

SEVEN DAYS

The news in brief

EVENTS

Fukushima fuel

Workers in Japan have taken the first steps towards fully decommissioning the stricken Fukushima Daiichi nuclear power plant. On 18 November, the Tokyo Power and Electric Corporation began the delicate task of removing fuel rods from a damaged reactor building. Although the unit was offline during the disastrous March 2011 earthquake, falling debris from the accident had made it difficult to transfer spent fuel kept in the building to permanent storage.

MAVEN launch

NASA's Mars Atmosphere and Volatile Evolution (MAVEN) spacecraft is on its way to study the upper atmosphere of the red planet. The mission launched on 18 November from Cape Canaveral, Florida, and will explore how atoms escape from the Martian atmosphere. MAVEN should reach its destination next September; once there, it will carry out a one-year nominal mission (see *Nature* **503**, 178; 2013).

POLICY

Japan emissions

Japan has scaled back its commitment to reduce greenhouse-gas emissions, according to news reports on 15 November. The country had previously pledged to lower emissions by 25% by 2020 compared with 1990 levels. But the new commitment — a 3.8% decrease over 2005 levels — would set Japan's emissions targets at 3.1% above 1990 baselines. The news comes as United Nations climate talks are under way in Warsaw. See *Nature* **503**, 174–175 (2013) and page 311 for more.



PHILIPPE MASCIET/MASTERFILMS/AIRBUS

Giant ash cloud tests sensor for aircraft

Sensors to detect volcanic ash have moved closer to widespread use on commercial airlines following flight tests involving the world's biggest artificial ash cloud (pictured). The Airborne Volcanic Object Imaging Detector (AVOID), developed by Nicarnica Aviation in Kjeller, Norway, uses infrared cameras to detect low levels of ash in the atmosphere. The test cloud was created on 30 October by spraying

particles collected from Iceland's Eyjafjallajökull volcano into the air off the west coast of France (see *Nature* **502**, 422–423; 2013). EasyJet, the UK airline carrier that helped to fund the experiment, announced on 13 November that it would mount the AVOID sensor on a number of its commercial jets by the end of next year. Volcanic ash can melt in the high temperatures of jet engines, clogging the equipment.

Brain implant

Patients with epilepsy who fail to respond to medications could benefit from a newly approved brain implant. The RNS Stimulator, made by Neuropace of Mountain View, California, received a green light from the US Food and Drug Administration on 14 November. The device is implanted in the skull and detects abnormal electrical activity in the brain, delivering corrective electrical stimulation pre-emptively to the brain areas in which epileptic seizures are thought to originate.

Malaria strategy

Researchers should aim to develop malaria vaccines by 2030 that can reduce the disease by 75%, the World

Health Organization said on 14 November in its updated Malaria Vaccine Technology Roadmap. The original 2006 roadmap had called for a malaria vaccine with an efficacy of 50% against severe disease and death — a target that seems unlikely to be met (see *Nature* **502**, 271–272; 2013). To accelerate progress, the revised plan recommends rapid assessment of new candidate vaccines using controlled studies in humans.

Heart health

Long-awaited clinical guidelines released on 12 November could change how physicians tackle cholesterol. The guidelines, issued by the American Heart Association and the American

College of Cardiology, advocate treating patients on the basis of their risk of cardiovascular disease, rather than trying to reduce 'bad' cholesterol (made up of low-density lipoprotein) to specific target levels, as had been previously recommended. See *Nature* **494**, 410–411 (2013) and go.nature.com/zxikwx for more.

Biofuel rules

The US Environmental Protection Agency proposed reducing requirements for the use of biofuels on 15 November, citing technical difficulties in meeting the current standards. The proposal would require that biofuels make up 9.2% of the US transportation fuel supply in 2014, down from 9.74%

FRANKLIN ORR in 2013. The requirement for advanced biofuels, which must reduce greenhouse-gas emissions by at least half, would drop from 1.62% to 1.33%. The rule is projected to reduce maize (corn) ethanol consumption by 3 billion litres next year, compared with 2013.

PEOPLE

Science educator

Microbiologist Ann Reid will be the new head of the US National Center for Science Education (NCSE) in Oakland, California. The non-profit organization campaigns against the teaching of creationism and climate-change denial in schools. Reid, formerly director of the American Academy of Microbiology in Washington DC, will replace retiring NCSE director Eugenie Scott, who has led the organization for 27 years (see *Nature* **497**, 287–288; 2013).

