for reducing hepatitis C infection in people who inject drugs**](#) [周二, 26 9月 22:54]

The first global review to quantify the impact of needle syringe programs (NSP) and opioid substitution treatment (OST) in reducing the risk of becoming infected with the hepatitis C virus has now been published. The study has implications for millions of people who are 'at risk' from infection.

- [**Household chores: Women still do more**](#) [周二, 26 9月 22:54]

Women of all ages still tend to do more household chores than their male partners, no matter how much they work or earn in a job outside the home. New findings demonstrate the persistent gendered nature of how housework is divided.

- [**Preschool teachers need better training in science**](#) [周二, 26 9月 22:54]

Preschool instructors appear to lack the knowledge, skills and confidence to effectively teach their young students science -- a problem that is likely contributing to America's poor global performance in this crucially important subject.

- [**Drought: A cause of riots**](#) [周二, 26 9月 21:05]

The scientific community has been working on the possibility of a relationship between periods of drought and rioting for several years. Now a team has formally verified this hypothesis by studying almost 1,800 riots that occurred over a 20-year period in sub-Saharan Africa. The researchers observed a systematic link between the sudden

depletion of water resources and the outbreak of unrest. They also succeeded in quantifying the impact of geographic and social factors on the same link.

- [**People are reluctant to use public defibrillators to treat cardiac arrests**](#) [周二, 26 9月 20:59]

A new study suggests that people are reluctant to use public-access defibrillators to treat cardiac arrests.

- [**Psychological impacts of natural disasters on youth**](#) [周二, 26 9月 04:32]

A researcher is fully aware of children's reaction to trauma. Her research focuses on the impact of disasters on youth since Hurricane Andrew in 1992. La Greca has been evaluating how best to define post-traumatic stress disorder (PTSD) in children. This line of research will help to quickly identify the children who need support services post-disaster and identify key aspects of the post-disaster environment that facilitate their recovery.

- [**Are children who see movie characters use guns more likely to use them?**](#) [周二, 26 9月 01:29]

Children who watched a PG-rated movie clip containing guns played with a disabled real gun longer and pulled the trigger more often than children who saw the same movie not containing guns.

- [**Climate insurance is rarely well thought out in agriculture**](#) [周一, 25 9月 23:33]

Internationally subsidised agricultural insurance is intended to protect farmers in developing countries from the effects of climate change. However, it can also lead to undesirable ecological and social side effects, as researchers have now explained. Their article also contains recommendations for improved insurance schemes which in future should also take account of ecological and social aspects in addition to economic issues.

- [**Group project? Taking turns, working with**](#)

friends may improve grades [周一, 25 9月 23:33]

A new study with college students has found that the social dynamics of a group, such as whether one person dominates the conversation or whether students work with a friend, affect academic performance. Put simply, the more comfortable students are, the better they do, which yields benefits beyond the classroom.

Fully renewable India in 2050 can take a shortcut to emission-free future [周一, 25 9月 23:16]

India can function on a fully renewable electricity system in 2050, research indicates. The study shows that developing countries that have an abundance of renewable resources do not need to take the path of the western countries where increasing living standards have been coupled with heavy emissions from electricity generation and other industry. They can move straight to renewable systems and do it cheaply.

Clarifying perspectives to promote action on loss and damage from climate change [周一, 25 9月 23:13]

The hurricanes Harvey, Irma and Maria highlight the potential for the climate system to cause loss and damage. 'Loss and damage' is a phrase used in different ways by people who work on climate policy, negotiation and adaptation/resilience. A new study clarifies these different perspectives which is a key issue now that the United Nations Framework Convention on Climate Change, UNFCCC, is encouraging creation and implementation of actions to address loss and damage from climate change.

Visual attention drawn to meaning, not what stands out [周一, 25 9月 23:13]

Our visual attention is drawn to parts of a scene that have meaning, rather than to those that are salient or 'stick out,' according to new research. The findings overturn the widely held model of visual attention.

World's botanic gardens contain a third of all

known plant species, and help protect the most threatened [周一, 25 9月 23:13]

The most in-depth species survey to date finds an 'astonishing array' of plant diversity in the global botanic garden network, including 41 percent of all endangered species. However, researchers find a significant imbalance between tropical and temperate plants, and say even more capacity should be given to conservation, as there is 'no technical reason for plant species to become extinct.'

• **Minority public managers prefer integrating social equity, traditional public values** [周一, 25 9月 22:57]

Minority public managers place more emphasis on both traditional values, like efficiency and effectiveness, and social equity when compared with their white counterparts, according to a new study.

• **Scientists call for more research on how human activities affect the seabed** [周一, 25 9月 22:47]

Extensive research has been released into how industry and environmental change are affecting our seafloors. Researchers say more work is needed to help safeguard these complex ecosystems and the benefits they provide to people for the future.

• **New technique spots warning signs of extreme events** [周日, 24 9月 22:38]

Engineers have devised a framework for identifying key patterns that precede an extreme event. The framework can be applied to a wide range of complicated, multidimensional systems to pick out the warning signs that are most likely to occur in the real world.

• **Study finds no-tillage not sufficient alone to prevent water pollution from nitrate** [周六, 23 9月 04:25]

A new study answers a long-debated agricultural question: whether no-tillage alone is sufficient to prevent water pollution from nitrate. The answer is no.

• **Flint's water crisis led to fewer babies and**

[higher fetal death rates, researchers find](#) [周五, 22 9月 21:16]

An estimated 275 fewer children were born in Flint, Michigan, while the city was using lead-contaminated water from the Flint River, according to new research findings.

• [Breathing dirty air may harm kidneys](#) [周五, 22 9月 21:16]

Outdoor air pollution may increase the risk of chronic kidney disease and contribute to kidney failure, say researchers. Scientists culled national VA databases to evaluate the effects of air pollution and kidney disease on nearly 2.5 million people over a period of 8.5 years, beginning in 2004. The scientists compared VA data on kidney function to air-quality levels collected by the Environmental Protection Agency (EPA) as well as the National Aeronautics and Space Administration (NASA).

• [Strong alcohol policies help reduce alcohol-involved homicides](#) [周五, 22 9月 04:12]

Stronger alcohol policies, including taxes and sales restrictions, have been shown to reduce the likelihood of alcohol involvement among homicide victims, according to a new study.

• [Babies can learn that hard work pays off](#) [周五, 22 9月 04:12]

A new study reveals babies as young as 15 months can learn the value of hard work. Researchers found babies who watched an adult struggle to reach two different goals before succeeding tried harder at their own difficult task than babies who saw an adult succeed effortlessly.

• [We must accelerate transitions for sustainability and climate change, experts say](#) [周五, 22 9月 02:12]

We must move faster towards a low-carbon world if we are to limit global warming to 2 degrees C this century, experts have warned.

• [Rapid hepatitis C testing may help better screen young adults](#) [周五, 22 9月 02:12]

Routine and rapid hepatitis C virus testing among young adults who use injection drugs improves life expectancy and may provide a good use of

limited resources, according to new research.

- [**Wildlife rangers: What motivates them?**](#) [周五, 22 9月 00:11]

Wildlife rangers are on the front lines protecting our most iconic species -- tigers, elephants, gorillas and many others. But their challenges involve more than confrontations with wild animals and poachers.

- [**Recipe for forest restoration discovered**](#) [周四, 21 9月 22:17]

A new study has uncovered some valuable information on ways to maximize the success of replanting efforts, bringing new hope for restoring these threatened ecosystems.

- [**Premature births cost health plans \\$6 billion annually**](#) [周四, 21 9月 21:02]

A new study estimates employer-sponsored health plans spent at least \$6 billion extra on infants born prematurely in 2013 and a substantial portion of that sum was spent on infants with major birth defects.

- [**Pay more, smoke less: Possible effects of raising tobacco taxes across the EU**](#) [周四, 21 9月 11:22]

Raising tobacco taxes to increase cigarette prices could reduce cigarette consumption and smoking-associated deaths (SADs) in all 28 EU countries, according to a new study. In higher income countries, raising tobacco taxes could increase revenues that could be spend on prevention and control programs, while in lower income countries tax revenues may be negatively affected, researchers suggest.

- [**When residents take charge of their rainforests, fewer trees die**](#) [周四, 21 9月 06:21]

When the government gives citizens a personal stake in forested land, trees don't disappear as quickly and environmental harm slows down, research finds.

- [**Communication among health care facilities key to preventing spread of drug-resistant bacteria**](#) [周

四, 21 9月 02:47]

Communication breakdowns between care facilities can pave the way

for outbreaks of infection, according to research on the spread of an extensively drug-resistant bacterium.

• [**Hold the phone: An ambulance might lower your chances of surviving some injuries**](#) [周四, 21 9月 01:16]

Victims of gunshots and stabbings are significantly less likely to die if they're taken to the trauma center by a private vehicle than ground emergency medical services (EMS), according to results of a new analysis.

• [**Building social communication skills in shy children helps with peer likeability**](#) [周三, 20 9月 22:00]

A new study has discovered that shy children with low English vocabulary skills, can still be popular among their peers if they have high-functioning social communication skills that enable them to engage and interact well with their peers in social settings.

• [**New tool to assess individual's level of wisdom**](#) [周三, 20 9月 21:59]

Researchers have developed a new tool called the San Diego Wisdom Scale (SD-WISE) to assess an individual's level of wisdom, based upon a conceptualization of wisdom as a trait with a neurobiological as well as psychosocial basis.

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [**Innovative control system paves the way for large scale universal quantum computing**](#) [周三, 27 9月 01:30]

Future quantum computers promise exponential scaling in computing power with linearly increasing number of qubits. However, harnessing this power is challenging due to the complexity of controlling a large number of qubits simultaneously. A solution to this problem has now been engineered.

- [**Pigeons better at multitasking than humans**](#) [周二, 26 9月 21:05]

Pigeons are capable of switching between two tasks as quickly as humans -- and even more quickly in certain situations. These are the findings of biopsychologists who had performed the same behavioral experiments to test birds and humans. The authors hypothesize that the cause of the slight multitasking advantage in birds is their higher neuronal density.

- [**After 15 years in a vegetative state, nerve stimulation restores consciousness**](#) [周二, 26 9月 01:29]

A 35-year-old man who had been in a vegetative state for 15 years after a car accident has shown signs of consciousness after neurosurgeons implanted a vagus nerve stimulator into his chest. The findings show that vagus nerve stimulation (VNS) -- a treatment already in use for epilepsy and depression--can help to restore consciousness even after many years in a vegetative state.

- [**Bacterial nanosized speargun works like a**](#)

[power drill](#) [周二, 26 9月 01:28]

In order to get rid of unpleasant competitors, some bacteria use a sophisticated weapon -- a nanosized speargun. Researchers have now gained new insights into the construction, mode of action and recycling of this weapon. The speargun drills a hole into the neighboring cells in only a few thousandths of a second and injects a cocktail of toxins.

[Lava tubes: Hidden sites for future human habitats on the Moon and Mars](#) [周一, 25 9月 23:28]

Lava tubes, underground caves created by volcanic activity, could provide protected habitats large enough to house streets on Mars or even towns on the Moon, according to new research. A further study shows how the next generation of lunar orbiters will be able to use radar to locate these structures under the Moon's surface.

[Genes are controlled by 'Nano footballs,' scientists discover](#) [周一, 25 9月 23:12]

Genes are controlled by 'nano footballs' -- structures that look like footballs but 10 million times smaller than the average ball -- new research has revealed.

[Fish have surprisingly complex personalities](#) [周一, 25 9月 21:54]

Tiny fish called Trinidadian guppies have individual 'personalities', new research shows.

[Detecting cosmic rays from a galaxy far, far away](#) [周五, 22 9月 02:12]

Where do cosmic rays come from? Solving a 50-year-old mystery, a collaboration of researchers has discovered it's much farther than the Milky Way.

[Early trilobites had stomachs, new fossil study finds](#) [周五, 22 9月 02:12]

Exceptionally preserved trilobite fossils from China, dating back to more than 500 million years ago, have revealed new insights into the extinct marine animal's digestive system. The new study shows that at

least two trilobite species evolved a stomach structure 20 million years earlier than previously thought.

• [**Hope to discover sure signs of life on Mars? New research says look for the element vanadium**](#) [周四, 21 9月 23:06]

A new article suggests NASA and others hunting for proof of Martian biology in the form of 'microfossils' could use the element vanadium in combination with Raman spectroscopy to confirm traces of extraterrestrial life.

• [**Big herbivorous dinosaurs ate crustaceans as a side dish**](#) [周四, 21 9月 22:17]

Some big plant-eating dinosaurs roaming present-day Utah some 75 million years ago were slurping up crustaceans on the side, a behavior that may have been tied to reproductive activities, says a new study.

• [**Tiny Brazilian frogs are deaf to their own calls**](#) [周四, 21 9月 21:03]

Pumpkin toadlets, found on the leaf litter of Brazil's Atlantic forest, are among the smallest frogs in the world. Scientists have now discovered that two species of these tiny orange frogs cannot hear the sound of their own calls.

• [**Unique type of object discovered in our solar system**](#) [周四, 21 9月 02:47]

Astronomers have observed the intriguing characteristics of an unusual type of object in the asteroid belt between Mars and Jupiter: two asteroids orbiting each other and exhibiting comet-like features, including a bright coma and a long tail. This is the first known binary asteroid also classified as a comet.

• [**Plants combine color and fragrance to procure pollinators**](#) [周四, 21 9月 02:47]

Who knew that it's possible to predict the fragrance of a flower by looking at its color? This is true for many of the 41 insect-pollinated plant species growing in a Phrygana scrubland habitat on the Greek island of Lesbos.

- **[Bite force research reveals dinosaur-eating frog](#)**

[周四, 21 9月 01:17]

Scientists say that a large, now extinct, frog called *Beelzebufo* that lived about 68 million years ago in Madagascar would have been capable of eating small dinosaurs. The conclusion comes from a study of the bite force of South American horned frogs from the living genus *Ceratophrys*, known as Pacman frogs for their characteristic round shape and large mouth, similar to the video game character Pac-Man.

- **[World's first 'molecular robot' capable of building molecules](#)**

[周四, 21 9月 01:17]

Scientists have created the world's first 'molecular robot' that is capable of performing basic tasks including building other molecules.

- **[Dinosaur evolution: Lumbering giants had agile ancestors](#)**

[周四, 21 9月 01:17]

The best known sauropod dinosaurs were huge herbivorous creatures, whose brain structures were markedly different from those of their evolutionary predecessors, for the earliest representatives of the group were small, lithe carnivores.

- **[Scientists make atoms-thick 'Post-It notes' for solar cells and circuits](#)**

[周四, 21 9月 01:17]

A new study describes an innovative method to make stacks of semiconductors just a few atoms thick. The technique offers scientists and engineers a simple, cost-effective method to make thin, uniform layers of these materials, which could expand capabilities for devices from solar cells to cell phones.

- **[Hold the phone: An ambulance might lower your chances of surviving some injuries](#)**

[周四, 21 9月 01:16]

Victims of gunshots and stabbings are significantly less likely to die if they're taken to the trauma center by a private vehicle than ground emergency medical services (EMS), according to results of a new analysis.

• [Is the Milky Way an 'outlier' galaxy? Studying its 'siblings' for clues](#) [周三, 20 9月 23:33]

The most-studied galaxy in the universe -- the Milky Way -- might not be as 'typical' as previously thought, according to a new study. Early results from the Satellites Around Galactic Analogs (SAGA) Survey indicate that the Milky Way's satellites are much more tranquil than other systems of comparable luminosity and environment. Many satellites of those 'sibling' galaxies are actively pumping out new stars, but the Milky Way's satellites are mostly inert.

• [Real or fake? Creating fingers to protect identities](#) [周三, 20 9月 23:33]

Biometric experts for the first time have designed and created a fake finger containing multiple key properties of human skin. Commonly called a spoof, this fake finger has been used to test two of the predominant types of fingerprint readers to help determine their resilience to spoof attacks.

• [Gravity waves influence weather and climate](#) [周三, 20 9月 22:00]

Gravity waves form in the atmosphere as a result of destabilizing processes. The effects of gravity waves can only be taken into consideration by including additional special components in the models.

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周四, 28 9月 2017

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Breaking science news and articles on global warming, extrasolar planets, stem cells, bird flu, autism, nanotechnology, dinosaurs, evolution -- the latest discoveries in astronomy, anthropology, biology, chemistry, climate and environment, computers, engineering, health and medicine, math, physics, psychology, technology, and more -- from the world's leading universities and research organizations.

- [**No evidence to support claims that telephone consultations reduce GP workload or hospital referrals**](#) [周四, 28 9月 06:44]

Telephone consultations to determine whether a patient needs to see their GP face-to-face can deal with many problems, but a new study found no evidence to support claims by companies offering to manage these services or by NHS England that the approach saves money or reduces the number of hospital referrals.

- [**The hormone that could be making your dog aggressive discovered**](#) [周四, 28 9月 04:20]

Thousands of people are hospitalized every year for dog bites, and aggressive behavior is a major reason dogs end up in shelters. Biologists have studied the biology behind canine aggression, specifically the role of the hormones vasopressin and oxytocin.

- [**Nontraffic injuries and fatalities in young children**](#) [周四, 28 9月 04:20]

From 1990-2014, researchers found more than 11,750 distinct incidents in a variety of venues and vehicles affecting 14,568 children 14 years and younger, resulting in nearly 3,400 deaths.

- [**How cells recover from the verge of programmed death**](#) [周四, 28 9月 04:20]

Biologists explore the molecular underpinnings of cells that recover from the verge of programmed death.

- [**Earliest evidence for a native African cultigen discovered in Eastern Sudan**](#) [周四, 28 9月 04:20]

Archaeologists examining plant impressions within broken pottery have discovered the earliest evidence for domesticated sorghum in Africa.

- [**New class of molecules may protect brain from stroke, neurodegenerative diseases**](#) [周四, 28 9月 04:20]

Scientists have discovered a new class of molecules in the brain that synchronize cell-to-cell communication and neuroinflammation/immune activity in response to injury or diseases. Elovonoids (ELVs) are bioactive chemical messengers made from omega-3 very long chain polyunsaturated fatty acids (VLC-PUFAs,n-3). They are released on demand when cells are damaged or stressed.

- [**Mini-protein rapid design method opens way to create a new class of drugs**](#) [周四, 28 9月 04:20]

A high-speed method has been developed to generate many different, small, stable proteins from scratch, custom-designed to bind to specific therapeutic targets. Protection against infectious diseases, like flu, and antidotes to nerve toxins are but two research goals of this approach. The method rapidly originates thousands of new drug candidates. These computer-designed proteins, which did not previously exist in nature, combine the stability and bioavailability of small molecule drugs with the sp...

- [**Beer can lift your spirits due to malted barley ingredient**](#) [周四, 28 9月 03:28]

Visitors to the Oktoberfest have always known it and now it has been scientifically -- beer can lift your spirits. Scientists examined 13,000 food components to find out whether they stimulate the reward center in

the brain and make people feel good. Hordenine which is found in malted barley and beer seems to do the job quite well.

- **[Haplobank: A biobank of reversible mutant embryonic stem cells](#)** [周四, 28 9月 01:38]

Scientists have developed a biobank of revertible, mutant embryonic stem cells – called Haplobank - which contains over 100,000 mutated, conditional mouse embryonic stem cell lines, targeting about 70% of the protein-coding genome.

- **[Melanoma cells rewired to resist drug treatment](#)** [周四, 28 9月 01:36]

Scientists reveal why relapses after treatment for metastatic melanoma occur. While combination therapies block off the principal pathway that cancer cells use to fuel their growth, the cells come to bypass this blockade and, like vehicles on a detour route, make use of additional pathways to continue growing and spreading.

- **[Black holes with ravenous appetites define Type I active galaxies](#)** [周四, 28 9月 01:36]

Type I and Type II active galaxies do not just appear different -- they are, in fact, very different from each other, both structurally and energetically, new research shows. According to the results of a new study, the key factor that distinguishes Type I and Type II galaxies is the rate at which their central black holes -- or active galactic nuclei -- consume matter and spit out energy.

- **[New light shed on how Earth and Mars were created](#)** [周四, 28 9月 01:36]

Analysing a mixture of earth samples and meteorites, scientists have shed new light on the sequence of events that led to the creation of the planets Earth and Mars.

- **[The volatile processes that shaped Earth](#)** [周四, 28 9月 01:36]

Although it is widely understood that Earth was formed gradually, from much smaller bodies, many of the processes involved in shaping our growing planet are less clear. Astronomers have now untangled some of

these processes, revealing that the mini-planets added to Earth had previously undergone melting and evaporation. They also address another scientific conundrum: Earth's depletion in many economically important chemical elements.

• [**Turbocharging engine design**](#) [周四, 28 9月 00:51]

Researchers have moved the development process into the passing lane. For the first time, scientists and engineers have pinpointed engine designs for a given fuel using the Mira supercomputer at the heart of the Argonne Leadership Computing Facility (ALCF), a DOE Office of Science User Facility.

• [**Teen first in Virginia to receive cancer gene therapy in clinical trial**](#) [周四, 28 9月 00:51]

UVA has administered its first dose of an experimental gene therapy for a deadly form of treatment-resistant pediatric leukemia.

• [**Breakthrough in understanding the origin of the aging process**](#) [周四, 28 9月 00:50]

Researchers have unveiled the mystery of why we age in a new study. They have identified that genes belonging to a process called autophagy, which is one of the cells most critical survival processes, promote health and fitness in young worms but drive the process of aging later in life.

• [**Our brain's filing system for storing experiences uncovered**](#) [周四, 28 9月 00:36]

A team of neuroscientists has uncovered how our brains organize, over time, our experiences: that is, according to their similarities.

• [**LIGO and Virgo observatories jointly detect black hole collision**](#) [周四, 28 9月 00:36]

The first observation of gravitational waves has been discovered by by three different detectors, marking a new era of greater insights and improved localization of cosmic events now available through globally networked gravitational-wave observatories.

• [**Citizen science can predict butterfly population**](#)

trends [周四, 28 9月 00:36]

New research shows that citizen scientists can play a role in gathering meaningful information to inform long-term monitoring of biodiversity trends such as butterfly population change.

- **Iron supplements have long-term benefits for low birth-weight babies** [周四, 28 9月 00:36]

Babies classified as low birth weight (under 2,500 grams) are at risk of iron deficiency, which is linked to impaired neurological development. A long-term randomized study now shows that providing such babies with iron supplements can prevent behavioral problems at school age.

- **Increased arterial stiffness linked to restrictive spirometry pattern and reduced forced vital capacity** [周四, 28 9月 00:35]

Increased arterial stiffness is a known predictor of cardiovascular diseases in different populations, including healthy subjects and patients with hypertension, diabetes, or renal disease. A new study examining arterial stiffness in a large population determined that both restrictive spirometry pattern and reduced forced vital capacity (FVC) were associated with a higher risk of arterial stiffness not only in men but also in women. The investigators found that arterial stiffness increased fourfo...

- **Total solar eclipse viewed from space** [周四, 28 9月 00:35]

While people across the nation gazed at August's total solar eclipse from Earth, a bread loaf-sized NASA satellite had a front row seat for the astronomical event.

- **Teens' online friendships just as meaningful as face-to-face ones** [周三, 27 9月 22:54]

Many parents worry about how much time teenagers spend texting, sharing selfies and engaging in other online activities with their friends. However, according to a recent research synthesis, many of these digital behaviors serve the same purpose and encompass the same core qualities

as face-to-face relationships.

• [**New iceberg calved from Pine Island Glacier**](#) [周三, 27 9月 22:45]

A new iceberg calved from Pine Island Glacier -- one of the main outlets where ice from the interior of the West Antarctic Ice Sheet flows into the ocean.

• [**Drug slows stomach emptying, may individualize obesity treatment, study shows**](#) [周三, 27 9月 22:25]

Liraglutide injection, a prescription medication used to treat type 2 diabetes and obesity is associated with marked slowing of stomach emptying and is an effective weight loss therapy, finds a randomized, double-blind, placebo-controlled study.

• [**On a collision course with game theory**](#) [周三, 27 9月 22:23]

How do pedestrians behave in a large crowd? How do they avoid collisions? How can their paths be modeled? A new approach developed by mathematicians provides answers to these questions.

• [**How old does your computer think you are?**](#) [周三, 27 9月 22:23]

Computerized face recognition is an important part of initiatives to develop security systems, in building social networks, in curating photographs, and many other applications. Systems can allow a computer to estimate with precision a person's age based on an analysis of their face.

• [**Preservation of floodplains is flood protection**](#) [周三, 27 9月 22:23]

The silting of rivers and streams leads to problems for fish, mussels, and other aquatic organisms because their habitats disappear. However, not only intensive agriculture and erosion are destroying these habitats. Now a study refutes this widespread view. In order to save the species living in the river basin -- and protect people from the threat of floods -- rivers need more space, diversity, and freedom.

• [**Two new crustacean species discovered on Galician seabed**](#) [周三, 27 9月 22:23]

The fauna of deep seabed tends to be relatively unknown due to the difficulty of collecting samples at great depths. A research team undertook four oceanographic expeditions in the waters off the northwest coast of the Iberian Peninsula that have led to the discovery of several new species that inhabit the abyssal plains. Now they describe two eyeless species of millimetric proportions.

• [**Anxious moms may give clues about how anxiety develops**](#) [周三, 27 9月 22:23]

Moms may be notorious worriers, but babies of anxious mothers may also spend more time focusing on threats in their environment, according to a team of researchers.

• [**Emerging infectious disease threatens Darwin's frog with extinction**](#) [周三, 27 9月 22:09]

Iconic species likely to be wiped-out by amphibian fungus, despite lack of obvious short-term evidence.

• [**Middle age fattens you up if you do not increase your physical activity**](#) [周三, 27 9月 22:09]

New research has examined how changes in the daily step count are related to changes in the body mass index (BMI).

• [**More than a 38 % of the Neotropical parrot population in the American continent is threatened by human activity**](#) [周三, 27 9月 22:09]

More than a 38% of the Neotropical parrot population of the American continent (Neotropic) is endangered due the impact of human activity, according to a scientific study.

• [**Seeking feedback not always sufficient for stimulating creativity**](#) [周三, 27 9月 22:09]

It is widely believed that seeking feedback from colleagues, managers, friends and family enhances employees' creativity. But is this always the case? No, a positive effect depends on the work environment.

- [**Moths: A different weapon against each enemy**](#) [周三, 27 9月 21:56]

It's a dangerous world out there, especially if you are a small insect. Insects have thrived on our planet for hundreds of millions of years, so they must be doing something right despite all the threats to their survival. With so many predators out to get them many animals have evolved chemical defences, making themselves distasteful or even toxic. Wood tiger moths protect themselves from multiple predators using different chemical defences. Choosing the right defence can be tricky as predators ...

- [**Coping with stressful organizational change**](#) [周三, 27 9月 21:51]

Stress is not a recent phenomenon, but the modern work environment seems to highlight its detrimental effects on employees. This is no more obvious than during times of organizational change. New research considers the impact of such changes on workers in a healthcare authority in New Zealand, highlighting the problems that any organization might face under such circumstances and pointing to possible methods to cope and remediate employee stress.

- [**Monetizing time savings makes toll roads financially stack up**](#) [周三, 27 9月 21:34]

Putting a dollar value on the savings from traffic congestion, noise and air pollution as a result of toll roads and tunnels will make large infrastructure projects more cost effective, according to a new study.

- [**How to grow a spine**](#) [周三, 27 9月 21:33]

A genetics professor -- whose lab discovered the segmentation clock 20 years ago -- and colleagues report that they used mouse cells to reconstitute a stable version of this clockwork for the first time in a petri dish, leading to several new discoveries about where the clock is located, what makes it tick and how the vertebral column takes shape.

- [**New twist on asymmetric catalysis**](#) [周三, 27 9月 21:33]

Researchers have developed an efficient and simple chemical synthesis of a new kind of twisted helicene molecule containing a sulfur group, thiophene. The unusual screw-like asymmetry of the molecules could be

useful for making drugs and other types of chemicals in their pure single-enantiomer forms.

- [**Brain disconnections may contribute to Parkinson's hallucinations**](#) [周三, 27 9月 21:33]

Disconnections of brain areas involved in attention and visual processing may contribute to visual hallucinations in individuals with Parkinson's disease, according to a new study. The disconnected brain areas seen on functional MRI may be valuable in predicting the development of visual hallucinations in patients with Parkinson's disease.

- [**Geographic variation in Gentoo penguin calls**](#) [周三, 27 9月 21:33]

Vocal communication is central to the lives of many birds, which use sound to attract mates and defend territories. Penguins are no exception, but we know little about how or why penguin vocalizations vary between isolated populations. A new study takes a broad look at vocalizations across the range of Gentoo penguins and concludes that while their calls do vary from place to place, we still have lots to learn about the processes at work.

- [**Songbird populations may indicate trouble in northwestern forests**](#) [周三, 27 9月 21:33]

Populations of many North American songbirds are declining, and in many cases we don't understand why. Conservation efforts need this information to be effective, and bird banding stations can help fill in the gaps, providing insights into how demographics vary across space and time. A new study presents ten years of data from banding stations across northern California and southern Oregon and offers new hints on what's driving changes in the region's songbird populations.

- [**Tree-dwelling, coconut-cracking giant rat discovered in Solomon Islands**](#) [周三, 27 9月 21:33]

Scientists have discovered a new species of giant rat. It's more than four times the size of the black rats that live in the US, it lives in trees, and it's rumored to crack open coconuts with its teeth. And it's actually

pretty cute.

- [**Red blood cells for transfusion like a good red: A little older, a little better**](#) [周三, 27 9月 21:33]

The transfusion of older stored red blood cells is safe and surprisingly, associated with fewer side effects, a landmark research trial has found.

- [**The strange structures of the Saturn nebula**](#) [周三, 27 9月 21:33]

The spectacular planetary nebula NGC 7009, or the Saturn Nebula, emerges from the darkness like a series of oddly-shaped bubbles, lit up in glorious pinks and blues. This colourful image was captured by the MUSE instrument on ESO's Very Large Telescope (VLT). The map -- which reveals a wealth of intricate structures in the dust, including shells, a halo and a curious wave-like feature -- will help astronomers understand how planetary nebulae develop their strange shapes and symmetries.

- [**Cellular 'message in a bottle' may provide path to new way of treating disease**](#) [周三, 27 9月 21:33]

A newly discovered cellular messaging mechanism could lead to a new way to deliver therapeutics to tissues affected by disease, according to a new study. Researchers found a type of extracellular vesicle -- a sac secreted by cells that contains proteins and RNA molecules -- carries receptors that allow signaling without direct contact between cells.

- [**Removing nitrate for healthier ecosystems**](#) [周三, 27 9月 21:33]

In a new study, researchers have identified nitrate removal hotspots in landscapes around agricultural streams.

- [**Purple plant is on the defensive**](#) [周三, 27 9月 21:33]

While lavender has long been known for its strong scent and soothing oils, a researcher is exploring the plant's ability to create natural pesticides.

- [**Computer scientists address gap in messaging privacy**](#) [周三, 27 9月 21:33]

Researchers have developed a solution to a longstanding problem in the field of end-to-end encryption, a technique that ensures that only sender and recipient can read a message.

• [Plant substance inhibits cancer stem cells](#) [周三, 27 9月

21:33]

Lab experiments show that the chemical compound damsine found in the plant *Ambrosia arborescens* inhibits the growth and spread of cancer stem cells. The similar but synthetically produced ambrosin has the same positive effect.

No evidence to support claims that telephone consultations reduce GP workload or hospital referrals -- ScienceDaily

Telephone consultations to determine whether a patient needs to see their GP face-to-face can deal with many problems, but a study led by researchers at the Cambridge Centre for Health Services Research (University of Cambridge and RAND Europe), found no evidence to support claims by companies offering to manage these services or by NHS England that the approach saves money or reduces the number of hospital referrals.

As UK general practices struggle with rising demand from patients, more work being transferred from secondary to primary care, and increasing difficulty in recruiting general practitioners, one proposed potential solution is a 'telephone first' approach, in which every patient asking to see a GP is initially phoned back by their doctor on the same day. At the end of this phone call the GP and the patient decide whether the problem

needs a face-to-face consultation, or whether it has been satisfactorily resolved on the phone.

Two commercial companies provide similar types of management support for practices adopting the new approach, with claims that the approach dramatically reduces the need for face-to-face consultations, reduces workload stress for GPs and practice staff, increases continuity of care, reduces A&E; attendance and emergency hospital admissions, and increases patient satisfaction.

Some of these claims are repeated in NHS England literature, including the assertion based on claims from one of the companies that practices using the approach have a 20% lower A&E; usage and that "the model has demonstrated a cost saving of approximately £100k per practice through prevention of avoidable attendance and admissions to hospital." Several Clinical Commissioning Groups have subsequently paid for the management support required for the approach to be adopted by practices in their area.

The NIHR acknowledged the need for robust and independent evaluation of current services and therefore commissioned the team led by Martin

Roland, Emeritus Professor of Health Services Research at the University of Cambridge. The results of the evaluation, which looked at data sources including GP and hospital records, patient surveys and economic analyses, are published today in *The BMJ*.

The study found that adoption of the 'telephone first' approach had a major effect on patterns of consultation: the number of telephone consultations increased 12-fold, and the number of face-to-face consultations fell by 38%.

However, the study found that the 'telephone first' approach was on average associated with increased overall GP workload; there was an overall increase of 8% in the mean time spent consulting by GPs, but this figure masks a wide variation between practices, with some practices experiencing a substantial reduction in workload and others a large increase.

Dr Jennifer Newbould from RAND Europe, part of the Cambridge Centre for Health Services Research, the study's first author, says: "There are some positives to a 'telephone first approach'; for example, we found clear evidence that a significant part of patient workload can be addressed through phone consultations. But we need

to be careful about seeing this as a panacea: while this may increase a GP practice's control over day-to-day workload, it does not necessarily decrease the amount of time GPs spend consulting and may, in some cases, increase it."

The researchers found no evidence that the approach substantially reduced overall attendance at A&E; departments or emergency hospital admissions: introduction of the 'telephone first' approach was followed by a small (2%) increase in hospital admissions, no initial change in A&E; attendance, but a small (2% per year) decrease in the subsequent rate of rise of A&E; attendance. However, far from reducing secondary care costs, they found overall secondary care costs increased slightly by £11,776 per 10,000 patients.

Professor Roland adds: "Importantly, we found no evidence to support claims made by one of the companies that support such services -- claims that have been repeated by NHS England -- that the approach would be substantially cost-saving or reduce hospital referrals. This has resulted in some Clinical Commissioning Groups across England buying their consultancy services based on unsubstantiated claims. The NHS must be careful to ensure that it bases its

information and recommendation on robust evidence."

The study was funded by the National Institute for Health Research.

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The hormone that could be making your dog aggressive discovered -- ScienceDaily

For some dog owners, a leisurely walk can turn stressful the moment their canine companion sees another pup walking by. Dogs with what is known as "leash aggression" may bark, growl or lunge at other dogs during walks, setting the scene for a tense and potentially dangerous interaction.

So why do some dogs lash out on the leash while others don't? Hormones may be to partly to blame, according to new research led by the University of Arizona's Evan MacLean.

Although a number of studies have looked at the role of testosterone and serotonin in aggression in dogs and other mammals, those hormones may be only part of the story, according to MacLean's findings, which are published in a special issue of the journal *Frontiers in Psychology*.

MacLean and his collaborators looked specifically at oxytocin and vasopressin -- hormones that are also found in humans -- and found that they may play an important role in shaping dogs' social behavior.

Better understanding the biology behind canine aggression could help with the development of interventions, said MacLean, an assistant professor of anthropology and director of the Arizona Canine Cognition Center in the UA School of Anthropology.

"Dog aggression is a huge problem. Thousands of people are hospitalized every year for dog bites, especially kids, and aggression is one of the main reasons that dogs get relinquished to shelters," MacLean said. "If there are ways to intervene and affect biological processes that produce aggression, that could have a huge benefit both for people and dogs."

MacLean was interested in oxytocin and vasopressin -- sometimes thought of as "yin and yang" hormones -- because of the growing research on their role in the biology of social behavior.

Oxytocin, which is significant in childbirth and

nursing, is sometimes called the "love hormone," as its levels in humans have been shown to increase when we hug or kiss a loved one. Vasopressin is a closely related hormone involved in water retention in the body. In contrast to oxytocin, it has been linked to aggression in humans, with previous research suggesting that people with chronic aggression problems have high levels of vasopressin.

For the current study, MacLean and his collaborators recruited pet dogs of varying ages, breeds and sexes, whose owners reported struggles with leash aggression. For each aggressive dog recruited, the researchers found a non-aggressive dog of the same sex, age and breed to serve as a comparison.

During the experiment, each dog was held on a leash by its owner. Across the room, an experimenter played audio of a dog barking behind a curtain, before pulling back the curtain to reveal a lifelike dog model with a human handler.

The dogs in the study were presented in the same way with everyday noises and three common objects -- a cardboard box, trash bag and an inflated yoga ball.

The dogs' responses and hormone levels were measured before and after the interaction.

While none of the dogs in the study reacted aggressively toward the box, bag or ball, many of the dogs in the leash aggression group had aggressive responses to the model dog, including barking, growling and lunging.

The dogs that reacted aggressively showed higher levels of total vasopressin in their systems, suggesting a link between vasopressin and aggression.

The researchers did not observe differences in oxytocin levels between the two groups of dogs. However, when they compared the oxytocin levels of the pet dogs in the study to a group of assistance dogs, which are specifically bred to have non-aggressive temperaments, they found that the assistance dogs had higher levels of oxytocin and higher oxytocin-to-vasopressin ratios. This supports the idea that oxytocin may help inhibit aggression in dogs.

"Seeing high oxytocin levels in assistance dogs is completely consistent with their behavioral phenotype - - that they're very, very friendly dogs that are not

aggressive toward people or other dogs," MacLean said.

Existing interventions for dogs' behavioral problems often target testosterone and serotonin -- the other two most commonly studied hormones in the context of canine aggression. Pet owners commonly neuter male dogs to help manage levels of testosterone, which has been linked to aggression. And to manage levels of serotonin, which is believed to reduce aggression, some dogs are prescribed SSRIs, or selective serotonin reuptake inhibitors, the most common type of antidepressants.

Future research might consider new interventions focused on vasopressin and oxytocin, MacLean said.

"It would be reasonable to think that if vasopressin facilitates aggression, you could develop pharmaceuticals that could target the vasopressin system to help in cases where dogs are really aggressive," he said. "Oxytocin and vasopressin are being used extensively as therapeutics in humans right now. Regulation of the oxytocin system has been implicated in things ranging from autism to schizophrenia to post-traumatic stress disorder, and

there are clinical trials looking at administering oxytocin as a drug to create some kind of behavioral response. It's interesting to think that maybe some of these same therapies we're trying with people could be useful in dogs."

As to why some dogs have higher levels of vasopressin, life experience may be a factor, MacLean said.

"There's a lot of work showing that experiences in your lifetime can change the way hormones function," MacLean said. "For a lot of dogs that have aggression problems, the owners report that the onset of the aggressive symptoms happened after some sort of traumatic experience. Often it was that the dog was attacked by some other dog and is in a hypervigilant state after that event -- almost like a post-traumatic reaction."

A piece of good news for pet owners and their pups: One way to boost dogs' oxytocin levels and decrease vasopressin is through friendly dog-human interactions. And the effect extends to people as well.

"Previous work shows dog-human friendly interactions

can create a release in oxytocin in dogs, and when dogs interact with people, we see that their vasopressin levels go down over time," MacLean said. "These are bidirectional effects. It's not just that when we're petting a dog, the dog is having this hormonal response -- we're having it, too."

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Nontraffic injuries and fatalities in young children: First of its kind study focuses on hidden threats to children in and around motor vehicles -- ScienceDaily

Over the last couple of decades, significant reductions in vehicle crash-related child fatalities have been attributed to advances in legislation, public safety campaigns and engineering. However, less is known about nontraffic injuries and fatalities (occurring primarily in driveways and parking lots) to children in and around motor vehicles.

A new *Traffic Injury Prevention* journal study, *Unintentional Nontraffic Injury and Fatal Events: Threats to Children In and Around Motor Vehicles*, describes the frequency of various nontraffic incidents, injuries, and fatalities to children using a unique surveillance system and database. The database was developed and is maintained by KidsAndCars.org, a national nonprofit organization dedicated to keeping

children safe in and around motor vehicles. Examples of nontraffic events include backovers, children left in hot vehicles, frontovers, children inadvertently knocking vehicles into gear, and others.

