

# Science INSIGHTS®

*The Official Journal of the Bono Academy of Science & Education*

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# Science INSIGHTS®

The Official Journal of The Bono Academy of Science & Education (BASE)

Science INSIGHTS®  
**Submission System**

► Mission: Let science reach the far corner by education

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Science Tests Idea | Science Speaks Truth | Science Makes Difference  
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## NEWS

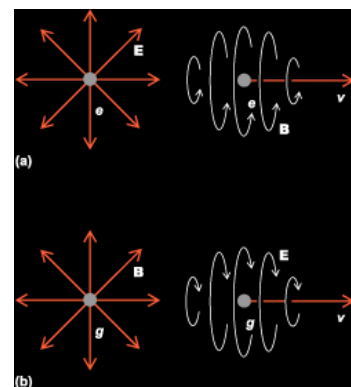
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## SCIENTIST ON-SPOT

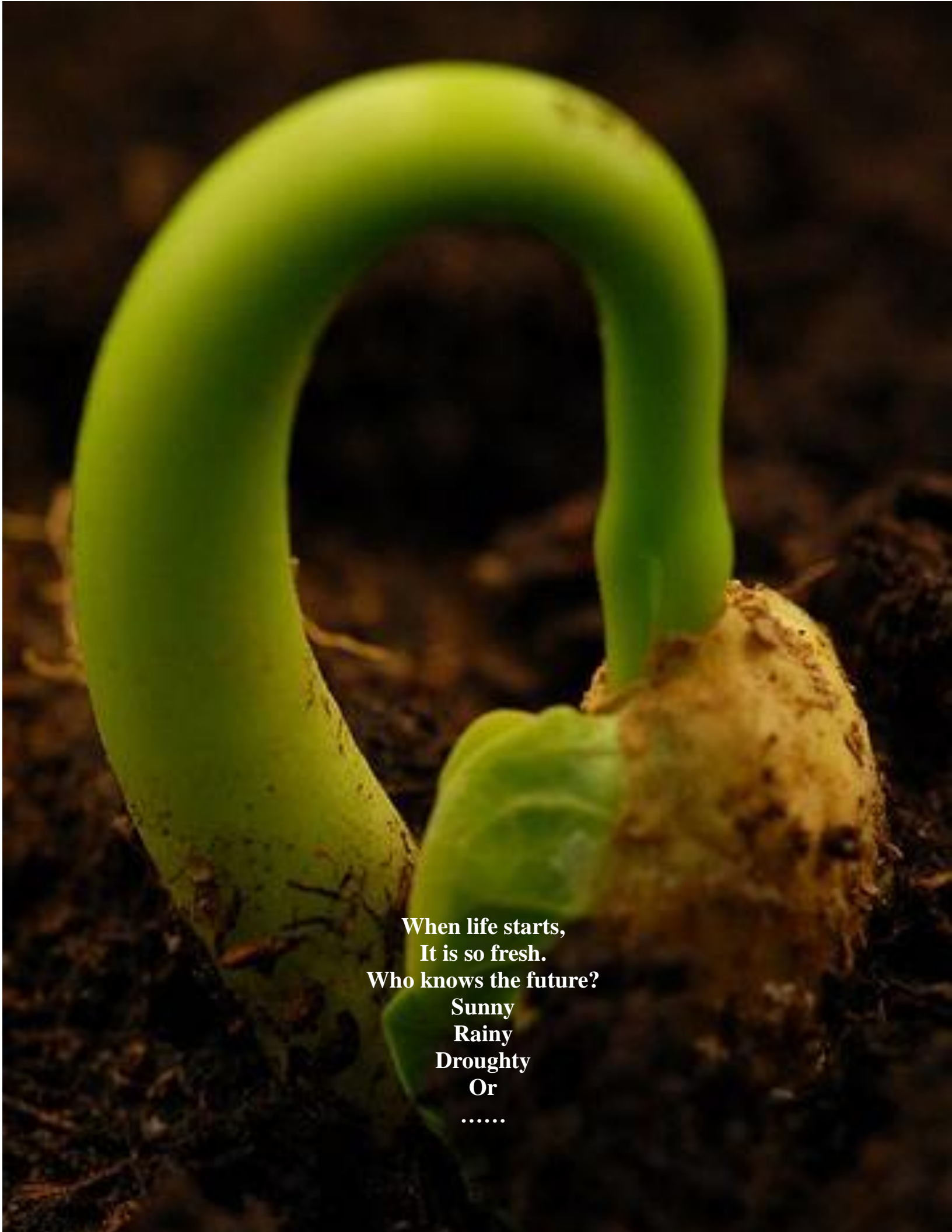
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 By Xian Wang



### COVER

Labor pain is considered as the leading cause for seeking Cesarean section in China, whereas how to reach the ideal labor pain control is still not that popular in the most populous country where most of the parous women are blind to the labor analgesia. Dr. Xiaofeng Shen from Nanjing Medical University leads her team march for the goal of “painless labor delivery” by adhering to the principle “primum non nocere”. See page 112.

Image: BASE illustrating group

A young green plant with a curved stem and a root ball, growing in dark soil. The stem is bright green and arches over the root ball. The root ball is light brown and textured. The background is dark and out of focus.

