

# SEVEN DAYS

The news in brief

## SPACE

### Rosetta rests

The European Space Agency's Rosetta spacecraft successfully crash-landed on the comet 67P/Churyumov–Gerasimenko on 30 September, in a daring finale to its 12-year mission. The craft sent back a continuous stream of data as it descended 19 kilometres to the comet's surface. The move was designed to get scientists the closest possible images and measurements of dust, gas and plasma from a comet. See page 13 for more.

### UN space ambition

The United Nations will launch its first space mission in 2021, aiming to give developing nations an opportunity to conduct space research. The UN Office for Outer Space Affairs (UNOOSA) announced on 27 September at an aeronautics congress in Mexico that it will put a payload on the Dream Chaser spacecraft being developed by the Sierra Nevada Corporation in Sparks, Nevada. UNOOSA said that it will soon start soliciting proposals for payloads to be launched into low-Earth orbit. It aims to select a mission by early 2018.

## FACILITIES

### Laser launch

The world's most powerful X-ray free-electron laser (XFEL), in Hamburg, Germany, officially launched on 6 October. The €1.2-billion (US\$1.3-billion) European XFEL, funded by 11 countries, is entering its test phase. When fully operational, it will accelerate bunches of free electrons to near the speed of light, generating X-ray radiation at 27,000 pulses per second. Scientists will use the radiation to study complex molecules and chemical reactions in unprecedented



SASHA MORDOVETS/GETTY

## Russia suspends plutonium deal with US

On 3 October, Russian President Vladimir Putin suspended an agreement with the United States that requires each country to dispose of 34 tonnes of weapons-grade plutonium, citing “unfriendly” US actions. Under the 2000 deal, which was reaffirmed in 2010, both countries committed to blending the plutonium into mixed-oxide (MOX) fuel for use in nuclear

power plants. Delays and cost overruns at a MOX fuel-fabrication facility at the Savannah River Site in South Carolina, however, prompted the US Department of Energy (DOE) to abandon the idea. Instead, the DOE is proposing to dilute and dispose of the plutonium directly. But Russia had opposed that option, claiming that the plutonium could eventually be recovered.

detail. The facility's 1.7-kilometre superconducting linear accelerator was installed in an underground tunnel last month. If tests go to plan, researchers will be able to apply for instrument time starting next year.

## POLICY

### Climate deal sealed

The European Union's parliament voted to ratify the 2015 Paris climate deal on 4 October, securing enough backing for the agreement to enter into force. The accord needed the support of 55 nations covering 55% of global greenhouse-gas emissions to do so. The European Union accounts for 12% of global emissions. India (responsible

for 4% of emissions) ratified the deal on 2 October. Signed last December in Paris by nearly 200 nations, the accord commits countries to keeping global warming to “well below” 2°C.

### French budget

With one eye on next year's elections, the French government has proposed a generous boost for its Ministry of Higher Education and Research in the draft budget for 2017, released on 28 September. The ministry would get a 3.7% spending hike, bringing its total budget to €23.85 billion (US\$27 billion) and its research pot to €7.9 billion. It is the largest increase for 15 years, but some fear that already-promised

salary raises for civil servants — including many researchers and university teaching staff — could swallow up much of the increased budget.

### Wildlife protection

In a significant step, delegates at the meeting of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in Johannesburg, South Africa, agreed on a motion calling for the closure of all domestic ivory markets. Japan, however, has said the non-binding motion won't apply there. But the congress rejected proposals to give African elephants the highest level of protection available. Other actions at the 12-day meeting, which closed on 5 October, included banning

COURTESY OF NEW HOPE FERTILITY CLINIC

all trade of pangolins, which are used in Chinese medicine and are some of the world's most trafficked mammals; and boosting protection for thresher sharks, known for their long, whip-like tails.

EVENTS

**Artificial pancreas**

US regulators have approved the first 'artificial pancreas' — a device that automatically adjusts insulin levels on the basis of blood-sugar levels. The US Food and Drug Administration approved the device, which is made by Medtronic of Dublin, on 28 September to treat type 1 diabetes. The artificial pancreas measures blood sugar every five minutes and relies on an insulin pump to adjust insulin levels accordingly.