The new study describes the national incidence of various nontraffic incidents, injuries, and fatalities to children in the United States using a comprehensive, longstanding surveillance system and database. Prior studies have focused on certain types of nontraffic mechanisms such as backovers, heatstroke, power window strangulation, trunk entrapment, etc. In addition to focusing on just a single mechanism, many of these studies have also been limited by institutional or regional estimates, or a narrow time period. The National Highway Traffic Safety Administration (NHTSA) has published recent periodic nontraffic incident summaries, including those with child-specific data. The significance of this study is that it is the first detailed analysis that includes all types of nontraffic vehicular dangers to young children.

Instances of nontraffic injuries and fatalities in the United States to children 0-14 years were tracked from 1990-2014 using a compilation of sources including media reports, individual accounts from victims and

their families, medical examiner reports, police reports, child death review teams, coroner reports, medical professionals, lawyers and various modes of publications. There were over 11,750 distinct incidents in a variety of venues and vehicles affecting 14,568 children 14 years and younger, resulting in nearly 3,400 deaths of which 47 percent of whom were male, and with an average age of 42 months.

"While we have made great progress in reducing injuries to children in motor vehicle crashes, this study describes the burden of nontraffic incidents and deaths to children 14 years old and younger over a 25-year period, including: children left in hot vehicles, backovers, frontovers, and other mechanisms," said Dr. Mark Zonfrillo, a pediatric emergency medicine physician and injury researcher from Hasbro Children's Hospital and Alpert Medical School of Brown University, and lead author of the study. "These nontraffic incidents present an important and often underreported threat to the safety and lives of young children, and are completely preventable" he added.

"These issues have been masked for decades by the age-old problem of, no data; no problem. Once thought of and referred to as 'freak accidents,' this study reveals

just how common nontraffic incidents really are," said Janette Fennell, president and founder of KidsAndCars.org. "Continued education, engineering modifications, advocacy, and legislation can help continue to prevent these incidents and must be incorporated into overall child vehicle safety initiatives."

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How cells recover from the verge of programmed death -- ScienceDaily

A new collaboration between two UC Santa Barbara labs explores the underlying molecular mechanism of a remarkable process called anastasis, a Greek word meaning "rising to life." Building on earlier work showing that cells can recover from the brink of death, the new study demonstrates that anastasis is an active process composed of two distinguishable stages. The team's findings appear in the *Journal of Cell Biology*.

"We knew already that cells need to transcribe new genes in order to recover," explained corresponding author Denise Montell, UCSB's Duggan Professor of Molecular, Cellular, and Developmental Biology. "So we profiled every molecule of mRNA in the cells as they started to die and then as they recovered."

First, the biologists added a toxin to the growth medium to induce apoptosis -- a form of programmed cell suicide that is an integral part of almost every disease -- and took the cells to brink of death. Then they exchanged the medium to remove the inducer and

allowed the cells to recover for one, two, three, four, eight or 12 hours. At every step along the way, the researchers collected millions of cells and sequenced their RNAs to discover how their genetic profile changed during this process. Montell's lab worked with UCSB's Kosik Molecular and Cellular Neurobiology Lab, which conducted the RNA analysis.

The data from the RNA profiles not only demonstrated the active nature of the anastasis process but also showed its two distinct phases. During the first four hours, the cells undergo massive changes in gene expression compared to untreated cells. Yet cells one hour into recovery are much more similar to each other than they are to cells at eight hours, which look similar to those at the 12-hour mark.

"We also found that even when cells are at the brink of death, they are secretly enriching survival RNAs," Montell said. "The cells don't know if things are going to get better or worse, so they hold on to some survival molecules just in case. So the cells are poised to recover even while they're dying."

The team focused on one particular pro-survival RNA called snail that is enriched at the brink of death. The

cells don't make protein out of the RNA or degrade it; rather, they hold on to it. When the scientists prevented the expression of snail, the cells were unable to survive.

They also discovered that RNAs induced in the early phase of anastasis promote transcription of other genes, which allows cells to recover and start dividing. In the later phase, RNAs change what they make and acquire the ability to migrate.

"Some things are expressed during the whole recovery process, including angiogenesis inducers that make new blood vessels," Montell noted. "This looks a lot like wound healing: cell proliferation or migration to fill in the gap and the creation of new blood vessels to nourish the recovery.

"That's all well and good in a beneficial normal process," Montell added. "For example, during a heart attack, when heart cells are deprived of oxygen, if they can recover, that's good news. But when cancer cells do the same thing, it's bad news. Chemotherapy drugs and radiation are known to induce cancer cells to undergo apoptosis. But anastasis may give them a way to bounce back after treatment."

Now that the researchers have described this molecular mechanism, they are particularly interested in the earliest phases of recovery before cells begin transcribing new genes. They also would like to better understand the long-term cellular effects of anastasis.

"We want to know whether a cell recovering from the brink of death retains a permanent epigenetic memory of the experience," Montell said. "We also want to find out whether cells that have experienced one round of anastasis are more or less resilient to a subsequent round. And most importantly, does the mechanism we describe in this paper underlie relapse after chemo and radiation therapy?"

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Earliest evidence for a native African cultigen discovered in Eastern Sudan -- ScienceDaily

Archaeologists examining plant impressions within broken pottery have discovered the earliest evidence for domesticated sorghum in Africa. The evidence comes from an archaeological site (known as KG23) in eastern Sudan, dating from 3500 to 3000 BC, and is associated with an ancient archaeological culture known as the Butana Group.

Sorghum is a native African grass that was utilized for thousands of years by prehistoric peoples, and emerged as one of the world's five most important cereal crops, along with rice, wheat, barley, and maize. For a half century scholars have hypothesized that native African groups were domesticating sorghum outside the winter rainfall zone of the ancient Egyptian Nile Valley (where wheat and barley cereals were predominant) in the semi-arid tropics of Africa, but no archaeological evidence existed. This new discovery in eastern Sudan reveals that during the 4th millennium BC, peoples of

the Butana Group were intensively cultivating wild stands of sorghum until they began to change the plant genetically into domesticated morphotypes.

Along with the recent discovery of domesticated pearl millet in eastern Mali around 2500 BC, this latest discovery in eastern Sudan pushes back the process for domesticating summer rainfall cereals another thousand years in the Sahel, with sorghum, providing new evidence for the earliest known native African cultigen.

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Top science stories featured on ScienceDaily's home page.

- [**The hormone that could be making your dog aggressive discovered**](#) [周四, 28 9月 04:20]

Thousands of people are hospitalized every year for dog bites, and aggressive behavior is a major reason dogs end up in shelters. Biologists have studied the biology behind canine aggression, specifically the role of the hormones vasopressin and oxytocin.

- [**Black holes with ravenous appetites define Type I active galaxies**](#) [周四, 28 9月 01:36]

Type I and Type II active galaxies do not just appear different -- they are, in fact, very different from each other, both structurally and energetically, new research shows. According to the results of a new study, the key factor that distinguishes Type I and Type II galaxies is the rate at which their central black holes -- or active galactic nuclei -- consume matter and spit out energy.

- [**New light shed on how Earth and Mars were created**](#) [周四, 28 9月 01:36]

Analysing a mixture of earth samples and meteorites, scientists have shed new light on the sequence of events that led to the creation of the planets Earth and Mars.

- [**The volatile processes that shaped Earth**](#) [周四, 28 9月 01:36]

Although it is widely understood that Earth was formed gradually, from much smaller bodies, many of the processes involved in shaping our growing planet are less clear. Astronomers have now untangled some of these processes, revealing that the mini-planets added to Earth had previously undergone melting and evaporation. They also address

another scientific conundrum: Earth's depletion in many economically important chemical elements.

- [**LIGO and Virgo observatories jointly detect black hole collision**](#) [周四, 28 9月 00:36]

The first observation of gravitational waves has been discovered by by three different detectors, marking a new era of greater insights and improved localization of cosmic events now available through globally networked gravitational-wave observatories.

- [**Emerging infectious disease threatens Darwin's frog with extinction**](#) [周三, 27 9月 22:09]

Iconic species likely to be wiped-out by amphibian fungus, despite lack of obvious short-term evidence.

- [**Geographic variation in Gentoo penguin calls**](#) [周三, 27 9月 21:33]

Vocal communication is central to the lives of many birds, which use sound to attract mates and defend territories. Penguins are no exception, but we know little about how or why penguin vocalizations vary between isolated populations. A new study takes a broad look at vocalizations across the range of Gentoo penguins and concludes that while their calls do vary from place to place, we still have lots to learn about the processes at work.

- [**Songbird populations may indicate trouble in northwestern forests**](#) [周三, 27 9月 21:33]

Populations of many North American songbirds are declining, and in many cases we don't understand why. Conservation efforts need this information to be effective, and bird banding stations can help fill in the gaps, providing insights into how demographics vary across space and time. A new study presents ten years of data from banding stations across northern California and southern Oregon and offers new hints on what's driving changes in the region's songbird populations.

- [**Tree-dwelling, coconut-cracking giant rat discovered in Solomon Islands**](#) [周三, 27 9月 21:33]

Scientists have discovered a new species of giant rat. It's more than four times the size of the black rats that live in the US, it lives in trees, and it's rumored to crack open coconuts with its teeth. And it's actually pretty cute.

- [**Lost continent of Zealandia: Scientists return from expedition to sunken land**](#) [周三, 27 9月 11:59]

After a nine-week voyage to study the lost, submerged continent of in the South Pacific, a team of 32 scientists from 12 countries has arrived in Hobart, Tasmania, aboard the research vessel JOIDES Resolution.

- [**Caribbean praying mantises have ancient African origin**](#) [周三, 27 9月 11:59]

Three seemingly unrelated praying mantis groups inhabiting Cuba and the rest of the Greater Antilles actually share an ancient African ancestor and possibly form the oldest endemic animal lineage on the Caribbean islands, researchers have determined.

- [**Umbilical cord stem cells show promise as heart failure treatment**](#) [周三, 27 9月 04:23]

Intravenous stem cell infusion derived from umbilical cords appears to boost heart muscle function in patients with heart failure, according to a small study. In this first-of-its-kind study, patients had 'significant' improvement in their hearts' ability to pump blood and experienced no adverse side effects related to the therapy. The results suggest IV-infused umbilical cord-derived stem cells are a promising avenue to treat heart failure.

- [**Energy harvested from evaporation could power much of US**](#) [周三, 27 9月 00:51]

In the first evaluation of evaporation as a renewable energy source, researchers find that US lakes and reservoirs could generate 325 gigawatts of power, nearly 70 percent of what the United States currently produces.

- [**Amount of water in stem cells can determine its**](#)

[fate as fat or bone](#) [周三, 27 9月 00:51]

Adding or removing water from a stem cell can change the destiny of the cell to either pre-fat cells or pre-bone cells, researchers have discovered in a new study.

[Wearable solar thermoelectric generator created](#)

[周二, 26 9月 22:55]

Engineers have introduced a new advanced energy harvesting system, capable of generating electricity by simply being attached to clothes, windows, and outer walls of a building.

[Cartography of the Cosmos](#) [周二, 26 9月 21:16]

There are hundreds of billions of stars in our own Milky Way galaxy, interspersed with all manner of matter, from the dark to the sublime. This is the universe that one group of researchers is trying to reconstruct, structure by structure, combining telescope surveys with next-generation data analysis and simulation techniques currently being primed for exascale computing.

[Pigeons better at multitasking than humans](#) [周二, 26 9月 21:05]

Pigeons are capable of switching between two tasks as quickly as humans -- and even more quickly in certain situations. These are the findings of biopsychologists who had performed the same behavioral experiments to test birds and humans. The authors hypothesize that the cause of the slight multitasking advantage in birds is their higher neuronal density.

[After 15 years in a vegetative state, nerve stimulation restores consciousness](#) [周二, 26 9月 01:29]

A 35-year-old man who had been in a vegetative state for 15 years after a car accident has shown signs of consciousness after neurosurgeons implanted a vagus nerve stimulator into his chest. The findings show that vagus nerve stimulation (VNS) -- a treatment already in use for epilepsy and depression--can help to restore consciousness even after many years in a vegetative state.

[Antibody protects against Zika and dengue,](#)

[**mouse study shows**](#) [周二, 26 9月 01:29]

The same countries hard hit by Zika virus -- which can cause brain damage in babies infected before birth -- are also home to dengue virus. Researchers now report that they have found an antibody that protects against both viruses. These findings, in mice, could be a step towards an antibody-based preventative drug to protect fetuses from brain damage, while also protecting their mothers from both Zika and dengue disease.

• [**Lava tubes: Hidden sites for future human habitats on the Moon and Mars**](#) [周一, 25 9月 23:28]

Lava tubes, underground caves created by volcanic activity, could provide protected habitats large enough to house streets on Mars or even towns on the Moon, according to new research. A further study shows how the next generation of lunar orbiters will be able to use radar to locate these structures under the Moon's surface.

• [**Visual attention drawn to meaning, not what stands out**](#) [周一, 25 9月 23:13]

Our visual attention is drawn to parts of a scene that have meaning, rather than to those that are salient or 'stick out,' according to new research. The findings overturn the widely held model of visual attention.

• [**Panda habitat shrinking, becoming more fragmented**](#) [周一, 25 9月 23:13]

Using remote sensing data, Chinese and US scientists have re-assessed the conservation status of the giant panda. Their analysis shows that while panda numbers are increasing, their habitat still covers less area and is more fragmented than it was in 1988, when the species was listed as endangered on the IUCN Red List.

• [**Child abuse affects brain wiring**](#) [周一, 25 9月 23:13]

For the first time, researchers have been able to see changes in the neural structures in specific areas of the brains of people who suffered severe abuse as children. The researchers believe that these changes may contribute to the emergence of depressive disorders and suicidal

behavior.

- [**Genes are controlled by 'Nano footballs,' scientists discover**](#) [周一, 25 9月 23:12]

Genes are controlled by 'nano footballs' -- structures that look like footballs but 10 million times smaller than the average ball -- new research has revealed.

- [**Brain damage in fish from plastic nanoparticles in water**](#) [周一, 25 9月 22:47]

A new study shows that plastic particles in water may end up inside fish brains. The plastic can cause brain damage, which is the likely cause of behavioral disorders observed in the fish.

- [**Brain guides body much sooner than previously believed**](#) [周一, 25 9月 21:54]

The brain plays an active role much earlier than previously thought. Long before movement or other behaviors occur, the nascent brain of an embryonic frog instructs normal muscle and nerve patterning and protects the embryo from agents that cause developmental defects. In addition to identifying these essential functions for the first time, researchers successfully rescued defects caused by lack of a brain by using widely available, human-approved drugs.

- [**Winter cold extremes linked to high-altitude polar vortex weakening**](#) [周五, 22 9月 21:40]

When the strong winds that circle the Arctic slacken, cold polar air can escape and cause extreme winter chills in parts of the Northern hemisphere. A new study finds that these weak states have become more persistent over the past four decades and can be linked to cold winters in Russia and Europe.

- [**Flint's water crisis led to fewer babies and higher fetal death rates, researchers find**](#) [周五, 22 9月 21:16]

An estimated 275 fewer children were born in Flint, Michigan, while the city was using lead-contaminated water from the Flint River, according

to new research findings.

- [**Babies can learn that hard work pays off**](#) [周五, 22 9月 04:12]

A new study reveals babies as young as 15 months can learn the value of hard work. Researchers found babies who watched an adult struggle to reach two different goals before succeeding tried harder at their own difficult task than babies who saw an adult succeed effortlessly.

- [**Unique gene therapy prevents, reverses multiple sclerosis in animal model**](#) [周五, 22 9月 04:12]

Multiple sclerosis can be inhibited or reversed using a novel gene therapy technique that stops the disease's immune response in mouse models, researchers have found.

- [**Ancient DNA data fills in thousands of years of human prehistory in Africa**](#) [周五, 22 9月 02:13]

By sequencing the ancient genomes of 15 individuals from different parts of Africa, researchers reporting in the journal Cell on Sept. 21 have reconstructed the prehistory of humans on the continent, going back thousands of years. The findings shed light on which human populations lived in eastern and southern Africa between 8,000 and 1,000 years ago, the researchers say.

- [**Scientists sequence asexual tiny worm whose lineage stretches back 18 million years**](#) [周五, 22 9月 02:13]

A team of scientists has sequenced, for the first time, a tiny worm that belongs to a group of exclusively asexual species that originated approximately 18 million years ago -- making it one of the oldest living lineages of asexual animals known.

- [**Detecting cosmic rays from a galaxy far, far away**](#) [周五, 22 9月 02:12]

Where do cosmic rays come from? Solving a 50-year-old mystery, a collaboration of researchers has discovered it's much farther than the Milky Way.

- [**Jellyfish, with no brains, still seem to sleep**](#) [周五, 22 9月]

02:12]

The discovery that primitive jellyfish sleep suggests that sleep is an ancient, evolutionarily conserved behavior.

• [**Why poison frogs don't poison themselves**](#) [周五, 22 9月

02:12]

Poison frogs harbor some of the most potent neurotoxins we know, yet scientists have long wondered -- how do these frogs keep from poisoning themselves? Scientists are now a step closer to resolving that head-scratcher. And the answer has potential consequences for the fight against pain and addiction.

• [**Reconstructing how Neanderthals grew, based on an El Sidrón child**](#) [周五, 22 9月 02:12]

How did Neanderthals grow? Does modern man develop in the same way as Homo neanderthalensis did? How does the size of the brain affect the development of the body? Researchers have studied the fossil remains of a Neanderthal child's skeleton in order to establish whether there are differences between the growth of Neanderthals and that of sapiens.

• [**Early trilobites had stomachs, new fossil study finds**](#) [周五, 22 9月 02:12]

Exceptionally preserved trilobite fossils from China, dating back to more than 500 million years ago, have revealed new insights into the extinct marine animal's digestive system. The new study shows that at least two trilobite species evolved a stomach structure 20 million years earlier than previously thought.

• [**Dino-killing asteroid's impact on bird evolution**](#)

[周五, 22 9月 00:11]

Human activities could change the pace of evolution, similar to what occurred 66 million years ago when a giant asteroid wiped out the dinosaurs, leaving modern birds as their only descendants.

• [**One in four girls is depressed at age 14**](#) [周四, 21 9月 23:07]

New research shows a quarter of girls (24%) and one in 10 boys (9%) are depressed at age 14.

- [**Surprising discovery: How the African tsetse fly really drinks your blood**](#) [周四, 21 9月 23:06]

Researchers have been taking a close-up look at the biting mouthparts of the African tsetse fly as part of ongoing work on the animal diseases it carries. Using a new high-powered scanning electron microscope, researchers were able to see the rows of sharp teeth and rasps that the fly uses to chew through the skin when it bites.

- [**Broad swath of US deemed environmentally suitable for mosquitoes that transmit disease**](#) [周四, 21 9月 22:42]

Three-quarters of counties in the contiguous United States present suitable environmental conditions for at least part of the year for either *Aedes aegypti* or *Aedes albopictus* mosquitoes to survive if introduced, according to researchers. The two mosquito species can transmit viruses that cause Zika, dengue, chikungunya, and yellow fever.

- [**Big herbivorous dinosaurs ate crustaceans as a side dish**](#) [周四, 21 9月 22:17]

Some big plant-eating dinosaurs roaming present-day Utah some 75 million years ago were slurping up crustaceans on the side, a behavior that may have been tied to reproductive activities, says a new study.

- [**Changing of the guard: Research sheds light on how plants breathe**](#) [周四, 21 9月 22:17]

New research is set to change the textbook understanding of how plants breathe. Researchers have developed the first full 3D model of a guard cell.

- [**Tiny Brazilian frogs are deaf to their own calls**](#) [周四, 21 9月 21:03]

Pumpkin toadlets, found on the leaf litter of Brazil's Atlantic forest, are among the smallest frogs in the world. Scientists have now discovered that two species of these tiny orange frogs cannot hear the sound of their own calls.

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

- [**No evidence to support claims that telephone consultations reduce GP workload or hospital referrals**](#) [周四, 28 9月 06:44]

Telephone consultations to determine whether a patient needs to see their GP face-to-face can deal with many problems, but a new study found no evidence to support claims by companies offering to manage these services or by NHS England that the approach saves money or reduces the number of hospital referrals.

- [**Nontraffic injuries and fatalities in young children**](#) [周四, 28 9月 04:20]

From 1990-2014, researchers found more than 11,750 distinct incidents in a variety of venues and vehicles affecting 14,568 children 14 years and younger, resulting in nearly 3,400 deaths.

- [**New class of molecules may protect brain from stroke, neurodegenerative diseases**](#) [周四, 28 9月 04:20]

Scientists have discovered a new class of molecules in the brain that synchronize cell-to-cell communication and neuroinflammation/immune activity in response to injury or diseases. Elovonoids (ELVs) are bioactive chemical messengers made from omega-3 very long chain polyunsaturated fatty acids (VLC-PUFAs,n-3). They are released on demand when cells are damaged or stressed.

- [**Mini-protein rapid design method opens way to create a new class of drugs**](#) [周四, 28 9月 04:20]

A high-speed method has been developed to generate many different, small, stable proteins from scratch, custom-designed to bind to specific therapeutic targets. Protection against infectious diseases, like flu, and antidotes to nerve toxins are but two research goals of this approach. The method rapidly originates thousands of new drug candidates. These computer-designed proteins, which did not previously exist in nature, combine the stability and bioavailability of small molecule drugs with the sp...

• [**Beer can lift your spirits due to malted barley ingredient**](#) [周四, 28 9月 03:28]

Visitors to the Oktoberfest have always known it and now it has been scientifically -- beer can lift your spirits. Scientists examined 13,000 food components to find out whether they stimulate the reward center in the brain and make people feel good. Hordenine which is found in malted barley and beer seems to do the job quite well.

• [**Haplobank: A biobank of reversible mutant embryonic stem cells**](#) [周四, 28 9月 01:38]

Scientists have developed a biobank of revertible, mutant embryonic stem cells – called Haplobank - which contains over 100,000 mutated, conditional mouse embryonic stem cell lines, targeting about 70% of the protein-coding genome.

• [**Melanoma cells rewire to resist drug treatment**](#) [周四, 28 9月 01:36]

Scientists reveal why relapses after treatment for metastatic melanoma occur. While combination therapies block off the principal pathway that cancer cells use to fuel their growth, the cells come to bypass this blockade and, like vehicles on a detour route, make use of additional pathways to continue growing and spreading.

• [**Teen first in Virginia to receive cancer gene therapy in clinical trial**](#) [周四, 28 9月 00:51]

UVA has administered its first dose of an experimental gene therapy for a deadly form of treatment-resistant pediatric leukemia.

- [**Breakthrough in understanding the origin of the aging process**](#) [周四, 28 9月 00:50]

Researchers have unveiled the mystery of why we age in a new study. They have identified that genes belonging to a process called autophagy, which is one of the cells most critical survival processes, promote health and fitness in young worms but drive the process of aging later in life.

- [**Our brain's filing system for storing experiences uncovered**](#) [周四, 28 9月 00:36]

A team of neuroscientists has uncovered how our brains organize, over time, our experiences: that is, according to their similarities.

- [**Iron supplements have long-term benefits for low birth-weight babies**](#) [周四, 28 9月 00:36]

Babies classified as low birth weight (under 2,500 grams) are at risk of iron deficiency, which is linked to impaired neurological development. A long-term randomized study now shows that providing such babies with iron supplements can prevent behavioral problems at school age.

- [**Increased arterial stiffness linked to restrictive spirometry pattern and reduced forced vital capacity**](#) [周四, 28 9月 00:35]

Increased arterial stiffness is a known predictor of cardiovascular diseases in different populations, including healthy subjects and patients with hypertension, diabetes, or renal disease. A new study examining arterial stiffness in a large population determined that both restrictive spirometry pattern and reduced forced vital capacity (FVC) were associated with a higher risk of arterial stiffness not only in men but also in women. The investigators found that arterial stiffness increased fourfo...

- [**Teens' online friendships just as meaningful as face-to-face ones**](#) [周三, 27 9月 22:54]

Many parents worry about how much time teenagers spend texting, sharing selfies and engaging in other online activities with their friends.

However, according to a recent research synthesis, many of these digital behaviors serve the same purpose and encompass the same core qualities as face-to-face relationships.

- [**Drug slows stomach emptying, may individualize obesity treatment, study shows**](#) [周三, 27 9月 22:25]

Liraglutide injection, a prescription medication used to treat type 2 diabetes and obesity is associated with marked slowing of stomach emptying and is an effective weight loss therapy, finds a randomized, double-blind, placebo-controlled study.

- [**On a collision course with game theory**](#) [周三, 27 9月 22:23]

How do pedestrians behave in a large crowd? How do they avoid collisions? How can their paths be modeled? A new approach developed by mathematicians provides answers to these questions.

- [**How old does your computer think you are?**](#) [周三, 27 9月 22:23]

Computerized face recognition is an important part of initiatives to develop security systems, in building social networks, in curating photographs, and many other applications. Systems can allow a computer to estimate with precision a person's age based on an analysis of their face.

- [**Anxious moms may give clues about how anxiety develops**](#) [周三, 27 9月 22:23]

Moms may be notorious worriers, but babies of anxious mothers may also spend more time focusing on threats in their environment, according to a team of researchers.

- [**Middle age fattens you up if you do not increase your physical activity**](#) [周三, 27 9月 22:09]

New research has examined how changes in the daily step count are related to changes in the body mass index (BMI).

- [**Seeking feedback not always sufficient for stimulating creativity**](#) [周三, 27 9月 22:09]

It is widely believed that seeking feedback from colleagues, managers, friends and family enhances employees' creativity. But is this always the case? No, a positive effect depends on the work environment.

• [**Coping with stressful organizational change**](#) [周三, 27 9月 21:51]

Stress is not a recent phenomenon, but the modern work environment seems to highlight its detrimental effects on employees. This is no more obvious than during times of organizational change. New research considers the impact of such changes on workers in a healthcare authority in New Zealand, highlighting the problems that any organization might face under such circumstances and pointing to possible methods to cope and remediate employee stress.

• [**How to grow a spine**](#) [周三, 27 9月 21:33]

A genetics professor -- whose lab discovered the segmentation clock 20 years ago -- and colleagues report that they used mouse cells to reconstitute a stable version of this clockwork for the first time in a petri dish, leading to several new discoveries about where the clock is located, what makes it tick and how the vertebral column takes shape.

• [**Red blood cells for transfusion like a good red: A little older, a little better**](#) [周三, 27 9月 21:33]

The transfusion of older stored red blood cells is safe and surprisingly, associated with fewer side effects, a landmark research trial has found.

• [**Cellular 'message in a bottle' may provide path to new way of treating disease**](#) [周三, 27 9月 21:33]

A newly discovered cellular messaging mechanism could lead to a new way to deliver therapeutics to tissues affected by disease, according to a new study. Researchers found a type of extracellular vesicle -- a sac secreted by cells that contains proteins and RNA molecules -- carries receptors that allow signaling without direct contact between cells.

• [**Plant substance inhibits cancer stem cells**](#) [周三, 27 9月 21:33]

Lab experiments show that the chemical compound damsin found in the plant *Ambrosia arborescens* inhibits the growth and spread of cancer

stem cells. The similar but synthetically produced ambrosin has the same positive effect.

- [**What happens when nerve cells stop working?**](#) [周三, 27 9月 21:33]

Micro-failures in brain functioning occur in conditions such as depression and dementia. In most cases, the lost capacity will return after a while. However, consequential damage will often remain so that the functional capability can only be restored through lengthy treatment -- if at all. For this reason, researchers have been investigating what happens during such breakdown phases and looking at possible ways of preventing damage and speeding up the healing processes.

- [**Brain cells that control appetite identified for first time**](#) [周三, 27 9月 21:32]

Dieting could be revolutionized, thanks to the groundbreaking discovery of the key brain cells which control our appetite.

- [**Woman develops rare life-threatening condition after liposuction**](#) [周三, 27 9月 11:59]

A 45-year-old woman developed a serious life-threatening condition after having liposuction, reveal doctors in a new report.

- [**Genetic fault that reduces the effectiveness of leukemia treatment, clinical trial reveals**](#) [周三, 27 9月 11:59]

A genetic fault has been identified in people with an aggressive type of leukemia that can significantly affect how they respond to treatment, report investigators.

- [**Restoring breathing capacity in Duchenne muscular dystrophy by activating the brain**](#) [周三, 27 9月 11:59]

New research suggests that enhancing breathing via the brain may limit deficiencies in respiratory capacity in Duchenne muscular dystrophy patients.

- [**Umbilical cord stem cells show promise as heart failure treatment**](#) [周三, 27 9月 04:23]

Intravenous stem cell infusion derived from umbilical cords appears to boost heart muscle function in patients with heart failure, according to a small study. In this first-of-its-kind study, patients had 'significant' improvement in their hearts' ability to pump blood and experienced no adverse side effects related to the therapy. The results suggest IV-infused umbilical cord-derived stem cells are a promising avenue to treat heart failure.

• [**Cancerous toxins linked to cannabis extract**](#) [周三, 27 9月 04:23]

Researchers have found benzene and other potentially cancer-causing chemicals in the vapor produced by butane hash oil, a cannabis extract.

• [**Gene circuit design strategy to advance synthetic biology**](#) [周三, 27 9月 04:23]

Scientists and engineers have developed synthetic gene circuits that program the functionality, performance, and behavior of living cells. These gene circuits hold great promise in medical and biotechnological applications, but to date, most circuits are constructed through a manner, which relies on a designer's intuition and is often inefficient.

• [**In plain sight: Researchers compare the performance of human subjects versus deep neural networks in visual searches**](#) [周三, 27 9月 04:18]

Researchers have compared the performance of human subjects versus deep neural networks in visual searches.

• [**Researchers identify possible biomarker for diagnosing CTE during life**](#) [周三, 27 9月 02:36]

A new biomarker (CCL11) for chronic traumatic encephalopathy (CTE) has been discovered that may allow the disease to be diagnosed during life for the first time. The findings might also help distinguish CTE from Alzheimer's disease, which often presents with symptoms similar to CTE and also can only be diagnosed post-mortem. The ability to diagnose CTE in living individuals will allow for research into prevention and treatment of the disease.

[Postpartum depression risk, duration and recurrence](#) [周三, 27 9月 02:35]

Postpartum affective disorder (AD), including postpartum depression (PPD), affects more than one in two hundred women with no history of prior psychiatric episodes, and raises the risk of later affective disorder for those women, according to a new study.

[Warming climate could increase bacterial impacts on Chesapeake Bay shellfish, recreation](#) [周三, 27 9月 02:35]

Researchers have found that three common species of Vibrio bacteria in Chesapeake Bay could increase with changing climate conditions by the end of this century, resulting in significant economic and healthcare costs from illnesses caused by exposure to contaminated water and consumption of contaminated shellfish. The study is among the first to apply a new way of downscaling global climate models to the Chesapeake Bay.

[Post heart attack: How can scar tissue be turned back into healthy heart muscle?](#) [周三, 27 9月 01:55]

Scientists are exploring ways to reprogram scar tissue cells into healthy heart muscle cells, and now researchers have published the first scientific paper to compare in great detail the two leading reprogramming techniques.

[Potential Zika vaccine protects against pregnancy transmission and testicular damage](#) [周三, 27 9月 00:51]

For the first time, a research team led has shown that a potential Zika vaccine quickly can protect fetuses against infection as well as protect males against testicular infection and injury. It also prevents a lowered sperm count after one vaccination.

[Antibiotics warranted for kids with minor staph infections](#) [周三, 27 9月 00:51]

The overuse of antibiotics has left some doctors questioning whether to

give such drugs to children diagnosed with uncomplicated Staphylococcus aureus (staph) infections. Now, research indicates that prescribing antibiotics -- in addition to lancing and draining staph-infected areas -- reduces the risk of recurrent infections.

• [**Amount of water in stem cells can determine its fate as fat or bone**](#) [周三, 27 9月 00:51]

Adding or removing water from a stem cell can change the destiny of the cell to either pre-fat cells or pre-bone cells, researchers have discovered in a new study.

• [**Scientists unlock mysteries of how Ebola uses people's immune defenses to cause infection**](#) [周三, 27 9月 00:51]

Scientists have gained new insight into how the Ebola virus uses the body's natural defenses to speed the rate of infection and unleash its lethal disease, according to a new report.

• [**Drug combo gangs up to take on triple-negative breast cancer**](#) [周二, 26 9月 23:59]

In the hunt for novel treatments against an aggressive form of breast cancer, researchers combined a new protein inhibitor with a chemotherapy drug to create a powerful combination that resulted in cancer cell death.

• [**Injection alternative: Model predicts performance of glucose-responsive insulin**](#) [周二, 26 9月 23:59]

Researchers have created a computer model that can predict how glucose-responsive insulin will affect patients' blood sugar based on chemical traits such as how quickly it becomes activated in the presence of glucose. This could help scientists design insulin that lingers in a patient's bloodstream and becomes active only when needed, such as right after a meal.

• [**A fresh set of eyes: Rotating plant inspectors reduces risk of medical device recalls**](#) [周二, 26 9月 23:59]

More frequent rotation of plant inspectors at medical device manufacturing facilities could benefit consumers and lead to fewer product recalls, finds new research.

• [**One in 5 teens report having had a concussion in their lifetime**](#) [周二, 26 9月 23:20]

A new study confirms what many hospital emergency rooms nationwide are seeing: teens playing contact sports suffer from concussions.

• [**Does your back feel stiff? Well, it may not actually be stiff, study finds**](#) [周二, 26 9月 23:20]

The feeling of stiffness in your back may mean something else is going, warns a new report.

• [**Biochemists discover mechanism that helps flu viruses evolve**](#) [周二, 26 9月 23:20]

Flu viruses' rapid evolution relies in part on hijacking some of the cellular machinery of the infected host cell -- a group of proteins called chaperones, which help other proteins fold into the correct shape. When viruses are unable to get help from these proteins, they do not evolve as rapidly, research shows.

• [**Lactation hormone also helps a mother's brain**](#) [周二, 26 9月 22:55]

The same hormone that stimulates milk production for lactation, also acts in a particular part of the brain to help establish the nurturing link between mother and baby, researchers have revealed.

• [**Theory of Parkinson's disease overturned**](#) [周二, 26 9月 22:55]

A research team has identified a new mechanism that causes the hallmark symptoms of Parkinson's disease, namely tremors, rigidity, and loss of voluntary movement. The discovery presents a new perspective to three decades of conventional wisdom in Parkinson's disease research. It also opens up new avenues that can help alleviate the motor problems suffered by patients of the disease.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

- [**Black holes with ravenous appetites define Type I active galaxies**](#) [周四, 28 9月 01:36]

Type I and Type II active galaxies do not just appear different -- they are, in fact, very different from each other, both structurally and energetically, new research shows. According to the results of a new study, the key factor that distinguishes Type I and Type II galaxies is the rate at which their central black holes -- or active galactic nuclei -- consume matter and spit out energy.

- [**New light shed on how Earth and Mars were created**](#) [周四, 28 9月 01:36]

Analysing a mixture of earth samples and meteorites, scientists have shed new light on the sequence of events that led to the creation of the planets Earth and Mars.

- [**The volatile processes that shaped Earth**](#) [周四, 28 9月 01:36]

Although it is widely understood that Earth was formed gradually, from much smaller bodies, many of the processes involved in shaping our growing planet are less clear. Astronomers have now untangled some of these processes, revealing that the mini-planets added to Earth had previously undergone melting and evaporation. They also address another scientific conundrum: Earth's depletion in many economically important chemical elements.

- [**Turbocharging engine design**](#) [周四, 28 9月 00:51]

Researchers have moved the development process into the passing lane. For the first time, scientists and engineers have pinpointed engine

designs for a given fuel using the Mira supercomputer at the heart of the Argonne Leadership Computing Facility (ALCF), a DOE Office of Science User Facility.

- [**LIGO and Virgo observatories jointly detect black hole collision**](#) [周四, 28 9月 00:36]

The first observation of gravitational waves has been discovered by by three different detectors, marking a new era of greater insights and improved localization of cosmic events now available through globally networked gravitational-wave observatories.

- [**Total solar eclipse viewed from space**](#) [周四, 28 9月 00:35]

While people across the nation gazed at August's total solar eclipse from Earth, a bread loaf-sized NASA satellite had a front row seat for the astronomical event.

- [**On a collision course with game theory**](#) [周三, 27 9月 22:23]

How do pedestrians behave in a large crowd? How do they avoid collisions? How can their paths be modeled? A new approach developed by mathematicians provides answers to these questions.

- [**How old does your computer think you are?**](#) [周三, 27 9月 22:23]

Computerized face recognition is an important part of initiatives to develop security systems, in building social networks, in curating photographs, and many other applications. Systems can allow a computer to estimate with precision a person's age based on an analysis of their face.

- [**Monetizing time savings makes toll roads financially stack up**](#) [周三, 27 9月 21:34]

Putting a dollar value on the savings from traffic congestion, noise and air pollution as a result of toll roads and tunnels will make large infrastructure projects more cost effective, according to a new study.

- [**New twist on asymmetric catalysis**](#) [周三, 27 9月 21:33]

Researchers have developed an efficient and simple chemical synthesis of a new kind of twisted helicene molecule containing a sulfur group,

thiophene. The unusual screw-like asymmetry of the molecules could be useful for making drugs and other types of chemicals in their pure single-enantiomer forms.

- [**The strange structures of the Saturn nebula**](#) [周三, 27 9月 21:33]

The spectacular planetary nebula NGC 7009, or the Saturn Nebula, emerges from the darkness like a series of oddly-shaped bubbles, lit up in glorious pinks and blues. This colourful image was captured by the MUSE instrument on ESO's Very Large Telescope (VLT). The map -- which reveals a wealth of intricate structures in the dust, including shells, a halo and a curious wave-like feature -- will help astronomers understand how planetary nebulae develop their strange shapes and symmetries.

- [**Computer scientists address gap in messaging privacy**](#) [周三, 27 9月 21:33]

Researchers have developed a solution to a longstanding problem in the field of end-to-end encryption, a technique that ensures that only sender and recipient can read a message.

- [**A beautiful wing design solution inspired by owl feathers**](#) [周三, 27 9月 11:59]

Researchers have formulated a mathematical solution that could help minimize noise, maximize aerodynamics in design of porous airfoils (2-D wings) to improve wind turbines and air vehicles.

- [**Innovative control system paves the way for large scale universal quantum computing**](#) [周三, 27 9月 01:30]

Future quantum computers promise exponential scaling in computing power with linearly increasing number of qubits. However, harnessing this power is challenging due to the complexity of controlling a large number of qubits simultaneously. A solution to this problem has now been engineered.

- [**Energy harvested from evaporation could power much of US**](#) [周三, 27 9月 00:51]

In the first evaluation of evaporation as a renewable energy source, researchers find that US lakes and reservoirs could generate 325 gigawatts of power, nearly 70 percent of what the United States currently produces.

• [Quantum communications bend to our needs](#) [周三, 27 9月 00:51]

The potential for photon entanglement in quantum computing and communications has been known for decades. One issue impeding immediate application is that many photon entanglement platforms don't operate within the range used by most forms of telecommunication. Researchers have started to unravel the mysteries of entangled photons, demonstrating a technique that uses semiconductor quantum dots to bend photons to the wavelengths used by today's popular C-band standards.

• [The 3-D selfie has arrived](#) [周三, 27 9月 00:51]

Computer scientists have solved a complex problem that has, until now, defeated experts in vision and graphics research. They have developed technology capable of producing 3-D facial reconstruction from a single 2-D image -- the 3-D selfie. People are queuing up to try it and so far, more than 400,000 users have had a go.

• [New reassurance that heat flux will be manageable in ITER](#) [周三, 27 9月 00:51]

A major issue facing ITER, the international tokamak under construction in France that will be the first magnetic fusion device to produce net energy, is whether the crucial divertor plates that will exhaust waste heat from the device can withstand the high heat flux, or load, that will strike them. Alarming projections extrapolated from existing tokamaks suggest that the heat flux could be so narrow and concentrated as to damage the tungsten divertor plates in the seven-story, 23,000 ton tokamak...

• [A fresh set of eyes: Rotating plant inspectors reduces risk of medical device recalls](#) [周二, 26 9月 23:59]

More frequent rotation of plant inspectors at medical device

manufacturing facilities could benefit consumers and lead to fewer product recalls, finds new research.

- [**Wearable solar thermoelectric generator created**](#)

[周二, 26 9月 22:55]

Engineers have introduced a new advanced energy harvesting system, capable of generating electricity by simply being attached to clothes, windows, and outer walls of a building.

- [**Artificial intelligence for obtaining chemical fingerprints**](#)

[周二, 26 9月 22:54]

Researchers have succeeded in developing a method for predicting molecular infrared spectra based on artificial intelligence. These chemical 'fingerprints' could only be simulated by common prediction techniques for small molecules in high quality. The team was able to carry out simulations that were previously not possible.