**When life starts,  
It is so fresh.  
Who knows the future?  
Sunny  
Rainy  
Droughty  
Or  
.....**



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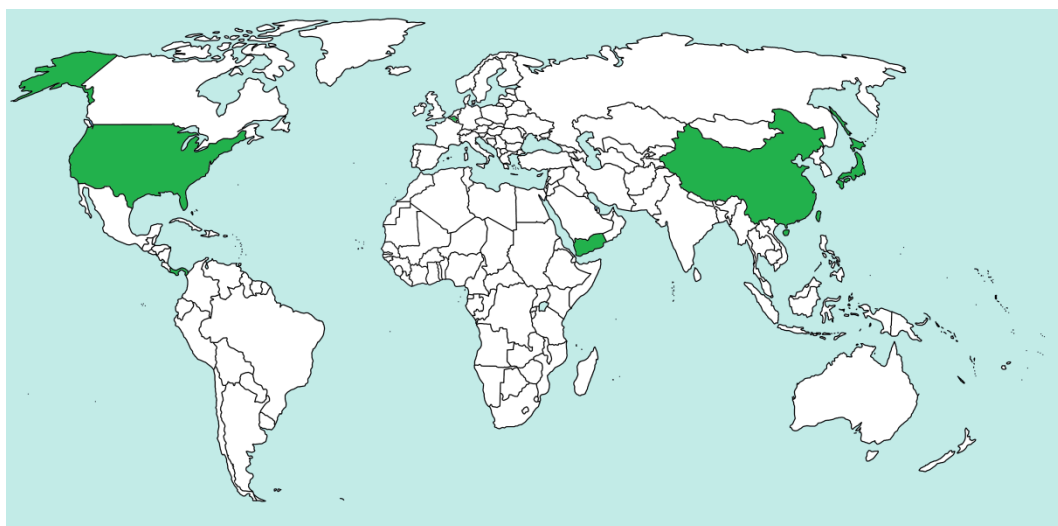


**When you face the eruption  
Do you feel the ending of the world?**

## Austin and Boston, USA Balboa, Panama

### Mushroom: New Weapon against Cli- mate Change

Have you ever heard mushrooms can reduce carbon level? Yes, it is true. A new study published in *Nature* found that the common ectomycorrhizal fungi, which can produce edible mushrooms, may help us dramatically reduce the amount of carbon released into the atmosphere by decaying matter. Maybe we believe that new technologies like solar panels are likely our best bet if we hope to reduce greenhouse gases like carbon dioxide, but these edible fungi would play an essential role in helping us in the future generations in the fight against climate change. They may have just gained the function to be an unlikely, totally organic ally for us. The researchers from the University of Texas, Boston University, and the Smithsonian Tropical Research Institute discovered that these fungi can help lock carbon into the soil. It is well-known that plants sequester carbon dioxide, but when they die, that carbon enters the soil. In general, soil is the biggest single terrestrial reservoir of carbon, far more than the amount of carbon contained in living



things and in the atmosphere combined. As the dead plant matter is broken down by microbes in the soil, that carbon is released back into the air. The rate at which that carbon leaves the soil can obviously have a major impact on the amount of carbon in the atmosphere, which in turn helps drive climate change. The microbes that break down plant matter need nitrogen found in the soil in to function. Fungi can compete with these microorganisms for nitrogen and steal it away. At the same time, the fungi also convert nitrogen into nutrients for the living plants they've attached themselves to. ectomycorrhizal fungi essentially protect plants, slowing the process of carbon decay and release considerably.■

## Sanaa, YEMEN

### Yemeni Al Qaeda says attack on hospital was mistake

Al Qaeda's wing in Yemen blamed a renegade fighter for targeting medics and patients in a military hospital during its attack on the Defense Ministry compound in Sanaa earlier this month. The killing of unarmed medics and patients, captured on closed-circuit television footage and broadcast by state media, caused widespread outrage in Yemen, where al Qaeda has portrayed itself as fighting for normal people against foreign drone strikes. Al Qaeda's offshoot Ansar al-Sharia

claimed responsibility for the assault in which at least 52 people were killed, the worst such attack in Yemen for 18 months. It said it attacked the compound because it believed it to house an operations room for drone attacks carried out by the United States against Islamist militants, which have also led to civilian deaths. Many of those killed died inside the compound's hospital, where staff said they had seen foreign doctors and nurses executed by attackers. The footage released on state television showed uniformed figures wandering around the hospital's corridors and wards shooting medics and patients. One attacker was shown walking up to a group of cowering patients and calmly tossing a hand grenade into their midst before ducking behind a wall.■

