

## COMMUNICATION

### Climate sceptics use strong words

Climate scientists use more cautious language in scientific reports than do climate-change sceptics, even though the sceptics often accuse the scientists of being alarmist.

Srdan Medimorec and Gordon Pennycook at the University of Waterloo in Canada used software to analyse the style of language in a report by the Intergovernmental Panel on Climate Change (IPCC) in 2013 and in a response written by a sceptic group, the Nongovernmental International Panel on Climate Change (NIPCC). The researchers did not assess the scientific accuracy of the reports but found that the NIPCC report used emotional language and the IPCC report contained more neutral and formal phrasing.

The authors hypothesize that the IPCC uses such language because of scrutiny from the media and sceptics. *Clim. Change* <http://doi.org/7mb> (2015)

## NUCLEAR PHYSICS

### Forensics reveals uranium's past

Uranium from German experiments during the Second World War was not used in a nuclear reactor for any appreciable amount of time.



Maria Wallenius at the European Commission Joint Research Centre's Institute for Transuranium Elements in Karlsruhe, Germany, and her colleagues did a forensic analysis of uranium samples (pictured) used in 1940s experiments in Germany. They looked for trace elements and isotopes of uranium and plutonium that are created when neutrons released during nuclear fission smash into other atoms.

They traced the origin of the uranium to a mine in the Czech Republic, and

found that isotope ratios matched those found in natural uranium ore. The samples were never used in experiments that reached the critical mass necessary for sustained nuclear fission. *Angew. Chem. Int. Ed.* <http://doi.org/f3f7js> (2015)

## CANCER

### A trap for roving cancer cells

Implanting a polymer scaffold in mice that have tumours captures spreading cancer cells,

enabling their early detection.

Lonnie Shea at the University of Michigan in Ann Arbor and his colleagues placed human breast-cancer cells in mice and implanted the scaffolds in their abdomens a week later. Two weeks after cell transplantation, the researchers detected cancer cells in the scaffolds but not in the lungs or liver, where breast cancer often spreads. After 28 days, mice with scaffolds had fewer tumours in their lungs than did animals without scaffolds. And using an imaging technique, the team measured changes in the tissue



## ANIMAL BEHAVIOUR

### Whales that click create cliques

Sperm whales form clans by learning vocal calls from others that sing like them. This kind of 'cultural transmission' has been seen as a mainly human trait.

Sperm-whale clans use distinct dialects of clicks to communicate. To learn how their complex societies form, Maurício Cantor at Dalhousie University in Halifax, Canada, and his colleagues used 18 years of data on the acoustic calls of sperm whales (*Physeter macrocephalus*; pictured) from around the Galapagos Islands to build several possible

models of whale populations. In their simulations, the clans that have been observed in nature did not form when the vocal calls were genetically inherited or learned from other sperm whales in general. But clans did form when the animals adopted the most common calls produced by certain individuals — mainly those with similar communication patterns.

This further suggests that humans are not the only mammals that segregate according to similarities in learned behaviour.

*Nature Commun.* 6, 8091 (2015)

properties within the scaffold that indicated the presence of cancer cells.

An inflammatory response to the scaffold attracted the cancer cells. This approach could eventually be used in humans to detect the early spread of cancer, the authors say.

*Nature Commun.* 6, 8094 (2015)

## PLANETARY SCIENCE

## A faster spin for Mercury

Mercury rotates nine seconds faster than scientists had thought, probably because of gravitational effects from Jupiter.

A team led by Alexander Stark of the German Aerospace Center in Berlin studied three years of data from NASA's MESSENGER spacecraft, which orbited the planet between 2011 and 2015 and measured Mercury's rotations more precisely than ever before.

The data also confirm that the planet has a molten outer core, causing this part to rotate at a different speed from the solid inner layers.

*Geophys. Res. Lett.* <http://doi.org/7mc> (2015)

## CANCER

## Muscle wasting blocked in mice

Giving tumour-bearing mice specific proteins prevents a muscle-wasting syndrome that commonly affects people with cancer.