- [**Understanding football violence could help the fight against terror**](#)

[周二, 26 9月 22:54]

Football has long been tarnished by outbreaks of fan violence. Although media headlines often link the behavior to 'hooliganism,' the activity could stem from potentially more positive motivations, such as passionate commitment to the group and the desire to belong.

Understanding the root cause of the behavior may therefore help in tackling the violence and channeling it into something more positive, scientists suggest.

- [**Cartography of the Cosmos**](#)

[周二, 26 9月 21:16]

There are hundreds of billions of stars in our own Milky Way galaxy, interspersed with all manner of matter, from the dark to the sublime.

This is the universe that one group of researchers is trying to reconstruct, structure by structure, combining telescope surveys with next-generation data analysis and simulation techniques currently being primed for exascale computing.

- [**Graphene forged into three-dimensional shapes**](#)

[周二, 26 9月 21:14]

Researchers have discovered how graphene, a single-atom-thin layer of

carbon, can be forged into three-dimensional objects by using laser light. A striking illustration was provided when the researchers fabricated a pyramid with a height of 60 nm, which is about 200 times larger than the thickness of a graphene sheet. The pyramid was so small that it would easily fit on a single strand of hair.

- [**The motor protein dancing in all our cells**](#) [周二, 26 9月 21:14]

Biologists have invented optical tweezers to follow the motions of molecular machines measured in nanometers.

- [**Physicists achieve rapid magnetic switching with lasers**](#) [周二, 26 9月 21:00]

New research shows control over composition of ferrimagnetic materials offers new ways of switching their magnetism.

- [**The principle Feynman and Einstein could not find was discovered**](#) [周二, 26 9月 20:59]

The Faraday's induction formula (flux rule) of electromagnetism says that the electromotive force (emf) created in a conducting circuit is equal to the rate at which the magnetic flux through the conducting circuit changes as it is written on a high school text in physics. This emf can be calculated in two ways: either by using the Lorentz force formula and calculating the force acting on electrons in the moving conductor of the circuit; or via one of Maxwell's equations (Faraday's law) and calcu...

- [**Creative use of noise brings bio-inspired electronic improvement**](#) [周二, 26 9月 03:14]

Researchers are working to exploit stochastic resonance to enhance signal transmission for a new generation of devices, using single-walled carbon nanotubes. They created a summing network SR device that detects subthreshold signals, fabricated to include a self-noise component.

- [**Holograms for molecules**](#) [周二, 26 9月 01:30]

Scientists have developed a completely new method for the analysis of molecules in liquids on a chip. The possible applications of this

technology are immense. It has the potential, inter alia, to revolutionize medical diagnostics.

- [**Click beetles inspire design of self-righting robots**](#) [周二, 26 9月 01:30]

Robots perform many tasks that humans can't or don't want to perform, getting around on intricately designed wheels and limbs. If they tip over, however, they are rendered almost useless. Mechanical engineers and entomologists are looking to click beetles, who can right themselves without the use of their legs, to solve this robotics challenge.

- [**New non-contact, remote biometric tool could be next advance in computer security**](#) [周二, 26 9月 01:30]

Forget fingerprint computer identification or retinal scanning. Scientists have now developed a computer security system using the dimensions of your heart as your identifier. The system uses low-level Doppler radar to measure your heart, and then continually monitors your heart to make sure no one else has stepped in to run your computer.

- [**The material that obscures supermassive black holes**](#) [周二, 26 9月 01:29]

New research examines the material that obscures active galactic nuclei obtained from infrared and X-ray observations.

- [**Are children who see movie characters use guns more likely to use them?**](#) [周二, 26 9月 01:29]

Children who watched a PG-rated movie clip containing guns played with a disabled real gun longer and pulled the trigger more often than children who saw the same movie not containing guns.

- [**Physicists demonstrate using a laser to control a current in graphene within just one femtosecond**](#) [周二, 26 9月 01:28]

Controlling electronic current is essential to modern electronics, as data and signals are transferred by streams of electrons which are controlled at high speed. Demands on transmission speeds are also increasing as technology develops. Scientists have now succeeded in switching on a

current with a desired direction in graphene using a single laser pulse within a femtosecond. This is more than a thousand times faster compared to the most efficient transistors today.

• [**High-fidelity recording of molecular geometry with DNA 'nanoscopy'**](#) [周一, 25 9月 23:33]

A research team has now developed a DNA nanotechnology-based method that allows for repeated, non-destructive recording of uniquely barcoded molecular pairings, rendering a detailed view of their components and geometries. In the future, the approach could help researchers understand how changes in molecular complexes control biological processes in living cells.

• [**Climate insurance is rarely well thought out in agriculture**](#) [周一, 25 9月 23:33]

Internationally subsidised agricultural insurance is intended to protect farmers in developing countries from the effects of climate change. However, it can also lead to undesirable ecological and social side effects, as researchers have now explained. Their article also contains recommendations for improved insurance schemes which in future should also take account of ecological and social aspects in addition to economic issues.

• [**Lava tubes: Hidden sites for future human habitats on the Moon and Mars**](#) [周一, 25 9月 23:28]

Lava tubes, underground caves created by volcanic activity, could provide protected habitats large enough to house streets on Mars or even towns on the Moon, according to new research. A further study shows how the next generation of lunar orbiters will be able to use radar to locate these structures under the Moon's surface.

• [**Fully renewable India in 2050 can take a shortcut to emission-free future**](#) [周一, 25 9月 23:16]

India can function on a fully renewable electricity system in 2050, research indicates. The study shows that developing countries that have an abundance of renewable resources do not need to take the path of the

western countries where increasing living standards have been coupled with heavy emissions from electricity generation and other industry. They can move straight to renewable systems and do it cheaply.

- [**New technique uses light to separate mirrored molecules**](#) [周一, 25 9月 23:13]

Left- and right-handed versions of molecules can be hard to tell apart but can have devastatingly different effects. Researchers are developing an optical filter to sort these molecules, which could lead to purer and safer drugs and agrichemicals.

- [**Nanoparticle supersoap creates 'bijel' with potential as sculptable fluid**](#) [周一, 25 9月 23:13]

A new type of 'bijel' could one day lead to applications in soft robotics, liquid circuitry, and a host of other applications that could benefit from shape-shifting fluids.

- [**New type of supercomputer could be based on 'magic dust' combination of light and matter**](#) [周一, 25 9月 23:13]

Scientists have successfully demonstrated that a type of 'magic dust' which combines light and matter can be used to solve complex problems and could eventually surpass the capabilities of even the most powerful supercomputers.

- [**Scientists monitor Silicon Valley's underground water reserves -- from space**](#) [周一, 25 9月 22:57]

Scientists monitoring Silicon Valley's underground water reserves from space have found that water levels rebounded quickly after a severe drought that lasted from 2012-15. The research points to the success of aggressive conservation measures. It also helps to lay the groundwork for low-cost monitoring of subterranean water reserves in California and elsewhere in the world.

- [**Filter may be a match for fracking water**](#) [周一, 25 9月 22:47]

A superhydrophilic filter has proven able to remove more than 90 percent of contaminants from water used in hydraulic fracturing

operations at shale oil and gas wells.

- [**With extra sugar, leaves get fat too**](#) [周一, 25 9月 22:47]

Eat too much without exercising and you'll probably put on a few pounds. As it turns out, plant leaves do something similar. A new study shows that retaining sugars in plant leaves can make them get fat too. In plants, this extra fat accumulation could be a good thing. It could help turn plants into factories for making biofuels and other useful chemicals.

- [**Semitransparent and flexible: Solar cells made from atomically thin sheet**](#) [周一, 25 9月 21:55]

A new method for fabricating semitransparent, flexible solar cells has greatly improved power conversion efficiency.

- [**New synthesis method for click chemistry**](#) [周一, 25 9月 21:55]

Scientists have developed a new way to advance click chemistry.

- [**Wound care: Patch could improve healing and reduce scarring**](#) [周一, 25 9月 21:54]

Scientists have developed a new gel patch prototype that could speed up the healing of a skin wound while minimizing the formation of scars.

- [**A preparative-scale reaction using platinum clusters with a single-digit atomicity realized**](#) [周一, 25 9月 21:54]

Scientists have recently developed a fully scalable method for the synthesis of atom-precise platinum clusters for potential use in catalytic applications. This method could provide a new pathway for large-scale production of atom-precise clusters. To demonstrate this, the hydrogenation of styrene was performed.

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Environment News

Top stories featured on ScienceDaily's Plants & Animals, Earth & Climate, and Fossils & Ruins sections.

- [**The hormone that could be making your dog aggressive discovered**](#) [周四, 28 9月 04:20]

Thousands of people are hospitalized every year for dog bites, and aggressive behavior is a major reason dogs end up in shelters. Biologists have studied the biology behind canine aggression, specifically the role of the hormones vasopressin and oxytocin.

- [**How cells recover from the verge of programmed death**](#) [周四, 28 9月 04:20]

Biologists explore the molecular underpinnings of cells that recover from the verge of programmed death.

- [**Earliest evidence for a native African cultigen discovered in Eastern Sudan**](#) [周四, 28 9月 04:20]

Archaeologists examining plant impressions within broken pottery have discovered the earliest evidence for domesticated sorghum in Africa.

- [**Beer can lift your spirits due to malted barley ingredient**](#) [周四, 28 9月 03:28]

Visitors to the Oktoberfest have always known it and now it has been scientifically -- beer can lift your spirits. Scientists examined 13,000 food components to find out whether they stimulate the reward center in the brain and make people feel good. Hordenine which is found in malted barley and beer seems to do the job quite well.

- [**Haplobank: A biobank of reversible mutant**](#)

[embryonic stem cells](#) [周四, 28 9月 01:38]

Scientists have developed a biobank of revertible, mutant embryonic stem cells – called Haplobank - which contains over 100,000 mutated, conditional mouse embryonic stem cell lines, targeting about 70% of the protein-coding genome.

• [The volatile processes that shaped Earth](#) [周四, 28 9月 01:36]

Although it is widely understood that Earth was formed gradually, from much smaller bodies, many of the processes involved in shaping our growing planet are less clear. Astronomers have now untangled some of these processes, revealing that the mini-planets added to Earth had previously undergone melting and evaporation. They also address another scientific conundrum: Earth's depletion in many economically important chemical elements.

• [Citizen science can predict butterfly population trends](#) [周四, 28 9月 00:36]

New research shows that citizen scientists can play a role in gathering meaningful information to inform long-term monitoring of biodiversity trends such as butterfly population change.

• [New iceberg calved from Pine Island Glacier](#) [周三, 27 9月 22:45]

A new iceberg calved from Pine Island Glacier -- one of the main outlets where ice from the interior of the West Antarctic Ice Sheet flows into the ocean.

• [Preservation of floodplains is flood protection](#) [周三, 27 9月 22:23]

The silting of rivers and streams leads to problems for fish, mussels, and other aquatic organisms because their habitats disappear. However, not only intensive agriculture and erosion are destroying these habitats. Now a study refutes this widespread view. In order to save the species living in the river basin -- and protect people from the threat of floods -- rivers need more space, diversity, and freedom.

• [Two new crustacean species discovered on Galician seabed](#) [周三, 27 9月 22:23]

The fauna of deep seabed tends to be relatively unknown due to the difficulty of collecting samples at great depths. A research team undertook four oceanographic expeditions in the waters off the northwest coast of the Iberian Peninsula that have led to the discovery of several new species that inhabit the abyssal plains. Now they describe two eyeless species of millimetric proportions.

• [**Emerging infectious disease threatens Darwin's frog with extinction**](#) [周三, 27 9月 22:09]

Iconic species likely to be wiped-out by amphibian fungus, despite lack of obvious short-term evidence.

• [**More than a 38 % of the Neotropical parrot population in the American continent is threatened by human activity**](#) [周三, 27 9月 22:09]

More than a 38% of the Neotropical parrot population of the American continent (Neotropic) is endangered due the impact of human activity, according to a scientific study.

• [**Moths: A different weapon against each enemy**](#) [周三, 27 9月 21:56]

It's a dangerous world out there, especially if you are a small insect. Insects have thrived on our planet for hundreds of millions of years, so they must be doing something right despite all the threats to their survival. With so many predators out to get them many animals have evolved chemical defences, making themselves distasteful or even toxic. Wood tiger moths protect themselves from multiple predators using different chemical defences. Choosing the right defence can be tricky as predators ...

• [**Monetizing time savings makes toll roads financially stack up**](#) [周三, 27 9月 21:34]

Putting a dollar value on the savings from traffic congestion, noise and air pollution as a result of toll roads and tunnels will make large infrastructure projects more cost effective, according to a new study.

• [**How to grow a spine**](#) [周三, 27 9月 21:33]

A genetics professor -- whose lab discovered the segmentation clock 20 years ago -- and colleagues report that they used mouse cells to reconstitute a stable version of this clockwork for the first time in a petri dish, leading to several new discoveries about where the clock is located, what makes it tick and how the vertebral column takes shape.

- [**Geographic variation in Gentoo penguin calls**](#) [周三, 27 9月 21:33]

Vocal communication is central to the lives of many birds, which use sound to attract mates and defend territories. Penguins are no exception, but we know little about how or why penguin vocalizations vary between isolated populations. A new study takes a broad look at vocalizations across the range of Gentoo penguins and concludes that while their calls do vary from place to place, we still have lots to learn about the processes at work.

- [**Songbird populations may indicate trouble in northwestern forests**](#) [周三, 27 9月 21:33]

Populations of many North American songbirds are declining, and in many cases we don't understand why. Conservation efforts need this information to be effective, and bird banding stations can help fill in the gaps, providing insights into how demographics vary across space and time. A new study presents ten years of data from banding stations across northern California and southern Oregon and offers new hints on what's driving changes in the region's songbird populations.

- [**Tree-dwelling, coconut-cracking giant rat discovered in Solomon Islands**](#) [周三, 27 9月 21:33]

Scientists have discovered a new species of giant rat. It's more than four times the size of the black rats that live in the US, it lives in trees, and it's rumored to crack open coconuts with its teeth. And it's actually pretty cute.

- [**Cellular 'message in a bottle' may provide path to new way of treating disease**](#) [周三, 27 9月 21:33]

A newly discovered cellular messaging mechanism could lead to a new way to deliver therapeutics to tissues affected by disease, according to a

new study. Researchers found a type of extracellular vesicle -- a sac secreted by cells that contains proteins and RNA molecules -- carries receptors that allow signaling without direct contact between cells.

- [**Removing nitrate for healthier ecosystems**](#) [周三, 27 9月 21:33]

In a new study, researchers have identified nitrate removal hotspots in landscapes around agricultural streams.

- [**Purple plant is on the defensive**](#) [周三, 27 9月 21:33]

While lavender has long been known for its strong scent and soothing oils, a researcher is exploring the plant's ability to create natural pesticides.

- [**Plant substance inhibits cancer stem cells**](#) [周三, 27 9月 21:33]

Lab experiments show that the chemical compound damsin found in the plant *Ambrosia arborescens* inhibits the growth and spread of cancer stem cells. The similar but synthetically produced ambrosin has the same positive effect.

- [**A beautiful wing design solution inspired by owl feathers**](#) [周三, 27 9月 11:59]

Researchers have formulated a mathematical solution that could help minimize noise, maximize aerodynamics in design of porous airfoils (2-D wings) to improve wind turbines and air vehicles.

- [**Noise pollution found to be disruptive for schooling fish**](#) [周三, 27 9月 11:59]

Noise from human construction projects can disrupt the schools that are so impressive in marine fish, new research has found.

- [**How has society adapted to hurricanes? A look at New Orleans over 300 years**](#) [周三, 27 9月 11:59]

In the midst of an intense hurricane season, a historical perspective looks at adaptation to hurricanes in New Orleans over nearly three centuries, from its foundation in 1718 to Hurricane Katrina in 2005.

- [**Lost continent of Zealandia: Scientists return**](#)

[from expedition to sunken land](#) [周三, 27 9月 11:59]

After a nine-week voyage to study the lost, submerged continent of in the South Pacific, a team of 32 scientists from 12 countries has arrived in Hobart, Tasmania, aboard the research vessel JOIDES Resolution.

[Caribbean praying mantises have ancient African origin](#) [周三, 27 9月 11:59]

Three seemingly unrelated praying mantis groups inhabiting Cuba and the rest of the Greater Antilles actually share an ancient African ancestor and possibly form the oldest endemic animal lineage on the Caribbean islands, researchers have determined.

[Cancerous toxins linked to cannabis extract](#) [周三, 27 9月 04:23]

Researchers have found benzene and other potentially cancer-causing chemicals in the vapor produced by butane hash oil, a cannabis extract.

[Gene circuit design strategy to advance synthetic biology](#) [周三, 27 9月 04:23]

Scientists and engineers have developed synthetic gene circuits that program the functionality, performance, and behavior of living cells. These gene circuits hold great promise in medical and biotechnological applications, but to date, most circuits are constructed through a manner, which relies on a designer's intuition and is often inefficient.

[Warming climate could increase bacterial impacts on Chesapeake Bay shellfish, recreation](#) [周三, 27 9月 02:35]

Researchers have found that three common species of Vibrio bacteria in Chesapeake Bay could increase with changing climate conditions by the end of this century, resulting in significant economic and healthcare costs from illnesses caused by exposure to contaminated water and consumption of contaminated shellfish. The study is among the first to apply a new way of downscaling global climate models to the Chesapeake Bay.

[Energy harvested from evaporation could power](#)

[**much of US**](#) [周三, 27 9月 00:51]

In the first evaluation of evaporation as a renewable energy source, researchers find that US lakes and reservoirs could generate 325 gigawatts of power, nearly 70 percent of what the United States currently produces.

• [**Some marine species more vulnerable to climate change than others**](#) [周三, 27 9月 00:51]

Certain marine species will fare much worse than others as they become more vulnerable to the effects of climate change, a new study has found.

• [**Amount of water in stem cells can determine its fate as fat or bone**](#) [周三, 27 9月 00:51]

Adding or removing water from a stem cell can change the destiny of the cell to either pre-fat cells or pre-bone cells, researchers have discovered in a new study.

• [**Scientists unlock mysteries of how Ebola uses people's immune defenses to cause infection**](#) [周三, 27 9月 00:51]

Scientists have gained new insight into how the Ebola virus uses the body's natural defenses to speed the rate of infection and unleash its lethal disease, according to a new report.

• [**Fisheries sustainability linked to gender roles among traders**](#) [周二, 26 9月 23:59]

A new study of fish traders in coastal Kenya shows that women largely occupied fisheries with the lowest profits and are not saving money while working in these fisheries.

• [**Two Caribbean bird-catcher trees named after two women with overlooked botanical works**](#) [周二, 26 9月 23:59]

Known for their biodiversity richness, the Caribbean Islands are now adding two new species of bird-catcher trees to their list of botanical treasures. The new species were named after two women who self-engaged for decades on educational projects in botany, but whose

remarkable work was never properly made known and accredited.

- [**Warm Northwest waters draw spawning fish north**](#) [周二, 26 9月 23:59]

Unusually warm ocean conditions off the Pacific Northwest in the last few years led anchovies, sardines and hake to begin spawning in Northwest waters much earlier in the year and, for anchovy, longer than biologists have ever recorded before, new research has found.

- [**Biochemists discover mechanism that helps flu viruses evolve**](#) [周二, 26 9月 23:20]

Flu viruses' rapid evolution relies in part on hijacking some of the cellular machinery of the infected host cell -- a group of proteins called chaperones, which help other proteins fold into the correct shape. When viruses are unable to get help from these proteins, they do not evolve as rapidly, research shows.

- [**Wearable solar thermoelectric generator created**](#) [周二, 26 9月 22:55]

Engineers have introduced a new advanced energy harvesting system, capable of generating electricity by simply being attached to clothes, windows, and outer walls of a building.

- [**Researchers identify novel way to target Ebola**](#) [周二, 26 9月 22:55]

Researchers have identified a potential new way to attack Ebola. Scientists have discovered that a protein called Tim-1 (T-cell immunoglobulin and mucin domain-containing protein 1) plays a key role in the development of the cytokine storm seen in the last stages of Ebola infection.

- [**Predatory bacteria found in study of cystic fibrosis patients' lung microbiome**](#) [周二, 26 9月 22:55]

Cystic fibrosis patients have a wide variety of bacteria in their lungs, including two 'predators' not detected before, according to a new study.

- [**The drying of peatlands is reducing bird diversity**](#) [周二, 26 9月 22:54]

The populations of peatland birds in Finland, Sweden, Norway, Estonia and Latvia have decreased by a third during the past three decades, a recent international study indicates. The situation in Finland is the most dire, and the species in most trouble is the Finnish ruff, as the population has fallen to approximately 3 percent of what it was at the beginning of the study period.

- [**Nerves control the body's bacterial community**](#) [周二, 26 9月 22:54]

Using the freshwater polyp Hydra as a model organism, researchers have investigated how the simple nervous system of these animals interacts with the microbiome. They were able to demonstrate, for the first time, that small molecules secreted by nerve cells help to regulate the composition and colonization of specific types of beneficial bacteria along the Hydra's body column.

- [**'Hypermotators' drive pathogenic fungi to evolve more rapidly**](#) [周二, 26 9月 22:54]

For nearly two decades, a rare but potentially deadly fungus called *Cryptococcus deuterogattii* has gained a foothold in the Pacific Northwest and Vancouver Island. Researchers recently showed that lineages of the fungal pathogen *Cryptococcus deuterogattii* house a specific mutation in their DNA that increases their mutation rate. These hypermutators, as they are called, rapidly develop resistance to the antifungal drugs FK506 and rapamycin.

- [**Chronic wasting disease**](#) [周二, 26 9月 22:54]

New research summarizes the efforts in disease surveillance and risk management of chronic wasting disease (CWD) in deer and shows that past management strategies such as selective culling, herd reduction, and hunter surveillance have had only limited effectiveness. The summary points towards new advice for optimal, cost-effective strategies in aggressive disease control.

- [**Milk-alternative drinks do not replace the iodine in cows' milk**](#) [周二, 26 9月 21:14]

Consumers of milk-alternative drinks may be at risk of iodine

deficiency, according to the findings of a new study.

- [**Agent Orange still linked to hormone imbalances in babies in Vietnam**](#) [周二, 26 9月 21:14]

Could herbicides that were sprayed during the Vietnam War still be causing health problems?

- [**The motor protein dancing in all our cells**](#) [周二, 26 9月 21:14]

Biologists have invented optical tweezers to follow the motions of molecular machines measured in nanometers.

- [**Higher risk of heart failure in cold weather**](#) [周二, 26 9月 21:14]

Could decreases in temperature cause heart failure and death?

- [**New 'bioactive' glass puts minerals back into damaged teeth**](#) [周二, 26 9月 21:12]

Dental researchers have now developed a very fast dissolving 'bioactive' glass which they are putting in toothpaste to repair decayed teeth.

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- [**No evidence to support claims that telephone consultations reduce GP workload or hospital referrals**](#) [周四, 28 9月 06:44]

Telephone consultations to determine whether a patient needs to see their GP face-to-face can deal with many problems, but a new study found no evidence to support claims by companies offering to manage these services or by NHS England that the approach saves money or reduces the number of hospital referrals.

- [**Citizen science can predict butterfly population trends**](#) [周四, 28 9月 00:36]

New research shows that citizen scientists can play a role in gathering meaningful information to inform long-term monitoring of biodiversity trends such as butterfly population change.

- [**Iron supplements have long-term benefits for low birth-weight babies**](#) [周四, 28 9月 00:36]

Babies classified as low birth weight (under 2,500 grams) are at risk of iron deficiency, which is linked to impaired neurological development. A long-term randomized study now shows that providing such babies with iron supplements can prevent behavioral problems at school age.

- [**Teens' online friendships just as meaningful as face-to-face ones**](#) [周三, 27 9月 22:54]

Many parents worry about how much time teenagers spend texting, sharing selfies and engaging in other online activities with their friends.

However, according to a recent research synthesis, many of these digital behaviors serve the same purpose and encompass the same core qualities as face-to-face relationships.

- [**Coping with stressful organizational change**](#) [周三, 27 9月 21:51]

Stress is not a recent phenomenon, but the modern work environment seems to highlight its detrimental effects on employees. This is no more obvious than during times of organizational change. New research considers the impact of such changes on workers in a healthcare authority in New Zealand, highlighting the problems that any organization might face under such circumstances and pointing to possible methods to cope and remediate employee stress.

- [**Monetizing time savings makes toll roads financially stack up**](#) [周三, 27 9月 21:34]

Putting a dollar value on the savings from traffic congestion, noise and air pollution as a result of toll roads and tunnels will make large infrastructure projects more cost effective, according to a new study.

- [**Interventions for reducing hepatitis C infection in people who inject drugs**](#) [周二, 26 9月 22:54]

The first global review to quantify the impact of needle syringe programs (NSP) and opioid substitution treatment (OST) in reducing the risk of becoming infected with the hepatitis C virus has now been published. The study has implications for millions of people who are 'at risk' from infection.

- [**Household chores: Women still do more**](#) [周二, 26 9月 22:54]

Women of all ages still tend to do more household chores than their male partners, no matter how much they work or earn in a job outside the home. New findings demonstrate the persistent gendered nature of how housework is divided.

- [**Preschool teachers need better training in science**](#) [周二, 26 9月 22:54]

Preschool instructors appear to lack the knowledge, skills and

confidence to effectively teach their young students science -- a problem that is likely contributing to America's poor global performance in this crucially important subject.

- [**Teachers report weaker relationships with students of color, children of immigrants**](#) [周二, 26 9月 22:54]

The relationship between teachers and students is a critical factor for academic success. However, a new study finds that teachers report weaker relationships with children of immigrants and adolescents of color.

- [**Drought: A cause of riots**](#) [周二, 26 9月 21:05]

The scientific community has been working on the possibility of a relationship between periods of drought and rioting for several years. Now a team has formally verified this hypothesis by studying almost 1,800 riots that occurred over a 20-year period in sub-Saharan Africa. The researchers observed a systematic link between the sudden depletion of water resources and the outbreak of unrest. They also succeeded in quantifying the impact of geographic and social factors on the same link.

- [**People are reluctant to use public defibrillators to treat cardiac arrests**](#) [周二, 26 9月 20:59]

A new study suggests that people are reluctant to use public-access defibrillators to treat cardiac arrests.

- [**Psychological impacts of natural disasters on youth**](#) [周二, 26 9月 04:32]

A researcher is fully aware of children's reaction to trauma. Her research focuses on the impact of disasters on youth since Hurricane Andrew in 1992. La Greca has been evaluating how best to define post-traumatic stress disorder (PTSD) in children. This line of research will help to quickly identify the children who need support services post-disaster and identify key aspects of the post-disaster environment that facilitate their recovery.

- [**Are children who see movie characters use guns**](#)

more likely to use them? [周二, 26 9月 01:29]

Children who watched a PG-rated movie clip containing guns played with a disabled real gun longer and pulled the trigger more often than children who saw the same movie not containing guns.

Climate insurance is rarely well thought out in agriculture [周一, 25 9月 23:33]

Internationally subsidised agricultural insurance is intended to protect farmers in developing countries from the effects of climate change. However, it can also lead to undesirable ecological and social side effects, as researchers have now explained. Their article also contains recommendations for improved insurance schemes which in future should also take account of ecological and social aspects in addition to economic issues.

Group project? Taking turns, working with friends may improve grades [周一, 25 9月 23:33]

A new study with college students has found that the social dynamics of a group, such as whether one person dominates the conversation or whether students work with a friend, affect academic performance. Put simply, the more comfortable students are, the better they do, which yields benefits beyond the classroom.

Fully renewable India in 2050 can take a shortcut to emission-free future [周一, 25 9月 23:16]

India can function on a fully renewable electricity system in 2050, research indicates. The study shows that developing countries that have an abundance of renewable resources do not need to take the path of the western countries where increasing living standards have been coupled with heavy emissions from electricity generation and other industry. They can move straight to renewable systems and do it cheaply.

Clarifying perspectives to promote action on loss and damage from climate change [周一, 25 9月 23:13]

The hurricanes Harvey, Irma and Maria highlight the potential for the

climate system to cause loss and damage. 'Loss and damage' is a phrase used in different ways by people who work on climate policy, negotiation and adaptation/resilience. A new study clarifies these different perspectives which is a key issue now that the United Nations Framework Convention on Climate Change, UNFCCC, is encouraging creation and implementation of actions to address loss and damage from climate change.

- **[Visual attention drawn to meaning, not what stands out](#)** [周一, 25 9月 23:13]

Our visual attention is drawn to parts of a scene that have meaning, rather than to those that are salient or 'stick out,' according to new research. The findings overturn the widely held model of visual attention.

- **[World's botanic gardens contain a third of all known plant species, and help protect the most threatened](#)** [周一, 25 9月 23:13]

The most in-depth species survey to date finds an 'astonishing array' of plant diversity in the global botanic garden network, including 41 percent of all endangered species. However, researchers find a significant imbalance between tropical and temperate plants, and say even more capacity should be given to conservation, as there is 'no technical reason for plant species to become extinct.'

- **[Minority public managers prefer integrating social equity, traditional public values](#)** [周一, 25 9月 22:57]

Minority public managers place more emphasis on both traditional values, like efficiency and effectiveness, and social equity when compared with their white counterparts, according to a new study.

- **[Scientists call for more research on how human activities affect the seabed](#)** [周一, 25 9月 22:47]

Extensive research has been released into how industry and environmental change are affecting our seafloors. Researchers say more

work is needed to help safeguard these complex ecosystems and the benefits they provide to people for the future.

- [**New technique spots warning signs of extreme events**](#) [周日, 24 9月 22:38]

Engineers have devised a framework for identifying key patterns that precede an extreme event. The framework can be applied to a wide range of complicated, multidimensional systems to pick out the warning signs that are most likely to occur in the real world.

- [**Study finds no-tillage not sufficient alone to prevent water pollution from nitrate**](#) [周六, 23 9月 04:25]

A new study answers a long-debated agricultural question: whether no-tillage alone is sufficient to prevent water pollution from nitrate. The answer is no.

- [**Flint's water crisis led to fewer babies and higher fetal death rates, researchers find**](#) [周五, 22 9月 21:16]

An estimated 275 fewer children were born in Flint, Michigan, while the city was using lead-contaminated water from the Flint River, according to new research findings.

- [**Breathing dirty air may harm kidneys**](#) [周五, 22 9月 21:16]

Outdoor air pollution may increase the risk of chronic kidney disease and contribute to kidney failure, say researchers. Scientists culled national VA databases to evaluate the effects of air pollution and kidney disease on nearly 2.5 million people over a period of 8.5 years, beginning in 2004. The scientists compared VA data on kidney function to air-quality levels collected by the Environmental Protection Agency (EPA) as well as the National Aeronautics and Space Administration (NASA).

- [**Strong alcohol policies help reduce alcohol-involved homicides**](#) [周五, 22 9月 04:12]

Stronger alcohol policies, including taxes and sales restrictions, have been shown to reduce the likelihood of alcohol involvement among

homicide victims, according to a new study.

- [**Babies can learn that hard work pays off**](#) [周五, 22 9月 04:12]

A new study reveals babies as young as 15 months can learn the value of hard work. Researchers found babies who watched an adult struggle to reach two different goals before succeeding tried harder at their own difficult task than babies who saw an adult succeed effortlessly.

- [**We must accelerate transitions for sustainability and climate change, experts say**](#) [周五, 22 9月 02:12]

We must move faster towards a low-carbon world if we are to limit global warming to 2 degrees C this century, experts have warned.

- [**Rapid hepatitis C testing may help better screen young adults**](#) [周五, 22 9月 02:12]

Routine and rapid hepatitis C virus testing among young adults who use injection drugs improves life expectancy and may provide a good use of limited resources, according to new research.

- [**Wildlife rangers: What motivates them?**](#) [周五, 22 9月 00:11]

Wildlife rangers are on the front lines protecting our most iconic species -- tigers, elephants, gorillas and many others. But their challenges involve more than confrontations with wild animals and poachers.

- [**Recipe for forest restoration discovered**](#) [周四, 21 9月 22:17]

A new study has uncovered some valuable information on ways to maximize the success of replanting efforts, bringing new hope for restoring these threatened ecosystems.

- [**Premature births cost health plans \\$6 billion annually**](#) [周四, 21 9月 21:02]

A new study estimates employer-sponsored health plans spent at least \$6 billion extra on infants born prematurely in 2013 and a substantial portion of that sum was spent on infants with major birth defects.

- [**Pay more, smoke less: Possible effects of raising tobacco taxes across the EU**](#) [周四, 21 9月 11:22]

Raising tobacco taxes to increase cigarette prices could reduce cigarette consumption and smoking-associated deaths (SADs) in all 28 EU countries, according to a new study. In higher income countries, raising tobacco taxes could increase revenues that could be spend on prevention and control programs, while in lower income countries tax revenues may be negatively affected, researchers suggest.

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [**Lost continent of Zealandia: Scientists return from expedition to sunken land**](#) [周三, 27 9月 11:59]

After a nine-week voyage to study the lost, submerged continent of in the South Pacific, a team of 32 scientists from 12 countries has arrived in Hobart, Tasmania, aboard the research vessel JOIDES Resolution.

- [**Innovative control system paves the way for large scale universal quantum computing**](#) [周三, 27 9月 01:30]

Future quantum computers promise exponential scaling in computing power with linearly increasing number of qubits. However, harnessing this power is challenging due to the complexity of controlling a large number of qubits simultaneously. A solution to this problem has now been engineered.

- [**Pigeons better at multitasking than humans**](#) [周二, 26 9月 21:05]

Pigeons are capable of switching between two tasks as quickly as humans -- and even more quickly in certain situations. These are the findings of biopsychologists who had performed the same behavioral experiments to test birds and humans. The authors hypothesize that the cause of the slight multitasking advantage in birds is their higher neuronal density.

- [**After 15 years in a vegetative state, nerve stimulation restores consciousness**](#) [周二, 26 9月 01:29]

A 35-year-old man who had been in a vegetative state for 15 years after a car accident has shown signs of consciousness after neurosurgeons

implanted a vagus nerve stimulator into his chest. The findings show that vagus nerve stimulation (VNS) -- a treatment already in use for epilepsy and depression--can help to restore consciousness even after many years in a vegetative state.

• [**Bacterial nanosized speargun works like a power drill**](#) [周二, 26 9月 01:28]

In order to get rid of unpleasant competitors, some bacteria use a sophisticated weapon -- a nanosized speargun. Researchers have now gained new insights into the construction, mode of action and recycling of this weapon. The speargun drills a hole into the neighboring cells in only a few thousandths of a second and injects a cocktail of toxins.

• [**Lava tubes: Hidden sites for future human habitats on the Moon and Mars**](#) [周一, 25 9月 23:28]

Lava tubes, underground caves created by volcanic activity, could provide protected habitats large enough to house streets on Mars or even towns on the Moon, according to new research. A further study shows how the next generation of lunar orbiters will be able to use radar to locate these structures under the Moon's surface.

• [**Genes are controlled by 'Nano footballs,' scientists discover**](#) [周一, 25 9月 23:12]

Genes are controlled by 'nano footballs' -- structures that look like footballs but 10 million times smaller than the average ball -- new research has revealed.

• [**Fish have surprisingly complex personalities**](#) [周一, 25 9月 21:54]

Tiny fish called Trinidadian guppies have individual 'personalities', new research shows.

• [**Detecting cosmic rays from a galaxy far, far away**](#) [周五, 22 9月 02:12]

Where do cosmic rays come from? Solving a 50-year-old mystery, a collaboration of researchers has discovered it's much farther than the Milky Way.

- [**Early trilobites had stomachs, new fossil study finds**](#) [周五, 22 9月 02:12]

Exceptionally preserved trilobite fossils from China, dating back to more than 500 million years ago, have revealed new insights into the extinct marine animal's digestive system. The new study shows that at least two trilobite species evolved a stomach structure 20 million years earlier than previously thought.

- [**Hope to discover sure signs of life on Mars? New research says look for the element vanadium**](#) [周四, 21 9月 23:06]

A new article suggests NASA and others hunting for proof of Martian biology in the form of 'microfossils' could use the element vanadium in combination with Raman spectroscopy to confirm traces of extraterrestrial life.

- [**Big herbivorous dinosaurs ate crustaceans as a side dish**](#) [周四, 21 9月 22:17]

Some big plant-eating dinosaurs roaming present-day Utah some 75 million years ago were slurping up crustaceans on the side, a behavior that may have been tied to reproductive activities, says a new study.

- [**Tiny Brazilian frogs are deaf to their own calls**](#) [周四, 21 9月 21:03]

Pumpkin toadlets, found on the leaf litter of Brazil's Atlantic forest, are among the smallest frogs in the world. Scientists have now discovered that two species of these tiny orange frogs cannot hear the sound of their own calls.

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- [**Solving the mystery of Pluto's giant blades of ice**](#)

[周五, 29 9月 03:24]

NASA's New Horizons mission revolutionized our knowledge of Pluto when it flew past that distant world in July 2015. Among its many discoveries were images of strange formations resembling giant knife blades of ice, whose origin had remained a mystery. Now, scientists have turned up a fascinating explanation for this "bladed terrain": the structures are made almost entirely of methane ice, and likely formed as a specific kind of erosion wore away their surfaces.

- [**Farthest active inbound comet yet seen**](#) [周五, 29 9月 03:23]

NASA's Hubble Space Telescope has photographed the farthest active inbound comet ever seen, at a whopping distance of 1.5 billion miles from the Sun (beyond Saturn's orbit). Slightly warmed by the remote Sun, it has already begun to develop an 80,000-mile-wide fuzzy cloud of dust, called a coma, enveloping a tiny, solid nucleus of frozen gas and dust. These observations represent the earliest signs of activity ever seen from a comet entering the solar system's planetary zone for the first time.

- [**Understanding connection between HIV transmission, racial/ethnic/geographical differences**](#) [周五, 29 9月 02:54]

The health effects of where people live, work, and interact are well documented, as are the value of neighborhood-level structural interventions designed to improve health. But place-based characteristics that contribute to disparities in HIV transmission and disease burden are poorly understood, possibly resulting in less-effective HIV risk reduction interventions and programming.

- [**Continental controls needed to maintain fightback against tree diseases**](#) [周五, 29 9月 02:21]

Tighter controls on timber and plant movements into Europe are necessary to prevent further disastrous effects of plant diseases, a new study of the ash-dieback pathogen advises.

- [**How molecular scissors cut in the right place**](#) [周五, 29 9月 02:21]

A research group has found out how CRISPR-Cas9 -- also known as 'molecular scissors' -- can search the genome for a specific DNA sequence. Cas9 already has many applications in biotechnology and is also expected to revolutionize medicine. The new research findings show how Cas9 can be improved to make the molecular scissors faster and more reliable.

- [**Protecting 'self-reactive' immune cells so they can fight melanoma**](#) [周五, 29 9月 02:21]

Researchers report on a potential new way to fight melanoma by blocking one of the immune system's checks and balances.

- [**Flexible new platform for high-performance electronics**](#) [周五, 29 9月 02:21]

A team of engineers has created the most functional flexible transistor in the world -- and with it, a fast, simple and inexpensive fabrication process that's easily scalable to the commercial level. It's an advance that could open the door to an increasingly interconnected world, enabling manufacturers to add 'smart,' wireless capabilities to any number of large or small products or objects -- like wearable sensors and computers for people and animals -- that curve, bend, stretch and move.

- [**Generating terahertz radiation from water makes 'the impossible, possible'**](#) [周五, 29 9月 02:21]

For nearly a decade, researchers have worked to solve a scientific puzzle that many in the research community believed to be impossible: producing terahertz waves -- a form of electromagnetic radiation in the far infrared frequency range -- from liquid water.

- [**Tsunami enabled hundreds of aquatic species to raft across Pacific**](#) [周五, 29 9月 02:21]

The 2011 Japanese tsunami set the stage for something unprecedented. For the first time in recorded history, scientists have detected entire communities of coastal species crossing the ocean by floating on makeshift rafts. Nearly 300 species have appeared on the shores of Hawaii and the US West Coast attached to tsunami debris, marine biologists discovered.

- [**Bed bugs attracted to dirty laundry**](#) [周五, 29 9月 02:20]

Bed bugs are attracted to dirty laundry, according to new research.

- [**Modern humans emerged more than 300,000 years ago new study suggests**](#) [周五, 29 9月 02:20]

A genomic analysis of ancient human remains from KwaZulu-Natal revealed that southern Africa has an important role to play in writing the history of humankind.