## New York, USA

### Cholesterol Linked to Alzheimer's Disease

When God made the man, he made everything. It is well-known that the patterns of "good" and "bad" cholesterol usually associated with heart risks. New study revealed that cholesterol can predict the levels of Alzheimer's-related beta amyloid protein seen in the brains of study participants. As the research pointed out that it had become increasingly clear that what have been traditionally thought of as vascular risk factors are also risk factors for Alzheimer's disease. For the study, pub-

lished in *JAMA Neurology*, the researchers examined the cholesterol levels of 74 elderly people who had normal to mildly impaired cognitive function. The researchers found that on average, participants who had higher levels of the “bad” LDL cholesterol and lower levels of “good” HDL cholesterol also had higher levels of amyloid in the brain. Generally, elevated LDL-cholesterol is associated with cardiovascular disease while high levels of HDL-cholesterol are thought to protect against heart disease. In other studies, some researchers have found evidence that LDL cholesterol-lowering drugs, such as statins, might offer some protection against Alzheimer's disease, but the results have been inconsistent. In the study, the researchers caution that the study does not prove cholesterol is directly affecting amyloid deposition. For instance, they write, unhealthy cholesterol could be linked to vascular damage, such as small strokes, and those micro-injuries could be the reason for the protein deposits. Finally, the study encouraged people to follow the advice of their doctor and try to achieve the cholesterol guidelines set by the American Heart Association. ■

## Wako, JAPAN

### “Jumping Genes” Linked to Schizophrenia

New research suggested that some so-called jumping genes that copy and paste themselves throughout the genome may be linked to schizophrenia. The findings were published in *Neuron* suggests these jumping genes may alter how neurons form during development, thereby increasing the risk of schizophrenia. Jumping genes, or retrotransposons, are mobile genetic elements that copy and paste themselves at different places throughout the genome. About half of the human genome is made of these mysterious elements, compared with the 1% of genes that actually code for making proteins. Earlier studies had found that

a certain type of jumping gene, known as long interspersed nuclear element-1 (LINE-1), was active in human brain cells. The research team conducted a post-mortem analysis of 120 human brains, 13 from patients who had been diagnosed with schizophrenia, and found a higher number of LINE-1 copies in the brains of schizophrenics compared with other groups. The team also found that stem cells derived from the brains of people with schizophrenia had a higher concentration of LINE-1 genes than did those from people without the diagnosis. Besides, the researchers also found that in people with schizophrenia, LINE-1 concentrations were increased near genes associated with psychiatric disorders that control how neurons in the brain communicate with one another suggesting that these LINE-1 segments may be inserting themselves into genes critical for brain development. When triggered by genetic and or environmental factors, they may alter that brain development and finally leading to schizophrenia. ■

likely formed about 4.4 billion years ago, shortly after the planet itself took shape. The origin of Saturn's ring system has long been the subject of debate, with some researchers arguing that it is a relatively young structure and others holding that it coalesced long ago, at roughly the same time as the gas giant's many satellites. Saturn's main ring system is huge but razor-thin, measuring about 175 000 miles across but just about 33 feet in the vertical direction. The rings are composed primarily of water ice, but they contain small amounts of rocky material contributed by micrometeoroid bombardment. The researchers found that a surprisingly small amount of dusty material comes into contact with the rings. On average, just  $10^{-19}$  grams of dust per square centimeter zooms through space every second at a distance of five to 50 Saturn radii from the planet. From measuring this low rate of dust recruitment, the team then calculated that the rings have likely existed for about 4.4 billion years. The Cassini mission launched in 1997 and reached



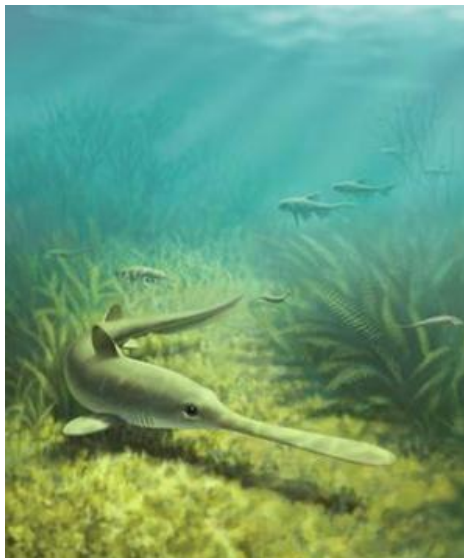
## San Francisco, USA

### Age of Saturn's Rings

How many years do you think the universe existed from its formation? How about the Saturn's rings then? A new study said that the Saturn's iconic rings

Saturn in 2004. The mission's operations have been extended through 2017, when the spacecraft will end its life with a dramatic plunge into Saturn's atmosphere. ■

## Brussels, BELGIUM



## Ann Arbor, USA Bizarre Spoon-Billed Sharks

Everything is really that very stunning. A newly found fossil date to about 310 million years ago preserved a baby shark with bizarre and long snouts. In this finding, the paleontologists have inferred the presence of another ancient shark nursery. The detailed story was presented in the *Journal of Vertebrate Paleontology* and revealed that even back then, the sharks, known as Bandringas, migrated to spawn. The primitive shark with long, spoon-shaped snouts started out as baby measuring just 4 to 6 inches long and eventually grew to be about 10 feet long. The new study also revealed that the Bandringas' snouts were studded with tiny receptors. The bottom-feeders used these receptors to sense the electrical activity of prey in the murky shoreline waters, and then used their vacuum-like mouths to suction up those prey, the studied showed. ■