US energy nominees

Chemical engineer Franklin Orr (pictured) has been tapped by US President Barack Obama to serve as the undersecretary for science at the Department of Energy. Orr, a researcher at Stanford University in California, would replace Steven Koonin as chief scientific adviser to US energy secretary Ernest Moniz, and would oversee



the department's research programmes. Meanwhile, Marc Kastner, a physicist at the Massachusetts Institute of Technology in Cambridge, was nominated to head the department's Office of Science. Both picks must be confirmed by the Senate. See go.nature.com/geeup9 for more.

RESEARCH

Acidic waters

Oceans are acidifying at an “unprecedented rate”, with potentially dire consequences for humans, according to a report released on 14 November from the Third Symposium on the Ocean in a High-CO₂ World. The assessment reviews current science on ocean acidification and warns that many species will fare worse in the future. Oceans will be less able to take up atmospheric CO₂, decreasing their capacity to

moderate climate change, the report says. Shellfish harvests will probably decline and coral reefs will be lost, it adds. See go.nature.com/cjejog for more.

Heat tracking

This year is on track to become the seventh-warmest since global climate records began in 1850, according to a preliminary assessment released on 13 November by the World Meteorological Organization. See go.nature.com/apxln for more.

Asian unicorn

A rare antelope-like animal called the saola has been caught on film for the first time in 15 years. The conservation group WWF snapped the photos using a camera trap in Vietnam, and announced the finding on 12 November. The saola (*Pseudoryx nghetinhensis*), sometimes nicknamed the Asian unicorn, is critically endangered, and probably only a few hundred remain. See *Nature* **484**, 424–425 (2012) and go.nature.com/yerkoh for more.

FUNDING

Broad investment

American philanthropists Eli and Edythe Broad announced on 14 November a US\$100-million investment to continue funding biomedical research

COMING UP

22 NOVEMBER

The European Space Agency is scheduled to launch Swarm, a constellation of satellites that will study Earth's magnetic field for four years.

go.nature.com/rxaaur

24–27 NOVEMBER

Science for global sustainable development is the theme of the sixth World Science Forum, to be held in Rio de Janeiro, Brazil. Highlights include biodiversity, water security and bioenergy.

go.nature.com/cxmbqf

at the Broad Institute in Cambridge, Massachusetts. The centre, which was founded in 2004, supports collaborations between scientists at the Massachusetts Institute of Technology and Harvard University. The Broad launched the institute with an initial \$100-million gift, and have already contributed a further \$500 million (see *Nature* **455**, 149; 2008).

BUSINESS

Breakthrough drug

The US Food and Drug Administration (FDA) approved on 13 November a ‘breakthrough therapy’ to treat a rare blood cancer called mantle-cell lymphoma. Ibrutinib, developed by Pharmacyclics of Sunnyvale, California, is only the second drug to be approved under the FDA's Breakthrough Therapy Designation programme — a pipeline launched last year to fast-track regulatory approval of particularly promising treatments. See go.nature.com/w5xfjo for more.

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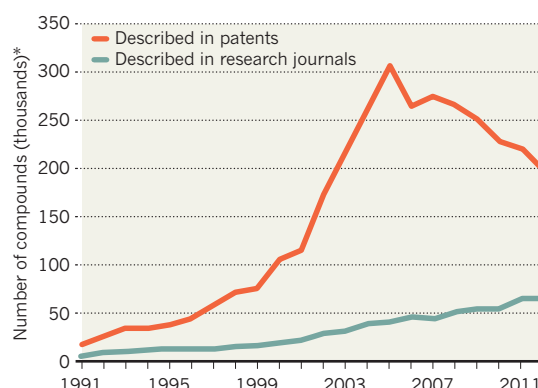
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TREND WATCH

The number of potential drug leads disclosed in patents each year has plummeted over the past seven years. But potentially bioactive molecules described in research journals are still rising, according to a data-mining study of molecular structures in more than 140,000 journal articles and patents (C. Southan *et al.* *PLoS ONE* **8**, e77142; 2013). The researchers suggest that job cuts and mergers among pharmaceutical companies may be behind the fall in global output.

PATENT CHEMISTRY ON THE SLIDE

The number of chemical compounds linked to protein targets being disclosed in patents is on the decline.



*Linked to human protein targets (pattern similar for all species).