- [**Supersonic gas streams left over from the Big Bang drive massive black hole formation**](#) [周五, 29 9月 02:20]

A super-computer simulation by an international team of researchers has shown the formation of a rapidly growing star from supersonic gas streams in the early universe left over from the Big Bang. The star ends its life with catastrophic collapse to leave a black hole with a mass of 34,000 times that of the Sun.

- [**Perovskite solar cells reach record long-term stability, efficiency over 20 percent**](#) [周五, 29 9月 02:20]

Scientists have greatly improved the operational stability of perovskite

solar cells by introducing cuprous thiocyanate protected by a thin layer of reduced graphene oxide. Devices lost less than 5 percent performance when subjected to a crucial accelerated aging test during which they were exposed for more than 1,000 hours to full sunlight at 60°C.

- [**Summer could be one long heatwave if planet hits 2 degrees Celsius**](#) [周五, 29 9月 00:18]

New paper highlighting how heatwaves will change with every degree of global warming up to 5 degrees C. It finds tropical summers may be one continuous heatwave at 2 degrees C.

- [**Saber-toothed kittens may have been born with thicker bones than other contemporary cats**](#) [周五, 29 9月 00:17]

Saber-toothed kittens may have been born with thicker bones compared to other contemporary cats, but they have a similar pattern of bone development, according to a new study.

- [**Speedy urine test for amphetamines sends results via app**](#) [周五, 29 9月 00:17]

Researchers have developed a wireless sensor and a smartphone app that can detect the presence of speed in a drop of human urine in seconds. The prototype device is also portable enough to be worn as a bracelet, has unprecedented sensitivity for amphetamines with low risk for false-positive results, and costs about \$50 to produce.

- [**For boys at risk of psychopathy, laughter isn't so contagious**](#) [周五, 29 9月 00:17]

For most people, laughter is highly contagious. It's nearly impossible to hear or see someone laughing and not feel the urge to join in. But researchers have new evidence to show that boys at risk of developing psychopathy when they become adults don't have that same urge.

- [**Incurable childhood brain tumors split into 10 new diseases**](#) [周五, 29 9月 00:17]

Scientists have found that deadly childhood brain tumors are actually 10 different diseases that should each be diagnosed and treated based on

their specific genetic faults. The major new study has important implications for treatment, since personalizing care for each type of brain tumor is likely to be much more effective than grouping them all together as one.

- [**How brain develops before birth is tightly controlled by RNA modification**](#) [周五, 29 9月 00:17]

A chemical tag added to RNA during embryonic development regulates how the early brain grows. When this development goes awry, problems happen and may cause psychiatric disorders in people.

- [**How do we sense moonlight? Daylight? There's a cell for that**](#) [周五, 29 9月 00:17]

Neuroscientists describe an unexpected way that we sense the overall degree of illumination in our environment. They found that neurons in the retina of the eye divvy up the job, with particular neurons tuned to different ranges of light intensity.

- [**Uncovering why psoriasis recurs**](#) [周五, 29 9月 00:17]

New research helps address a longstanding question about the inflammatory skin condition psoriasis: Why do skin lesions that have resolved with therapy recur in the same locations after a patient stops using topical steroids?

- [**Necessity is indeed mother of invention, regardless of resources, study shows**](#) [周五, 29 9月 00:16]

People who live in extremely resource poor environments can also be highly innovative in a different way and provide benefits to a range of people through creative problem solving, research shows.

- [**Zinc can halt the growth of cancer cells, study says**](#) [周五, 29 9月 00:16]

Zinc supplements can significantly inhibit the proliferation of esophageal cancer cells, according to a new study.

- [**Fluorine-containing molecules from cell cultures**](#) [周五, 29 9月 00:16]

Natural organic compounds that contain fluorine are rare because living organisms -- with a few exceptions -- do not produce them. Scientists have now genetically engineered a microbial host for organofluorine metabolism, allowing it to produce a fluorinated intermediate known as a diketide. As reported, the diketide could then be used as a monomer for the in vivo production of fluorinated bioplastics.

- [**Nearly one in six new HIV diagnoses in Europe are among people over 50**](#) [周五, 29 9月 00:16]

A new study showed that while the rate of newly reported HIV cases in Europe remained steady in younger people between 2004 and 2015, it increased by 2 percent each year overall in older people. With around 30,000 newly diagnosed HIV infections reported each year over the last decade, the HIV epidemic remains a significant public health problem in the 31 countries of the European Union and European Economic Area.

- [**Highly virulent bacterium causes rampant caries in some children**](#) [周五, 29 9月 00:16]

Researchers have made a novel discovery connecting highly variant types of the caries bacterium *Streptococcus mutans* and their adhesive function to children with rampant caries and increased risk of dental caries.

- [**Popping bubbles: Surfactants have surprising effect on nanobubble stability**](#) [周五, 29 9月 00:16]

The stability of nanobubbles is well understood, but the mechanisms causing their eventual destabilization are still in question. Using molecular dynamics simulations, researchers explored the effect of surfactants -- components that lower surface tension -- on the stabilization of nanobubbles.

- [**Study provides first estimate of total US population with felony convictions**](#) [周五, 29 9月 00:16]

New research on the growth in the scope and scale of felony convictions finds that, as of 2010, 3 percent of the total US population and 15 percent of the African-American male population have served time in

prison. People with felony convictions more broadly account for 8 percent of the overall population and 33 percent of the African-American male population.

- [**In people with OCD, actions are at odds with beliefs**](#) [周五, 29 9月 00:16]

The repeated behaviors that characterize obsessive-compulsive disorder are a manifestation of an underlying brain dysfunction that is not yet well understood. Now, scientists report the use of a mathematical model that they say will help them get at the root of what causes OCD. They find that people with OCD develop an internal, accurate sense of how things work but do not use it to guide behavior.

- [**Tracking the body's mini-shuttles**](#) [周四, 28 9月 23:30]

The development of a new technique for labelling the body's own transporters -- exosomes -- could have long term benefits in the treatment of life-threatening medical conditions, including cancer.

- [**Fever during labor may present risk to mother**](#) [周四, 28 9月 23:30]

A new study finds a link between the duration of fever during labor and maternal complications.

- [**Don't rely on mixed messages to change health behaviors**](#) [周四, 28 9月 23:30]

Self-improvement messages to lose weight, quit smoking or eat more fruits and vegetables can fall on deaf ears if the intervention message is mixed, says new research.

- [**Parkinson's disease involves degeneration of the olfactory system**](#) [周四, 28 9月 23:30]

Scientists discover the anatomical link for the loss of smell in Parkinson's disease.

- [**How do zebrafish develop their stripes?**](#) [周四, 28 9月 22:31]

A mathematician has thrown new light on the longstanding mystery of how zebrafish develop the distinctive striped patterns on their skin.

[Driving speed affected when a driver's mind 'wanders'](#) [周四, 28 9月 22:30]

Research finds that driving speed fluctuates more when a driver's mind wanders from focusing on the act of driving - and that the outside environment influences how often a driver's mind wanders.

[Bursting with starbirth](#) [周四, 28 9月 22:12]

This oddly shaped galactic spectacle is bursting with brand new stars. The pink fireworks in this image taken with the NASA/ESA Hubble Space Telescope are regions of intense star formation, triggered by a cosmic-scale collision. The huge galaxy in this image, NGC 4490, has a smaller galaxy in its gravitational grip and is feeling the strain.

[Scientists create endocytosis on demand by 'hotwiring' cells](#) [周四, 28 9月 22:12]

A solution to the problem of creating endocytosis on demand is being compared to 'hotwiring' a car. A team has managed to trigger clathrin-mediated endocytosis in the lab.

[Small scale energy harvesters show large scale impact](#) [周四, 28 9月 22:12]

The production of nano-scale devices has drastically increased with the rise in technological applications, yet a major drawback to the functionality of nano-sized systems is the need for an equally small energy resource. To address this, researchers have been modeling new piezoelectric energy harvester technology at the nano-scale level.

[Abusive bosses experience short-lived benefits](#) [周四, 28 9月 22:12]

Being a jerk to your employees may actually improve your well-being, but only for a short while, suggests new research on abusive bosses.

[Medication that treats parasite infection also has anti-cancer effect](#) [周四, 28 9月 21:42]

Scientists report a new gene target, KPNB1, for treatment against epithelial ovarian cancer (EOC). EOC is the fifth leading cause of cancer-related deaths in women and has a particularly grim outlook

upon diagnosis. They also find that ivermectin exerts an anti-tumor effect on EOC cells by interacting with the KPNB1 gene. Because ivermectin is already approved to treat parasitic infections in patients, experiments for its effectiveness in an anti-cancer regimen is expected to significantly lower ...

- [**Mapping the Tasmanian tiger's mysterious loss from mainland**](#) [周四, 28 9月 21:42]

Ancient DNA extracted from fossil bones and museum specimens has shed new light on the mysterious loss of the Tasmanian tiger (thylacine) from Australia's mainland.

- [**Did rapid sea-level rise drown fossil coral reefs around Hawaii?**](#) [周四, 28 9月 21:42]

Investigations to predict changes in sea levels and their impacts on coastal systems are a step closer, as a result of a new international collaboration.

- [**Women with suspected HPV adverse effects more often suffered from psychiatric disorders**](#) [周四, 28 9月 21:42]

New research shows that women who are referred to an HPV center more often have had psychiatric medicine prescribed or been hospitalized for psychiatric conditions up to five years before they received the vaccine.

- [**Biodegradable microsensors for food monitoring**](#) [周四, 28 9月 21:42]

A new generation of microsensors could provide the vital link between food products and the Internet of Things. Researchers have developed an ultra-thin temperature sensor that is both biocompatible and biodegradable.

- [**Chimpanzees can learn how to use tools without observing others**](#) [周四, 28 9月 21:42]

New observations have led researchers to believe that chimpanzees can use tools spontaneously to solve a task, without needing to watch others first.

- [**Large earthquakes along Olympic Mountain faults, Washington State, USA**](#) [周四, 28 9月 21:42]

A comprehensive study of faults along the north side of the Olympic Mountains of Washington State emphasizes the substantial seismic hazard to the northern Puget Lowland region. The study examined the Lake Creek-Boundary Creek and Sadie Creek faults along the north flank the Olympic Mountains, and concludes that there were three to five large, surface-rupturing earthquakes along the faults within the last 13,000 years.

- [**Answer to young people's persistent sleep problems**](#) [周四, 28 9月 21:41]

A collaborative research project indicates high rates of sleep problems continuing through teenage years and into early adulthood -- but also suggests a natural remedy.

- [**Making surgical screws from bones**](#) [周四, 28 9月 20:51]

Biomechanics are developing surgical screws from donated human bone material for foot and jaw surgery together with an Austrian start-up.

- [**Non-toxic flame retardant enters market, study suggests**](#) [周四, 28 9月 20:51]

Chemists have developed and patented an environmentally friendly way to produce flame retardants for foams that can be used in mattresses and upholstery. Unlike previous flame retardants made of chemicals containing chlorine, the new material is non-toxic and effective, researchers say.

- [**Delayed diagnosis, not gender, affects women's treatment for heart disease**](#) [周四, 28 9月 20:51]

Women with heart disease typically receive less complete surgical revascularization with arterial grafts than men do, but not because of gender bias. Instead, factors such as delayed diagnosis of coronary artery disease (CAD) in women may contribute to the differences in treatment, according to a new study.

Solving the mystery of Pluto's giant blades of ice -- ScienceDaily

NASA's New Horizons mission revolutionized our knowledge of Pluto when it flew past that distant world in July 2015. Among its many discoveries were images of strange formations resembling giant knife blades of ice, whose origin had remained a mystery.

Now, scientists have turned up a fascinating explanation for this "bladed terrain": the structures are made almost entirely of methane ice, and likely formed as a specific kind of erosion wore away their surfaces, leaving dramatic crests and sharp divides.

These jagged geological ridges are found at the highest altitudes on Pluto's surface, near its equator, and can soar many hundreds of feet into the sky -- as high as a New York City skyscraper. They are one of the most puzzling feature types on Pluto, and it now appears the blades are related to Pluto's complex climate and geological history.

A team led by New Horizons team member Jeffrey

Moore, a research scientist at NASA's Ames Research Center in California's Silicon Valley, has determined that formation of the bladed terrain begins with methane freezing out of the atmosphere at extreme altitudes on Pluto, in the same way frost freezes on the ground on Earth, or even in your freezer.

"When we realized that bladed terrain consists of tall deposits of methane ice, we asked ourselves why it forms all of these ridges, as opposed to just being big blobs of ice on the ground," said Moore. "It turns out that Pluto undergoes climate variation and sometimes, when Pluto is a little warmer, the methane ice begins to basically 'evaporate' away."

Scientists use the term "sublimation" for this process where ice transforms directly into gas, skipping over the intermediate liquid form.

Similar structures can be found in high-altitude snowfields along Earth's equator, though on a very different scale than the blades on Pluto. The terrestrial structures, called penitentes, are snow formations just a few meters high, with striking similarities to the vastly larger bladed terrain on Pluto. Their spiky texture also forms through sublimation.

This erosion of Pluto's bladed terrain indicates that its climate has undergone changes over long periods of time -- on a scale of millions of years -- that cause this ongoing geological activity. Early climatic conditions allowed methane to freeze out onto high elevation surfaces, but, as time progressed, these conditions changed, causing the ice to "burn off" into a gas.

As a result of this discovery, we now know that the surface and air of Pluto are apparently far more dynamic than previously thought. The results have just been published in *Icarus*, an international journal of planetary science.

Mapping Pluto's Surface

Identifying the nature of the exotic bladed terrain also brings us a step closer to understanding the global topography of Pluto. The New Horizons spacecraft provided spectacular, high-resolution data about one side of Pluto, called the encounter hemisphere, and observed the other side of Pluto at lower resolution.

Since methane has now been linked to high elevations, researchers can use data that indicates where methane is present around Pluto's globe to infer which locations

are at higher altitudes. This provides an opportunity to map out altitudes of some parts of Pluto's surface not captured in high resolution, where bladed terrains also appear to exist.

Though the detailed coverage of Pluto's bladed terrain covers only a small area, NASA researchers and their collaborators have been able to conclude from several types of data that these sharp ridges may be a widespread feature on Pluto's so-called "far side," helping to develop a working understanding of Pluto's global geography, its present and its past.

Story Source:

[Materials](#) provided by [NASA](#). Original written by Frank Tavares, NASA's Ames Research Center. *Note: Content may be edited for style and length.*

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Farthest active inbound comet yet seen -- ScienceDaily

NASA's Hubble Space Telescope has photographed the farthest active inbound comet ever seen, at a whopping distance of 1.5 billion miles from the Sun (beyond Saturn's orbit). Slightly warmed by the remote Sun, it has already begun to develop an 80,000-mile-wide fuzzy cloud of dust, called a coma, enveloping a tiny, solid nucleus of frozen gas and dust. These observations represent the earliest signs of activity ever seen from a comet entering the solar system's planetary zone for the first time.

The comet, called C/2017 K2 (PANSTARRS) or "K2," has been travelling for millions of years from its home in the frigid outer reaches of the solar system, where the temperature is about minus 440 degrees Fahrenheit. The comet's orbit indicates that it came from the Oort Cloud, a spherical region almost a light-year in diameter and thought to contain hundreds of billions of comets. Comets are the icy leftovers from the formation of the solar system 4.6 billion years ago and

therefore pristine in icy composition.

"K2 is so far from the Sun and so cold, we know for sure that the activity -- all the fuzzy stuff making it look like a comet -- is not produced, as in other comets, by the evaporation of water ice," said lead researcher David Jewitt of the University of California, Los Angeles. "Instead, we think the activity is due to the sublimation [a solid changing directly into a gas] of super-volatiles as K2 makes its maiden entry into the solar system's planetary zone. That's why it's special. This comet is so far away and so incredibly cold that water ice there is frozen like a rock."

Based on the Hubble observations of K2's coma, Jewitt suggests that sunlight is heating frozen volatile gases -- such as oxygen, nitrogen, carbon dioxide, and carbon monoxide -- that coat the comet's frigid surface. These icy volatiles lift off from the comet and release dust, forming the coma. Past studies of the composition of comets near the Sun have revealed the same mixture of volatile ices.

"I think these volatiles are spread all through K2, and in the beginning billions of years ago, they were probably all through every comet presently in the Oort

Cloud," Jewitt said. "But the volatiles on the surface are the ones that absorb the heat from the Sun, so, in a sense, the comet is shedding its outer skin. Most comets are discovered much closer to the Sun, near Jupiter's orbit, so by the time we see them, these surface volatiles have already been baked off. That's why I think K2 is the most primitive comet we've seen."

K2 was discovered in May 2017 by the Panoramic Survey Telescope and Rapid Response System (Pan-STARRS) in Hawaii, a survey project of NASA's Near-Earth Object Observations Program. Jewitt used Hubble's Wide Field Camera 3 at the end of June to take a closer look at the icy visitor.

Hubble's sharp "eye" revealed the extent of the coma and also helped Jewitt estimate the size of the nucleus - - less than 12 miles across -- though the tenuous coma is 10 Earth diameters across.

This vast coma must have formed when the comet was even farther away from the Sun. Digging through archival images, Jewitt's team uncovered views of K2 and its fuzzy coma taken in 2013 by the Canada-France-Hawaii Telescope (CFHT) in Hawaii. But the

object was then so faint that no one noticed it.

"We think the comet has been continuously active for at least four years," Jewitt said. "In the CFHT data, K2 had a coma already at 2 billion miles from the Sun, when it was between the orbits of Uranus and Neptune. It was already active, and I think it has been continuously active coming in. As it approaches the Sun, it's getting warmer and warmer, and the activity is ramping up."

But, curiously, the Hubble images do not show a tail flowing from K2, which is a signature of comets. The absence of such a feature indicates that particles lifting off the comet are too large for radiation pressure from the Sun to sweep them back into a tail.

Astronomers will have plenty of time to conduct detailed studies of K2. For the next five years, the comet will continue its journey into the inner solar system before it reaches its closest approach to the Sun in 2022 just beyond Mars' orbit. "We will be able to monitor for the first time the developing activity of a comet falling in from the Oort Cloud over an extraordinary range of distances," Jewitt said. "It should become more and more active as it nears the

Sun and presumably will form a tail."

Jewitt said that NASA's James Webb Space Telescope, an infrared observatory scheduled to launch in 2018, could measure the heat from the nucleus, which would give astronomers a more accurate estimate of its size.

The team's results will appear in the September 28 issue of *The Astrophysical Journal Letters*.

The Hubble Space Telescope is a project of international cooperation between NASA and ESA (European Space Agency). NASA's Goddard Space Flight Center in Greenbelt, Maryland, manages the telescope. The Space Telescope Science Institute (STScI) in Baltimore, Maryland, conducts Hubble science operations. STScI is operated for NASA by the Association of Universities for Research in Astronomy, Inc., in Washington, D.C.

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Understanding connection between HIV transmission, racial/ethnic/geographical differences - - ScienceDaily

The health effects of where people live, work, and interact are well documented, as are the value of neighborhood-level structural interventions designed to improve health. But place-based characteristics that contribute to disparities in HIV transmission and disease burden are poorly understood, possibly resulting in less-effective HIV risk reduction interventions and programming.

A new study from the University of Pennsylvania School of Nursing (Penn Nursing) is helping to better understand the contextual social and structural factors that drive disparate HIV/AIDS rates and how place-based interventions can be more effective in fighting the HIV/AIDS pandemic.

The 22-month pilot study -- recently published in the *Journal of Urban Health* -- explored racial/ethnic and

geographic differences in mode of HIV transmission in Philadelphia, an urban HIV epicenter. Data indicated that certain geographic locations appear to have different modes of transmission profiles, with nuanced differences by gender and race/ethnicity.

"Underlying geographical factors that contribute to disparities in HIV transmission and disease burden are poorly understood," explains Bridgette M. Brawner, PhD, APRN, Assistant Professor of Nursing, and the lead author of the study. "'One size' does not fit all for individual-level interventions; the same is true in disproportionately affected neighborhoods, particularly when risk profiles differ by neighborhood characteristics and population demographics. The data generated from this research support a much needed paradigm shift to acknowledge the role negative social and structural factors like limited social cohesion, inadequate health-related resources and poverty have on the HIV/AIDS pandemic. The findings will also better inform the development of neighborhood-level structural interventions to address HIV/AIDS in overly burdened communities."

Story Source:

Materials provided by **University of Pennsylvania School of Nursing**. *Note: Content may be edited for style and length.*

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Continental controls needed to maintain fightback against tree diseases: New research calls for tighter controls to fight tree disease epidemics -- ScienceDaily

Tighter controls on timber and plant movements into Europe are necessary to prevent further disastrous effects of plant diseases, a new study of the ash-dieback pathogen advises.

The call to action follows detailed investigations carried out in British woodlands into the population makeup of the *Hymenoscyphus fraxineus* fungus that causes ash dieback.

While the findings bring some hope for the future of ash tree populations in Great Britain and continental Europe, the authors warn that further introductions of variants of the fungus from its native East Asia must be prevented.

Professor James Brown from the John Innes Centre,

one of the authors of the peer review paper in the journal *Plant Pathology*, said: "What this study shows is that once the ash dieback fungus arrived in Europe, it spread to Britain both by wind-borne spores and by trade in plants. Other alien diseases could spread in the same way. Because of this, disease control must operate on a European scale. Above all, we should prevent diseased plants getting into Europe."

The research team from the John Innes Centre and Forest Research carried out genetic tests on fungal samples found on ash leaves and stems collected from infected woodlands in England and Wales.

Three of the woodland study sites in Norfolk, Suffolk and Kent in the east of England contained ash populations believed to have been infected by windborne fungal spores that travelled from diseased woodlands in continental Europe.

Two further English sites, in Devon, Derbyshire and one in Carmarthenshire, Wales, were selected because they were presumed be infected from ash trees planted in the last 10-20 years from nursery stock from continental Europe.

The aim of the research was to determine if the mode of arrival of the fungus had an impact on the genetic diversity of fungal populations and how they were adapting to local population of ash.

A range of lab and field techniques revealed that numerous infections had established many strains of the pathogenic fungus at each location. There was considerable genetic diversity within pathogen populations in all the sites, regardless of mode of arrival.

The genetic diversity found in European populations of the fungus had been transferred to all the British woodlands, whether they had been introduced as windborne spores or on imported nursery stock. This genetic diversity is, surprisingly, a positive sign for the future of ash because it allows natural selection to operate within populations of the fungus. The pathogen is expected to gradually evolve over successive life cycles to adapt to the tree rather than killing it.

"What we expect in the long run is that the ash and the fungi will reach equilibrium -- a kind of armed stand-off, and the fungus will merge into the background as a parasite of only moderate importance," said Professor

Brown.

But the study warns that this prospect is based upon the present make-up of the population in Britain and continental Europe. The danger is that new arrivals from East Asia of more genetically diverse strains of the pathogen could be disastrous for European ash.

"It's strongly suspected that ash dieback disease was imported by timber movements from East Asia. Transport of plant material between countries carries a real risk of spreading disease," said Professor Brown.

This study has implications for timber and plant trade within Europe, "We have to be more rigorous about trade between European countries once it is known that a disease is in the source country. It would not stop spread of the disease but it would certainly slow it down," says Professor Brown,

Dr Elizabeth Orton, a post-doctoral scientist at the John Innes Centre and lead author on the paper, recommends the creation of nurseries containing trees with diverse resistance to the ash dieback pathogen. Nurseries like these would allow the trees to breed together to produce seed that can be distributed to

bolster resistance throughout the UK.

Story Source:

Materials provided by [John Innes Centre](#). *Note: Content may be edited for style and length.*

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How molecular scissors cut in the right place -- ScienceDaily

A research group at Uppsala University has found out how CRISPR-Cas9 -- also known as 'molecular scissors' -- can search the genome for a specific DNA sequence. Cas9 already has many applications in biotechnology and is also expected to revolutionise medicine. The new research findings show how Cas9 can be improved to make the molecular scissors faster and more reliable. The study is being published in *Science*.

In less than a decade, CRISPR-Cas9 has revolutionised biological research. Cas9 makes it possible, for specific purposes, to correct or modify ('edit') essentially any DNA sequence. The hope is that the genetic scissors will also enable genetic diseases to be cured and prevented.

The exciting aspect of Cas9 is that the molecule can be programmed with a piece of artificial genetic code, which can then be made to seek out the corresponding sequence in the genome. A research group at Uppsala

University has now discovered how Cas9 finds the right sequence.

'Most proteins that search DNA code can recognise one specific sequence merely by sensing the outside of the DNA double helix. Cas9 can search for an arbitrary code, but to determine whether it is in the right place the molecule has to open the double DNA helix and compare the sequence with the programmed code. The incredible thing is that it can still search the entire genome without using any energy,' says Johan Elf, who is in charge of the study.

The researchers have developed two new methods to measure how long Cas9 takes to find its target sequence. The first method showed that it takes as long as six hours for Cas9 to search a bacterium, i.e. through four million base pairs. This somewhat unlikely result was also verifiable by means of the second, independent technique. The time found also tallies with the number of milliseconds Cas9 has available for testing every position, which the researchers were able to measure by following labelled Cas9 molecules in real time.

'The results show that the price Cas9 pays for its

flexibility is time. To find the target faster, more Cas9 molecules searching for the same DNA sequence are needed,' says Johan Elf.

The very high concentrations of Cas9 that are necessary for finding the right sequence within a reasonable time frame can pose severe problems for the cells that scientists try to alternate. But since the nature of the search process is now understood, an important clue as to how the system can be improved has been found. By sacrificing a portion of Cas9's flexibility, it would be possible to design genetic scissors that are still sufficiently versatile to edit various genes but simultaneously fast enough to be medically usable.

'The results have given us clues on how we might achieve that kind of solution,' Elf says. 'The key is in what are known as the "PAM sequences," which determine where and how often Cas9 opens up the DNA double helix. Molecular scissors that do not need to open the helix as many times to find their target are not only faster but would also reduce the risk of side-effects.'

Story Source:

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All Top News

Top science stories featured on ScienceDaily's home page.

- [**Solving the mystery of Pluto's giant blades of ice**](#)

[周五, 29 9月 03:24]

NASA's New Horizons mission revolutionized our knowledge of Pluto when it flew past that distant world in July 2015. Among its many discoveries were images of strange formations resembling giant knife blades of ice, whose origin had remained a mystery. Now, scientists have turned up a fascinating explanation for this "bladed terrain": the structures are made almost entirely of methane ice, and likely formed as a specific kind of erosion wore away their surfaces.

- [**Farthest active inbound comet yet seen**](#) [周五, 29 9月 03:23]

NASA's Hubble Space Telescope has photographed the farthest active inbound comet ever seen, at a whopping distance of 1.5 billion miles from the Sun (beyond Saturn's orbit). Slightly warmed by the remote Sun, it has already begun to develop an 80,000-mile-wide fuzzy cloud of dust, called a coma, enveloping a tiny, solid nucleus of frozen gas and dust. These observations represent the earliest signs of activity ever seen from a comet entering the solar system's planetary zone for the first time.

- [**Tsunami enabled hundreds of aquatic species to raft across Pacific**](#) [周五, 29 9月 02:21]

The 2011 Japanese tsunami set the stage for something unprecedented. For the first time in recorded history, scientists have detected entire communities of coastal species crossing the ocean by floating on makeshift rafts. Nearly 300 species have appeared on the shores of Hawaii and the US West Coast attached to tsunami debris, marine biologists discovered.

- [**Modern humans emerged more than 300,000 years ago new study suggests**](#) [周五, 29 9月 02:20]

A genomic analysis of ancient human remains from KwaZulu-Natal revealed that southern Africa has an important role to play in writing the history of humankind.

- [**Supersonic gas streams left over from the Big Bang drive massive black hole formation**](#) [周五, 29 9月 02:20]

A super-computer simulation by an international team of researchers has shown the formation of a rapidly growing star from supersonic gas streams in the early universe left over from the Big Bang. The star ends its life with catastrophic collapse to leave a black hole with a mass of 34,000 times that of the Sun.

- [**Perovskite solar cells reach record long-term stability, efficiency over 20 percent**](#) [周五, 29 9月 02:20]

Scientists have greatly improved the operational stability of perovskite solar cells by introducing cuprous thiocyanate protected by a thin layer of reduced graphene oxide. Devices lost less than 5 percent performance when subjected to a crucial accelerated aging test during which they were exposed for more than 1,000 hours to full sunlight at 60°C.

- [**Summer could be one long heatwave if planet hits 2 degrees Celsius**](#) [周五, 29 9月 00:18]

New paper highlighting how heatwaves will change with every degree of global warming up to 5 degrees C. It finds tropical summers may be one continuous heatwave at 2 degrees C.

- [**Saber-toothed kittens may have been born with thicker bones than other contemporary cats**](#) [周五, 29 9月 00:17]

Saber-toothed kittens may have been born with thicker bones compared to other contemporary cats, but they have a similar pattern of bone development, according to a new study.

- [**Chimpanzees can learn how to use tools without**](#)

[observing others](#) [周四, 28 9月 21:42]

New observations have led researchers to believe that chimpanzees can use tools spontaneously to solve a task, without needing to watch others first.

• [The hormone that could be making your dog aggressive discovered](#) [周四, 28 9月 04:20]

Thousands of people are hospitalized every year for dog bites, and aggressive behavior is a major reason dogs end up in shelters. Biologists have studied the biology behind canine aggression, specifically the role of the hormones vasopressin and oxytocin.

• [Black holes with ravenous appetites define Type I active galaxies](#) [周四, 28 9月 01:36]

Type I and Type II active galaxies do not just appear different -- they are, in fact, very different from each other, both structurally and energetically, new research shows. According to the results of a new study, the key factor that distinguishes Type I and Type II galaxies is the rate at which their central black holes -- or active galactic nuclei -- consume matter and spit out energy.

• [New light shed on how Earth and Mars were created](#) [周四, 28 9月 01:36]

Analysing a mixture of earth samples and meteorites, scientists have shed new light on the sequence of events that led to the creation of the planets Earth and Mars.

• [The volatile processes that shaped Earth](#) [周四, 28 9月 01:36]

Although it is widely understood that Earth was formed gradually, from much smaller bodies, many of the processes involved in shaping our growing planet are less clear. Astronomers have now untangled some of these processes, revealing that the mini-planets added to Earth had previously undergone melting and evaporation. They also address another scientific conundrum: Earth's depletion in many economically important chemical elements.

- [**LIGO and Virgo observatories jointly detect black hole collision**](#) [周四, 28 9月 00:36]

The first observation of gravitational waves has been discovered by by three different detectors, marking a new era of greater insights and improved localization of cosmic events now available through globally networked gravitational-wave observatories.

- [**Emerging infectious disease threatens Darwin's frog with extinction**](#) [周三, 27 9月 22:09]

Iconic species likely to be wiped-out by amphibian fungus, despite lack of obvious short-term evidence.

- [**Geographic variation in Gentoo penguin calls**](#) [周三, 27 9月 21:33]

Vocal communication is central to the lives of many birds, which use sound to attract mates and defend territories. Penguins are no exception, but we know little about how or why penguin vocalizations vary between isolated populations. A new study takes a broad look at vocalizations across the range of Gentoo penguins and concludes that while their calls do vary from place to place, we still have lots to learn about the processes at work.

- [**Songbird populations may indicate trouble in northwestern forests**](#) [周三, 27 9月 21:33]

Populations of many North American songbirds are declining, and in many cases we don't understand why. Conservation efforts need this information to be effective, and bird banding stations can help fill in the gaps, providing insights into how demographics vary across space and time. A new study presents ten years of data from banding stations across northern California and southern Oregon and offers new hints on what's driving changes in the region's songbird populations.

- [**Tree-dwelling, coconut-cracking giant rat discovered in Solomon Islands**](#) [周三, 27 9月 21:33]

Scientists have discovered a new species of giant rat. It's more than four times the size of the black rats that live in the US, it lives in trees, and

it's rumored to crack open coconuts with its teeth. And it's actually pretty cute.

- [**Lost continent of Zealandia: Scientists return from expedition to sunken land**](#) [周三, 27 9月 11:59]

After a nine-week voyage to study the lost, submerged continent of in the South Pacific, a team of 32 scientists from 12 countries has arrived in Hobart, Tasmania, aboard the research vessel JOIDES Resolution.

- [**Caribbean praying mantises have ancient African origin**](#) [周三, 27 9月 11:59]

Three seemingly unrelated praying mantis groups inhabiting Cuba and the rest of the Greater Antilles actually share an ancient African ancestor and possibly form the oldest endemic animal lineage on the Caribbean islands, researchers have determined.

- [**Umbilical cord stem cells show promise as heart failure treatment**](#) [周三, 27 9月 04:23]

Intravenous stem cell infusion derived from umbilical cords appears to boost heart muscle function in patients with heart failure, according to a small study. In this first-of-its-kind study, patients had 'significant' improvement in their hearts' ability to pump blood and experienced no adverse side effects related to the therapy. The results suggest IV-infused umbilical cord-derived stem cells are a promising avenue to treat heart failure.

- [**Energy harvested from evaporation could power much of US**](#) [周三, 27 9月 00:51]

In the first evaluation of evaporation as a renewable energy source, researchers find that US lakes and reservoirs could generate 325 gigawatts of power, nearly 70 percent of what the United States currently produces.

- [**Amount of water in stem cells can determine its fate as fat or bone**](#) [周三, 27 9月 00:51]

Adding or removing water from a stem cell can change the destiny of

the cell to either pre-fat cells or pre-bone cells, researchers have discovered in a new study.

- [**Wearable solar thermoelectric generator created**](#)

[周二, 26 9月 22:55]

Engineers have introduced a new advanced energy harvesting system, capable of generating electricity by simply being attached to clothes, windows, and outer walls of a building.

- [**Cartography of the Cosmos**](#) [周二, 26 9月 21:16]

There are hundreds of billions of stars in our own Milky Way galaxy, interspersed with all manner of matter, from the dark to the sublime. This is the universe that one group of researchers is trying to reconstruct, structure by structure, combining telescope surveys with next-generation data analysis and simulation techniques currently being primed for exascale computing.

- [**Pigeons better at multitasking than humans**](#) [周二, 26 9月 21:05]

Pigeons are capable of switching between two tasks as quickly as humans -- and even more quickly in certain situations. These are the findings of biopsychologists who had performed the same behavioral experiments to test birds and humans. The authors hypothesize that the cause of the slight multitasking advantage in birds is their higher neuronal density.

- [**After 15 years in a vegetative state, nerve stimulation restores consciousness**](#) [周二, 26 9月 01:29]

A 35-year-old man who had been in a vegetative state for 15 years after a car accident has shown signs of consciousness after neurosurgeons implanted a vagus nerve stimulator into his chest. The findings show that vagus nerve stimulation (VNS) -- a treatment already in use for epilepsy and depression--can help to restore consciousness even after many years in a vegetative state.

- [**Antibody protects against Zika and dengue, mouse study shows**](#) [周二, 26 9月 01:29]

The same countries hard hit by Zika virus -- which can cause brain

damage in babies infected before birth -- are also home to dengue virus. Researchers now report that they have found an antibody that protects against both viruses. These findings, in mice, could be a step towards an antibody-based preventative drug to protect fetuses from brain damage, while also protecting their mothers from both Zika and dengue disease.

- [**Lava tubes: Hidden sites for future human habitats on the Moon and Mars**](#) [周一, 25 9月 23:28]

Lava tubes, underground caves created by volcanic activity, could provide protected habitats large enough to house streets on Mars or even towns on the Moon, according to new research. A further study shows how the next generation of lunar orbiters will be able to use radar to locate these structures under the Moon's surface.

- [**Visual attention drawn to meaning, not what stands out**](#) [周一, 25 9月 23:13]

Our visual attention is drawn to parts of a scene that have meaning, rather than to those that are salient or 'stick out,' according to new research. The findings overturn the widely held model of visual attention.

- [**Panda habitat shrinking, becoming more fragmented**](#) [周一, 25 9月 23:13]

Using remote sensing data, Chinese and US scientists have re-assessed the conservation status of the giant panda. Their analysis shows that while panda numbers are increasing, their habitat still covers less area and is more fragmented than it was in 1988, when the species was listed as endangered on the IUCN Red List.

- [**Child abuse affects brain wiring**](#) [周一, 25 9月 23:13]

For the first time, researchers have been able to see changes in the neural structures in specific areas of the brains of people who suffered severe abuse as children. The researchers believe that these changes may contribute to the emergence of depressive disorders and suicidal behavior.

- [**Genes are controlled by 'Nano footballs,'**](#)

scientists discover [周一, 25 9月 23:12]

Genes are controlled by 'nano footballs' -- structures that look like footballs but 10 million times smaller than the average ball -- new research has revealed.

Brain damage in fish from plastic nanoparticles in water [周一, 25 9月 22:47]

A new study shows that plastic particles in water may end up inside fish brains. The plastic can cause brain damage, which is the likely cause of behavioral disorders observed in the fish.

Brain guides body much sooner than previously believed [周一, 25 9月 21:54]

The brain plays an active role much earlier than previously thought. Long before movement or other behaviors occur, the nascent brain of an embryonic frog instructs normal muscle and nerve patterning and protects the embryo from agents that cause developmental defects. In addition to identifying these essential functions for the first time, researchers successfully rescued defects caused by lack of a brain by using widely available, human-approved drugs.

Winter cold extremes linked to high-altitude polar vortex weakening [周五, 22 9月 21:40]

When the strong winds that circle the Arctic slacken, cold polar air can escape and cause extreme winter chills in parts of the Northern hemisphere. A new study finds that these weak states have become more persistent over the past four decades and can be linked to cold winters in Russia and Europe.

Flint's water crisis led to fewer babies and higher fetal death rates, researchers find [周五, 22 9月 21:16]

An estimated 275 fewer children were born in Flint, Michigan, while the city was using lead-contaminated water from the Flint River, according to new research findings.

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

- [**Understanding connection between HIV transmission, racial/ethnic/geographical differences**](#) [周五, 29 9月 02:54]

The health effects of where people live, work, and interact are well documented, as are the value of neighborhood-level structural interventions designed to improve health. But place-based characteristics that contribute to disparities in HIV transmission and disease burden are poorly understood, possibly resulting in less-effective HIV risk reduction interventions and programming.

- [**How molecular scissors cut in the right place**](#) [周五, 29 9月 02:21]

A research group has found out how CRISPR-Cas9 -- also known as 'molecular scissors' -- can search the genome for a specific DNA sequence. Cas9 already has many applications in biotechnology and is also expected to revolutionize medicine. The new research findings show how Cas9 can be improved to make the molecular scissors faster and more reliable.

- [**Protecting 'self-reactive' immune cells so they can fight melanoma**](#) [周五, 29 9月 02:21]

Researchers report on a potential new way to fight melanoma by blocking one of the immune system's checks and balances.

- [**Bed bugs attracted to dirty laundry**](#) [周五, 29 9月 02:20]

Bed bugs are attracted to dirty laundry, according to new research.

- [**Speedy urine test for amphetamines sends**](#)

[results via app](#) [周五, 29 9月 00:17]

Researchers have developed a wireless sensor and a smartphone app that can detect the presence of speed in a drop of human urine in seconds. The prototype device is also portable enough to be worn as a bracelet, has unprecedented sensitivity for amphetamines with low risk for false-positive results, and costs about \$50 to produce.

[For boys at risk of psychopathy, laughter isn't so contagious](#) [周五, 29 9月 00:17]

For most people, laughter is highly contagious. It's nearly impossible to hear or see someone laughing and not feel the urge to join in. But researchers have new evidence to show that boys at risk of developing psychopathy when they become adults don't have that same urge.

[Incurable childhood brain tumors split into 10 new diseases](#) [周五, 29 9月 00:17]

Scientists have found that deadly childhood brain tumors are actually 10 different diseases that should each be diagnosed and treated based on their specific genetic faults. The major new study has important implications for treatment, since personalizing care for each type of brain tumor is likely to be much more effective than grouping them all together as one.

[How brain develops before birth is tightly controlled by RNA modification](#) [周五, 29 9月 00:17]

A chemical tag added to RNA during embryonic development regulates how the early brain grows. When this development goes awry, problems happen and may cause psychiatric disorders in people.

[How do we sense moonlight? Daylight? There's a cell for that](#) [周五, 29 9月 00:17]

Neuroscientists describe an unexpected way that we sense the overall degree of illumination in our environment. They found that neurons in the retina of the eye divvy up the job, with particular neurons tuned to different ranges of light intensity.

- [**Uncovering why psoriasis recurs**](#) [周五, 29 9月 00:17]

New research helps address a longstanding question about the inflammatory skin condition psoriasis: Why do skin lesions that have resolved with therapy recur in the same locations after a patient stops using topical steroids?