## Tiny Ancestor of Lions, Tigers and Bears Discovered

Scientists said that lions, tigers, bears and even loyal pups and playful kitties all come from the same line of carnivorous mammals, but a lineage whose origins are lost in time. Right now, they have discovered one of the earliest ancestors of all modern carnivores in Belgium. The new species, *Dormaalocyon Latouri*, was a 2-pound tree-dweller that likely fed on even smaller mammals and insects. As the researchers said that all modern carnivores are descended from a single group, and one of four groups of carnivorous mammals was found in the Paleocene and Eocene periods. The Paleocene ran from 66 million to 56 million years ago, and the Eocene followed from 56 to 33.9 million years ago. Part of the challenge of uncovering carnivore history is that, on the



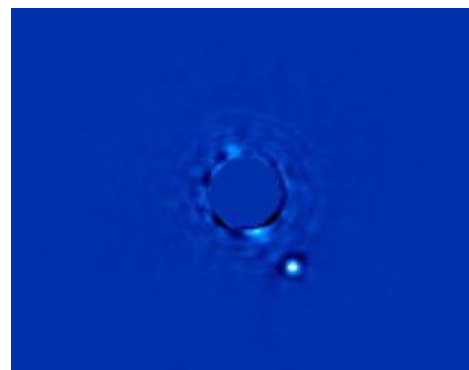
whole, meat-eating mammals aren't that common. There are many more

herbivores and omnivores on the planet and in the fossil record. However, the geographical origin of the carnivoriforms remains mysterious. ■

## Washington DC, USA First Photos of Alien Worlds

From science fiction, we thought that alien world was there. Today, astronomers have detected and found the possible alien world in our space. In the nearly 1 000 planets detected outside of our own solar system, but little is known about their composition. Now, the Gemini Observatory's Planet Imager enables scientists to image exoplanets directly. Although current planet-imaging systems are only able to see gas giants about three or more times the size of Jupiter, NASA's Kepler space telescope has detected thousands of smaller planet candidates but cannot image these directly. The Gemini Planet Imager (GPI), an instrument at the 8-meter Gemini South telescope in Chile, can see exoplanets in the outer solar system of young stars. Its goal is to improve the contrast of planetary imaging by an order of magnitude. The GPI consists of a sophisticated adaptive optics system to remove the blurring effects of the atmosphere, a coronagraph that blocks starlight so planets can be seen, an infrared sensor and a spectrograph. The imager can also take spectra of a planet by breaking up light into its component colors, revealing

the planet's composition and surface temperature. Images can also be taken in polarized light. The GPI is eight times more sensitive than current systems. The researchers expect to release data publicly in February and plans to conduct a large-scale survey of exoplanets in the second half of 2014. ■



## Beijing, CHINA Forced Abortion Highlights Abuses in One-Child Policy

The good news is that China recently relaxed the one-child policy partially, but the bad news is that it is such an unfair policy for other families if they are not suitable for the new policy. Moreover, there are still some forced abortions happened in China. In this scenario, a pregnant woman recalled her disaster. She, Qifeng Gong, said her mind is clear, and she can recall how she begged for mercy. Several people pinned her head, arms, knees and ankles to a hospital bed before



driving a syringe of labor-inducing drugs into her uterus. She was seven months pregnant with what would have been her second boy. The drugs caused her to have a stillborn baby after 35 hours of excruciating pain. She was forced to have the abortion by officials in China's southern province of Hunan in the name of complying with national limits on family size. Since the abortion more than two years ago, Gong has been diagnosed with schizophrenia. She traveled with her husband to Beijing to demand help paying for her treatment, but she ended up being hauled away in her pajamas by police. Forced abortions are considered an acceptable way of enforcing China's population limits, but they are banned when the woman is more than five months pregnant. Yet no one has been held accountable for Gong's late-term abortion, and other women in similar cases also struggle to get justice and compensation. Observers believe forced late-term abortions are on the decline, though reports continue to surface. A British broadcaster reported one in the eastern province of Shandong in September 2013. Although China in November announced an easing of its one-child policy to allow more couples to have a second child, the overall system remains in place and local governments are still required to keep to population quotas. The new policy would not have applied to Gong because it allows couples to have a second child only if both the mother and father have no siblings. China's

government bans abuses by local enforcers, but nevertheless requires them to successfully carry out family-planning policies. A pregnancy could be several months along by the time they hear about it, or it could become late-term while officials attempt to negotiate a settlement with the parents. Any reliable tally of such cases is impossible. Victims can be silenced by local authorities with threats or money, and may be unaware that such conduct is forbidden. ■

### Cambridge, USA

## Ocean's Huge Hidden Waves Explained

The biggest ocean waves in the world sweep through the South China Sea's Luzon Strait, towering more than 550 feet tall. Why it happened? How it happened? Luckily for ships plying the busy waters between Taiwan and the Philippines, these massive waves barely break the surface, though the waves can be a daily event. But for scientists, understanding these underwater "internal waves", which happen throughout the world's oceans, is important for modeling Earth's climate; the waves may push huge volumes of heat, salt and nutrients around the ocean. Recently, a new modeling study reveals how the Luzon Strait's internal waves rise from the deep. The model shows that the spacing of two submerged seafloor ridges in the northern Luzon Strait is perfect for generating gigantic

internal waves. For the study, MIT postdoc Matthieu Mercier built a detailed model of the Luzon Strait seafloor in a 50-foot-diameter wave tank. In the tank, the internal waves formed when tidal currents pushed cold, heavy bottom water over two seafloor ridges, setting up a disturbance called a standing wave. In one key discovery, scientists found that the entire double-ridge system, rather than an isolated feature such as a high mountain on the ridges, was responsible for generating the internal wave. The ocean itself is divided because colder, saltier water is denser and sinks below hotter, less salty water. ■