**'Three-parent' baby**

A potential world first in fertility therapy — a baby boy conceived using a controversial mitochondrial-replacement technique that mixes DNA from three people — was reported by *New Scientist* on 27 September. The method, called spindle nuclear transfer, moves the nucleus of an egg cell from a mother with faulty mitochondria to the nucleus-free egg of a healthy donor; this is then fertilized with the father's sperm. The



procedure was carried out in Mexico by a team from a US clinic, on behalf of a Jordanian couple. The mother of the baby carries a neurological disease called Leigh's syndrome. But with only sparse information available, the claim has not been verified, and some researchers have questioned the ethics of the procedure. The team, led by John Zhang (pictured, with baby), is scheduled to present details on 19 October. The boy was born in April. See [go.nature.com/2dphaud](http://go.nature.com/2dphaud) for more.

**Arctic science**

Nations have made a joint pledge to improve collaboration on Arctic research. Science ministers and advisers from more than 20 nations and the European Union, plus representatives from indigenous groups, met at the White House on 28 September for the first Arctic-science ministerial meeting to discuss the rapidly

changing polar environment. In a joint statement, the ministers announced several projects, including a five-year drive to create an Arctic observation system, led by Norway; an EU-led project on the Arctic's impacts on Northern Hemisphere weather; and a US-led research network that will harness the power of citizen scientists.

**AI super-league**

Tech giants Google, Facebook, Amazon, IBM and Microsoft will join forces to create an artificial-intelligence (AI) consortium to promote public understanding of the field. The Partnership on Artificial Intelligence to Benefit People and Society, announced on 28 September, will recommend best practices, consult with academics on how AI might affect society, and propose standards for future AI researchers. But two big names are so far conspicuously absent from the group: Apple and Elon Musk's research-focused company OpenAI.

**Entangled whales**

Two North Atlantic right whales (*Eubalaena glacialis*) were found dead and a third became entangled in fishing gear off the coasts of Maine and Massachusetts between 22 and 24 September. The species, which is endangered,

has a population of about 500 in the region. Officials with the US National Oceanic and Atmospheric Administration removed buoys and more than 60 metres of rope from the entangled whale, an 8-year-old female, before she became uncooperative. A necropsy of one of the dead whales revealed that it had died of stress after being entangled in fishing gear.

**eLife to charge**

The open-access journal *eLife* announced on 29 September that it is dropping one of its most distinctive features: free publishing. From 2017, it will charge a fee of US\$2,500 for each accepted paper. The journal, which launched in 2012, has until now had its expenses covered by three of the world's largest private research funders. But it needs another revenue stream to support its business as the number of papers that it receives increases, says its director. The fee is in the range charged by other open-access journals. See [go.nature.com/2dw11hy](http://go.nature.com/2dw11hy) for more.

AWARDS

**Nobel prizes**

Molecular biologist Yoshinori Ohsumi won the 2016 Nobel Prize in Physiology or Medicine for his work in the field of autophagy: the processes by which the cell digests and recycles its own components. The physics prize was awarded to David Thouless, Duncan Haldane and Michael Kosterlitz for discoveries of exotic behaviour in matter, and for using the mathematics of topology to explain the phenomena. A member of the Nobel physics committee used a bagel and pretzel to aid his explanation of the work (see page 18). *Nature* went to press before the chemistry prize was awarded, but full details are available at [go.nature.com/2dnp5bb](http://go.nature.com/2dnp5bb).

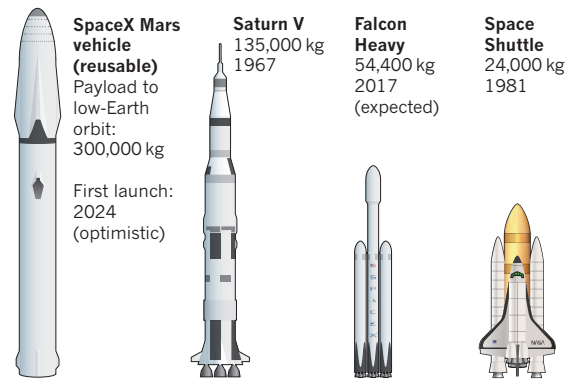
SOURCE: SPACE/NATURE

TREND WATCH

SpaceX head Elon Musk has unveiled a plan to colonize Mars. In his yet-to-be-built Interplanetary Transport System, a spaceship designed to carry at least 100 people would be mounted on the most powerful rocket ever built. Both elements are intended to be reusable. After launch, the rocket booster separates in orbit and lands back on Earth. The spaceship, parked in orbit, waits for the booster to return and refuel it with methane and oxygen. Once fully fuelled, the spaceship heads to Mars.

YOU'RE GOING TO NEED A BIGGER ROCKET

At 122 metres, SpaceX's Mars vehicle would be the biggest space-flight system ever built. It is designed to lift into low-Earth orbit more than twice what was possible with NASA's Saturn V Moon rocket.



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