- [**Necessity is indeed mother of invention, regardless of resources, study shows**](#) [周五, 29 9月 00:16]

People who live in extremely resource poor environments can also be highly innovative in a different way and provide benefits to a range of people through creative problem solving, research shows.

- [**Zinc can halt the growth of cancer cells, study says**](#) [周五, 29 9月 00:16]

Zinc supplements can significantly inhibit the proliferation of esophageal cancer cells, according to a new study.

- [**Nearly one in six new HIV diagnoses in Europe are among people over 50**](#) [周五, 29 9月 00:16]

A new study showed that while the rate of newly reported HIV cases in Europe remained steady in younger people between 2004 and 2015, it increased by 2 percent each year overall in older people. With around 30,000 newly diagnosed HIV infections reported each year over the last decade, the HIV epidemic remains a significant public health problem in the 31 countries of the European Union and European Economic Area.

- [**Highly virulent bacterium causes rampant caries in some children**](#) [周五, 29 9月 00:16]

Researchers have made a novel discovery connecting highly variant types of the caries bacterium *Streptococcus mutans* and their adhesive function to children with rampant caries and increased risk of dental caries.

- [**Study provides first estimate of total US population with felony convictions**](#) [周五, 29 9月 00:16]

New research on the growth in the scope and scale of felony convictions

finds that, as of 2010, 3 percent of the total US population and 15 percent of the African-American male population have served time in prison. People with felony convictions more broadly account for 8 percent of the overall population and 33 percent of the African-American male population.

- [**In people with OCD, actions are at odds with beliefs**](#) [周五, 29 9月 00:16]

The repeated behaviors that characterize obsessive-compulsive disorder are a manifestation of an underlying brain dysfunction that is not yet well understood. Now, scientists report the use of a mathematical model that they say will help them get at the root of what causes OCD. They find that people with OCD develop an internal, accurate sense of how things work but do not use it to guide behavior.

- [**Tracking the body's mini-shuttles**](#) [周四, 28 9月 23:30]

The development of a new technique for labelling the body's own transporters -- exosomes -- could have long term benefits in the treatment of life-threatening medical conditions, including cancer.

- [**Fever during labor may present risk to mother**](#) [周四, 28 9月 23:30]

A new study finds a link between the duration of fever during labor and maternal complications.

- [**Don't rely on mixed messages to change health behaviors**](#) [周四, 28 9月 23:30]

Self-improvement messages to lose weight, quit smoking or eat more fruits and vegetables can fall on deaf ears if the intervention message is mixed, says new research.

- [**Parkinson's disease involves degeneration of the olfactory system**](#) [周四, 28 9月 23:30]

Scientists discover the anatomical link for the loss of smell in Parkinson's disease.

- [**Driving speed affected when a driver's mind**](#)

'wanders' [周四, 28 9月 22:30]

Research finds that driving speed fluctuates more when a driver's mind wanders from focusing on the act of driving - and that the outside environment influences how often a driver's mind wanders.

Scientists create endocytosis on demand by 'hotwiring' cells [周四, 28 9月 22:12]

A solution to the problem of creating endocytosis on demand is being compared to 'hotwiring' a car. A team has managed to trigger clathrin-mediated endocytosis in the lab.

Abusive bosses experience short-lived benefits [周四, 28 9月 22:12]

Being a jerk to your employees may actually improve your well-being, but only for a short while, suggests new research on abusive bosses.

Medication that treats parasite infection also has anti-cancer effect [周四, 28 9月 21:42]

Scientists report a new gene target, KPNB1, for treatment against epithelial ovarian cancer (EOC). EOC is the fifth leading cause of cancer-related deaths in women and has a particularly grim outlook upon diagnosis. They also find that ivermectin exerts an anti-tumor effect on EOC cells by interacting with the KPNB1 gene. Because ivermectin is already approved to treat parasitic infections in patients, experiments for its effectiveness in an anti-cancer regimen is expected to significantly lower ...

Women with suspected HPV adverse effects more often suffered from psychiatric disorders [周四, 28 9月 21:42]

New research shows that women who are referred to an HPV center more often have had psychiatric medicine prescribed or been hospitalized for psychiatric conditions up to five years before they received the vaccine.

Answer to young people's persistent sleep problems [周四, 28 9月 21:41]

A collaborative research project indicates high rates of sleep problems continuing through teenage years and into early adulthood -- but also suggests a natural remedy.

- [**Making surgical screws from bones**](#) [周四, 28 9月 20:51]

Biomechanics are developing surgical screws from donated human bone material for foot and jaw surgery together with an Austrian start-up.

- [**Non-toxic flame retardant enters market, study suggests**](#) [周四, 28 9月 20:51]

Chemists have developed and patented an environmentally friendly way to produce flame retardants for foams that can be used in mattresses and upholstery. Unlike previous flame retardants made of chemicals containing chlorine, the new material is non-toxic and effective, researchers say.

- [**Delayed diagnosis, not gender, affects women's treatment for heart disease**](#) [周四, 28 9月 20:51]

Women with heart disease typically receive less complete surgical revascularization with arterial grafts than men do, but not because of gender bias. Instead, factors such as delayed diagnosis of coronary artery disease (CAD) in women may contribute to the differences in treatment, according to a new study.

- [**Self-esteem in kids: Lavish praise is not the answer, warmth is**](#) [周四, 28 9月 20:51]

How do children construct views of themselves and their place in the world? Children's social relationships turn out to be critical. For example, children develop higher self-esteem when their parents treat them warmly. But they develop lower self-esteem when their parents lavish them with inflated praise.

- [**Breakthrough in rapid, mass screening for the Ebola virus**](#) [周四, 28 9月 20:49]

A new, faster and safer way of diagnosing the Ebola virus has been developed.

- **[Intriguing link between sleep, cognition and schizophrenia identified](#)** [周四, 28 9月 20:47]

Many people with schizophrenia have trouble with learning and memory. A new study has found intriguing links between sleep, cognition and a compound called kynurenine. These links could illuminate the mechanism that causes cognitive problems among those with the disease, and could point the way to new treatments to reduce some of the disease's symptoms.

- **[Biology of mending a broken heart](#)** [周四, 28 9月 20:47]

Scientists might be on to a way to preserve heart function after heart attacks or for people with inherited heart defects called congenital cardiomyopathies. Researchers report that after simulating heart injury in laboratory mouse models, they stopped or slowed cardiac fibrosis, organ enlargement and preserved heart function by blocking a well-known molecular pathway.

- **[Secrets from inside the womb that could provide clues to miscarriage](#)** [周四, 28 9月 20:47]

The major structures of a baby's heart form in just four days, according to new research using the latest imaging techniques.

- **[Expectant mother's elevated blood pressure raises child's risk of obesity](#)** [周四, 28 9月 06:47]

When expectant mothers have elevated blood pressure during pregnancy, it may raise their children's risk of developing childhood obesity.

- **[No evidence to support claims that telephone consultations reduce GP workload or hospital referrals](#)** [周四, 28 9月 06:44]

Telephone consultations to determine whether a patient needs to see their GP face-to-face can deal with many problems, but a new study found no evidence to support claims by companies offering to manage these services or by NHS England that the approach saves money or

reduces the number of hospital referrals.

- [**Health and social care changes 'paving way for fewer services' warn experts**](#) [周四, 28 9月 06:44]

Current reforms to health and social care services, and radical redesign of the local government finance system, may signal the end of the NHS and local government in England as we know them, warn experts.

- [**Strong family ties improve employment options for people with childhood-onset disabilities**](#) [周四, 28 9月 06:43]

Family and close friends play an integral role in helping people with childhood-onset disabilities attain quality employment as adults, a new study has found.

- [**Move towards 'holy grail' of computing by creation of brain-like photonic microchips**](#) [周四, 28 9月 04:20]

Scientists have made a crucial step towards unlocking the 'holy grail' of computing -- microchips that mimic the way the human brain works to store and process information.

- [**That cup of coffee may not relieve Parkinson's symptoms**](#) [周四, 28 9月 04:20]

Contrary to previous research, caffeine may not relieve movement symptoms for people with Parkinson's disease, according to a study.

- [**Early 'full-term' babies may have poorer respiratory fitness through adolescence and young adulthood**](#) [周四, 28 9月 04:20]

Though considered full-term, babies born at 37-38 gestational weeks may be more likely than those born later to have poor cardiorespiratory fitness into young adulthood. These findings suggest scheduled caesarean sections or induced labor at lower gestational ages are concerning.

- [**High cost of truckers not having enough places**](#)

[to park and rest](#) [周四, 28 9月 04:20]

A pilot study illustrates the high economic cost of having too few safe places for commercial truck drivers to park and rest.

• [Nontraffic injuries and fatalities in young children](#) [周四, 28 9月 04:20]

From 1990-2014, researchers found more than 11,750 distinct incidents in a variety of venues and vehicles affecting 14,568 children 14 years and younger, resulting in nearly 3,400 deaths.

• [New test rapidly diagnoses Zika](#) [周四, 28 9月 04:20]

Researchers have developed a paper-based test that can diagnose Zika infection within 20 minutes. Unlike existing tests, the new diagnostic does not cross-react with Dengue virus, a close relative of the Zika virus that can produce false positives on many Zika tests.

• [New class of molecules may protect brain from stroke, neurodegenerative diseases](#) [周四, 28 9月 04:20]

Scientists have discovered a new class of molecules in the brain that synchronize cell-to-cell communication and neuroinflammation/immune activity in response to injury or diseases. Elovans (ELVs) are bioactive chemical messengers made from omega-3 very long chain polyunsaturated fatty acids (VLC-PUFAs,n-3). They are released on demand when cells are damaged or stressed.

• [Mini-protein rapid design method opens way to create a new class of drugs](#) [周四, 28 9月 04:20]

A high-speed method has been developed to generate many different, small, stable proteins from scratch, custom-designed to bind to specific therapeutic targets. Protection against infectious diseases, like flu, and antidotes to nerve toxins are but two research goals of this approach. The method rapidly originates thousands of new drug candidates. These computer-designed proteins, which did not previously exist in nature, combine the stability and bioavailability of small molecule drugs with the sp...

- [**Beer can lift your spirits due to malted barley ingredient**](#) [周四, 28 9月 03:28]

Visitors to the Oktoberfest have always known it and now it has been scientifically -- beer can lift your spirits. Scientists examined 13,000 food components to find out whether they stimulate the reward center in the brain and make people feel good. Hordenine which is found in malted barley and beer seems to do the job quite well.

- [**Haplobank: A biobank of reversible mutant embryonic stem cells**](#) [周四, 28 9月 01:38]

Scientists have developed a biobank of revertible, mutant embryonic stem cells – called Haplobank - which contains over 100,000 mutated, conditional mouse embryonic stem cell lines, targeting about 70% of the protein-coding genome.

- [**Minimally invasive valve replacements hold up well after five years, study shows**](#) [周四, 28 9月 01:36]

A minimally invasive procedure used to replace heart valves without open heart surgery appears to provide a durable remedy for people with a life-threatening form of heart disease in which the aortic valve opening narrows, diminishing blood flow.

- [**Battling belly fat: Specialized immune cells impair metabolism in aging**](#) [周四, 28 9月 01:36]

Researchers have described how nervous systems and immune systems talk to each other to control metabolism and inflammation. Their finding furthers scientists' understanding of why older adults fail to burn stored belly fat, which raises the risk of chronic disease. The study also points to potential therapeutic approaches to target the problem, the researchers said.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

- [**Solving the mystery of Pluto's giant blades of ice**](#)

[周五, 29 9月 03:24]

NASA's New Horizons mission revolutionized our knowledge of Pluto when it flew past that distant world in July 2015. Among its many discoveries were images of strange formations resembling giant knife blades of ice, whose origin had remained a mystery. Now, scientists have turned up a fascinating explanation for this "bladed terrain": the structures are made almost entirely of methane ice, and likely formed as a specific kind of erosion wore away their surfaces.

- [**Farthest active inbound comet yet seen**](#) [周五, 29 9月 03:23]

NASA's Hubble Space Telescope has photographed the farthest active inbound comet ever seen, at a whopping distance of 1.5 billion miles from the Sun (beyond Saturn's orbit). Slightly warmed by the remote Sun, it has already begun to develop an 80,000-mile-wide fuzzy cloud of dust, called a coma, enveloping a tiny, solid nucleus of frozen gas and dust. These observations represent the earliest signs of activity ever seen from a comet entering the solar system's planetary zone for the first time.

- [**Flexible new platform for high-performance electronics**](#) [周五, 29 9月 02:21]

A team of engineers has created the most functional flexible transistor in the world -- and with it, a fast, simple and inexpensive fabrication process that's easily scalable to the commercial level. It's an advance that could open the door to an increasingly interconnected world, enabling manufacturers to add 'smart,' wireless capabilities to any number of large or small products or objects -- like wearable sensors and computers for

people and animals -- that curve, bend, stretch and move.

- [**Generating terahertz radiation from water makes 'the impossible, possible'**](#) [周五, 29 9月 02:21]

For nearly a decade, researchers have worked to solve a scientific puzzle that many in the research community believed to be impossible: producing terahertz waves -- a form of electromagnetic radiation in the far infrared frequency range -- from liquid water.

- [**Supersonic gas streams left over from the Big Bang drive massive black hole formation**](#) [周五, 29 9月 02:20]

A super-computer simulation by an international team of researchers has shown the formation of a rapidly growing star from supersonic gas streams in the early universe left over from the Big Bang. The star ends its life with catastrophic collapse to leave a black hole with a mass of 34,000 times that of the Sun.

- [**Perovskite solar cells reach record long-term stability, efficiency over 20 percent**](#) [周五, 29 9月 02:20]

Scientists have greatly improved the operational stability of perovskite solar cells by introducing cuprous thiocyanate protected by a thin layer of reduced graphene oxide. Devices lost less than 5 percent performance when subjected to a crucial accelerated aging test during which they were exposed for more than 1,000 hours to full sunlight at 60°C.

- [**Speedy urine test for amphetamines sends results via app**](#) [周五, 29 9月 00:17]

Researchers have developed a wireless sensor and a smartphone app that can detect the presence of speed in a drop of human urine in seconds. The prototype device is also portable enough to be worn as a bracelet, has unprecedented sensitivity for amphetamines with low risk for false-positive results, and costs about \$50 to produce.

- [**Fluorine-containing molecules from cell cultures**](#) [周五, 29 9月 00:16]

Natural organic compounds that contain fluorine are rare because living organisms -- with a few exceptions -- do not produce them. Scientists

have now genetically engineered a microbial host for organofluorine metabolism, allowing it to produce a fluoridated intermediate known as a diketide. As reported, the diketide could then be used as a monomer for the in vivo production of fluorinated bioplastics.

- [**Popping bubbles: Surfactants have surprising effect on nanobubble stability**](#) [周五, 29 9月 00:16]

The stability of nanobubbles is well understood, but the mechanisms causing their eventual destabilization are still in question. Using molecular dynamics simulations, researchers explored the effect of surfactants -- components that lower surface tension -- on the stabilization of nanobubbles.

- [**How do zebrafish develop their stripes?**](#) [周四, 28 9月 22:31]

A mathematician has thrown new light on the longstanding mystery of how zebrafish develop the distinctive striped patterns on their skin.

- [**Bursting with starbirth**](#) [周四, 28 9月 22:12]

This oddly shaped galactic spectacle is bursting with brand new stars. The pink fireworks in this image taken with the NASA/ESA Hubble Space Telescope are regions of intense star formation, triggered by a cosmic-scale collision. The huge galaxy in this image, NGC 4490, has a smaller galaxy in its gravitational grip and is feeling the strain.

- [**Small scale energy harvesters show large scale impact**](#) [周四, 28 9月 22:12]

The production of nano-scale devices has drastically increased with the rise in technological applications, yet a major drawback to the functionality of nano-sized systems is the need for an equally small energy resource. To address this, researchers have been modeling new piezoelectric energy harvester technology at the nano-scale level.

- [**Biodegradable microsensors for food monitoring**](#) [周四, 28 9月 21:42]

A new generation of microsensors could provide the vital link between food products and the Internet of Things. Researchers have developed an ultra-thin temperature sensor that is both biocompatible and biodegradable.

- [**Making surgical screws from bones**](#) [周四, 28 9月 20:51]

Biomechanics are developing surgical screws from donated human bone material for foot and jaw surgery together with an Austrian start-up.

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Scientists have made a crucial step towards unlocking the 'holy grail' of computing -- microchips that mimic the way the human brain works to store and process information.

- [**High cost of truckers not having enough places to park and rest**](#) [周四, 28 9月 04:20]

A pilot study illustrates the high economic cost of having too few safe places for commercial truck drivers to park and rest.

- [**Band gaps, made to order**](#) [周四, 28 9月 04:20]

Engineers have created atomically thin superlattice materials with precision.

- [**Atomistic simulations go the distance on metal strength**](#) [周四, 28 9月 04:20]

Researchers have dived down to the atomic scale to resolve every 'jiggle and wiggle' of atomic motion that underlies metal strength.

- [**Minimally invasive valve replacements hold up well after five years, study shows**](#) [周四, 28 9月 01:36]

A minimally invasive procedure used to replace heart valves without open heart surgery appears to provide a durable remedy for people with

a life-threatening form of heart disease in which the aortic valve opening narrows, diminishing blood flow.

- [**Black holes with ravenous appetites define Type I active galaxies**](#) [周四, 28 9月 01:36]

Type I and Type II active galaxies do not just appear different -- they are, in fact, very different from each other, both structurally and energetically, new research shows. According to the results of a new study, the key factor that distinguishes Type I and Type II galaxies is the rate at which their central black holes -- or active galactic nuclei -- consume matter and spit out energy.

- [**New light shed on how Earth and Mars were created**](#) [周四, 28 9月 01:36]

Analysing a mixture of earth samples and meteorites, scientists have shed new light on the sequence of events that led to the creation of the planets Earth and Mars.

- [**The volatile processes that shaped Earth**](#) [周四, 28 9月 01:36]

Although it is widely understood that Earth was formed gradually, from much smaller bodies, many of the processes involved in shaping our growing planet are less clear. Astronomers have now untangled some of these processes, revealing that the mini-planets added to Earth had previously undergone melting and evaporation. They also address another scientific conundrum: Earth's depletion in many economically important chemical elements.

- [**Recipe for quantum-enhanced technologies refined**](#) [周四, 28 9月 00:57]

A breakthrough has been made in understanding the structure of entanglement in quantum systems with long-range interactions.

- [**Turbocharging engine design**](#) [周四, 28 9月 00:51]

Researchers have moved the development process into the passing lane. For the first time, scientists and engineers have pinpointed engine designs for a given fuel using the Mira supercomputer at the heart of the Argonne Leadership Computing Facility (ALCF), a DOE Office of

Science User Facility.

- [**Prototype UT equipment can detect rheumatoid arthritis**](#) [周四, 28 9月 00:50]

Researchers have designed a device that shows the difference between healthy fingers and arthritic fingers, according to a first clinical study published. The researchers responsible for the development of the compact device believe that it may in time help doctors to objectively diagnose the degree of inflammation in joints.

- [**LIGO and Virgo observatories jointly detect black hole collision**](#) [周四, 28 9月 00:36]

The first observation of gravitational waves has been discovered by by three different detectors, marking a new era of greater insights and improved localization of cosmic events now available through globally networked gravitational-wave observatories.

- [**Unlocking the mysteries of memory -- and potentially enhancing it**](#) [周四, 28 9月 00:36]

Memory acts like an anchor, reminding us of past experiences that have made us who we are today. Attempts to boost it, particularly as we age, have sprouted cottage industries of supplements and brain games. In parallel, researchers have been pursuing pharmaceutical interventions. In some of the latest work on this front, one team reports that they have identified a novel compound that enhances long-term memory in animal studies.

- [**Ancient ink for cancer treatment**](#) [周四, 28 9月 00:35]

For hundreds of years, Chinese calligraphers have used a plant-based ink to create beautiful messages and art. Now, one group reports that this ink could noninvasively and effectively treat cancer cells that spread, or metastasize, to lymph nodes.

- [**Total solar eclipse viewed from space**](#) [周四, 28 9月 00:35]

While people across the nation gazed at August's total solar eclipse from Earth, a bread loaf-sized NASA satellite had a front row seat for the astronomical event.

- [**On a collision course with game theory**](#) [周三, 27 9月 22:23]

How do pedestrians behave in a large crowd? How do they avoid collisions? How can their paths be modeled? A new approach developed by mathematicians provides answers to these questions.

- [**How old does your computer think you are?**](#) [周三, 27 9月 22:23]

Computerized face recognition is an important part of initiatives to develop security systems, in building social networks, in curating photographs, and many other applications. Systems can allow a computer to estimate with precision a person's age based on an analysis of their face.

- [**Monetizing time savings makes toll roads financially stack up**](#) [周三, 27 9月 21:34]

Putting a dollar value on the savings from traffic congestion, noise and air pollution as a result of toll roads and tunnels will make large infrastructure projects more cost effective, according to a new study.

- [**New twist on asymmetric catalysis**](#) [周三, 27 9月 21:33]

Researchers have developed an efficient and simple chemical synthesis of a new kind of twisted helicene molecule containing a sulfur group, thiophene. The unusual screw-like asymmetry of the molecules could be useful for making drugs and other types of chemicals in their pure single-enantiomer forms.

- [**The strange structures of the Saturn nebula**](#) [周三, 27 9月 21:33]

The spectacular planetary nebula NGC 7009, or the Saturn Nebula, emerges from the darkness like a series of oddly-shaped bubbles, lit up in glorious pinks and blues. This colourful image was captured by the MUSE instrument on ESO's Very Large Telescope (VLT). The map -- which reveals a wealth of intricate structures in the dust, including shells, a halo and a curious wave-like feature -- will help astronomers understand how planetary nebulae develop their strange shapes and symmetries.

- [**Computer scientists address gap in messaging**](#)

[privacy](#) [周三, 27 9月 21:33]

Researchers have developed a solution to a longstanding problem in the field of end-to-end encryption, a technique that ensures that only sender and recipient can read a message.

· [A beautiful wing design solution inspired by owl feathers](#) [周三, 27 9月 11:59]

Researchers have formulated a mathematical solution that could help minimize noise, maximize aerodynamics in design of porous airfoils (2-D wings) to improve wind turbines and air vehicles.

· [Engineers to pioneer unprecedented high speed wireless data coverage](#) [周三, 27 9月 01:52]

A major new international research program is responding to the overwhelming demand of internet traffic to develop ubiquitous wireless data coverage with unprecedented speed at millimetre waves.

· [Near-Earth asteroid CubeSat goes full sail](#) [周三, 27 9月 01:39]

NASA's Near-Earth Asteroid Scout, a small satellite the size of a shoebox, designed to study asteroids close to Earth, recently performed a full-scale solar sail deployment test. The test was performed in an indoor clean room to ensure the deployment mechanism's functionality after recent environmental testing.

· [Innovative control system paves the way for large scale universal quantum computing](#) [周三, 27 9月 01:30]

Future quantum computers promise exponential scaling in computing power with linearly increasing number of qubits. However, harnessing this power is challenging due to the complexity of controlling a large number of qubits simultaneously. A solution to this problem has now been engineered.

· [Energy harvested from evaporation could power much of US](#) [周三, 27 9月 00:51]

In the first evaluation of evaporation as a renewable energy source,

researchers find that US lakes and reservoirs could generate 325 gigawatts of power, nearly 70 percent of what the United States currently produces.

• [Quantum communications bend to our needs](#) [周三, 27 9月 00:51]

The potential for photon entanglement in quantum computing and communications has been known for decades. One issue impeding immediate application is that many photon entanglement platforms don't operate within the range used by most forms of telecommunication. Researchers have started to unravel the mysteries of entangled photons, demonstrating a technique that uses semiconductor quantum dots to bend photons to the wavelengths used by today's popular C-band standards.

• [The 3-D selfie has arrived](#) [周三, 27 9月 00:51]

Computer scientists have solved a complex problem that has, until now, defeated experts in vision and graphics research. They have developed technology capable of producing 3-D facial reconstruction from a single 2-D image -- the 3-D selfie. People are queuing up to try it and so far, more than 400,000 users have had a go.

• [New reassurance that heat flux will be manageable in ITER](#) [周三, 27 9月 00:51]

A major issue facing ITER, the international tokamak under construction in France that will be the first magnetic fusion device to produce net energy, is whether the crucial divertor plates that will exhaust waste heat from the device can withstand the high heat flux, or load, that will strike them. Alarming projections extrapolated from existing tokamaks suggest that the heat flux could be so narrow and concentrated as to damage the tungsten divertor plates in the seven-story, 23,000 ton tokamak...

• [A fresh set of eyes: Rotating plant inspectors reduces risk of medical device recalls](#) [周二, 26 9月 23:59]

More frequent rotation of plant inspectors at medical device manufacturing facilities could benefit consumers and lead to fewer

product recalls, finds new research.

- [**Wearable solar thermoelectric generator created**](#)

[周二, 26 9月 22:55]

Engineers have introduced a new advanced energy harvesting system, capable of generating electricity by simply being attached to clothes, windows, and outer walls of a building.

- [**Artificial intelligence for obtaining chemical fingerprints**](#)

[周二, 26 9月 22:54]

Researchers have succeeded in developing a method for predicting molecular infrared spectra based on artificial intelligence. These chemical 'fingerprints' could only be simulated by common prediction techniques for small molecules in high quality. The team was able to carry out simulations that were previously not possible.

- [**Understanding football violence could help the fight against terror**](#)

[周二, 26 9月 22:54]

Football has long been tarnished by outbreaks of fan violence. Although media headlines often link the behavior to 'hooliganism,' the activity could stem from potentially more positive motivations, such as passionate commitment to the group and the desire to belong. Understanding the root cause of the behavior may therefore help in tackling the violence and channeling it into something more positive, scientists suggest.

- [**80 percent of activity tracker users stick with the devices for at least six months, study shows**](#)

[周二, 26 9月 21:17]

Use of activity trackers, such as wearable devices and smartphone apps, is on the rise, and a new study shows that 80 percent of users stuck with the device for at least six months. Though the gadgets may help motivate users to increase exercise, the populations that could benefit most may not be using the technologies.

- [**Cartography of the Cosmos**](#)

[周二, 26 9月 21:16]

There are hundreds of billions of stars in our own Milky Way galaxy, interspersed with all manner of matter, from the dark to the sublime.

This is the universe that one group of researchers is trying to reconstruct, structure by structure, combining telescope surveys with next-generation data analysis and simulation techniques currently being primed for exascale computing.

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Environment News

Top stories featured on ScienceDaily's Plants & Animals, Earth & Climate, and Fossils & Ruins sections.

- [**Continental controls needed to maintain fightback against tree diseases**](#) [周五, 29 9月 02:21]

Tighter controls on timber and plant movements into Europe are necessary to prevent further disastrous effects of plant diseases, a new study of the ash-dieback pathogen advises.

- [**Tsunami enabled hundreds of aquatic species to raft across Pacific**](#) [周五, 29 9月 02:21]

The 2011 Japanese tsunami set the stage for something unprecedented. For the first time in recorded history, scientists have detected entire communities of coastal species crossing the ocean by floating on makeshift rafts. Nearly 300 species have appeared on the shores of Hawaii and the US West Coast attached to tsunami debris, marine biologists discovered.

- [**Bed bugs attracted to dirty laundry**](#) [周五, 29 9月 02:20]

Bed bugs are attracted to dirty laundry, according to new research.

- [**Modern humans emerged more than 300,000 years ago new study suggests**](#) [周五, 29 9月 02:20]

A genomic analysis of ancient human remains from KwaZulu-Natal revealed that southern Africa has an important role to play in writing the history of humankind.

- [**Perovskite solar cells reach record long-term stability, efficiency over 20 percent**](#) [周五, 29 9月 02:20]

Scientists have greatly improved the operational stability of perovskite

solar cells by introducing cuprous thiocyanate protected by a thin layer of reduced graphene oxide. Devices lost less than 5 percent performance when subjected to a crucial accelerated aging test during which they were exposed for more than 1,000 hours to full sunlight at 60°C.

- [**Summer could be one long heatwave if planet hits 2 degrees Celsius**](#) [周五, 29 9月 00:18]

New paper highlighting how heatwaves will change with every degree of global warming up to 5 degrees C. It finds tropical summers may be one continuous heatwave at 2 degrees C.

- [**Saber-toothed kittens may have been born with thicker bones than other contemporary cats**](#) [周五, 29 9月 00:17]

Saber-toothed kittens may have been born with thicker bones compared to other contemporary cats, but they have a similar pattern of bone development, according to a new study.

- [**Fluorine-containing molecules from cell cultures**](#) [周五, 29 9月 00:16]

Natural organic compounds that contain fluorine are rare because living organisms -- with a few exceptions -- do not produce them. Scientists have now genetically engineered a microbial host for organofluorine metabolism, allowing it to produce a fluorinated intermediate known as a diketide. As reported, the diketide could then be used as a monomer for the in vivo production of fluorinated bioplastics.

- [**Highly virulent bacterium causes rampant caries in some children**](#) [周五, 29 9月 00:16]

Researchers have made a novel discovery connecting highly variant types of the caries bacterium *Streptococcus mutans* and their adhesive function to children with rampant caries and increased risk of dental caries.

- [**How do zebrafish develop their stripes?**](#) [周四, 28 9月 22:31]

A mathematician has thrown new light on the longstanding mystery of how zebrafish develop the distinctive striped patterns on their skin.

- [**Mapping the Tasmanian tiger's mysterious loss from mainland**](#) [周四, 28 9月 21:42]

Ancient DNA extracted from fossil bones and museum specimens has shed new light on the mysterious loss of the Tasmanian tiger (thylacine) from Australia's mainland.

- [**Did rapid sea-level rise drown fossil coral reefs around Hawaii?**](#) [周四, 28 9月 21:42]

Investigations to predict changes in sea levels and their impacts on coastal systems are a step closer, as a result of a new international collaboration.

- [**Chimpanzees can learn how to use tools without observing others**](#) [周四, 28 9月 21:42]

New observations have led researchers to believe that chimpanzees can use tools spontaneously to solve a task, without needing to watch others first.

- [**Large earthquakes along Olympic Mountain faults, Washington State, USA**](#) [周四, 28 9月 21:42]

A comprehensive study of faults along the north side of the Olympic Mountains of Washington State emphasizes the substantial seismic hazard to the northern Puget Lowland region. The study examined the Lake Creek-Boundary Creek and Sadie Creek faults along the north flank the Olympic Mountains, and concludes that there were three to five large, surface-rupturing earthquakes along the faults within the last 13,000 years.

- [**Breakthrough in rapid, mass screening for the Ebola virus**](#) [周四, 28 9月 20:49]

A new, faster and safer way of diagnosing the Ebola virus has been developed.

- [**Exploring an ancient event in pumpkin, gourd and melon evolution**](#) [周四, 28 9月 20:47]

Recently, scientists have making great strides in better understanding with the genomes sequenced of cucumber, watermelon, and melons. With these projects completed, a research team has performed the first large comparative genomics exploration of their genome structures and evolution. After reconstructing evolutionary trees and extensive comparisons of common genes between Cucurbitaceae plants, unexpectedly, the research team has found the first evidence of an ancient whole genome duplication ev...

- [**New mechanism points the way to breaking ribosome antibiotic resistance**](#) [周四, 28 9月 20:47]

Research groups reveal a novel mechanism of ribosome dimerization in the bacterium *Lactococcus lactis* using cryo-electron microscopy. As this dimerization renders ribosomes more resistant to antibiotics, this study provides the necessary structural basis to design new generations of antibiotics.

- [**Examining the lifestyles of microbes**](#) [周四, 28 9月 06:43]

Scientists are studying microbes called Parcubacteria that were found by James Cameron (director of 'Terminator') during a recent deep sea expedition. They want to study the microbes' lifestyle and see how similar they are to those found on land.

- [**That cup of coffee may not relieve Parkinson's symptoms**](#) [周四, 28 9月 04:20]

Contrary to previous research, caffeine may not relieve movement symptoms for people with Parkinson's disease, according to a study.

- [**The hormone that could be making your dog aggressive discovered**](#) [周四, 28 9月 04:20]

Thousands of people are hospitalized every year for dog bites, and aggressive behavior is a major reason dogs end up in shelters. Biologists have studied the biology behind canine aggression, specifically the role of the hormones vasopressin and oxytocin.

- [**How cells recover from the verge of**](#)

[programmed death](#) [周四, 28 9月 04:20]

Biologists explore the molecular underpinnings of cells that recover from the verge of programmed death.

• [Earliest evidence for a native African cultigen discovered in Eastern Sudan](#) [周四, 28 9月 04:20]

Archaeologists examining plant impressions within broken pottery have discovered the earliest evidence for domesticated sorghum in Africa.

• [Beer can lift your spirits due to malted barley ingredient](#) [周四, 28 9月 03:28]

Visitors to the Oktoberfest have always known it and now it has been scientifically -- beer can lift your spirits. Scientists examined 13,000 food components to find out whether they stimulate the reward center in the brain and make people feel good. Hordenine which is found in malted barley and beer seems to do the job quite well.

• [Haplobank: A biobank of reversible mutant embryonic stem cells](#) [周四, 28 9月 01:38]

Scientists have developed a biobank of revertible, mutant embryonic stem cells – called Haplobank - which contains over 100,000 mutated, conditional mouse embryonic stem cell lines, targeting about 70% of the protein-coding genome.

• [The volatile processes that shaped Earth](#) [周四, 28 9月 01:36]

Although it is widely understood that Earth was formed gradually, from much smaller bodies, many of the processes involved in shaping our growing planet are less clear. Astronomers have now untangled some of these processes, revealing that the mini-planets added to Earth had previously undergone melting and evaporation. They also address another scientific conundrum: Earth's depletion in many economically important chemical elements.

• [Citizen science can predict butterfly population trends](#) [周四, 28 9月 00:36]

New research shows that citizen scientists can play a role in gathering

meaningful information to inform long-term monitoring of biodiversity trends such as butterfly population change.

- **[Olive mill wastewater transformed: From pollutant to bio-fertilizer, biofuel](#)** [周四, 28 9月 00:36]

Olive oil has long been a popular kitchen staple. Yet producing the oil creates a vast stream of wastewater that can foul waterways, reduce soil fertility and trigger extensive damage to nearby ecosystems. Now scientists report on the development of an environmentally friendly process that could transform this pollutant into 'green' biofuel, bio-fertilizer and safe water for use in agricultural irrigation.

- **[Ancient ink for cancer treatment](#)** [周四, 28 9月 00:35]

For hundreds of years, Chinese calligraphers have used a plant-based ink to create beautiful messages and art. Now, one group reports that this ink could noninvasively and effectively treat cancer cells that spread, or metastasize, to lymph nodes.

- **[New iceberg calved from Pine Island Glacier](#)** [周三, 27 9月 22:45]

A new iceberg calved from Pine Island Glacier -- one of the main outlets where ice from the interior of the West Antarctic Ice Sheet flows into the ocean.

- **[Preservation of floodplains is flood protection](#)** [周三, 27 9月 22:23]

The silting of rivers and streams leads to problems for fish, mussels, and other aquatic organisms because their habitats disappear. However, not only intensive agriculture and erosion are destroying these habitats. Now a study refutes this widespread view. In order to save the species living in the river basin -- and protect people from the threat of floods -- rivers need more space, diversity, and freedom.

- **[Two new crustacean species discovered on Galician seabed](#)** [周三, 27 9月 22:23]

The fauna of deep seabed tends to be relatively unknown due to the difficulty of collecting samples at great depths. A research team undertook four oceanographic expeditions in the waters off the

northwest coast of the Iberian Peninsula that have led to the discovery of several new species that inhabit the abyssal plains. Now they describe two eyeless species of millimetric proportions.

• **[Emerging infectious disease threatens Darwin's frog with extinction](#)** [周三, 27 9月 22:09]

Iconic species likely to be wiped-out by amphibian fungus, despite lack of obvious short-term evidence.

• **[More than a 38 % of the Neotropical parrot population in the American continent is threatened by human activity](#)** [周三, 27 9月 22:09]

More than a 38% of the Neotropical parrot population of the American continent (Neotropic) is endangered due the impact of human activity, according to a scientific study.

• **[Moths: A different weapon against each enemy](#)** [周三, 27 9月 21:56]

It's a dangerous world out there, especially if you are a small insect. Insects have thrived on our planet for hundreds of millions of years, so they must be doing something right despite all the threats to their survival. With so many predators out to get them many animals have evolved chemical defences, making themselves distasteful or even toxic. Wood tiger moths protect themselves from multiple predators using different chemical defences. Choosing the right defence can be tricky as predators ...

• **[Genome of Fall Armyworm decoded: Moth pest is invading Africa](#)** [周三, 27 9月 21:51]

As part of an international consortium, researchers have sequenced one of the first genomes of a moth from the superfamily Noctuoidea: *Spodoptera frugiperda*, or armyworm. This crop pest -- until now only known on the American continent -- has become invasive in Africa since 2016. This study opens up perspectives for new methods of biological control and a better understanding of the mechanisms involved in the appearance of pesticide resistance.

- [**Monetizing time savings makes toll roads financially stack up**](#) [周三, 27 9月 21:34]

Putting a dollar value on the savings from traffic congestion, noise and air pollution as a result of toll roads and tunnels will make large infrastructure projects more cost effective, according to a new study.

- [**How to grow a spine**](#) [周三, 27 9月 21:33]

A genetics professor -- whose lab discovered the segmentation clock 20 years ago -- and colleagues report that they used mouse cells to reconstitute a stable version of this clockwork for the first time in a petri dish, leading to several new discoveries about where the clock is located, what makes it tick and how the vertebral column takes shape.

- [**Geographic variation in Gentoo penguin calls**](#) [周三, 27 9月 21:33]

Vocal communication is central to the lives of many birds, which use sound to attract mates and defend territories. Penguins are no exception, but we know little about how or why penguin vocalizations vary between isolated populations. A new study takes a broad look at vocalizations across the range of Gentoo penguins and concludes that while their calls do vary from place to place, we still have lots to learn about the processes at work.

- [**Songbird populations may indicate trouble in northwestern forests**](#) [周三, 27 9月 21:33]

Populations of many North American songbirds are declining, and in many cases we don't understand why. Conservation efforts need this information to be effective, and bird banding stations can help fill in the gaps, providing insights into how demographics vary across space and time. A new study presents ten years of data from banding stations across northern California and southern Oregon and offers new hints on what's driving changes in the region's songbird populations.

- [**Tree-dwelling, coconut-cracking giant rat discovered in Solomon Islands**](#) [周三, 27 9月 21:33]

Scientists have discovered a new species of giant rat. It's more than four

times the size of the black rats that live in the US, it lives in trees, and it's rumored to crack open coconuts with its teeth. And it's actually pretty cute.

- [**Cellular 'message in a bottle' may provide path to new way of treating disease**](#) [周三, 27 9月 21:33]

A newly discovered cellular messaging mechanism could lead to a new way to deliver therapeutics to tissues affected by disease, according to a new study. Researchers found a type of extracellular vesicle -- a sac secreted by cells that contains proteins and RNA molecules -- carries receptors that allow signaling without direct contact between cells.

- [**Removing nitrate for healthier ecosystems**](#) [周三, 27 9月 21:33]

In a new study, researchers have identified nitrate removal hotspots in landscapes around agricultural streams.

- [**Purple plant is on the defensive**](#) [周三, 27 9月 21:33]

While lavender has long been known for its strong scent and soothing oils, a researcher is exploring the plant's ability to create natural pesticides.

- [**Plant substance inhibits cancer stem cells**](#) [周三, 27 9月 21:33]

Lab experiments show that the chemical compound damsine found in the plant *Ambrosia arborescens* inhibits the growth and spread of cancer stem cells. The similar but synthetically produced ambrosin has the same positive effect.

- [**A beautiful wing design solution inspired by owl feathers**](#) [周三, 27 9月 11:59]

Researchers have formulated a mathematical solution that could help minimize noise, maximize aerodynamics in design of porous airfoils (2-D wings) to improve wind turbines and air vehicles.

- [**Noise pollution found to be disruptive for schooling fish**](#) [周三, 27 9月 11:59]

Noise from human construction projects can disrupt the schools that are

so impressive in marine fish, new research has found.

- [**How has society adapted to hurricanes? A look at New Orleans over 300 years**](#) [周三, 27 9月 11:59]

In the midst of an intense hurricane season, a historical perspective looks at adaptation to hurricanes in New Orleans over nearly three centuries, from its foundation in 1718 to Hurricane Katrina in 2005.