### Old Main, USA

## Fossils of Ancient Australasian Trees

In Patagonia, at the southern end of South America, scientists have discovered 52.2-million-year-old fossils of a giant evergreen tree that now is only found thousands of miles away in Australia and Asia. Coniferous trees in the genus *Agathis*, which are sought after for their soft wood, have thick trunks and can grow up to 200 feet tall. Today they live in mountainous rainforests from Sumatra to New Zealand. But the discovery of fossilized *Agathis* leaves, branches and cones in the rich deposits at Argentina's Laguna del Hunco suggests the tree covered much more ground in prehistoric times. The new fossils date back to a time when the landmasses of Australia, Antarctica, South America and Africa were joined in the southern supercontinent Gondwana. Though *Agathis* adapted its range in response to past pressures, the researchers said it is not clear whether the tree will be able to respond to the more rapid human-induced threats from climate change and activities like deforestation and selective logging. The layers of volcanic ash and lake sediments at Laguna del Hunco have turned up some other amazing ancient plants, including a fossilized tomatillo and the remains of eucalyptus buds and flowers. ■



THE BONOI ACADEMY OF SCIENCE & EDUCATION

## Call for Subcommittee Members

The Bonoi Academy of Science & Education (BASE) is composed of 20 different scientific and educational divisions. All these divisions are consisted of Director, Co-Director, Standing Committee, and Office Members. Some of the divisions are enrolling above positions. If you are interested in science or education work and if you think that is of great value for your career development, please send us your application asap. Given the BASE is a non-profitable organization, these positions then are also non-profitable, the BASE is not responsible for the salary or any other benefits. If you are approved as a member of one of the subcommittees, you automatically become a member of the BASE, which means you do not need to pay for the membership fees during the term. Of course, you are also eligible for applying for the BASE awards and funding, and also suitable for the member benefits. Come on with us to spread science knowledge to the far corner of the world by education.

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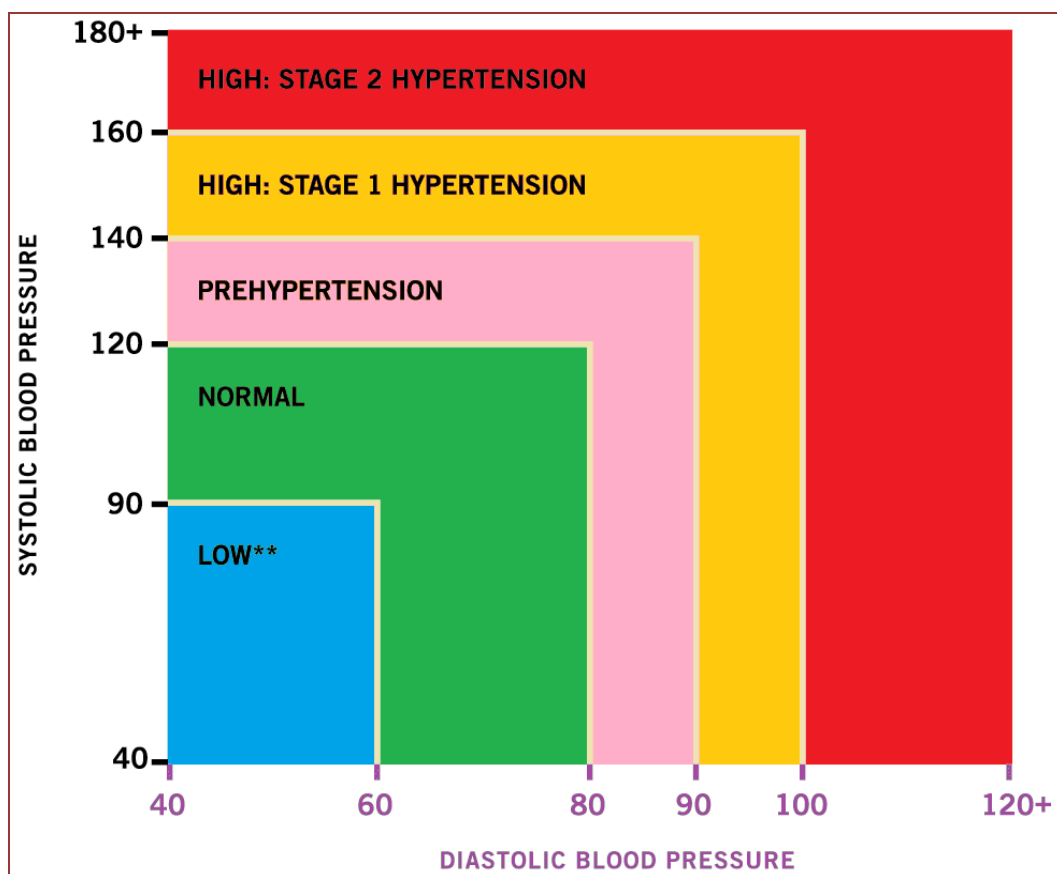
Love the Wave  
Love the Earth