Many patients with cancer die from severe muscle loss (cachexia), which has no treatment. To find a way to halt the condition, Amelia Johnston and Nicholas Hoogenraad at La Trobe University in Melbourne, Australia, and their colleagues injected mice with mouse cancer cells that had been engineered to express a human gene encoding the protein Fn14, which drives cancer growth. The animals lost muscle and fat, but giving the mice an antibody against

Fn14 stopped cachexia. Moreover, in a mouse model of cachexia, the animals lived longer and maintained body weight when treated with an anti-Fn14 antibody, compared with untreated mice.

Targeting Fn14 proteins that are generated by tumours could be a treatment strategy for this condition, the authors say. *Cell* 162, 1365–1378 (2015)

## ASTRONOMY

## The farthest galaxy so far

Astronomers have observed the most distant galaxy yet by detecting photons emitted from its clouds of hydrogen when the 13.8-billion-year-old Universe was less than 600 million years old.

Such photons rarely make it to telescopes on Earth, but Adi Zitrin at the California Institute of Technology in Pasadena and his colleagues were able to detect them using a telescope at the W. M. Keck Observatory in Mauna Kea, Hawaii. They found that the wavelength of arriving photons had been stretched en route, indicating that the galaxy, named EGSY8p7, is more than 13.2 billion light years (4 billion parsecs) away.

Seeing hydrogen emission from such a distant galaxy may challenge current understanding of the evolution of the Universe, the authors say.

*Astrophys. J. Lett.* 810, L12 (2015)

## ECOLOGY

## Marauding ants bring disease

One of the most widespread invasive ant species not only displaces native ants, but also carries viruses.

Phil Lester at Victoria University of Wellington and his colleagues searched

## SOCIAL SELECTION

Popular topics on social media

## Science failings shared on Twitter

Researchers' best success stories end up in journals, but many of their less-successful ones found their way on to Twitter this week with the hashtag #FailingInSTEM. Tales of low points and often-humorous mishaps reassured others that failures can be overcome on the way to scientific success. "The #FailingInSTEM tweets are so important! It's so comforting to know that other scientists make mistakes," tweeted Aimee Eckert, a PhD student in cell biology at the University of Sussex in Brighton, UK. Nicole Cabrera Salazar, an astronomy PhD student at Georgia State University in Atlanta, started the #FailingInSTEM Twitter discussion after a friend of hers suffered a scientific setback: "We need to let our young ppl know that regular, fallible people do science. We make mistakes everyday. It's part of the job #FailingInSTEM." She suspected that other young researchers could use a reminder that science is not all about

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successful experiments and flashy publications. "People don't talk about all of the times that they broke something in a lab or got heckled during a presentation," she says.

for viral sequences in RNA extracted from Argentine ants (*Linepithema humile*; pictured) in New Zealand. They found a virus that they named *Linepithema humile virus 1*, which could explain periodic crashes in Argentine ant populations. They also found that the ants carried deformed wing virus, which can be fatal to honeybees.

The team suggests that bees could become infected when the ants forage or raid bee nests. *Biol. Lett.* 11, 20150610 (2015)

## CONDENSED-MATTER PHYSICS

## Weyl particles discovered

Three separate teams have found analogues of Weyl fermions: massless elementary particles that were first predicted in 1929 but

have never been observed.

Physicists searching for these fermions look for their unusual properties in the collective behaviour of other particles. Hong Ding and Tian Qian at the Chinese Academy of Sciences in Beijing and their colleagues saw these 'quasiparticles' by probing a sample of tantalum arsenide with a beam of X-rays. In July, a separate group of researchers led by Zahid Hasan at Princeton University in New Jersey announced that they had seen the particles in the same material. Ling Lu at the Massachusetts Institute of Technology in Cambridge and his colleagues reported seeing signs of the particles in the behaviour of light passing through a crystal.

Such experimental systems could allow researchers to probe the exotic properties associated with Weyl particles. *Phys. Rev. X* 5, 031013 (2015); *Science* 349, 613–617; 622–624 (2015)

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