- [**Lost continent of Zealandia: Scientists return from expedition to sunken land**](#) [周三, 27 9月 11:59]

After a nine-week voyage to study the lost, submerged continent of in the South Pacific, a team of 32 scientists from 12 countries has arrived in Hobart, Tasmania, aboard the research vessel JOIDES Resolution.

- [**Caribbean praying mantises have ancient African origin**](#) [周三, 27 9月 11:59]

Three seemingly unrelated praying mantis groups inhabiting Cuba and the rest of the Greater Antilles actually share an ancient African ancestor and possibly form the oldest endemic animal lineage on the Caribbean islands, researchers have determined.

- [**Cancerous toxins linked to cannabis extract**](#) [周三, 27 9月 04:23]

Researchers have found benzene and other potentially cancer-causing chemicals in the vapor produced by butane hash oil, a cannabis extract.

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- [**Understanding connection between HIV transmission, racial/ethnic/geographical differences**](#) [周五, 29 9月 02:54]

The health effects of where people live, work, and interact are well documented, as are the value of neighborhood-level structural interventions designed to improve health. But place-based characteristics that contribute to disparities in HIV transmission and disease burden are poorly understood, possibly resulting in less-effective HIV risk reduction interventions and programming.

- [**Nearly one in six new HIV diagnoses in Europe are among people over 50**](#) [周五, 29 9月 00:16]

A new study showed that while the rate of newly reported HIV cases in Europe remained steady in younger people between 2004 and 2015, it increased by 2 percent each year overall in older people. With around 30,000 newly diagnosed HIV infections reported each year over the last decade, the HIV epidemic remains a significant public health problem in the 31 countries of the European Union and European Economic Area.

- [**Study provides first estimate of total US population with felony convictions**](#) [周五, 29 9月 00:16]

New research on the growth in the scope and scale of felony convictions finds that, as of 2010, 3 percent of the total US population and 15 percent of the African-American male population have served time in prison. People with felony convictions more broadly account for 8 percent of the overall population and 33 percent of the African-

American male population.

- **[In people with OCD, actions are at odds with beliefs](#)** [周五, 29 9月 00:16]

The repeated behaviors that characterize obsessive-compulsive disorder are a manifestation of an underlying brain dysfunction that is not yet well understood. Now, scientists report the use of a mathematical model that they say will help them get at the root of what causes OCD. They find that people with OCD develop an internal, accurate sense of how things work but do not use it to guide behavior.

- **[Don't rely on mixed messages to change health behaviors](#)** [周四, 28 9月 23:30]

Self-improvement messages to lose weight, quit smoking or eat more fruits and vegetables can fall on deaf ears if the intervention message is mixed, says new research.

- **[Abusive bosses experience short-lived benefits](#)** [周四, 28 9月 22:12]

Being a jerk to your employees may actually improve your well-being, but only for a short while, suggests new research on abusive bosses.

- **[Self-esteem in kids: Lavish praise is not the answer, warmth is](#)** [周四, 28 9月 20:51]

How do children construct views of themselves and their place in the world? Children's social relationships turn out to be critical. For example, children develop higher self-esteem when their parents treat them warmly. But they develop lower self-esteem when their parents lavish them with inflated praise.

- **[No evidence to support claims that telephone consultations reduce GP workload or hospital referrals](#)** [周四, 28 9月 06:44]

Telephone consultations to determine whether a patient needs to see their GP face-to-face can deal with many problems, but a new study found no evidence to support claims by companies offering to manage these services or by NHS England that the approach saves money or

reduces the number of hospital referrals.

- [**Health and social care changes 'paving way for fewer services' warn experts**](#) [周四, 28 9月 06:44]

Current reforms to health and social care services, and radical redesign of the local government finance system, may signal the end of the NHS and local government in England as we know them, warn experts.

- [**Should we welcome plans to sell off wasted NHS land?**](#) [周四, 28 9月 06:44]

With the NHS under severe financial pressure, should we welcome plans to raise capital by selling off inefficiently used land and buildings owned by the health service? Experts debate the issue in a new article.

- [**High cost of truckers not having enough places to park and rest**](#) [周四, 28 9月 04:20]

A pilot study illustrates the high economic cost of having too few safe places for commercial truck drivers to park and rest.

- [**New test rapidly diagnoses Zika**](#) [周四, 28 9月 04:20]

Researchers have developed a paper-based test that can diagnose Zika infection within 20 minutes. Unlike existing tests, the new diagnostic does not cross-react with Dengue virus, a close relative of the Zika virus that can produce false positives on many Zika tests.

- [**Citizen science can predict butterfly population trends**](#) [周四, 28 9月 00:36]

New research shows that citizen scientists can play a role in gathering meaningful information to inform long-term monitoring of biodiversity trends such as butterfly population change.

- [**Iron supplements have long-term benefits for low birth-weight babies**](#) [周四, 28 9月 00:36]

Babies classified as low birth weight (under 2,500 grams) are at risk of iron deficiency, which is linked to impaired neurological development. A long-term randomized study now shows that providing such babies

with iron supplements can prevent behavioral problems at school age.

- [**Teens' online friendships just as meaningful as face-to-face ones**](#) [周三, 27 9月 22:54]

Many parents worry about how much time teenagers spend texting, sharing selfies and engaging in other online activities with their friends. However, according to a recent research synthesis, many of these digital behaviors serve the same purpose and encompass the same core qualities as face-to-face relationships.

- [**Coping with stressful organizational change**](#) [周三, 27 9月 21:51]

Stress is not a recent phenomenon, but the modern work environment seems to highlight its detrimental effects on employees. This is no more obvious than during times of organizational change. New research considers the impact of such changes on workers in a healthcare authority in New Zealand, highlighting the problems that any organization might face under such circumstances and pointing to possible methods to cope and remediate employee stress.

- [**Monetizing time savings makes toll roads financially stack up**](#) [周三, 27 9月 21:34]

Putting a dollar value on the savings from traffic congestion, noise and air pollution as a result of toll roads and tunnels will make large infrastructure projects more cost effective, according to a new study.

- [**Do deep promotional discounts work? New study sheds light on strategy**](#) [周三, 27 9月 01:53]

Promotional discounts increase store traffic and lead to higher overall profits, especially if the advertised products are staples – items such as meat and produce that are purchased frequently and by many customers.

- [**Potential Zika vaccine protects against pregnancy transmission and testicular damage**](#) [周三, 27 9月 00:51]

For the first time, a research team led has shown that a potential Zika vaccine quickly can protect fetuses against infection as well as protect males against testicular infection and injury. It also prevents a lowered

sperm count after one vaccination.

- [**Interventions for reducing hepatitis C infection in people who inject drugs**](#) [周二, 26 9月 22:54]

The first global review to quantify the impact of needle syringe programs (NSP) and opioid substitution treatment (OST) in reducing the risk of becoming infected with the hepatitis C virus has now been published. The study has implications for millions of people who are 'at risk' from infection.

- [**Household chores: Women still do more**](#) [周二, 26 9月 22:54]

Women of all ages still tend to do more household chores than their male partners, no matter how much they work or earn in a job outside the home. New findings demonstrate the persistent gendered nature of how housework is divided.

- [**Preschool teachers need better training in science**](#) [周二, 26 9月 22:54]

Preschool instructors appear to lack the knowledge, skills and confidence to effectively teach their young students science -- a problem that is likely contributing to America's poor global performance in this crucially important subject.

- [**Teachers report weaker relationships with students of color, children of immigrants**](#) [周二, 26 9月 22:54]

The relationship between teachers and students is a critical factor for academic success. However, a new study finds that teachers report weaker relationships with children of immigrants and adolescents of color.

- [**Escaping wildfires**](#) [周二, 26 9月 21:15]

A new study is the first attempt to map escape routes for wildland fire fighters from an aerial perspective. The researchers used LiDAR technology to analyze the terrain slope, ground surface roughness and vegetation density of a fire-prone region in central Utah, and assessed how each landscape condition impeded a person's ability to travel.

- **[Drought: A cause of riots](#)** [周二, 26 9月 21:05]

The scientific community has been working on the possibility of a relationship between periods of drought and rioting for several years. Now a team has formally verified this hypothesis by studying almost 1,800 riots that occurred over a 20-year period in sub-Saharan Africa. The researchers observed a systematic link between the sudden depletion of water resources and the outbreak of unrest. They also succeeded in quantifying the impact of geographic and social factors on the same link.

- **[People are reluctant to use public defibrillators to treat cardiac arrests](#)** [周二, 26 9月 20:59]

A new study suggests that people are reluctant to use public-access defibrillators to treat cardiac arrests.

- **[Psychological impacts of natural disasters on youth](#)** [周二, 26 9月 04:32]

A researcher is fully aware of children's reaction to trauma. Her research focuses on the impact of disasters on youth since Hurricane Andrew in 1992. La Greca has been evaluating how best to define post-traumatic stress disorder (PTSD) in children. This line of research will help to quickly identify the children who need support services post-disaster and identify key aspects of the post-disaster environment that facilitate their recovery.

- **[Are children who see movie characters use guns more likely to use them?](#)** [周二, 26 9月 01:29]

Children who watched a PG-rated movie clip containing guns played with a disabled real gun longer and pulled the trigger more often than children who saw the same movie not containing guns.

- **[Climate insurance is rarely well thought out in agriculture](#)** [周一, 25 9月 23:33]

Internationally subsidised agricultural insurance is intended to protect farmers in developing countries from the effects of climate change.

However, it can also lead to undesirable ecological and social side effects, as researchers have now explained. Their article also contains recommendations for improved insurance schemes which in future should also take account of ecological and social aspects in addition to economic issues.

- **[Group project? Taking turns, working with friends may improve grades](#)** [周一, 25 9月 23:33]

A new study with college students has found that the social dynamics of a group, such as whether one person dominates the conversation or whether students work with a friend, affect academic performance. Put simply, the more comfortable students are, the better they do, which yields benefits beyond the classroom.

- **[Fully renewable India in 2050 can take a shortcut to emission-free future](#)** [周一, 25 9月 23:16]

India can function on a fully renewable electricity system in 2050, research indicates. The study shows that developing countries that have an abundance of renewable resources do not need to take the path of the western countries where increasing living standards have been coupled with heavy emissions from electricity generation and other industry. They can move straight to renewable systems and do it cheaply.

- **[Clarifying perspectives to promote action on loss and damage from climate change](#)** [周一, 25 9月 23:13]

The hurricanes Harvey, Irma and Maria highlight the potential for the climate system to cause loss and damage. 'Loss and damage' is a phrase used in different ways by people who work on climate policy, negotiation and adaptation/resilience. A new study clarifies these different perspectives which is a key issue now that the United Nations Framework Convention on Climate Change, UNFCCC, is encouraging creation and implementation of actions to address loss and damage from climate change.

- **[Visual attention drawn to meaning, not what stands out](#)** [周一, 25 9月 23:13]

Our visual attention is drawn to parts of a scene that have meaning, rather than to those that are salient or 'stick out,' according to new research. The findings overturn the widely held model of visual attention.

- [**World's botanic gardens contain a third of all known plant species, and help protect the most threatened**](#) [周一, 25 9月 23:13]

The most in-depth species survey to date finds an 'astonishing array' of plant diversity in the global botanic garden network, including 41 percent of all endangered species. However, researchers find a significant imbalance between tropical and temperate plants, and say even more capacity should be given to conservation, as there is 'no technical reason for plant species to become extinct.'

- [**Minority public managers prefer integrating social equity, traditional public values**](#) [周一, 25 9月 22:57]

Minority public managers place more emphasis on both traditional values, like efficiency and effectiveness, and social equity when compared with their white counterparts, according to a new study.

- [**Scientists call for more research on how human activities affect the seabed**](#) [周一, 25 9月 22:47]

Extensive research has been released into how industry and environmental change are affecting our seafloors. Researchers say more work is needed to help safeguard these complex ecosystems and the benefits they provide to people for the future.

- [**New technique spots warning signs of extreme events**](#) [周日, 24 9月 22:38]

Engineers have devised a framework for identifying key patterns that precede an extreme event. The framework can be applied to a wide range of complicated, multidimensional systems to pick out the warning signs that are most likely to occur in the real world.

- [**Study finds no-tillage not sufficient alone to**](#)

[prevent water pollution from nitrate](#) [周六, 23 9月 04:25]

A new study answers a long-debated agricultural question: whether no-tillage alone is sufficient to prevent water pollution from nitrate. The answer is no.

· [Flint's water crisis led to fewer babies and higher fetal death rates, researchers find](#) [周五, 22 9月 21:16]

An estimated 275 fewer children were born in Flint, Michigan, while the city was using lead-contaminated water from the Flint River, according to new research findings.

· [Breathing dirty air may harm kidneys](#) [周五, 22 9月 21:16]

Outdoor air pollution may increase the risk of chronic kidney disease and contribute to kidney failure, say researchers. Scientists culled national VA databases to evaluate the effects of air pollution and kidney disease on nearly 2.5 million people over a period of 8.5 years, beginning in 2004. The scientists compared VA data on kidney function to air-quality levels collected by the Environmental Protection Agency (EPA) as well as the National Aeronautics and Space Administration (NASA).

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [**Solving the mystery of Pluto's giant blades of ice**](#)

[周五, 29 9月 03:24]

NASA's New Horizons mission revolutionized our knowledge of Pluto when it flew past that distant world in July 2015. Among its many discoveries were images of strange formations resembling giant knife blades of ice, whose origin had remained a mystery. Now, scientists have turned up a fascinating explanation for this "bladed terrain": the structures are made almost entirely of methane ice, and likely formed as a specific kind of erosion wore away their surfaces.

- [**Farthest active inbound comet yet seen**](#) [周五, 29 9月 03:23]

NASA's Hubble Space Telescope has photographed the farthest active inbound comet ever seen, at a whopping distance of 1.5 billion miles from the Sun (beyond Saturn's orbit). Slightly warmed by the remote Sun, it has already begun to develop an 80,000-mile-wide fuzzy cloud of dust, called a coma, enveloping a tiny, solid nucleus of frozen gas and dust. These observations represent the earliest signs of activity ever seen from a comet entering the solar system's planetary zone for the first time.

- [**Chimpanzees can learn how to use tools without observing others**](#) [周四, 28 9月 21:42]

New observations have led researchers to believe that chimpanzees can use tools spontaneously to solve a task, without needing to watch others first.

- [**Lost continent of Zealandia: Scientists return from expedition to sunken land**](#) [周三, 27 9月 11:59]

After a nine-week voyage to study the lost, submerged continent of in the South Pacific, a team of 32 scientists from 12 countries has arrived in Hobart, Tasmania, aboard the research vessel JOIDES Resolution.

- [**Innovative control system paves the way for large scale universal quantum computing**](#) [周三, 27 9月 01:30]

Future quantum computers promise exponential scaling in computing power with linearly increasing number of qubits. However, harnessing this power is challenging due to the complexity of controlling a large number of qubits simultaneously. A solution to this problem has now been engineered.

- [**Pigeons better at multitasking than humans**](#) [周二, 26 9月 21:05]

Pigeons are capable of switching between two tasks as quickly as humans -- and even more quickly in certain situations. These are the findings of biopsychologists who had performed the same behavioral experiments to test birds and humans. The authors hypothesize that the cause of the slight multitasking advantage in birds is their higher neuronal density.

- [**After 15 years in a vegetative state, nerve stimulation restores consciousness**](#) [周二, 26 9月 01:29]

A 35-year-old man who had been in a vegetative state for 15 years after a car accident has shown signs of consciousness after neurosurgeons implanted a vagus nerve stimulator into his chest. The findings show that vagus nerve stimulation (VNS) -- a treatment already in use for epilepsy and depression--can help to restore consciousness even after many years in a vegetative state.

- [**Bacterial nanosized speargun works like a power drill**](#) [周二, 26 9月 01:28]

In order to get rid of unpleasant competitors, some bacteria use a sophisticated weapon -- a nanosized speargun. Researchers have now gained new insights into the construction, mode of action and recycling of this weapon. The speargun drills a hole into the neighboring cells in

only a few thousandths of a second and injects a cocktail of toxins.

• [**Lava tubes: Hidden sites for future human habitats on the Moon and Mars**](#) [周一, 25 9月 23:28]

Lava tubes, underground caves created by volcanic activity, could provide protected habitats large enough to house streets on Mars or even towns on the Moon, according to new research. A further study shows how the next generation of lunar orbiters will be able to use radar to locate these structures under the Moon's surface.

• [**Genes are controlled by 'Nano footballs,' scientists discover**](#) [周一, 25 9月 23:12]

Genes are controlled by 'nano footballs' -- structures that look like footballs but 10 million times smaller than the average ball -- new research has revealed.

• [**Fish have surprisingly complex personalities**](#) [周一, 25 9月 21:54]

Tiny fish called Trinidadian guppies have individual 'personalities', new research shows.

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ScienceDaily

周六, 30 9月 2017

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- [**Physical abuse and punishment impact children's academic performance**](#) [周六, 30 9月 03:22]

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- [**Snapchat users motivation, level of interest**](#) [周六, 30 9月 01:35]

The simplicity of the platform and brevity of posts are key factors in determining how students can become very regular users.

- [**Video gamers have an advantage in learning**](#) [周六, 30 9月 00:51]

Neuropsychologists let video gamers compete against non-gamers in a learning competition. During the test, the video gamers performed significantly better and showed an increased brain activity in the brain

areas that are relevant for learning.

- [**Raccoons solve an ancient puzzle, but do they really understand it?**](#) [周六, 30 9月 00:51]

Scientists have been using an ancient Greek fable written by Aesop as inspiration to test whether birds and small children understand cause and effect relationships. A group of scientists have now extended this body of work to study raccoon intelligence. Their research uses the Aesop's Fable paradigm to assess if mammalian carnivores understand the principles of water displacement.

- [**New mouse model replicates an underlying cause of intellectual disability**](#) [周六, 30 9月 00:50]

Researchers have developed the first mice that lack the Upf3b gene, providing a new model for studying its underlying role in intellectual disabilities and neurodevelopmental disorders.

- [**There are only 15 possible pentagonal tiles**](#) [周五, 29 9月 23:50]

Tiling the plane with a single pattern is a mathematical problem that has interested humans since Antiquity, notably for the aesthetic quality of tiles in mosaics or tiling. One of the unresolved problems in this field that has been puzzling the scientific community since 1918 has now been definitively resolved.

- [**New study changes our view on flying insects**](#) [周五, 29 9月 23:49]

For the first time, researchers are able to prove that there is an optimal speed for certain insects when they fly. At this speed, they are the most efficient and consume the least amount of energy. Corresponding phenomena have previously been demonstrated in birds, but never among insects.

- [**Erosion from ancient tsunami in Northern California**](#) [周五, 29 9月 23:30]

Geologists use ground-penetrating radar to determine the breadth and depth of erosion from an ancient tsunami in Northern California.

- [**Scandinavia's earliest farmers exchanged terminology with Indo-Europeans**](#) [周五, 29 9月 23:29]

5,000 years ago, the Yamnaya culture migrated into Europe from the Caspian steppe. In addition to innovations such as the wagon and dairy production, they brought a new language -- Indo-European -- that replaced most local languages the following millennia. But local cultures also influenced the new language, particularly in southern Scandinavia, where Neolithic farmers made lasting contributions to Indo-European vocabulary before their own language went extinct, new research shows.

- [**Algae with light switch**](#) [周五, 29 9月 23:29]

The adhesion of Chlamydomonas, a unicellular alga, to surfaces is light-dependent.

- [**Bioreactors on a chip renew promises for algal biofuels**](#) [周五, 29 9月 23:29]

Researchers report exciting new technology that may revolutionize the search for the perfect algal strain: algal droplet bioreactors on a chip the size of a quarter.

- [**Small collisions make big impact on Mercury's thin atmosphere**](#) [周五, 29 9月 23:29]

Mercury, our smallest planetary neighbor, has very little to call an atmosphere, but it does have a strange weather pattern: morning micro-meteor showers.

- [**Protein that could improve symptoms and reduce mortality in flu**](#) [周五, 29 9月 23:29]

Flu season is on its way, and a new report has identified an innovative strategy for battling this deadly illness.

- [**Arbuscular mycorrhizal fungal communities exposed with new DNA sequencing approach**](#) [周五, 29 9月 23:29]

Arbuscular mycorrhizal fungal systems play crucial roles in their

environment, affecting the plants that can grow there and the nutrients in the soils. Researchers have developed a new DNA sequencing technique using barcoded primers that is capable of detecting rare fungal species in a community, paving the way for future insights into how they might vary in response to environmental changes.

- [**Why do we fall asleep when bored?**](#) [周五, 29 9月 21:34]

Why do we have the tendency to fall asleep in the absence of motivating stimuli, i.e., when bored.

- [**A stinging report: Climate change a major threat to bumble bees**](#) [周五, 29 9月 21:33]

New research is helping to explain the link between a changing global climate and a dramatic decline in bumble bee populations worldwide.

- [**Frequent sauna bathing keeps blood pressure in check**](#) [周五, 29 9月 21:33]

Frequent sauna bathing reduces the risk of elevated blood pressure, according to an extensive follow-up population-based study. The risk of developing elevated blood pressure was nearly 50 percent lower among men who had a sauna 4-7 times a week compared to men who had a sauna only once a week.

- [**New regulator of liver metabolism discovered**](#) [周五, 29 9月 21:33]

Researchers have identified an enzyme that has a major effect on glucose utilization in liver cells. The enzyme, retinol saturase, helps these cells adapt to variations in glucose levels. However, when glucose levels are consistently too high, retinol saturase appears to exert a damaging effect on cells.

- [**How the lungs of premature babies can undergo damage**](#) [周五, 29 9月 21:33]

Premature babies that need ventilation to support their breathing often suffer from a condition known as bronchopulmonary dysplasia. Researchers have now discovered a molecular mechanism that plays a key role in the development of the disease.

- [**Antarctica: Return of the Weddell polynya supports Kiel climate model**](#) [周五, 29 9月 21:33]

Currently, winter has still a firm grip on Antarctica. At this time of the year, the Weddell Sea usually is covered with a thick layer of sea ice. In spite of the icy temperatures in the region, satellite images depict a large ice-free area in the middle of the ice cover.

- [**Ultracold atoms point toward an intriguing magnetic behavior**](#) [周五, 29 9月 21:33]

Researchers have studied the quantum behavior of ultracold atoms and discovered an intriguing magnetic behavior that could help explain how high-temperature superconductivity works.

- [**Breakdown of brain cells' metabolic collaboration linked to Alzheimer's disease**](#) [周五, 29 9月 21:33]

Researchers have discovered that impairing a critical partnership between brain cells can lead to neurodegeneration.

- [**New role for fragile X protein could offer clues for treatment**](#) [周五, 29 9月 21:33]

The protein behind fragile X syndrome, a leading cause of autism and intellectual disability, controls a suite of genetic regulators.

- [**Electrically heated textiles now possible via UMass Amherst research**](#) [周五, 29 9月 21:33]

Skiers, crossing guards and others who endure frozen fingers in cold weather may look forward to future relief as manufacturers are poised to take advantage of a new technique for creating electrically heated cloth. Researchers have made gloves that keep fingers as warm as the palm of the hand.

- [**New clues from brain structures of mantis shrimp**](#) [周五, 29 9月 21:33]

New research sheds new light on the evolution of some of the earliest brain structures, and stirs up new, intriguing questions about the origins

of centers that support learning and memory.

- [**Immune system cells protect against CMV-induced hearing loss in mice**](#) [周五, 29 9月 21:33]

Immune system cells known as natural killer cells play an important protective role against hearing loss in mice infected with cytomegalovirus (CMV), according to a new study.

- [**Sharks and rays live a lot longer than we thought**](#) [周五, 29 9月 21:32]

Sharks and rays live a lot longer than we thought -- some twice as long as previously estimated.

- [**Elderly who have trouble identifying odors face risk of dementia**](#) [周五, 29 9月 21:32]

A long-term study of nearly 3,000 older adults found that those who could not identify at least four out of five common odors were more than twice as likely as those with a normal sense of smell to develop dementia within five years. About 14 percent could name just three, 5 percent could identify only two, and 2 percent could name just one. One percent of the study subjects were not able to identify a single scent.

- [**Global methane emissions from agriculture larger than reported, according to new estimates**](#) [周五, 29 9月 21:32]

Global methane emissions from agriculture are larger than estimated due to the previous use of out-of-date data on carbon emissions generated by livestock, according to a new study.

- [**Transcranial electrical stimulation shows promise for treating mild traumatic brain injury**](#) [周五, 29 9月 21:30]

Using a form of low-impulse electrical stimulation to the brain, documented by neuroimaging, researchers report significantly improved neural function in participants with mild traumatic brain injury (TBI).

- [**Ultra-fast and ultra-sensitive hydrogen sensor**](#) [周五, 29 9月 21:29]

Scientists have made an ultra-fast hydrogen sensor that can detect hydrogen gas levels under 1 percent in less than seven seconds. The sensor also can detect hundreds of parts per million levels of hydrogen gas within 60 seconds at room temperature.

• [Solving the mystery of Pluto's giant blades of ice](#)

[周五, 29 9月 03:24]

NASA's New Horizons mission revolutionized our knowledge of Pluto when it flew past that distant world in July 2015. Among its many discoveries were images of strange formations resembling giant knife blades of ice, whose origin had remained a mystery. Now, scientists have turned up a fascinating explanation for this "bladed terrain": the structures are made almost entirely of methane ice, and likely formed as a specific kind of erosion wore away their surfaces.

• [Farthest active inbound comet yet seen](#) [周五, 29 9月 03:23]

NASA's Hubble Space Telescope has photographed the farthest active inbound comet ever seen, at a whopping distance of 1.5 billion miles from the Sun (beyond Saturn's orbit). Slightly warmed by the remote Sun, it has already begun to develop an 80,000-mile-wide fuzzy cloud of dust, called a coma, enveloping a tiny, solid nucleus of frozen gas and dust. These observations represent the earliest signs of activity ever seen from a comet entering the solar system's planetary zone for the first time.

• [A fresh look at older data yields a surprise near the Martian equator](#) [周五, 29 9月 03:22]

Scientists taking a new look at older data from NASA's longest-operating Mars orbiter have discovered evidence of significant hydration near the Martian equator -- a mysterious signature in a region of the Red Planet where planetary scientists figure ice shouldn't exist.

• [Understanding connection between HIV transmission, racial/ethnic/geographical differences](#) [周五, 29 9月 02:54]

The health effects of where people live, work, and interact are well documented, as are the value of neighborhood-level structural

interventions designed to improve health. But place-based characteristics that contribute to disparities in HIV transmission and disease burden are poorly understood, possibly resulting in less-effective HIV risk reduction interventions and programming.

- [**Disease resistance successfully spread from modified to wild mosquitoes**](#) [周五, 29 9月 02:54]

Using genetically modified mosquitoes to reduce or prevent the spread of disease is a rapidly expanding field of investigation. One challenge is ensuring that GM mosquitoes can mate with their wild counterparts so the desired modification is spread in the wild population. Investigators have engineered mosquitoes with an altered microbiota that suppresses human malaria-causing parasites. These GM mosquitoes preferred to mate with wild mosquitoes and passed the desired protection to offspring.

- [**Massive projected increase in use of antimicrobials in animals by 2030**](#) [周五, 29 9月 02:21]

The amount of antimicrobials given to animals destined for human consumption is expected to rise by a staggering 52 percent and reach 200,000 tons by 2030 unless policies are implemented to limit their use, according to new research.

- [**Continental controls needed to maintain fightback against tree diseases**](#) [周五, 29 9月 02:21]

Tighter controls on timber and plant movements into Europe are necessary to prevent further disastrous effects of plant diseases, a new study of the ash-dieback pathogen advises.

- [**Smart molecules trigger white blood cells to become better cancer-eating machines**](#) [周五, 29 9月 02:21]

A team of researchers has engineered smart protein molecules that can reprogram white blood cells to ignore a self-defense signaling mechanism that cancer cells use to survive and spread in the body. Researchers say the advance could lead to a new method of re-engineering immune cells to fight cancer and infectious diseases. The

team successfully tested this method in a live cell culture system.

• [How molecular scissors cut in the right place](#) [周五, 29 9月 02:21]

A research group has found out how CRISPR-Cas9 -- also known as 'molecular scissors' -- can search the genome for a specific DNA sequence. Cas9 already has many applications in biotechnology and is also expected to revolutionize medicine. The new research findings show how Cas9 can be improved to make the molecular scissors faster and more reliable.

• [Neuro-immune crosstalk in allergic asthma](#) [周五, 29 9月 02:21]

A research team has uncovered a fundamental molecular cue that the nervous system uses to communicate with the immune system, and may potentially trigger allergic lung inflammation leading to asthma.

• [Protecting 'self-reactive' immune cells so they can fight melanoma](#) [周五, 29 9月 02:21]

Researchers report on a potential new way to fight melanoma by blocking one of the immune system's checks and balances.

• [Flexible new platform for high-performance electronics](#) [周五, 29 9月 02:21]

A team of engineers has created the most functional flexible transistor in the world -- and with it, a fast, simple and inexpensive fabrication process that's easily scalable to the commercial level. It's an advance that could open the door to an increasingly interconnected world, enabling manufacturers to add 'smart,' wireless capabilities to any number of large or small products or objects -- like wearable sensors and computers for people and animals -- that curve, bend, stretch and move.

• [Why public appeals may fall flat with some would-be donors](#) [周五, 29 9月 02:21]

To give or not to give: sometimes the answer is in the question, researchers into human behavior and charitable giving have found. The study suggests that sometimes the 'ask' needs to suit the potential donors' sense of independence or interdependence.

• [**Students know about learning strategies -- but don't use them**](#) [周五, 29 9月 02:21]

Researchers find that university students have high levels of knowledge about self-regulated learning strategies, but many students don't use them. Specific training on how and when to use these techniques could help more students to maximize their academic potential.

• [**Generating terahertz radiation from water makes 'the impossible, possible'**](#) [周五, 29 9月 02:21]

For nearly a decade, researchers have worked to solve a scientific puzzle that many in the research community believed to be impossible: producing terahertz waves -- a form of electromagnetic radiation in the far infrared frequency range -- from liquid water.

• [**Tsunami enabled hundreds of aquatic species to raft across Pacific**](#) [周五, 29 9月 02:21]

The 2011 Japanese tsunami set the stage for something unprecedented. For the first time in recorded history, scientists have detected entire communities of coastal species crossing the ocean by floating on makeshift rafts. Nearly 300 species have appeared on the shores of Hawaii and the US West Coast attached to tsunami debris, marine biologists discovered.

• [**Bed bugs attracted to dirty laundry**](#) [周五, 29 9月 02:20]

Bed bugs are attracted to dirty laundry, according to new research.

Physical abuse and punishment impact children's academic performance -- ScienceDaily

A Penn State researcher and her collaborator found that physical abuse was associated with decreases in children's cognitive performance, while non-abusive forms of physical punishment were independently associated with reduced school engagement and increased peer isolation.

Sarah Font, assistant professor of sociology and co-funded faculty member of the Child Maltreatment Solutions Network, and Jamie Cage, assistant professor in Virginia Commonwealth University's School of Social Work, found that children's performances and engagement in the classroom are significantly influenced by their exposure to mild, harsh and abusive physical punishment in the home. Their study was recently published in *Child Abuse and Neglect*.

While corporal punishment and physical abuse have been linked with reduced cognitive development and

academic achievement in children previously, Font's study is one of the few that simultaneously examines abusive and non-abusive physical punishment as reported by both children and caregivers.

Even if physical punishment does not result in serious physical injury, children may experience fear and distress, and this stress has been found to negatively impact brain structure, development and overall well-being.

"This punishment style is meant to inflict minor pain so the child will change their behavior to avoid future punishment, but it does not give children the opportunity to learn how to behave appropriately through explanation and reasoning," stated Font.

In this study, over 650 children and their caregivers were examined in three areas of physical punishment: mild corporal punishment, harsh corporal punishment, and physical abuse. The groups reported their use or experience with physical punishment and researchers then measured cognitive outcomes, school engagement, and peer isolation in the children. The data was analyzed to determine trajectories between cognitive and academic performance and how initial

and varying exposure to physical punishment and abuse influences them.

"We found that while all forms of physical punishment and abuse are associated with declines in school engagement, only initial exposure to physical abuse has a significant negative influence on cognitive performance, and only harsh corporal punishment notably increases peer isolation in children and was observed in both child and caregiver reports. This suggests that preventing physical abuse could promote children's cognitive performance, but it may not be enough to get children to be involved and well-adjusted in school," said Font.

Considering that mild physical punishment can develop into physical abuse and that even these mild punishments have consequences on children's cognitive and social school functioning, parent education on alternative forms of punishment may be one solution to prevent physical abuse.

Programs that reach parents during services that they regularly use may be one way to give them alternative punishment technique education. This could be a medical professional informing parents during a child's

health visit or staff members of an Early Head Start program providing parent education during the child's enrollment. "Further research and efforts in these types of interventions needs to continue so we can learn more," Font said.

This research was made possible support from the Population Research Institute, part of the Social Science Research Institute.

Story Source:

[Materials](#) provided by [Penn State](#). Original written by Brooke McCord. *Note: Content may be edited for style and length.*

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UV-irradiated amorphous ice behaves like liquid at low temperatures -- ScienceDaily

Ice analogs mimicking interstellar ice behave like liquids at temperatures between -210°C and -120°C according to Hokkaido University researchers. This liquid-like ice may enhance the formation of organic compounds including prebiotic molecules and the accretion of dust to form planets.

Molecular bonds in the ice are severed when irradiated by ultraviolet light inside interstellar molecular clouds, facilitating the formation of complex organic substances including prebiotic molecules. Thus, scientists believe interstellar ice to be "cradles" of organic compounds, but little has previously been known about the ice itself.

The team led by Associate Professor Shogo Tachibana of Hokkaido University discovered that ultraviolet-irradiated amorphous ice which mimics interstellar ice exhibited liquid-like behavior at extremely low

temperature ranges. This finding should help unravel the mechanisms behind the formation of prebiotic molecules as well as the process that gives birth to planets.

The team sprayed a mixed gas of water, methanol and ammonia onto a substrate which was chilled to $-263\text{C}/-441\text{F}$ to $-258\text{C}/-432\text{F}$ and simultaneously irradiated with ultraviolet light. After the ice formed, the researchers turned off the freezer to observe the ice with a microscope as the temperature rose. To their surprise, the ice bubbled like boiling water at temperatures between $-210\text{C}/-346\text{F}$ and $-120\text{C}/-184\text{F}$. Analysis of the gas showed it to be hydrogen molecules, which the researchers believe were formed from methanol and ammonia broken up by UV irradiation. The bubbling shows that the ice was behaving like a liquid, with a viscosity estimated to be similar to that of firm honey.

They then examined pure water. Islands of amorphous water ice were created on a substrate by irradiating crystalline ice with ultraviolet light at $-263\text{C}/-441\text{F}$. They observed the islands as the temperature was raised or at a fixed temperature of $-213\text{C}/-351\text{F}$. The researchers witnessed the islands of amorphous ice

changing shape and spreading over the substrate, which is also a sign of ice behaving like a liquid. The estimated viscosity of this ice was similar to that of silicic magma. This result implies this liquid-like state is common in ice consisting of water.

These experiments suggest that real interstellar ice might behave like a liquid, enhancing the formation of organic compounds, including prebiotic molecules. Tachibana says, "The formation of organic molecules, including prebiotic ones, may efficiently occur in a very cold environment."

"The liquid-like ice may help dust accrete to planets because liquid may act as a glue. However, further experiments are needed to understand the material properties of the liquid-like ice " he added.

Story Source:

Materials provided by [Hokkaido University](#). *Note: Content may be edited for style and length.*

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Snapchat users motivation, level of interest -- ScienceDaily

The simplicity of the platform and brevity of posts are key factors in determining how students can become addicted.

In a world where people struggle with a seemingly diminishing attention span, Snapchat could be the best form of communication.

Posts last just 10 seconds. That's it. No deep thoughts or analytical narrative to the posts. Quick, simple and move on to the next topic.

But a study by Texas Tech University associate professor Narissra Punyanunt-Carter, graduate student J.J. Delacruz and alumni Jason Wrench in the College of Media & Communication shows the interest and popularity of Snapchat goes beyond just its simplicity.

"People use Snapchat a lot because of its entertainment and functional needs," Delacruz said. "For certain people, it enables them to overcome communication

apprehension by using a different means of communication where they don't have a threat in their face. At the same time, there are people who are addicted to it. So for counseling purposes, there is a need to establish the motivations to see if maybe they need to use something other than Snapchat, mediated or not, as a way to fulfill their interaction needs."

In other words, Snapchat, because of its brevity, can provide the perfect medium for those who are hesitant about communicating their life to a public audience, but at the same time can become addictive because those same properties allow for multiple, quick posts that only last a few seconds.

"I noticed people were using it all the time. They are constantly on it," Punyanunt-Carter said. "It's very different from the traditional social media because it only records 10 seconds worth of snaps that are very, very quick. So if I have a lot of friends, that's very time consuming to sit down and watch all their posts on most social media platforms."

Finding their motivations

For the study, Punyanunt-Carter and Delacruz recruited

students in the College of Media & Communication through the department's Sona survey system, where students earn extra credit in certain classes for participating in online surveys. They also administered the survey to those who responded to requests through TechAnnounce, totaling almost 500 students altogether.

The survey asked students who use Snapchat about their reasons for using the medium, including needs and motivations. It also asked about general social media use motivations, such as personality characteristics and what made them tend to gravitate toward Snapchat as a social medium. It also asked questions to help researchers analyze differences between males and females.

The brevity of Snapchat posts was a key factor for two big reasons. One, people using Snapchat felt much more trustworthy with how they shared content with others. Two, because the content disappears quickly, users are able to share their lives and don't feel the pressure to present themselves in any extraordinary form -- they can just be their normal, real self.

"They thought that was a good way to maintain ties

with people they were already very close with, interpersonally," Delacruz said. "It wasn't so much about whether or not they were being controversial as much as just not putting much thought into what is out there. Maybe it's just an ugly selfie or whatever, or maybe it's something that, because the judgement is not there like it is on Facebook or Twitter or Instagram, there's no controversial topics."

There's also an element of familiarity with Snapchat that makes it a preferred medium. Not with the medium itself, but with those on the medium. Delacruz said Snapchat is not the preferred social media platform for starting a new relationship because the posts don't last long. That is something more for Facebook, Twitter and Instagram.

However, it is an optimal platform for those with whom the user already has a relationship, and therefore don't have to impress in their post. It is used to maintain relationships and establish trust between users.

At the same time, Snapchat seems to change faster than other social media platforms, adding things like filters that Facebook and Instagram later added as well.

"It takes away the pressure of coming up with a great message or great topic, or coming up with a way to present yourself that is socially acceptable," Delacruz said.

Analyzing apprehension

While Snapchat can be a useful tool to help overcome apprehension about communicating on a public forum, it can also swing the other way and become addictive.

Understanding the motivations for users who are addicted to it is a crucial part of the study. By knowing what motivates Snapchat users, researchers can help others identify potential alternative outlets for communication.

"Knowing their motivations would definitely help people who advise those with the addiction," Delacruz said. "It can help them have a better understanding of how to be confident and effective communicators."

Punyanunt-Carter would like to expand future research beyond just Snapchat and into other forms of communication.

"I'm going to look further at interpersonal

communication behaviors and how these types of social media platforms affect interpersonal relationships and, perhaps, the sense of identity," Punyanunt-Carter said. "I want to understand the interpersonal and intrapersonal communication elements on social media. There's a lot that needs to be done."

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Video gamers have an advantage in learning -- ScienceDaily

Neuropsychologists of the Ruhr-Universität Bochum let video gamers compete against non-gamers in a learning competition. During the test, the video gamers performed significantly better and showed an increased brain activity in the brain areas that are relevant for learning. Prof Dr Boris Suchan, Sabrina Schenk and Robert Lech report their findings in the journal *Behavioural Brain Research*.

The weather prediction task

The research team studied 17 volunteers who -- according to their own statement -- played action-based games on the computer or a console for more than 15 hours a week. The control group consisted of 17 volunteers who didn't play video games on a regular basis. Both teams did the so-called weather prediction task, a well-established test to investigate the learning of probabilities. The researchers simultaneously recorded the brain activity of the participants via magnetic resonance imaging.

The participants were shown a combination of three cue cards with different symbols. They should estimate whether the card combination predicted sun or rain and got a feedback if their choice was right or wrong right away. The volunteers gradually learned, on the basis of the feedback, which card combination stands for which weather prediction. The combinations were thereby linked to higher or lower probabilities for sun and rain. After completing the task, the study participants filled out a questionnaire to sample their acquired knowledge about the cue card combinations.