## MEDICINE

## Latest Guideline for High Blood Pressure in Adults

You can see automatic sphygmomanometer at every pharmacy center, and it tells you how high your blood pressure (BP) is. Hypertension is the most common condition seen in primary care and leads to myocardial infarction, stroke, renal failure, and death if not detected early and treated appropriately. Patients want to be assured that BP treatment will reduce their disease burden, while clinicians want guidance on hypertension management using the best scientific evidence. In this report, researchers presented a rigorous, evidence-based approach to recommend treatment thresholds, goals, and medications in the management of hypertension in adults. Evidence was drawn from randomized controlled trials, which represent the gold standard for determining efficacy and effectiveness. Evidence quality and recommendations were graded based on their effect on important outcomes. In the report, the scientists said that there is strong evidence to support treating hypertensive persons aged 60 years or older to a BP goal of less than 150/90 mm Hg and hypertensive persons 30 through 59 years of age to a diastolic goal of less than 90 mm Hg; however, there is insufficient evidence in hypertensive persons younger than 60 years for a systolic goal, or in those younger than 30 years for a diastolic goal, so the panel recommends a BP of less than 140/90 mm Hg for those groups based on expert opinion. The same thresholds and goals are recommended for hypertensive adults with diabetes or nondiabetic chronic kidney disease (CKD) as for the general hypertensive population younger than 60 years. There is moderate evidence to support initiating drug treatment with an angiotensin-converting enzyme inhibitor, angiotensin receptor blocker, calcium channel blocker, or thiazide-type di-



retic in the nonblack hypertensive population, including those with diabetes. In the black hypertensive population, including those with diabetes, a calcium channel blocker or thiazide-type diuretic is recommended as initial therapy. There is moderate evidence to support initial or add-on antihypertensive therapy with an angiotensin-converting enzyme inhibitor or angiotensin receptor blocker in persons with CKD to improve kidney outcomes. Although this guideline provides evidence-based recommendations for the management of high BP and should meet the clinical needs of most patients, these recommendations are not a substitute for clinical judgment, and decisions about care must carefully consider and incorporate the clinical characteristics and circumstances of each individual patient. We need take ourselves care and keep an eye on our BP in case we became the victim of hypertension. ■

JAMA 2014;  
doi:10.1001/jama.2013.284427. In  
press

## PHYSICS

## Magnetic Monopole Field Exposed by Electrons

Although quantum mechanics does not require magnetic monopoles to exist, quantum mechanics can apparently predict a magnetic charge, if it is ever found in nature, must be quantized in units of  $hc/2e$  where  $e$  is the absolute electron charge value. It has been shown that based on the Helmholtz decomposition theorem, the stationary magnetic monopole field can only be represented by a scalar potential similar to electrostatics, not as a vector potential. In a new study, the researcher headed by Dr. Jo Verbeeck from University of Antwerp, Belgium, performed experimental search for magnetic monopole particles has, so far, been in vain. Nevertheless, these elusive particles of magnetic charge have fuelled a rich field of theoretical study. In the study, the authors created an approximation of a magnetic monopole in free space at the end of a long, nanoscopically thin magnetic needle.

They experimentally demonstrated that the interaction of this approximate magnetic monopole field with a beam of electrons produces an electron vortex state, as theoretically predicted for a true magnetic monopole. This fundamental quantum mechanical scattering experiment is independent of the speed of the electrons and has consequences for all situations where electrons meet such monopole magnetic fields, as, for example, in solids. The set-up not only shows an attractive way to produce electron vortex states but also provides a unique insight into monopole fields and shows that electron vortices might well occur in unexplored solid-state physics situations. ■

**Nat Physic 2014;10(1):26**

## ENVIRONMENT AND POLLUTION

### Cancer Risks after Nuclear Release Accident: A Modeling Study for Radio-Cesium

Modern nuclear plants provide us energy every day, but we must face the reality if one day the nuclear released accidentally. It is a disaster for our human being. Yes, it is. The accident at the Fukushima Daiichi Nuclear Power Plant (NPP) in Japan resulted in the release of a large number of fission products that were transported worldwide. Has it produced some unpredictable results? YES. A new study led by Dr. Nikolaos Evangeliou from L'Orme des Merisiers, France, presented the effects of two of the most dangerous radionuclides emitted,  $^{137}\text{Cs}$  (half-life: 30.2 years) and  $^{134}\text{Cs}$  (half-life: 2.06 years), which were transported across the world constituting the global fallout after nuclear releases. The authors aimed to provide preliminary cancer risk estimates after the Fukushima NPP accident, in terms of excess lifetime incident and death risks, prior to epidemiology, and compare them with those occurred after the Chernobyl accident. Moreover, cancer risks are



presented for the local population in the form of high-resolution risk maps for 3 population classes and for both sexes. The atmospheric transport model LMDZORINCA was used to simulate the global dispersion of radio-cesium after the accident. Air and ground activity concentrations have been incorporated with monitoring data as input to the Linear Non-Threshold model frequently used in risk assessments of all solid cancers. Cancer risks were estimated to be small for the global population in regions outside Japan. Women are more sensitive to radiation than men, although the largest risks were recorded for infants; the risk is not depended on the sex at the age-at-exposure. Radiation risks from Fukushima were more enhanced near the plant, while the evacuation measures were crucial for its reduction. According to their estimations, 730–1700 excess cancer incidents are expected of which around 65% may be fatal. Finally, the researchers applied the same calculations using the Dose and Dose Rate Effectiveness Factor, which is recommended by the ICRP, UNSCEAR and EPA as an alternative reduction factor instead of using a threshold value. Excess lifetime cancer incidents were estimated to be between 360 and 850, whereas 220–520 of them will be fatal. Nevertheless, these numbers are expected to be even smaller, as the response of the Japanese official authorities to the accident was rapid. The projected cancer incidents are much lower than the casualties occurred from the earthquake itself (> 20 000) and also smaller than the accident of Chernobyl. ■

**Envir Int 2014;64:17**

## ENGINEERING

### Human Thermal Comfort from a Glass Window

When you sitting in your sunny room near the window, have you enjoyed the warming air surround you? It is so comfortable, but have you ever considered that at length? A funny study presented by Drs. Nopparat Khamporn and Somsak Chaiyapinunt from Chulalongkorn University, Thailand, in which the effect of the glass window on the thermal comfort of a person sitting near the glass window is investigated by performing the experiment in a test room. A clear glass window and a tinted glass window are chosen to be the test windows in their study. The index chosen to describe the thermal comfort was the percentage of people dissatisfied (PPD). The important parameter for evaluating the human thermal comfort condition was the mean radiant temperature. The mathematical model for predicting the mean radiant temperature was presented. The predicted mean radiant temperature and the mean radiant temperature evaluated from the operative temperature were compared. The researchers found that the mean radiant temperature, the predicted mean vote (PMV) and the PPD were all dependent on the transmitted solar radiation and the surface temperature of the glass window. Higher value of the mean radiant temperature yields higher value of the PMV and the PPD. The room with a clear glass window installed had high thermal discomfort condition mainly from the solar radiation. The amount of the thermal discomfort was directly varied with the amount of the transmitted solar radiation. For a high transmittance glass window, the thermal discomfort due to solar radiation was greater than the thermal discomfort due to surface temperature. For a low transmittance with high absorptance glass window, the thermal discomfort due to surface temperature becomes important when compared to the thermal discomfort in the part of solar radiation. ■

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FORTHCOMING ISSUE  
22 FEBRUARY 2014



**Who feeds us?**

# Wave

By Maurice Denis



## Wave

BY Maurice Denis. 1916. Oil on canvas. 100.0\*123.5cm  
from Ohara Museum of Art (Japan)

Maurice Denis was born in a small town Grandville, Normandy, in northern France. He went to Lycee Condorcet, where he met Roussel and Vuillard. He then went on to L'academie Julian and came to know Bonnard and Serusier there. Serusier stayed in Bretagne, the north western region of France in 1888 when he was introduced to an artist by his artist friend Emile Bernard. The artist was Paul Gauguin. Serusier brought the paintings he had created under the guidance of Gauguin back to Paris and showed them to his friends. Denis and his friends learned from him about Gauguin's views about art and were deeply moved. Hence they formed Les Nabis in the same year. "Nabis" means prophets in Hebrew. While placing an emphasis on profile lines, they used pure colors and their composition of the paintings was two dimensional. By doing so, decorative features of the paintings were more reinforced. Their activities expanded into decoration of theaters and churches and poster making. Denis played a very important role as he contributed to Les Nabis not only by creating paintings but by supporting the school with his theory. He often traveled to Italy and created paintings influenced by the Renaissance period classical art, as well. He was also influenced by Japanese art through Ukiyo-e. This painting "Wave" was painted about 27 years after the foundation of Les Nabis. Denis had very diverse activities at this time including creating illustrations for religious books. Through his painting style, we can get a sense of the theory of Les Nabis. The bold composition of the waves, rocks and people let shapes and colors appear in the way they were intended and give voluminous and vibrant impressions.



Working like a worker bee?  
Relax yourself.....



**Adhere to the Principle “Primum Non Nocere”: A Documentary of the Pioneer  
Scientist in Labor Pain Control in China**  
Xian Wang

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# Adhere to the Principle “*Primum Non Nocere*”: A Documentary of the Pioneer Scientist in Labor Pain Control in China

By Xian Wang

It is hard to avoid risks during daily medical practice. Even though empiricism hinders the uniformed and standardized procedures, we are still guided by high-graded clinical trials and professional guidelines. Labor pain is considered as the leading cause for seeking Cesarean section in China, whereas how to reach the ideal labor pain control is still not that popular in the most populous country where most of the parous women are blind to the labor analgesia. Dr. Xiaofeng Shen from Nanjing Medical University leads her team march for the goal of “painless labor delivery” by adhering to the principle “*primum non nocere*”. In collaboration with other domestic and foreign peers, Dr. Shen strives to spread and popularize the knowledge of labor pain control in China, which now has been well-known all over the country for their patient-centered efforts, and has been recognized by Chinese professional and health organizations. For the team of Dr. Shen, the practical principle has been perfected to “*primum non nocere, secundus, opinio vulnero*”. ■



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**Keywords:** Scientist – Labor analgesia – Xiaofeng Shen – China – Safety

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**M**EDICAL practice involves unavoidable risks of which some are definite but some are random. These risks are associated with the unpredictable biology of the individual like genetic and nongenetic variabilities, age, gender, compliance, and environment. How to reach the goal of “*primum non nocere*”, and then “*secundus, opinio vulnero*” is an art, but also the key principle. Clinical trials and guidelines shape and stand-

ardize the approaches and techniques used for caring, but empirical performance makes them be modified to receive the desired favorable outcomes. When new drugs enter our pharmacopoeia or new techniques enrolled into our routine work, some of them were approved by trials but some not. Therefore, our obligation or commission is of vigilant for the possible side effects or adverse events

that need to be monitored and reported.