Video gamers better with high uncertainties

The gamers were notably better in combining the cue cards with the weather predictions than the control group. They fared even better with cue card combinations that had a high uncertainty such as a combination that predicted 60 percent rain and 40 percent sunshine.

The analysis of the questionnaire revealed that the gamers had acquired more knowledge about the meaning of the card combinations than the control group. "Our study shows that gamers are better in analysing a situation quickly, to generate new

knowledge and to categorise facts -- especially in situations with high uncertainties," says first author Sabrina Schenk.

This kind of learning is linked to an increased activity in the hippocampus, a brain region that plays a key role in learning and memory. "We think that playing video games trains certain brain regions like the hippocampus," says Schenk. "That is not only important for young people, but also for older people; this is because changes in the hippocampus can lead to a decrease in memory performance. Maybe we can treat that with video games in the future."

Story Source:

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Raccoons solve an ancient puzzle, but do they really understand it? Study investigates whether mammals understand the principles of water displacement -- ScienceDaily

Scientists have been using an ancient Greek fable written by Aesop as inspiration to test whether birds and small children understand cause and effect relationships. In "The Crow and the Pitcher," a thirsty crow realises it should drop stones into a pitcher in order to raise the water level high enough so that the bird is able to drink it. A group of US scientists led by Lauren Stanton of the University of Wyoming have now extended this body of work to study raccoon intelligence. Their research in Springer's journal *Animal Cognition* is the first to use the Aesop's Fable paradigm to assess if mammalian carnivores understand the principles of water displacement.

The research team included Sarah Benson-Amram and Emily Davis from the University of Wyoming, as well

as Shylo Johnson and Amy Gilbert from the USDA National Wildlife Research Center, where the experiments were performed. The scientists first tested whether eight raccoons (*Procyon lotor*) held in captivity would spontaneously drop stones into a clear fifty centimetre tube of water to retrieve floating pieces of marshmallow. They found that, similar to studies of birds, the raccoons did not spontaneously drop stones into the tube from the start.

Following previous studies on birds and human children, the scientists then trained the raccoons to drop stones into the tube. They did this by balancing stones on a rim on top of the tube. If the raccoons accidentally knocked the stones in, this raised the water level high enough to bring the marshmallow reward within reach. Raccoons could then learn that the stones falling into the tube brought the marshmallow closer.

During training, seven raccoons interacted with the stones, and four raccoons retrieved the marshmallow reward after accidentally knocking the stones into the water. Two of the four raccoons that got the marshmallow during training then learned on their own to pick up stones off the ground and drop them into the water to get a reward. A third raccoon surprised the

scientists by inventing an entirely new method for solving the problem. She found a way to overturn the entire, very heavy, tube and base to get the marshmallow reward.

The two raccoons that successfully dropped stones into the tube were then presented with different objects that they could drop into the tube to solve the problem, such as large versus small stones, and sinking versus floating balls. These experiments enabled the researchers to determine whether the raccoons really understood the problem. If the raccoons understand water displacement, they should select the objects that displace the most water, like the large stones and sinking balls.

The raccoons performed differently than birds and human children did in previous Aesop's Fable studies, and they did not always pick the most functional option. Stanton, however, believes the raccoons' performance is not necessarily a reflection of their cognitive abilities, but more so of their exploratory behaviour and the build of their dexterous paws.

"We found raccoons to be innovative in many aspects of this task, and we observed diverse, investigative

behaviours that are unique to raccoons," says Stanton, adding that the way in which the experiment was conducted might also have played a role. She explains that the raccoons had fewer opportunities to interact with the puzzle than did many of the birds that were tested in previous studies. Therefore, the performance of the raccoons might improve if they have more time to familiarize themselves with the stones and the water tube.

Despite the low success rates of the raccoons, Benson-Amram is optimistic about running more experiments with raccoons. As Benson-Amram explains "Our study demonstrates that captive raccoons are able to learn to solve novel problems and that they approach classic tests of animal cognition in diverse and exciting ways. We can't wait to see what they do next."

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All Top News

Top science stories featured on ScienceDaily's home page.

- [**Physical abuse and punishment impact children's academic performance**](#) [周六, 30 9月 03:22]

Scientists have found that physical abuse was associated with decreases in children's cognitive performance, while non-abusive forms of physical punishment were independently associated with reduced school engagement and increased peer isolation.

- [**Video gamers have an advantage in learning**](#) [周六, 30 9月 00:51]

Neuropsychologists let video gamers compete against non-gamers in a learning competition. During the test, the video gamers performed significantly better and showed an increased brain activity in the brain areas that are relevant for learning.

- [**Raccoons solve an ancient puzzle, but do they really understand it?**](#) [周六, 30 9月 00:51]

Scientists have been using an ancient Greek fable written by Aesop as inspiration to test whether birds and small children understand cause and effect relationships. A group of scientists have now extended this body of work to study raccoon intelligence. Their research uses the Aesop's Fable paradigm to assess if mammalian carnivores understand the principles of water displacement.

- [**New study changes our view on flying insects**](#) [周五, 29 9月 23:49]

For the first time, researchers are able to prove that there is an optimal speed for certain insects when they fly. At this speed, they are the most efficient and consume the least amount of energy. Corresponding phenomena have previously been demonstrated in birds, but never

among insects.

- [**Small collisions make big impact on Mercury's thin atmosphere**](#) [周五, 29 9月 23:29]

Mercury, our smallest planetary neighbor, has very little to call an atmosphere, but it does have a strange weather pattern: morning micro-meteor showers.

- [**A stinging report: Climate change a major threat to bumble bees**](#) [周五, 29 9月 21:33]

New research is helping to explain the link between a changing global climate and a dramatic decline in bumble bee populations worldwide.

- [**Antarctica: Return of the Weddell polynya supports Kiel climate model**](#) [周五, 29 9月 21:33]

Currently, winter has still a firm grip on Antarctica. At this time of the year, the Weddell Sea usually is covered with a thick layer of sea ice. In spite of the icy temperatures in the region, satellite images depict a large ice-free area in the middle of the ice cover.

- [**Electrically heated textiles now possible via UMass Amherst research**](#) [周五, 29 9月 21:33]

Skiers, crossing guards and others who endure frozen fingers in cold weather may look forward to future relief as manufacturers are poised to take advantage of a new technique for creating electrically heated cloth. Researchers have made gloves that keep fingers as warm as the palm of the hand.

- [**Sharks and rays live a lot longer than we thought**](#) [周五, 29 9月 21:32]

Sharks and rays live a lot longer than we thought -- some twice as long as previously estimated.

- [**Solving the mystery of Pluto's giant blades of ice**](#) [周五, 29 9月 03:24]

NASA's New Horizons mission revolutionized our knowledge of Pluto when it flew past that distant world in July 2015. Among its many

discoveries were images of strange formations resembling giant knife blades of ice, whose origin had remained a mystery. Now, scientists have turned up a fascinating explanation for this "bladed terrain": the structures are made almost entirely of methane ice, and likely formed as a specific kind of erosion wore away their surfaces.

- [**Farthest active inbound comet yet seen**](#) [周五, 29 9月 03:23]

NASA's Hubble Space Telescope has photographed the farthest active inbound comet ever seen, at a whopping distance of 1.5 billion miles from the Sun (beyond Saturn's orbit). Slightly warmed by the remote Sun, it has already begun to develop an 80,000-mile-wide fuzzy cloud of dust, called a coma, enveloping a tiny, solid nucleus of frozen gas and dust. These observations represent the earliest signs of activity ever seen from a comet entering the solar system's planetary zone for the first time.

- [**A fresh look at older data yields a surprise near the Martian equator**](#) [周五, 29 9月 03:22]

Scientists taking a new look at older data from NASA's longest-operating Mars orbiter have discovered evidence of significant hydration near the Martian equator -- a mysterious signature in a region of the Red Planet where planetary scientists figure ice shouldn't exist.

- [**Disease resistance successfully spread from modified to wild mosquitoes**](#) [周五, 29 9月 02:54]

Using genetically modified mosquitoes to reduce or prevent the spread of disease is a rapidly expanding field of investigation. One challenge is ensuring that GM mosquitoes can mate with their wild counterparts so the desired modification is spread in the wild population. Investigators have engineered mosquitoes with an altered microbiota that suppresses human malaria-causing parasites. These GM mosquitoes preferred to mate with wild mosquitoes and passed the desired protection to offspring.

- [**Tsunami enabled hundreds of aquatic species to raft across Pacific**](#) [周五, 29 9月 02:21]

The 2011 Japanese tsunami set the stage for something unprecedented. For the first time in recorded history, scientists have detected entire communities of coastal species crossing the ocean by floating on makeshift rafts. Nearly 300 species have appeared on the shores of Hawaii and the US West Coast attached to tsunami debris, marine biologists discovered.

- [**New measurements show widespread forest loss has reversed the role of tropics as a carbon sink**](#)

[周五, 29 9月 02:20]

A new report provides the most comprehensive picture of deforestation's toll on critical climate change safeguard; reveals hard-to-measure forest degradation is responsible for nearly 70 percent of emissions from tropical forests. Researchers discovered that tropical regions are now a net source of carbon to the atmosphere.

- [**Modern humans emerged more than 300,000 years ago new study suggests**](#)

[周五, 29 9月 02:20]

A genomic analysis of ancient human remains from KwaZulu-Natal revealed that southern Africa has an important role to play in writing the history of humankind.

- [**Supersonic gas streams left over from the Big Bang drive massive black hole formation**](#)

[周五, 29 9月 02:20]

A super-computer simulation by an international team of researchers has shown the formation of a rapidly growing star from supersonic gas streams in the early universe left over from the Big Bang. The star ends its life with catastrophic collapse to leave a black hole with a mass of 34,000 times that of the Sun.

- [**Perovskite solar cells reach record long-term stability, efficiency over 20 percent**](#)

[周五, 29 9月 02:20]

Scientists have greatly improved the operational stability of perovskite solar cells by introducing cuprous thiocyanate protected by a thin layer of reduced graphene oxide. Devices lost less than 5 percent performance when subjected to a crucial accelerated aging test during which they

were exposed for more than 1,000 hours to full sunlight at 60°C.

- [**Summer could be one long heatwave if planet hits 2 degrees Celsius**](#) [周五, 29 9月 00:18]

New paper highlighting how heatwaves will change with every degree of global warming up to 5 degrees C. It finds tropical summers may be one continuous heatwave at 2 degrees C.

- [**Saber-toothed kittens may have been born with thicker bones than other contemporary cats**](#) [周五, 29 9月 00:17]

Saber-toothed kittens may have been born with thicker bones compared to other contemporary cats, but they have a similar pattern of bone development, according to a new study.

- [**Chimpanzees can learn how to use tools without observing others**](#) [周四, 28 9月 21:42]

New observations have led researchers to believe that chimpanzees can use tools spontaneously to solve a task, without needing to watch others first.

- [**The hormone that could be making your dog aggressive discovered**](#) [周四, 28 9月 04:20]

Thousands of people are hospitalized every year for dog bites, and aggressive behavior is a major reason dogs end up in shelters. Biologists have studied the biology behind canine aggression, specifically the role of the hormones vasopressin and oxytocin.

- [**Black holes with ravenous appetites define Type I active galaxies**](#) [周四, 28 9月 01:36]

Type I and Type II active galaxies do not just appear different -- they are, in fact, very different from each other, both structurally and energetically, new research shows. According to the results of a new study, the key factor that distinguishes Type I and Type II galaxies is the rate at which their central black holes -- or active galactic nuclei -- consume matter and spit out energy.

- [**New light shed on how Earth and Mars were created**](#) [周四, 28 9月 01:36]

Analysing a mixture of earth samples and meteorites, scientists have shed new light on the sequence of events that led to the creation of the planets Earth and Mars.

- [**The volatile processes that shaped Earth**](#) [周四, 28 9月 01:36]

Although it is widely understood that Earth was formed gradually, from much smaller bodies, many of the processes involved in shaping our growing planet are less clear. Astronomers have now untangled some of these processes, revealing that the mini-planets added to Earth had previously undergone melting and evaporation. They also address another scientific conundrum: Earth's depletion in many economically important chemical elements.

- [**LIGO and Virgo observatories jointly detect black hole collision**](#) [周四, 28 9月 00:36]

The first observation of gravitational waves has been discovered by by three different detectors, marking a new era of greater insights and improved localization of cosmic events now available through globally networked gravitational-wave observatories.

- [**Soft, flexible origami-inspired robot**](#) [周三, 27 9月 22:23]

A Case Western Reserve University researcher has turned the origami she enjoyed as a child into a patent-pending soft robot that may one day be used on an assembly line, in surgery or even outer space.

- [**Emerging infectious disease threatens Darwin's frog with extinction**](#) [周三, 27 9月 22:09]

Iconic species likely to be wiped-out by amphibian fungus, despite lack of obvious short-term evidence.

- [**Geographic variation in Gentoo penguin calls**](#) [周三, 27 9月 21:33]

Vocal communication is central to the lives of many birds, which use sound to attract mates and defend territories. Penguins are no exception, but we know little about how or why penguin vocalizations vary

between isolated populations. A new study takes a broad look at vocalizations across the range of Gentoo penguins and concludes that while their calls do vary from place to place, we still have lots to learn about the processes at work.

- [**Songbird populations may indicate trouble in northwestern forests**](#) [周三, 27 9月 21:33]

Populations of many North American songbirds are declining, and in many cases we don't understand why. Conservation efforts need this information to be effective, and bird banding stations can help fill in the gaps, providing insights into how demographics vary across space and time. A new study presents ten years of data from banding stations across northern California and southern Oregon and offers new hints on what's driving changes in the region's songbird populations.

- [**Tree-dwelling, coconut-cracking giant rat discovered in Solomon Islands**](#) [周三, 27 9月 21:33]

Scientists have discovered a new species of giant rat. It's more than four times the size of the black rats that live in the US, it lives in trees, and it's rumored to crack open coconuts with its teeth. And it's actually pretty cute.

- [**Lost continent of Zealandia: Scientists return from expedition to sunken land**](#) [周三, 27 9月 11:59]

After a nine-week voyage to study the lost, submerged continent of in the South Pacific, a team of 32 scientists from 12 countries has arrived in Hobart, Tasmania, aboard the research vessel JOIDES Resolution.

- [**Caribbean praying mantises have ancient African origin**](#) [周三, 27 9月 11:59]

Three seemingly unrelated praying mantis groups inhabiting Cuba and the rest of the Greater Antilles actually share an ancient African ancestor and possibly form the oldest endemic animal lineage on the Caribbean islands, researchers have determined.

- [**Umbilical cord stem cells show promise as heart**](#)

[failure treatment](#) [周三, 27 9月 04:23]

Intravenous stem cell infusion derived from umbilical cords appears to boost heart muscle function in patients with heart failure, according to a small study. In this first-of-its-kind study, patients had 'significant' improvement in their hearts' ability to pump blood and experienced no adverse side effects related to the therapy. The results suggest IV-infused umbilical cord-derived stem cells are a promising avenue to treat heart failure.

• [Energy harvested from evaporation could power much of US](#) [周三, 27 9月 00:51]

In the first evaluation of evaporation as a renewable energy source, researchers find that US lakes and reservoirs could generate 325 gigawatts of power, nearly 70 percent of what the United States currently produces.

• [Amount of water in stem cells can determine its fate as fat or bone](#) [周三, 27 9月 00:51]

Adding or removing water from a stem cell can change the destiny of the cell to either pre-fat cells or pre-bone cells, researchers have discovered in a new study.

• [Wearable solar thermoelectric generator created](#) [周二, 26 9月 22:55]

Engineers have introduced a new advanced energy harvesting system, capable of generating electricity by simply being attached to clothes, windows, and outer walls of a building.

• [Cartography of the Cosmos](#) [周二, 26 9月 21:16]

There are hundreds of billions of stars in our own Milky Way galaxy, interspersed with all manner of matter, from the dark to the sublime. This is the universe that one group of researchers is trying to reconstruct, structure by structure, combining telescope surveys with next-generation data analysis and simulation techniques currently being primed for exascale computing.

• [Pigeons better at multitasking than humans](#) [周二, 26 9月 21:05]

Pigeons are capable of switching between two tasks as quickly as humans -- and even more quickly in certain situations. These are the findings of biopsychologists who had performed the same behavioral experiments to test birds and humans. The authors hypothesize that the cause of the slight multitasking advantage in birds is their higher neuronal density.

- [**After 15 years in a vegetative state, nerve stimulation restores consciousness**](#) [周二, 26 9月 01:29]

A 35-year-old man who had been in a vegetative state for 15 years after a car accident has shown signs of consciousness after neurosurgeons implanted a vagus nerve stimulator into his chest. The findings show that vagus nerve stimulation (VNS) -- a treatment already in use for epilepsy and depression--can help to restore consciousness even after many years in a vegetative state.

- [**Antibody protects against Zika and dengue, mouse study shows**](#) [周二, 26 9月 01:29]

The same countries hard hit by Zika virus -- which can cause brain damage in babies infected before birth -- are also home to dengue virus. Researchers now report that they have found an antibody that protects against both viruses. These findings, in mice, could be a step towards an antibody-based preventative drug to protect fetuses from brain damage, while also protecting their mothers from both Zika and dengue disease.

- [**Lava tubes: Hidden sites for future human habitats on the Moon and Mars**](#) [周一, 25 9月 23:28]

Lava tubes, underground caves created by volcanic activity, could provide protected habitats large enough to house streets on Mars or even towns on the Moon, according to new research. A further study shows how the next generation of lunar orbiters will be able to use radar to locate these structures under the Moon's surface.

- [**Visual attention drawn to meaning, not what stands out**](#) [周一, 25 9月 23:13]

Our visual attention is drawn to parts of a scene that have meaning,

rather than to those that are salient or 'stick out,' according to new research. The findings overturn the widely held model of visual attention.

- **[Panda habitat shrinking, becoming more fragmented](#)** [周一, 25 9月 23:13]

Using remote sensing data, Chinese and US scientists have re-assessed the conservation status of the giant panda. Their analysis shows that while panda numbers are increasing, their habitat still covers less area and is more fragmented than it was in 1988, when the species was listed as endangered on the IUCN Red List.

- **[Child abuse affects brain wiring](#)** [周一, 25 9月 23:13]

For the first time, researchers have been able to see changes in the neural structures in specific areas of the brains of people who suffered severe abuse as children. The researchers believe that these changes may contribute to the emergence of depressive disorders and suicidal behavior.

- **[Genes are controlled by 'Nano footballs,' scientists discover](#)** [周一, 25 9月 23:12]

Genes are controlled by 'nano footballs' -- structures that look like footballs but 10 million times smaller than the average ball -- new research has revealed.

- **[Brain damage in fish from plastic nanoparticles in water](#)** [周一, 25 9月 22:47]

A new study shows that plastic particles in water may end up inside fish brains. The plastic can cause brain damage, which is the likely cause of behavioral disorders observed in the fish.

- **[Brain guides body much sooner than previously believed](#)** [周一, 25 9月 21:54]

The brain plays an active role much earlier than previously thought. Long before movement or other behaviors occur, the nascent brain of an embryonic frog instructs normal muscle and nerve patterning and

protects the embryo from agents that cause developmental defects. In addition to identifying these essential functions for the first time, researchers successfully rescued defects caused by lack of a brain by using widely available, human-approved drugs.

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Health News

Top stories featured on ScienceDaily's Health & Medicine, Mind & Brain, and Living Well sections.

- [**Physical abuse and punishment impact children's academic performance**](#) [周六, 30 9月 03:22]

Scientists have found that physical abuse was associated with decreases in children's cognitive performance, while non-abusive forms of physical punishment were independently associated with reduced school engagement and increased peer isolation.

- [**Snapchat users motivation, level of interest**](#) [周六, 30 9月 01:35]

The simplicity of the platform and brevity of posts are key factors in determining how students can become very regular users.

- [**Video gamers have an advantage in learning**](#) [周六, 30 9月 00:51]

Neuropsychologists let video gamers compete against non-gamers in a learning competition. During the test, the video gamers performed significantly better and showed an increased brain activity in the brain areas that are relevant for learning.

- [**New mouse model replicates an underlying cause of intellectual disability**](#) [周六, 30 9月 00:50]

Researchers have developed the first mice that lack the Upf3b gene, providing a new model for studying its underlying role in intellectual disabilities and neurodevelopmental disorders.

- [**Protein that could improve symptoms and reduce mortality in flu**](#) [周五, 29 9月 23:29]

Flu season is on its way, and a new report has identified an innovative

strategy for battling this deadly illness.

- [**Why do we fall asleep when bored?**](#) [周五, 29 9月 21:34]

Why do we have the tendency to fall asleep in the absence of motivating stimuli, i.e., when bored.

- [**Frequent sauna bathing keeps blood pressure in check**](#) [周五, 29 9月 21:33]

Frequent sauna bathing reduces the risk of elevated blood pressure, according to an extensive follow-up population-based study. The risk of developing elevated blood pressure was nearly 50 percent lower among men who had a sauna 4-7 times a week compared to men who had a sauna only once a week.

- [**New regulator of liver metabolism discovered**](#) [周五, 29 9月 21:33]

Researchers have identified an enzyme that has a major effect on glucose utilization in liver cells. The enzyme, retinol saturase, helps these cells adapt to variations in glucose levels. However, when glucose levels are consistently too high, retinol saturase appears to exert a damaging effect on cells.

- [**How the lungs of premature babies can undergo damage**](#) [周五, 29 9月 21:33]

Premature babies that need ventilation to support their breathing often suffer from a condition known as bronchopulmonary dysplasia. Researchers have now discovered a molecular mechanism that plays a key role in the development of the disease.

- [**Breakdown of brain cells' metabolic collaboration linked to Alzheimer's disease**](#) [周五, 29 9月 21:33]

Researchers have discovered that impairing a critical partnership between brain cells can lead to neurodegeneration.

- [**New role for fragile X protein could offer clues for treatment**](#) [周五, 29 9月 21:33]

The protein behind fragile X syndrome, a leading cause of autism and

intellectual disability, controls a suite of genetic regulators.

- [**Immune system cells protect against CMV-induced hearing loss in mice**](#) [周五, 29 9月 21:33]

Immune system cells known as natural killer cells play an important protective role against hearing loss in mice infected with cytomegalovirus (CMV), according to a new study.

- [**An epidemic of dream deprivation: Unrecognized health hazard of sleep loss**](#) [周五, 29 9月 21:32]

A sleep and dream specialist has completed a comprehensive review of data about the causes, extent and consequences of dream loss includes recommendations for restoring healthy dreaming.

- [**Elderly who have trouble identifying odors face risk of dementia**](#) [周五, 29 9月 21:32]

A long-term study of nearly 3,000 older adults found that those who could not identify at least four out of five common odors were more than twice as likely as those with a normal sense of smell to develop dementia within five years. About 14 percent could name just three, 5 percent could identify only two, and 2 percent could name just one. One percent of the study subjects were not able to identify a single scent.

- [**Transcranial electrical stimulation shows promise for treating mild traumatic brain injury**](#) [周五, 29 9月 21:30]

Using a form of low-impulse electrical stimulation to the brain, documented by neuroimaging, researchers report significantly improved neural function in participants with mild traumatic brain injury (TBI).

- [**Understanding connection between HIV transmission, racial/ethnic/geographical differences**](#) [周五, 29 9月 02:54]

The health effects of where people live, work, and interact are well documented, as are the value of neighborhood-level structural interventions designed to improve health. But place-based

characteristics that contribute to disparities in HIV transmission and disease burden are poorly understood, possibly resulting in less-effective HIV risk reduction interventions and programming.

- [**Disease resistance successfully spread from modified to wild mosquitoes**](#) [周五, 29 9月 02:54]

Using genetically modified mosquitoes to reduce or prevent the spread of disease is a rapidly expanding field of investigation. One challenge is ensuring that GM mosquitoes can mate with their wild counterparts so the desired modification is spread in the wild population. Investigators have engineered mosquitoes with an altered microbiota that suppresses human malaria-causing parasites. These GM mosquitoes preferred to mate with wild mosquitoes and passed the desired protection to offspring.

- [**Massive projected increase in use of antimicrobials in animals by 2030**](#) [周五, 29 9月 02:21]

The amount of antimicrobials given to animals destined for human consumption is expected to rise by a staggering 52 percent and reach 200,000 tons by 2030 unless policies are implemented to limit their use, according to new research.

- [**Smart molecules trigger white blood cells to become better cancer-eating machines**](#) [周五, 29 9月 02:21]

A team of researchers has engineered smart protein molecules that can reprogram white blood cells to ignore a self-defense signaling mechanism that cancer cells use to survive and spread in the body. Researchers say the advance could lead to a new method of re-engineering immune cells to fight cancer and infectious diseases. The team successfully tested this method in a live cell culture system.

- [**How molecular scissors cut in the right place**](#) [周五, 29 9月 02:21]

A research group has found out how CRISPR-Cas9 -- also known as 'molecular scissors' -- can search the genome for a specific DNA sequence. Cas9 already has many applications in biotechnology and is also expected to revolutionize medicine. The new research findings

show how Cas9 can be improved to make the molecular scissors faster and more reliable.

• [**Neuro-immune crosstalk in allergic asthma**](#) [周五, 29 9月 02:21]

A research team has uncovered a fundamental molecular cue that the nervous system uses to communicate with the immune system, and may potentially trigger allergic lung inflammation leading to asthma.

• [**Protecting 'self-reactive' immune cells so they can fight melanoma**](#) [周五, 29 9月 02:21]

Researchers report on a potential new way to fight melanoma by blocking one of the immune system's checks and balances.

• [**Why public appeals may fall flat with some would-be donors**](#) [周五, 29 9月 02:21]

To give or not to give: sometimes the answer is in the question, researchers into human behavior and charitable giving have found. The study suggests that sometimes the 'ask' needs to suit the potential donors' sense of independence or interdependence.

• [**Students know about learning strategies -- but don't use them**](#) [周五, 29 9月 02:21]

Researchers find that university students have high levels of knowledge about self-regulated learning strategies, but many students don't use them. Specific training on how and when to use these techniques could help more students to maximize their academic potential.

• [**Bed bugs attracted to dirty laundry**](#) [周五, 29 9月 02:20]

Bed bugs are attracted to dirty laundry, according to new research.

• [**Molecular fingerprint of breast tumors linked to immune response in bloodstream**](#) [周五, 29 9月 02:20]

Using newly developed software, researchers have shown that genes and molecular processes in breast cancer tumor cells are tightly linked to genes and processes in blood cells, including immune system cells.

• [**Central America 'kissing bug' carries two main**](#)

subtypes of Chagas disease parasite [周五, 29 9月 02:20]

Trypanosoma cruzi, the parasite that causes Chagas disease, is divided into six strains, each of which differs in where they are found and in how important they are in human infections. Now, researchers have found that most T. cruzi parasites in Central America belong to just two of those strains.

• **Male hormones may promote infection by virus that causes Kaposi's sarcoma** [周五, 29 9月 02:20]

Male hormones may facilitate infection with a virus that can cause a type of cancer known as Kaposi's sarcoma. This finding could help explain why men have an increased risk of developing Kaposi's sarcoma.

• **Speedy urine test for amphetamines sends results via app** [周五, 29 9月 00:17]

Researchers have developed a wireless sensor and a smartphone app that can detect the presence of speed in a drop of human urine in seconds. The prototype device is also portable enough to be worn as a bracelet, has unprecedented sensitivity for amphetamines with low risk for false-positive results, and costs about \$50 to produce.

• **For boys at risk of psychopathy, laughter isn't so contagious** [周五, 29 9月 00:17]

For most people, laughter is highly contagious. It's nearly impossible to hear or see someone laughing and not feel the urge to join in. But researchers have new evidence to show that boys at risk of developing psychopathy when they become adults don't have that same urge.

• **Incurable childhood brain tumors split into 10 new diseases** [周五, 29 9月 00:17]

Scientists have found that deadly childhood brain tumors are actually 10 different diseases that should each be diagnosed and treated based on their specific genetic faults. The major new study has important implications for treatment, since personalizing care for each type of

brain tumor is likely to be much more effective than grouping them all together as one.

- [**How brain develops before birth is tightly controlled by RNA modification**](#) [周五, 29 9月 00:17]

A chemical tag added to RNA during embryonic development regulates how the early brain grows. When this development goes awry, problems happen and may cause psychiatric disorders in people.

- [**How do we sense moonlight? Daylight? There's a cell for that**](#) [周五, 29 9月 00:17]

Neuroscientists describe an unexpected way that we sense the overall degree of illumination in our environment. They found that neurons in the retina of the eye divvy up the job, with particular neurons tuned to different ranges of light intensity.

- [**Uncovering why psoriasis recurs**](#) [周五, 29 9月 00:17]

New research helps address a longstanding question about the inflammatory skin condition psoriasis: Why do skin lesions that have resolved with therapy recur in the same locations after a patient stops using topical steroids?

- [**Necessity is indeed mother of invention, regardless of resources, study shows**](#) [周五, 29 9月 00:16]

People who live in extremely resource poor environments can also be highly innovative in a different way and provide benefits to a range of people through creative problem solving, research shows.

- [**Zinc can halt the growth of cancer cells, study says**](#) [周五, 29 9月 00:16]

Zinc supplements can significantly inhibit the proliferation of esophageal cancer cells, according to a new study.

- [**Nearly one in six new HIV diagnoses in Europe are among people over 50**](#) [周五, 29 9月 00:16]

A new study showed that while the rate of newly reported HIV cases in

Europe remained steady in younger people between 2004 and 2015, it increased by 2 percent each year overall in older people. With around 30,000 newly diagnosed HIV infections reported each year over the last decade, the HIV epidemic remains a significant public health problem in the 31 countries of the European Union and European Economic Area.

- [**Highly virulent bacterium causes rampant caries in some children**](#) [周五, 29 9月 00:16]

Researchers have made a novel discovery connecting highly variant types of the caries bacterium *Streptococcus mutans* and their adhesive function to children with rampant caries and increased risk of dental caries.

- [**Study provides first estimate of total US population with felony convictions**](#) [周五, 29 9月 00:16]

New research on the growth in the scope and scale of felony convictions finds that, as of 2010, 3 percent of the total US population and 15 percent of the African-American male population have served time in prison. People with felony convictions more broadly account for 8 percent of the overall population and 33 percent of the African-American male population.

- [**In people with OCD, actions are at odds with beliefs**](#) [周五, 29 9月 00:16]

The repeated behaviors that characterize obsessive-compulsive disorder are a manifestation of an underlying brain dysfunction that is not yet well understood. Now, scientists report the use of a mathematical model that they say will help them get at the root of what causes OCD. They find that people with OCD develop an internal, accurate sense of how things work but do not use it to guide behavior.

- [**Tracking the body's mini-shuttles**](#) [周四, 28 9月 23:30]

The development of a new technique for labelling the body's own transporters -- exosomes -- could have long term benefits in the treatment of life-threatening medical conditions, including cancer.

- [**Fever during labor may present risk to mother**](#) [周

四, 28 9月 23:30]

A new study finds a link between the duration of fever during labor and maternal complications.

• **[Don't rely on mixed messages to change health behaviors](#)** [周四, 28 9月 23:30]

Self-improvement messages to lose weight, quit smoking or eat more fruits and vegetables can fall on deaf ears if the intervention message is mixed, says new research.

• **[Parkinson's disease involves degeneration of the olfactory system](#)** [周四, 28 9月 23:30]

Scientists discover the anatomical link for the loss of smell in Parkinson's disease.

• **[Scientists create endocytosis on demand by 'hotwiring' cells](#)** [周四, 28 9月 22:12]

A solution to the problem of creating endocytosis on demand is being compared to 'hotwiring' a car. A team has managed to trigger clathrin-mediated endocytosis in the lab.

• **[Medication that treats parasite infection also has anti-cancer effect](#)** [周四, 28 9月 21:42]

Scientists report a new gene target, KPNB1, for treatment against epithelial ovarian cancer (EOC). EOC is the fifth leading cause of cancer-related deaths in women and has a particularly grim outlook upon diagnosis. They also find that ivermectin exerts an anti-tumor effect on EOC cells by interacting with the KPNB1 gene. Because ivermectin is already approved to treat parasitic infections in patients, experiments for its effectiveness in an anti-cancer regimen is expected to significantly lower ...

• **[Women with suspected HPV adverse effects more often suffered from psychiatric disorders](#)** [周

四, 28 9月 21:42]

New research shows that women who are referred to an HPV center more often have had psychiatric medicine prescribed or been

hospitalized for psychiatric conditions up to five years before they received the vaccine.

• [Answer to young people's persistent sleep problems](#) [周四, 28 9月 21:41]

A collaborative research project indicates high rates of sleep problems continuing through teenage years and into early adulthood -- but also suggests a natural remedy.

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Technology News

Top stories featured on ScienceDaily's Space & Time, Matter & Energy, and Computers & Math sections.

- [**UV-irradiated amorphous ice behaves like liquid at low temperatures**](#) [周六, 30 9月 03:21]

Ice analogs mimicking interstellar ice behave like liquids at temperatures between -210°C and -120°C according to researchers. This liquid-like ice may enhance the formation of organic compounds including prebiotic molecules and the accretion of dust to form planets.

- [**Video gamers have an advantage in learning**](#) [周六, 30 9月 00:51]

Neuropsychologists let video gamers compete against non-gamers in a learning competition. During the test, the video gamers performed significantly better and showed an increased brain activity in the brain areas that are relevant for learning.

- [**There are only 15 possible pentagonal tiles**](#) [周五, 29 9月 23:50]

Tiling the plane with a single pattern is a mathematical problem that has interested humans since Antiquity, notably for the aesthetic quality of tiles in mosaics or tiling. One of the unresolved problems in this field that has been puzzling the scientific community since 1918 has now been definitively resolved.

- [**Bioreactors on a chip renew promises for algal biofuels**](#) [周五, 29 9月 23:29]

Researchers report exciting new technology that may revolutionize the search for the perfect algal strain: algal droplet bioreactors on a chip the size of a quarter.

- [**Small collisions make big impact on Mercury's**](#)

[thin atmosphere](#) [周五, 29 9月 23:29]

Mercury, our smallest planetary neighbor, has very little to call an atmosphere, but it does have a strange weather pattern: morning micro-meteor showers.

• [Ultracold atoms point toward an intriguing magnetic behavior](#) [周五, 29 9月 21:33]

Researchers have studied the quantum behavior of ultracold atoms and discovered an intriguing magnetic behavior that could help explain how high-temperature superconductivity works.

• [Electrically heated textiles now possible via UMass Amherst research](#) [周五, 29 9月 21:33]

Skiers, crossing guards and others who endure frozen fingers in cold weather may look forward to future relief as manufacturers are poised to take advantage of a new technique for creating electrically heated cloth. Researchers have made gloves that keep fingers as warm as the palm of the hand.

• [Ultra-fast and ultra-sensitive hydrogen sensor](#) [周五, 29 9月 21:29]

Scientists have made an ultra-fast hydrogen sensor that can detect hydrogen gas levels under 1 percent in less than seven seconds. The sensor also can detect hundreds of parts per million levels of hydrogen gas within 60 seconds at room temperature.

• [Solving the mystery of Pluto's giant blades of ice](#) [周五, 29 9月 03:24]

NASA's New Horizons mission revolutionized our knowledge of Pluto when it flew past that distant world in July 2015. Among its many discoveries were images of strange formations resembling giant knife blades of ice, whose origin had remained a mystery. Now, scientists have turned up a fascinating explanation for this "bladed terrain": the structures are made almost entirely of methane ice, and likely formed as a specific kind of erosion wore away their surfaces.

• [Farthest active inbound comet yet seen](#) [周五, 29 9月 03:23]

NASA's Hubble Space Telescope has photographed the farthest active

inbound comet ever seen, at a whopping distance of 1.5 billion miles from the Sun (beyond Saturn's orbit). Slightly warmed by the remote Sun, it has already begun to develop an 80,000-mile-wide fuzzy cloud of dust, called a coma, enveloping a tiny, solid nucleus of frozen gas and dust. These observations represent the earliest signs of activity ever seen from a comet entering the solar system's planetary zone for the first time.

- [**A fresh look at older data yields a surprise near the Martian equator**](#) [周五, 29 9月 03:22]

Scientists taking a new look at older data from NASA's longest-operating Mars orbiter have discovered evidence of significant hydration near the Martian equator -- a mysterious signature in a region of the Red Planet where planetary scientists figure ice shouldn't exist.

- [**Flexible new platform for high-performance electronics**](#) [周五, 29 9月 02:21]

A team of engineers has created the most functional flexible transistor in the world -- and with it, a fast, simple and inexpensive fabrication process that's easily scalable to the commercial level. It's an advance that could open the door to an increasingly interconnected world, enabling manufacturers to add 'smart,' wireless capabilities to any number of large or small products or objects -- like wearable sensors and computers for people and animals -- that curve, bend, stretch and move.

- [**Generating terahertz radiation from water makes 'the impossible, possible'**](#) [周五, 29 9月 02:21]

For nearly a decade, researchers have worked to solve a scientific puzzle that many in the research community believed to be impossible: producing terahertz waves -- a form of electromagnetic radiation in the far infrared frequency range -- from liquid water.

- [**Supersonic gas streams left over from the Big Bang drive massive black hole formation**](#) [周五, 29 9月 02:20]

A super-computer simulation by an international team of researchers has shown the formation of a rapidly growing star from supersonic gas

streams in the early universe left over from the Big Bang. The star ends its life with catastrophic collapse to leave a black hole with a mass of 34,000 times that of the Sun.

- [**Perovskite solar cells reach record long-term stability, efficiency over 20 percent**](#) [周五, 29 9月 02:20]

Scientists have greatly improved the operational stability of perovskite solar cells by introducing cuprous thiocyanate protected by a thin layer of reduced graphene oxide. Devices lost less than 5 percent performance when subjected to a crucial accelerated aging test during which they were exposed for more than 1,000 hours to full sunlight at 60°C.

- [**Speedy urine test for amphetamines sends results via app**](#) [周五, 29 9月 00:17]

Researchers have developed a wireless sensor and a smartphone app that can detect the presence of speed in a drop of human urine in seconds. The prototype device is also portable enough to be worn as a bracelet, has unprecedented sensitivity for amphetamines with low risk for false-positive results, and costs about \$50 to produce.

- [**Fluorine-containing molecules from cell cultures**](#) [周五, 29 9月 00:16]

Natural organic compounds that contain fluorine are rare because living organisms -- with a few exceptions -- do not produce them. Scientists have now genetically engineered a microbial host for organofluorine metabolism, allowing it to produce a fluorinated intermediate known as a diketide. As reported, the diketide could then be used as a monomer for the in vivo production of fluorinated bioplastics.

- [**Popping bubbles: Surfactants have surprising effect on nanobubble stability**](#) [周五, 29 9月 00:16]

The stability of nanobubbles is well understood, but the mechanisms causing their eventual destabilization are still in question. Using molecular dynamics simulations, researchers explored the effect of surfactants -- components that lower surface tension -- on the stabilization of nanobubbles.

- **[How do zebrafish develop their stripes?](#)** [周四, 28 9月 22:31]

A mathematician has thrown new light on the longstanding mystery of how zebrafish develop the distinctive striped patterns on their skin.

- **[Bursting with starbirth](#)** [周四, 28 9月 22:12]

This oddly shaped galactic spectacle is bursting with brand new stars. The pink fireworks in this image taken with the NASA/ESA Hubble Space Telescope are regions of intense star formation, triggered by a cosmic-scale collision. The huge galaxy in this image, NGC 4490, has a smaller galaxy in its gravitational grip and is feeling the strain.

- **[Small scale energy harvesters show large scale impact](#)** [周四, 28 9月 22:12]

The production of nano-scale devices has drastically increased with the rise in technological applications, yet a major drawback to the functionality of nano-sized systems is the need for an equally small energy resource. To address this, researchers have been modeling new piezoelectric energy harvester technology at the nano-scale level.

- **[Biodegradable microsensors for food monitoring](#)** [周四, 28 9月 21:42]

A new generation of microsensors could provide the vital link between food products and the Internet of Things. Researchers have developed an ultra-thin temperature sensor that is both biocompatible and biodegradable.

- **[Making surgical screws from bones](#)** [周四, 28 9月 20:51]

Biomechanics are developing surgical screws from donated human bone material for foot and jaw surgery together with an Austrian start-up.

- **[Non-toxic flame retardant enters market, study suggests](#)** [周四, 28 9月 20:51]

Chemists have developed and patented an environmentally friendly way to produce flame retardants for foams that can be used in mattresses and upholstery. Unlike previous flame retardants made of chemicals containing chlorine, the new material is non-toxic and effective, researchers say.