One of the major reasons for the high Cesarean section rate in China is the fear of labor pain. However, labor analgesia is the very technique that can relieve the pain effectively, a technique widely applied in the developed countries. In comparison, various reasons such as difference in understanding, insufficient teaching



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**Dr. Xiaofeng Shen, M.D., M.P.H.**

Professor in Anesthesiology and Pain Medicine  
Director, Department of Anesthesiology and Critical Care Medicine  
Associate Chairwoman of the Chinese Ob/Gyn Anesthesia Commission

Dr. Shen strives to give her patients the safest medical service by adhering to the principle of "*primum non nocere*". She leads her team march for the goal of "painless labor delivery". Right now, Dr. Shen has perfected her memo to be "*primum non nocere, secundus, opinion vulnero*".

of corresponding knowledge, lack of anesthesiologists, unreasonable charges in combination result in the lower rate of labor analgesia (< 10%), but a higher rate of Cesarean section (70-80%) in China. Dr. Xiaofeng Shen, the Chinese pioneer of labor analgesist, led her team successfully carried out labor control study started 1999. Until 2000, more than 60 000 cases received epidural labor pain control. In September 2009, they published their first paper regarding the effect of latent epidural analgesia, cervix < 4cm, on the Cesarean section in the distinguished professional journal of *Anesthesiology* (1), in which Dr. Shen and colleagues enrolled and screened 15 000 nulliparous women requested for epidural analgesia, and they demonstrated that initiating labor analgesia during the latent phase of labor does not increase the rate of Cesarean delivery. Based on their findings, Dr. Shen and her team began thinking about the use of epidural analgesia in high-risk patients like preeclampsia and diabetes mellitus, and they also compared the analgesic effectiveness of intermittent bolus injection of the drug mixture with the continual pump infusion. As Dr. Shen said, all these studies were conducted under the guidance of "*primum non nocere*". This the sole principle for adherence when they carried out one

study and determined whether it shall be propagated or not.

In 2008, a so-called "No Pain Labor N' Delivery" was initiated by the American-Chinese anesthesiologist Dr. Lingqun Hu from Feinberg School of Medicine, Northwestern University, who is committed to promote the popularity of epidural labor analgesia and to establish training bases or centers in China. They aimed to increase the spontaneous childbirth rate as high as 10% and decrease the rate of Cesarean section. Before the activity, most hospitals in China were so limited to promote the popularization and development of epidural analgesia. After spreading, many hospitals right now hope to get Dr. Hu's support. In this context, Dr. Shen and the American anesthesiologists cooperated and collaborated to establish the first training center in China. In 2013, the department of anesthesiology headed by Dr Shen was approved to be the first The Training Base on Obstetric Anesthesia in China by the Chinese Society of Anesthesiology. Meanwhile, Dr. Shen began to operate the informative system in her department that makes the routine anesthesia and analgesia become paperless, which undoubtedly promotes the development of patient safety-centered anesthesia, and also makes the information easily retrievable. With the prospective view, Dr. Shen leads her depart-

ment to build up the Anesthesia Clinic in 2010 to promote preoperative patient-anesthesiologist communication. It was a trial, and it was proved to be a great success. One key factor for the success is that it can help patients to understand the A-to-Z knowledge about the anesthesia, and to soothe patients' anxiety and depression.

Dr. Shen's work caught the eyes of the world and also evoked discussion on this topic in China. On July 15, 2013, the newspaper Medical Forum published one article entitled "How far is the labor analgesia from us?", and then on September 09, 2013, another article entitled "Decrease the Cesarean section rate, anesthesiologists help to do so" was released in the same newspaper. This article caused a big repercussion among obstetricians and anesthesiologists. Dr. Shen, the vice chairwoman of the National Obstetric and Gynecological Anesthesiology Committee, referred that the low labor analgesia rate in China is related to the poor education on corresponding science knowledge, the lack of anesthesiologists, as well as the insufficient attention of mothers and their family. In the hospital where Dr. Shen is working, the rate of labor analgesia is as high as 95%.

Dr. Shen and her team thus far completed over 30 clinical trials registered in the ClinicalTrials.gov. As the municipal and provincial key depart-

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ment, Dr. Shen leads her team march for the goal of “*primum non nocere*”. For them, patient’s safety is the first stone no matter what medical technique will be applied in medical practice. For their practical principle, it

has been perfected to be “*primum non nocere, secundus, opinio vulnero*”.

### Conflict of Interests

None

### References

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