• [**Move towards 'holy grail' of computing by creation of brain-like photonic microchips**](#) [周四, 28 9月 04:20]

Scientists have made a crucial step towards unlocking the 'holy grail' of computing -- microchips that mimic the way the human brain works to store and process information.

• [**High cost of truckers not having enough places to park and rest**](#) [周四, 28 9月 04:20]

A pilot study illustrates the high economic cost of having too few safe places for commercial truck drivers to park and rest.

• [**Band gaps, made to order**](#) [周四, 28 9月 04:20]

Engineers have created atomically thin superlattice materials with precision.

• [**Atomistic simulations go the distance on metal strength**](#) [周四, 28 9月 04:20]

Researchers have dived down to the atomic scale to resolve every 'jiggle and wiggle' of atomic motion that underlies metal strength.

• [**Minimally invasive valve replacements hold up well after five years, study shows**](#) [周四, 28 9月 01:36]

A minimally invasive procedure used to replace heart valves without open heart surgery appears to provide a durable remedy for people with a life-threatening form of heart disease in which the aortic valve opening narrows, diminishing blood flow.

• [**Black holes with ravenous appetites define Type I active galaxies**](#) [周四, 28 9月 01:36]

Type I and Type II active galaxies do not just appear different -- they are, in fact, very different from each other, both structurally and energetically, new research shows. According to the results of a new study, the key factor that distinguishes Type I and Type II galaxies is the rate at which their central black holes -- or active galactic nuclei -- consume matter and spit out energy.

- [**New light shed on how Earth and Mars were created**](#) [周四, 28 9月 01:36]

Analysing a mixture of earth samples and meteorites, scientists have shed new light on the sequence of events that led to the creation of the planets Earth and Mars.

- [**The volatile processes that shaped Earth**](#) [周四, 28 9月 01:36]

Although it is widely understood that Earth was formed gradually, from much smaller bodies, many of the processes involved in shaping our growing planet are less clear. Astronomers have now untangled some of these processes, revealing that the mini-planets added to Earth had previously undergone melting and evaporation. They also address another scientific conundrum: Earth's depletion in many economically important chemical elements.

- [**Recipe for quantum-enhanced technologies refined**](#) [周四, 28 9月 00:57]

A breakthrough has been made in understanding the structure of entanglement in quantum systems with long-range interactions.

- [**Turbocharging engine design**](#) [周四, 28 9月 00:51]

Researchers have moved the development process into the passing lane. For the first time, scientists and engineers have pinpointed engine designs for a given fuel using the Mira supercomputer at the heart of the Argonne Leadership Computing Facility (ALCF), a DOE Office of Science User Facility.

- [**Prototype UT equipment can detect rheumatoid arthritis**](#) [周四, 28 9月 00:50]

Researchers have designed a device that shows the difference between healthy fingers and arthritic fingers, according to a first clinical study published. The researchers responsible for the development of the compact device believe that it may in time help doctors to objectively diagnose the degree of inflammation in joints.

- [**LIGO and Virgo observatories jointly detect**](#)

[black hole collision](#) [周四, 28 9月 00:36]

The first observation of gravitational waves has been discovered by by three different detectors, marking a new era of greater insights and improved localization of cosmic events now available through globally networked gravitational-wave observatories.

• [Unlocking the mysteries of memory -- and potentially enhancing it](#) [周四, 28 9月 00:36]

Memory acts like an anchor, reminding us of past experiences that have made us who we are today. Attempts to boost it, particularly as we age, have sprouted cottage industries of supplements and brain games. In parallel, researchers have been pursuing pharmaceutical interventions. In some of the latest work on this front, one team reports that they have identified a novel compound that enhances long-term memory in animal studies.

• [Ancient ink for cancer treatment](#) [周四, 28 9月 00:35]

For hundreds of years, Chinese calligraphers have used a plant-based ink to create beautiful messages and art. Now, one group reports that this ink could noninvasively and effectively treat cancer cells that spread, or metastasize, to lymph nodes.

• [Total solar eclipse viewed from space](#) [周四, 28 9月 00:35]

While people across the nation gazed at August's total solar eclipse from Earth, a bread loaf-sized NASA satellite had a front row seat for the astronomical event.

• [On a collision course with game theory](#) [周三, 27 9月 22:23]

How do pedestrians behave in a large crowd? How do they avoid collisions? How can their paths be modeled? A new approach developed by mathematicians provides answers to these questions.

• [Soft, flexible origami-inspired robot](#) [周三, 27 9月 22:23]

A Case Western Reserve University researcher has turned the origami she enjoyed as a child into a patent-pending soft robot that may one day be used on an assembly line, in surgery or even outer space.

• [How old does your computer think you are?](#) [周三, 27 9月 22:23]

月 22:23]

Computerized face recognition is an important part of initiatives to develop security systems, in building social networks, in curating photographs, and many other applications. Systems can allow a computer to estimate with precision a person's age based on an analysis of their face.

- [**Monetizing time savings makes toll roads financially stack up**](#) [周三, 27 9月 21:34]

Putting a dollar value on the savings from traffic congestion, noise and air pollution as a result of toll roads and tunnels will make large infrastructure projects more cost effective, according to a new study.

- [**New twist on asymmetric catalysis**](#) [周三, 27 9月 21:33]

Researchers have developed an efficient and simple chemical synthesis of a new kind of twisted helicene molecule containing a sulfur group, thiophene. The unusual screw-like asymmetry of the molecules could be useful for making drugs and other types of chemicals in their pure single-enantiomer forms.

- [**The strange structures of the Saturn nebula**](#) [周三, 27 9月 21:33]

The spectacular planetary nebula NGC 7009, or the Saturn Nebula, emerges from the darkness like a series of oddly-shaped bubbles, lit up in glorious pinks and blues. This colourful image was captured by the MUSE instrument on ESO's Very Large Telescope (VLT). The map -- which reveals a wealth of intricate structures in the dust, including shells, a halo and a curious wave-like feature -- will help astronomers understand how planetary nebulae develop their strange shapes and symmetries.

- [**Computer scientists address gap in messaging privacy**](#) [周三, 27 9月 21:33]

Researchers have developed a solution to a longstanding problem in the field of end-to-end encryption, a technique that ensures that only sender and recipient can read a message.

- [**A beautiful wing design solution inspired by owl**](#)

[feathers](#) [周三, 27 9月 11:59]

Researchers have formulated a mathematical solution that could help minimize noise, maximize aerodynamics in design of porous airfoils (2-D wings) to improve wind turbines and air vehicles.

• [A record number of Americans viewed the 2017 solar eclipse](#) [周三, 27 9月 02:36]

Eighty-eight percent of American adults viewed the August total solar eclipse directly or electronically. This audience of 215 million adults is nearly twice the size of the viewership of recent Super Bowl football games.

• [Engineers to pioneer unprecedented high speed wireless data coverage](#) [周三, 27 9月 01:52]

A major new international research program is responding to the overwhelming demand of internet traffic to develop ubiquitous wireless data coverage with unprecedented speed at millimetre waves.

• [Near-Earth asteroid CubeSat goes full sail](#) [周三, 27 9月 01:39]

NASA's Near-Earth Asteroid Scout, a small satellite the size of a shoebox, designed to study asteroids close to Earth, recently performed a full-scale solar sail deployment test. The test was performed in an indoor clean room to ensure the deployment mechanism's functionality after recent environmental testing.

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Environment News

Top stories featured on ScienceDaily's Plants & Animals, Earth & Climate, and Fossils & Ruins sections.

- [**Raccoons solve an ancient puzzle, but do they really understand it?**](#) [周六, 30 9月 00:51]

Scientists have been using an ancient Greek fable written by Aesop as inspiration to test whether birds and small children understand cause and effect relationships. A group of scientists have now extended this body of work to study raccoon intelligence. Their research uses the Aesop's Fable paradigm to assess if mammalian carnivores understand the principles of water displacement.

- [**New study changes our view on flying insects**](#) [周五, 29 9月 23:49]

For the first time, researchers are able to prove that there is an optimal speed for certain insects when they fly. At this speed, they are the most efficient and consume the least amount of energy. Corresponding phenomena have previously been demonstrated in birds, but never among insects.

- [**Erosion from ancient tsunami in Northern California**](#) [周五, 29 9月 23:30]

Geologists use ground-penetrating radar to determine the breadth and depth of erosion from an ancient tsunami in Northern California.

- [**Scandinavia's earliest farmers exchanged terminology with Indo-Europeans**](#) [周五, 29 9月 23:29]

5,000 years ago, the Yamnaya culture migrated into Europe from the Caspian steppe. In addition to innovations such as the wagon and dairy production, they brought a new language -- Indo-European -- that

replaced most local languages the following millennia. But local cultures also influenced the new language, particularly in southern Scandinavia, where Neolithic farmers made lasting contributions to Indo-European vocabulary before their own language went extinct, new research shows.

- [**Algae with light switch**](#) [周五, 29 9月 23:29]

The adhesion of *Chlamydomonas*, a unicellular alga, to surfaces is light-dependent.

- [**Arbuscular mycorrhizal fungal communities exposed with new DNA sequencing approach**](#) [周五, 29 9月 23:29]

Arbuscular mycorrhizal fungal systems play crucial roles in their environment, affecting the plants that can grow there and the nutrients in the soils. Researchers have developed a new DNA sequencing technique using barcoded primers that is capable of detecting rare fungal species in a community, paving the way for future insights into how they might vary in response to environmental changes.

- [**A stinging report: Climate change a major threat to bumble bees**](#) [周五, 29 9月 21:33]

New research is helping to explain the link between a changing global climate and a dramatic decline in bumble bee populations worldwide.

- [**Antarctica: Return of the Weddell polynya supports Kiel climate model**](#) [周五, 29 9月 21:33]

Currently, winter has still a firm grip on Antarctica. At this time of the year, the Weddell Sea usually is covered with a thick layer of sea ice. In spite of the icy temperatures in the region, satellite images depict a large ice-free area in the middle of the ice cover.

- [**New clues from brain structures of mantis shrimp**](#) [周五, 29 9月 21:33]

New research sheds new light on the evolution of some of the earliest brain structures, and stirs up new, intriguing questions about the origins of centers that support learning and memory.

- [**Sharks and rays live a lot longer than we thought**](#) [周五, 29 9月 21:32]

Sharks and rays live a lot longer than we thought -- some twice as long as previously estimated.

- [**Global methane emissions from agriculture larger than reported, according to new estimates**](#) [周五, 29 9月 21:32]

Global methane emissions from agriculture are larger than estimated due to the previous use of out-of-date data on carbon emissions generated by livestock, according to a new study.

- [**Disease resistance successfully spread from modified to wild mosquitoes**](#) [周五, 29 9月 02:54]

Using genetically modified mosquitoes to reduce or prevent the spread of disease is a rapidly expanding field of investigation. One challenge is ensuring that GM mosquitoes can mate with their wild counterparts so the desired modification is spread in the wild population. Investigators have engineered mosquitoes with an altered microbiota that suppresses human malaria-causing parasites. These GM mosquitoes preferred to mate with wild mosquitoes and passed the desired protection to offspring.

- [**Massive projected increase in use of antimicrobials in animals by 2030**](#) [周五, 29 9月 02:21]

The amount of antimicrobials given to animals destined for human consumption is expected to rise by a staggering 52 percent and reach 200,000 tons by 2030 unless policies are implemented to limit their use, according to new research.

- [**Continental controls needed to maintain fightback against tree diseases**](#) [周五, 29 9月 02:21]

Tighter controls on timber and plant movements into Europe are necessary to prevent further disastrous effects of plant diseases, a new study of the ash-dieback pathogen advises.

- [**Smart molecules trigger white blood cells to become better cancer-eating machines**](#) [周五, 29 9月 02:21]

A team of researchers has engineered smart protein molecules that can reprogram white blood cells to ignore a self-defense signaling mechanism that cancer cells use to survive and spread in the body. Researchers say the advance could lead to a new method of re-engineering immune cells to fight cancer and infectious diseases. The team successfully tested this method in a live cell culture system.

- [**Tsunami enabled hundreds of aquatic species to raft across Pacific**](#) [周五, 29 9月 02:21]

The 2011 Japanese tsunami set the stage for something unprecedented. For the first time in recorded history, scientists have detected entire communities of coastal species crossing the ocean by floating on makeshift rafts. Nearly 300 species have appeared on the shores of Hawaii and the US West Coast attached to tsunami debris, marine biologists discovered.

- [**Bed bugs attracted to dirty laundry**](#) [周五, 29 9月 02:20]

Bed bugs are attracted to dirty laundry, according to new research.

- [**Central America 'kissing bug' carries two main subtypes of Chagas disease parasite**](#) [周五, 29 9月 02:20]

Trypanosoma cruzi, the parasite that causes Chagas disease, is divided into six strains, each of which differs in where they are found and in how important they are in human infections. Now, researchers have found that most T. cruzi parasites in Central America belong to just two of those strains.

- [**New measurements show widespread forest loss has reversed the role of tropics as a carbon sink**](#) [周五, 29 9月 02:20]

[周五, 29 9月 02:20]

A new report provides the most comprehensive picture of deforestation's toll on critical climate change safeguard; reveals hard-to-measure forest degradation is responsible for nearly 70 percent of emissions from tropical forests. Researchers discovered that tropical regions are now a

net source of carbon to the atmosphere.

- [**Modern humans emerged more than 300,000 years ago new study suggests**](#) [周五, 29 9月 02:20]

A genomic analysis of ancient human remains from KwaZulu-Natal revealed that southern Africa has an important role to play in writing the history of humankind.

- [**Perovskite solar cells reach record long-term stability, efficiency over 20 percent**](#) [周五, 29 9月 02:20]

Scientists have greatly improved the operational stability of perovskite solar cells by introducing cuprous thiocyanate protected by a thin layer of reduced graphene oxide. Devices lost less than 5 percent performance when subjected to a crucial accelerated aging test during which they were exposed for more than 1,000 hours to full sunlight at 60°C.

- [**Summer could be one long heatwave if planet hits 2 degrees Celsius**](#) [周五, 29 9月 00:18]

New paper highlighting how heatwaves will change with every degree of global warming up to 5 degrees C. It finds tropical summers may be one continuous heatwave at 2 degrees C.

- [**Saber-toothed kittens may have been born with thicker bones than other contemporary cats**](#) [周五, 29 9月 00:17]

Saber-toothed kittens may have been born with thicker bones compared to other contemporary cats, but they have a similar pattern of bone development, according to a new study.

- [**Fluorine-containing molecules from cell cultures**](#) [周五, 29 9月 00:16]

Natural organic compounds that contain fluorine are rare because living organisms -- with a few exceptions -- do not produce them. Scientists have now genetically engineered a microbial host for organofluorine metabolism, allowing it to produce a fluoridated intermediate known as a diketide. As reported, the diketide could then be used as a monomer for the in vivo production of fluorinated bioplastics.

- [**Highly virulent bacterium causes rampant caries in some children**](#) [周五, 29 9月 00:16]

Researchers have made a novel discovery connecting highly variant types of the caries bacterium *Streptococcus mutans* and their adhesive function to children with rampant caries and increased risk of dental caries.

- [**How do zebrafish develop their stripes?**](#) [周四, 28 9月 22:31]

A mathematician has thrown new light on the longstanding mystery of how zebrafish develop the distinctive striped patterns on their skin.

- [**Mapping the Tasmanian tiger's mysterious loss from mainland**](#) [周四, 28 9月 21:42]

Ancient DNA extracted from fossil bones and museum specimens has shed new light on the mysterious loss of the Tasmanian tiger (thylacine) from Australia's mainland.

- [**Did rapid sea-level rise drown fossil coral reefs around Hawaii?**](#) [周四, 28 9月 21:42]

Investigations to predict changes in sea levels and their impacts on coastal systems are a step closer, as a result of a new international collaboration.

- [**Chimpanzees can learn how to use tools without observing others**](#) [周四, 28 9月 21:42]

New observations have led researchers to believe that chimpanzees can use tools spontaneously to solve a task, without needing to watch others first.

- [**Large earthquakes along Olympic Mountain faults, Washington State, USA**](#) [周四, 28 9月 21:42]

A comprehensive study of faults along the north side of the Olympic Mountains of Washington State emphasizes the substantial seismic hazard to the northern Puget Lowland region. The study examined the Lake Creek-Boundary Creek and Sadie Creek faults along the north flank the Olympic Mountains, and concludes that there were three to

five large, surface-rupturing earthquakes along the faults within the last 13,000 years.

- [**Breakthrough in rapid, mass screening for the Ebola virus**](#) [周四, 28 9月 20:49]

A new, faster and safer way of diagnosing the Ebola virus has been developed.

- [**Exploring an ancient event in pumpkin, gourd and melon evolution**](#) [周四, 28 9月 20:47]

Recently, scientists have making great strides in better understanding with the genomes sequenced of cucumber, watermelon, and melons. With these projects completed, a research team has performed the first large comparative genomics exploration of their genome structures and evolution. After reconstructing evolutionary trees and extensive comparisons of common genes between Cucurbitaceae plants, unexpectedly, the research team has found the first evidence of an ancient whole genome duplication ev...

- [**New mechanism points the way to breaking ribosome antibiotic resistance**](#) [周四, 28 9月 20:47]

Research groups reveal a novel mechanism of ribosome dimerization in the bacterium *Lactococcus lactis* using cryo-electron microscopy. As this dimerization renders ribosomes more resistant to antibiotics, this study provides the necessary structural basis to design new generations of antibiotics.

- [**Examining the lifestyles of microbes**](#) [周四, 28 9月 06:43]

Scientists are studying microbes called Parcubacteria that were found by James Cameron (director of 'Terminator') during a recent deep sea expedition. They want to study the microbes' lifestyle and see how similar they are to those found on land.

- [**That cup of coffee may not relieve Parkinson's symptoms**](#) [周四, 28 9月 04:20]

Contrary to previous research, caffeine may not relieve movement

symptoms for people with Parkinson's disease, according to a study.

- [**The hormone that could be making your dog aggressive discovered**](#) [周四, 28 9月 04:20]

Thousands of people are hospitalized every year for dog bites, and aggressive behavior is a major reason dogs end up in shelters. Biologists have studied the biology behind canine aggression, specifically the role of the hormones vasopressin and oxytocin.

- [**How cells recover from the verge of programmed death**](#) [周四, 28 9月 04:20]

Biologists explore the molecular underpinnings of cells that recover from the verge of programmed death.

- [**Earliest evidence for a native African cultigen discovered in Eastern Sudan**](#) [周四, 28 9月 04:20]

Archaeologists examining plant impressions within broken pottery have discovered the earliest evidence for domesticated sorghum in Africa.

- [**Beer can lift your spirits due to malted barley ingredient**](#) [周四, 28 9月 03:28]

Visitors to the Oktoberfest have always known it and now it has been scientifically -- beer can lift your spirits. Scientists examined 13,000 food components to find out whether they stimulate the reward center in the brain and make people feel good. Hordenine which is found in malted barley and beer seems to do the job quite well.

- [**Haplobank: A biobank of reversible mutant embryonic stem cells**](#) [周四, 28 9月 01:38]

Scientists have developed a biobank of revertible, mutant embryonic stem cells – called Haplobank - which contains over 100,000 mutated, conditional mouse embryonic stem cell lines, targeting about 70% of the protein-coding genome.

- [**The volatile processes that shaped Earth**](#) [周四, 28 9月 01:36]

Although it is widely understood that Earth was formed gradually, from

much smaller bodies, many of the processes involved in shaping our growing planet are less clear. Astronomers have now untangled some of these processes, revealing that the mini-planets added to Earth had previously undergone melting and evaporation. They also address another scientific conundrum: Earth's depletion in many economically important chemical elements.

- [**Citizen science can predict butterfly population trends**](#) [周四, 28 9月 00:36]

New research shows that citizen scientists can play a role in gathering meaningful information to inform long-term monitoring of biodiversity trends such as butterfly population change.

- [**Olive mill wastewater transformed: From pollutant to bio-fertilizer, biofuel**](#) [周四, 28 9月 00:36]

Olive oil has long been a popular kitchen staple. Yet producing the oil creates a vast stream of wastewater that can foul waterways, reduce soil fertility and trigger extensive damage to nearby ecosystems. Now scientists report on the development of an environmentally friendly process that could transform this pollutant into 'green' biofuel, bio-fertilizer and safe water for use in agricultural irrigation.

- [**Ancient ink for cancer treatment**](#) [周四, 28 9月 00:35]

For hundreds of years, Chinese calligraphers have used a plant-based ink to create beautiful messages and art. Now, one group reports that this ink could noninvasively and effectively treat cancer cells that spread, or metastasize, to lymph nodes.

- [**New iceberg calved from Pine Island Glacier**](#) [周三, 27 9月 22:45]

A new iceberg calved from Pine Island Glacier -- one of the main outlets where ice from the interior of the West Antarctic Ice Sheet flows into the ocean.

- [**Preservation of floodplains is flood protection**](#) [周三, 27 9月 22:23]

The silting of rivers and streams leads to problems for fish, mussels, and other aquatic organisms because their habitats disappear. However, not

only intensive agriculture and erosion are destroying these habitats. Now a study refutes this widespread view. In order to save the species living in the river basin -- and protect people from the threat of floods -- rivers need more space, diversity, and freedom.

• [**Two new crustacean species discovered on Galician seabed**](#) [周三, 27 9月 22:23]

The fauna of deep seabed tends to be relatively unknown due to the difficulty of collecting samples at great depths. A research team undertook four oceanographic expeditions in the waters off the northwest coast of the Iberian Peninsula that have led to the discovery of several new species that inhabit the abyssal plains. Now they describe two eyeless species of millimetric proportions.

• [**Emerging infectious disease threatens Darwin's frog with extinction**](#) [周三, 27 9月 22:09]

Iconic species likely to be wiped-out by amphibian fungus, despite lack of obvious short-term evidence.

• [**More than a 38 % of the Neotropical parrot population in the American continent is threatened by human activity**](#) [周三, 27 9月 22:09]

More than a 38% of the Neotropical parrot population of the American continent (Neotropic) is endangered due the impact of human activity, according to a scientific study.

• [**Moths: A different weapon against each enemy**](#) [周三, 27 9月 21:56]

It's a dangerous world out there, especially if you are a small insect. Insects have thrived on our planet for hundreds of millions of years, so they must be doing something right despite all the threats to their survival. With so many predators out to get them many animals have evolved chemical defences, making themselves distasteful or even toxic. Wood tiger moths protect themselves from multiple predators using different chemical defences. Choosing the right defence can be tricky as predators ...

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Society News

Top stories featured on ScienceDaily's Science & Society, Business & Industry, and Education & Learning sections.

- [**Physical abuse and punishment impact children's academic performance**](#) [周六, 30 9月 03:22]

Scientists have found that physical abuse was associated with decreases in children's cognitive performance, while non-abusive forms of physical punishment were independently associated with reduced school engagement and increased peer isolation.

- [**Video gamers have an advantage in learning**](#) [周六, 30 9月 00:51]

Neuropsychologists let video gamers compete against non-gamers in a learning competition. During the test, the video gamers performed significantly better and showed an increased brain activity in the brain areas that are relevant for learning.

- [**Understanding connection between HIV transmission, racial/ethnic/geographical differences**](#) [周五, 29 9月 02:54]

The health effects of where people live, work, and interact are well documented, as are the value of neighborhood-level structural interventions designed to improve health. But place-based characteristics that contribute to disparities in HIV transmission and disease burden are poorly understood, possibly resulting in less-effective HIV risk reduction interventions and programming.

- [**Massive projected increase in use of antimicrobials in animals by 2030**](#) [周五, 29 9月 02:21]

The amount of antimicrobials given to animals destined for human

consumption is expected to rise by a staggering 52 percent and reach 200,000 tons by 2030 unless policies are implemented to limit their use, according to new research.

- [**Why public appeals may fall flat with some would-be donors**](#) [周五, 29 9月 02:21]

To give or not to give: sometimes the answer is in the question, researchers into human behavior and charitable giving have found. The study suggests that sometimes the 'ask' needs to suit the potential donors' sense of independence or interdependence.

- [**Students know about learning strategies -- but don't use them**](#) [周五, 29 9月 02:21]

Researchers find that university students have high levels of knowledge about self-regulated learning strategies, but many students don't use them. Specific training on how and when to use these techniques could help more students to maximize their academic potential.

- [**Nearly one in six new HIV diagnoses in Europe are among people over 50**](#) [周五, 29 9月 00:16]

A new study showed that while the rate of newly reported HIV cases in Europe remained steady in younger people between 2004 and 2015, it increased by 2 percent each year overall in older people. With around 30,000 newly diagnosed HIV infections reported each year over the last decade, the HIV epidemic remains a significant public health problem in the 31 countries of the European Union and European Economic Area.

- [**Study provides first estimate of total US population with felony convictions**](#) [周五, 29 9月 00:16]

New research on the growth in the scope and scale of felony convictions finds that, as of 2010, 3 percent of the total US population and 15 percent of the African-American male population have served time in prison. People with felony convictions more broadly account for 8 percent of the overall population and 33 percent of the African-American male population.

- [**In people with OCD, actions are at odds with beliefs**](#) [周五, 29 9月 00:16]

The repeated behaviors that characterize obsessive-compulsive disorder are a manifestation of an underlying brain dysfunction that is not yet well understood. Now, scientists report the use of a mathematical model that they say will help them get at the root of what causes OCD. They find that people with OCD develop an internal, accurate sense of how things work but do not use it to guide behavior.

- [**Don't rely on mixed messages to change health behaviors**](#) [周四, 28 9月 23:30]

Self-improvement messages to lose weight, quit smoking or eat more fruits and vegetables can fall on deaf ears if the intervention message is mixed, says new research.

- [**Abusive bosses experience short-lived benefits**](#) [周四, 28 9月 22:12]

Being a jerk to your employees may actually improve your well-being, but only for a short while, suggests new research on abusive bosses.

- [**Self-esteem in kids: Lavish praise is not the answer, warmth is**](#) [周四, 28 9月 20:51]

How do children construct views of themselves and their place in the world? Children's social relationships turn out to be critical. For example, children develop higher self-esteem when their parents treat them warmly. But they develop lower self-esteem when their parents lavish them with inflated praise.

- [**Achieving U.S. National HIV/AIDS Strategy targets would save lives, be cost effective**](#) [周四, 28 9月 20:47]

An analysis shows that achieving the treatment targets of the National HIV/AIDS Strategy by 2020 not only would prevent hundreds of thousands of new infections and deaths but also would demonstrate excellent value.

- [**No evidence to support claims that telephone**](#)

[consultations reduce GP workload or hospital referrals](#) [周四, 28 9月 06:44]

Telephone consultations to determine whether a patient needs to see their GP face-to-face can deal with many problems, but a new study found no evidence to support claims by companies offering to manage these services or by NHS England that the approach saves money or reduces the number of hospital referrals.

[Health and social care changes 'paving way for fewer services' warn experts](#) [周四, 28 9月 06:44]

Current reforms to health and social care services, and radical redesign of the local government finance system, may signal the end of the NHS and local government in England as we know them, warn experts.

[Should we welcome plans to sell off wasted NHS land?](#) [周四, 28 9月 06:44]

With the NHS under severe financial pressure, should we welcome plans to raise capital by selling off inefficiently used land and buildings owned by the health service? Experts debate the issue in a new article.

[New test rapidly diagnoses Zika](#) [周四, 28 9月 04:20]

Researchers have developed a paper-based test that can diagnose Zika infection within 20 minutes. Unlike existing tests, the new diagnostic does not cross-react with Dengue virus, a close relative of the Zika virus that can produce false positives on many Zika tests.

[Citizen science can predict butterfly population trends](#) [周四, 28 9月 00:36]

New research shows that citizen scientists can play a role in gathering meaningful information to inform long-term monitoring of biodiversity trends such as butterfly population change.

[Iron supplements have long-term benefits for low birth-weight babies](#) [周四, 28 9月 00:36]

Babies classified as low birth weight (under 2,500 grams) are at risk of iron deficiency, which is linked to impaired neurological development.

A long-term randomized study now shows that providing such babies with iron supplements can prevent behavioral problems at school age.

- [**Teens' online friendships just as meaningful as face-to-face ones**](#) [周三, 27 9月 22:54]

Many parents worry about how much time teenagers spend texting, sharing selfies and engaging in other online activities with their friends. However, according to a recent research synthesis, many of these digital behaviors serve the same purpose and encompass the same core qualities as face-to-face relationships.

- [**Coping with stressful organizational change**](#) [周三, 27 9月 21:51]

Stress is not a recent phenomenon, but the modern work environment seems to highlight its detrimental effects on employees. This is no more obvious than during times of organizational change. New research considers the impact of such changes on workers in a healthcare authority in New Zealand, highlighting the problems that any organization might face under such circumstances and pointing to possible methods to cope and remediate employee stress.

- [**Monetizing time savings makes toll roads financially stack up**](#) [周三, 27 9月 21:34]

Putting a dollar value on the savings from traffic congestion, noise and air pollution as a result of toll roads and tunnels will make large infrastructure projects more cost effective, according to a new study.

- [**A record number of Americans viewed the 2017 solar eclipse**](#) [周三, 27 9月 02:36]

Eighty-eight percent of American adults viewed the August total solar eclipse directly or electronically. This audience of 215 million adults is nearly twice the size of the viewership of recent Super Bowl football games.

- [**Do deep promotional discounts work? New study sheds light on strategy**](#) [周三, 27 9月 01:53]

Promotional discounts increase store traffic and lead to higher overall

profits, especially if the advertised products are staples – items such as meat and produce that are purchased frequently and by many customers.

- [**Potential Zika vaccine protects against pregnancy transmission and testicular damage**](#) [周三, 27 9月 00:51]

For the first time, a research team led has shown that a potential Zika vaccine quickly can protect fetuses against infection as well as protect males against testicular infection and injury. It also prevents a lowered sperm count after one vaccination.

- [**Discovery: Bernie Sanders spider**](#) [周二, 26 9月 22:55]

Students and a scientist have discovered 15 new species of 'smiley-faced' spiders -- and named them after, among others, David Attenborough, Barack Obama, Michelle Obama, Leonardo DiCaprio, and Vermont Senator Bernie Sanders.

- [**Interventions for reducing hepatitis C infection in people who inject drugs**](#) [周二, 26 9月 22:54]

The first global review to quantify the impact of needle syringe programs (NSP) and opioid substitution treatment (OST) in reducing the risk of becoming infected with the hepatitis C virus has now been published. The study has implications for millions of people who are 'at risk' from infection.

- [**Household chores: Women still do more**](#) [周二, 26 9月 22:54]

Women of all ages still tend to do more household chores than their male partners, no matter how much they work or earn in a job outside the home. New findings demonstrate the persistent gendered nature of how housework is divided.

- [**Preschool teachers need better training in science**](#) [周二, 26 9月 22:54]

Preschool instructors appear to lack the knowledge, skills and confidence to effectively teach their young students science -- a problem that is likely contributing to America's poor global performance in this crucially important subject.

• **[Teachers report weaker relationships with students of color, children of immigrants](#)** [周二, 26 9月 22:54]

The relationship between teachers and students is a critical factor for academic success. However, a new study finds that teachers report weaker relationships with children of immigrants and adolescents of color.

• **[Escaping wildfires](#)** [周二, 26 9月 21:15]

A new study is the first attempt to map escape routes for wildland fire fighters from an aerial perspective. The researchers used LiDAR technology to analyze the terrain slope, ground surface roughness and vegetation density of a fire-prone region in central Utah, and assessed how each landscape condition impeded a person's ability to travel.

• **[Drought: A cause of riots](#)** [周二, 26 9月 21:05]

The scientific community has been working on the possibility of a relationship between periods of drought and rioting for several years. Now a team has formally verified this hypothesis by studying almost 1,800 riots that occurred over a 20-year period in sub-Saharan Africa. The researchers observed a systematic link between the sudden depletion of water resources and the outbreak of unrest. They also succeeded in quantifying the impact of geographic and social factors on the same link.

• **[People are reluctant to use public defibrillators to treat cardiac arrests](#)** [周二, 26 9月 20:59]

A new study suggests that people are reluctant to use public-access defibrillators to treat cardiac arrests.

• **[Psychological impacts of natural disasters on youth](#)** [周二, 26 9月 04:32]

A researcher is fully aware of children's reaction to trauma. Her research focuses on the impact of disasters on youth since Hurricane Andrew in 1992. La Greca has been evaluating how best to define post-traumatic stress disorder (PTSD) in children. This line of research will help to quickly identify the children who need support services post-disaster and

identify key aspects of the post-disaster environment that facilitate their recovery.

• **[Are children who see movie characters use guns more likely to use them?](#)** [周二, 26 9月 01:29]

Children who watched a PG-rated movie clip containing guns played with a disabled real gun longer and pulled the trigger more often than children who saw the same movie not containing guns.

• **[Climate insurance is rarely well thought out in agriculture](#)** [周一, 25 9月 23:33]

Internationally subsidised agricultural insurance is intended to protect farmers in developing countries from the effects of climate change. However, it can also lead to undesirable ecological and social side effects, as researchers have now explained. Their article also contains recommendations for improved insurance schemes which in future should also take account of ecological and social aspects in addition to economic issues.

• **[Group project? Taking turns, working with friends may improve grades](#)** [周一, 25 9月 23:33]

A new study with college students has found that the social dynamics of a group, such as whether one person dominates the conversation or whether students work with a friend, affect academic performance. Put simply, the more comfortable students are, the better they do, which yields benefits beyond the classroom.

• **[Fully renewable India in 2050 can take a shortcut to emission-free future](#)** [周一, 25 9月 23:16]

India can function on a fully renewable electricity system in 2050, research indicates. The study shows that developing countries that have an abundance of renewable resources do not need to take the path of the western countries where increasing living standards have been coupled with heavy emissions from electricity generation and other industry. They can move straight to renewable systems and do it cheaply.

- **[Clarifying perspectives to promote action on loss and damage from climate change](#)** [周一, 25 9月 23:13]

The hurricanes Harvey, Irma and Maria highlight the potential for the climate system to cause loss and damage. 'Loss and damage' is a phrase used in different ways by people who work on climate policy, negotiation and adaptation/resilience. A new study clarifies these different perspectives which is a key issue now that the United Nations Framework Convention on Climate Change, UNFCCC, is encouraging creation and implementation of actions to address loss and damage from climate change.

- **[Visual attention drawn to meaning, not what stands out](#)** [周一, 25 9月 23:13]

Our visual attention is drawn to parts of a scene that have meaning, rather than to those that are salient or 'stick out,' according to new research. The findings overturn the widely held model of visual attention.

- **[World's botanic gardens contain a third of all known plant species, and help protect the most threatened](#)** [周一, 25 9月 23:13]

The most in-depth species survey to date finds an 'astonishing array' of plant diversity in the global botanic garden network, including 41 percent of all endangered species. However, researchers find a significant imbalance between tropical and temperate plants, and say even more capacity should be given to conservation, as there is 'no technical reason for plant species to become extinct.'

- **[Scientists call for more research on how human activities affect the seabed](#)** [周一, 25 9月 22:47]

Extensive research has been released into how industry and environmental change are affecting our seafloors. Researchers say more work is needed to help safeguard these complex ecosystems and the benefits they provide to people for the future.

[New technique spots warning signs of extreme events](#) [周日, 24 9月 22:38]

Engineers have devised a framework for identifying key patterns that precede an extreme event. The framework can be applied to a wide range of complicated, multidimensional systems to pick out the warning signs that are most likely to occur in the real world.

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Strange & Offbeat News

Quirky stories from all of ScienceDaily's health, technology, environment, and society sections.

- [**Small collisions make big impact on Mercury's thin atmosphere**](#) [周五, 29 9月 23:29]

Mercury, our smallest planetary neighbor, has very little to call an atmosphere, but it does have a strange weather pattern: morning micro-meteor showers.

- [**New clues from brain structures of mantis shrimp**](#) [周五, 29 9月 21:33]

New research sheds new light on the evolution of some of the earliest brain structures, and stirs up new, intriguing questions about the origins of centers that support learning and memory.

- [**Solving the mystery of Pluto's giant blades of ice**](#)

[周五, 29 9月 03:24]

NASA's New Horizons mission revolutionized our knowledge of Pluto when it flew past that distant world in July 2015. Among its many discoveries were images of strange formations resembling giant knife blades of ice, whose origin had remained a mystery. Now, scientists have turned up a fascinating explanation for this "bladed terrain": the structures are made almost entirely of methane ice, and likely formed as a specific kind of erosion wore away their surfaces.

- [**Farthest active inbound comet yet seen**](#) [周五, 29 9月 03:23]

NASA's Hubble Space Telescope has photographed the farthest active inbound comet ever seen, at a whopping distance of 1.5 billion miles from the Sun (beyond Saturn's orbit). Slightly warmed by the remote Sun, it has already begun to develop an 80,000-mile-wide fuzzy cloud of dust, called a coma, enveloping a tiny, solid nucleus of frozen gas and

dust. These observations represent the earliest signs of activity ever seen from a comet entering the solar system's planetary zone for the first time.

- [**A fresh look at older data yields a surprise near the Martian equator**](#) [周五, 29 9月 03:22]

Scientists taking a new look at older data from NASA's longest-operating Mars orbiter have discovered evidence of significant hydration near the Martian equator -- a mysterious signature in a region of the Red Planet where planetary scientists figure ice shouldn't exist.

- [**Chimpanzees can learn how to use tools without observing others**](#) [周四, 28 9月 21:42]

New observations have led researchers to believe that chimpanzees can use tools spontaneously to solve a task, without needing to watch others first.

- [**Soft, flexible origami-inspired robot**](#) [周三, 27 9月 22:23]

A Case Western Reserve University researcher has turned the origami she enjoyed as a child into a patent-pending soft robot that may one day be used on an assembly line, in surgery or even outer space.

- [**Lost continent of Zealandia: Scientists return from expedition to sunken land**](#) [周三, 27 9月 11:59]

After a nine-week voyage to study the lost, submerged continent of in the South Pacific, a team of 32 scientists from 12 countries has arrived in Hobart, Tasmania, aboard the research vessel JOIDES Resolution.

- [**Innovative control system paves the way for large scale universal quantum computing**](#) [周三, 27 9月 01:30]

Future quantum computers promise exponential scaling in computing power with linearly increasing number of qubits. However, harnessing this power is challenging due to the complexity of controlling a large number of qubits simultaneously. A solution to this problem has now been engineered.

- [**Discovery: Bernie Sanders spider**](#) [周二, 26 9月 22:55]

Students and a scientist have discovered 15 new species of 'smiley-faced' spiders -- and named them after, among others, David Attenborough, Barack Obama, Michelle Obama, Leonardo DiCaprio, and Vermont Senator Bernie Sanders.

- [**Pigeons better at multitasking than humans**](#) [周二, 26 9月 21:05]

Pigeons are capable of switching between two tasks as quickly as humans -- and even more quickly in certain situations. These are the findings of biopsychologists who had performed the same behavioral experiments to test birds and humans. The authors hypothesize that the cause of the slight multitasking advantage in birds is their higher neuronal density.

- [**After 15 years in a vegetative state, nerve stimulation restores consciousness**](#) [周二, 26 9月 01:29]

A 35-year-old man who had been in a vegetative state for 15 years after a car accident has shown signs of consciousness after neurosurgeons implanted a vagus nerve stimulator into his chest. The findings show that vagus nerve stimulation (VNS) -- a treatment already in use for epilepsy and depression--can help to restore consciousness even after many years in a vegetative state.

- [**Bacterial nanosized speargun works like a power drill**](#) [周二, 26 9月 01:28]

In order to get rid of unpleasant competitors, some bacteria use a sophisticated weapon -- a nanosized speargun. Researchers have now gained new insights into the construction, mode of action and recycling of this weapon. The speargun drills a hole into the neighboring cells in only a few thousandths of a second and injects a cocktail of toxins.

- [**Lava tubes: Hidden sites for future human habitats on the Moon and Mars**](#) [周一, 25 9月 23:28]

Lava tubes, underground caves created by volcanic activity, could provide protected habitats large enough to house streets on Mars or even

towns on the Moon, according to new research. A further study shows how the next generation of lunar orbiters will be able to use radar to locate these structures under the Moon's surface.

• [**Genes are controlled by 'Nano footballs,' scientists discover**](#) [周一, 25 9月 23:12]

Genes are controlled by 'nano footballs' -- structures that look like footballs but 10 million times smaller than the average ball -- new research has revealed.

• [**Fish have surprisingly complex personalities**](#) [周一, 25 9月 21:54]

Tiny fish called Trinidadian guppies have individual 'personalities', new research shows.

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