

showing how competition for a nutrient can drive primate and pathogen evolution. *Science* 346, 1362–1366 (2014)

## ANTHROPOLOGY

## How a Maya city rose and fell

One of the major Maya cities thrived in a tropical forest by using sophisticated agricultural, forestry and water-management techniques.

David Lentz at the University of Cincinnati in Ohio and his colleagues surveyed modern forests at the site of Tikal in Guatemala, which was a bustling city roughly 1,400 years ago. By analysing archaeological plant and soil specimens, the authors concluded that the people of Tikal intensively farmed the land, using irrigation and terraces, for example. They also developed a complex system for collecting and distributing rainwater.

However, by around AD 850, as drought set in, the Tikal systems could not keep up with the growing population, probably leading to the demise of the great city.

*Proc. Natl Acad. Sci. USA* <http://dx.doi.org/10.1073/pnas.1408631111> (2014)

## PHYSICS

## Record-breaking electron boost

Physicists have used lasers to increase the amount of energy that electrons gain per metre by more than two orders of magnitude compared with traditional accelerators.

Conventional colliders can accelerate particles to much greater energies, but over many kilometres. Wim Leemans at Lawrence Berkeley National Laboratory in California and his colleagues used extremely intense laser pulses and an ionized gas to boost electrons over much smaller distances.

By guiding the pulses through channels in the plasma, the researchers

generated strong electric fields that increased injected electrons to 4.2 gigaelectronvolts — the highest energy ever achieved in a laser-based system — over just 9 centimetres.

The authors say that the technique could be used to make smaller high-energy linear accelerators, and to create table-top systems that use X-rays emitted by electrons to probe materials. *Phys. Rev. Lett.* 113, 245002 (2014)

## CHEMISTRY

## Painkillers made in minutes

Ibuprofen can be produced in minutes by mixing reagents as they flow through a series of connecting tubes.

Synthesizing a substance in a continuous-flow process offers more control over reactions and allows less solvent to be used than batch production in flasks. But solid by-products can accumulate, blocking the flow. By varying the width of connecting tubes and using specially designed pumps, David Snead and Timothy Jamison at the Massachusetts Institute of Technology in Cambridge built an apparatus that produces ibuprofen in three minutes with minimal fouling. The five-stage process has three reactions — one of the most complex applications of flow chemistry yet.

A wide variety of other drugs could be synthesized in this way, the authors say.

*Angew. Chem. Int. Edn* <http://doi.org/10.1002/anie.201408631> (2014)

## AGRICULTURAL ECOLOGY

## Pesticide moves up food chain

An insecticide banned in some areas for its effect on bees not only fails to kill certain pests, but also harms the predators that feed on them.

Neonicotinoid insecticides are used on many crops, including soya-bean plants, on which pest slugs (*Derocera reticulatum*) feed. Margaret

## SOCIAL SELECTION

Popular articles on social media

### When press releases go bad

Researchers love to blame the news media when reports about science are misleading or even wrong. But a study making the rounds online suggests that much of the hype and misinformation about health-related research in the news has its roots in university press releases — which are often approved in advance by the researchers themselves. “Academics should be accountable for the wild exaggerations in press releases of their studies,” tweeted Catherine Collins, a dietitian who works for the National Health Service in London. But some say that others are to blame. “Exaggerated academic hype leads to bad news stories. Why don’t reporters do their jobs?” tweeted Steve Usdin, editor and co-host of *BioCentury This Week*, a US public-affairs show covering the biopharma industry. *Br. Med. J.* 349, g7015 (2014)



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## ASTRONOMY

## Exoplanet seen from Earth

Using a modest-sized ground-based telescope, astronomers have spotted a planet twice the size of Earth passing in front of its host star.

Researchers typically study planets outside the Solar System using space telescopes or much larger telescopes on Earth, but studies with space telescopes are expensive and access to large facilities on the ground is limited. A team led by Ernst de Mooij, now at Queen’s University Belfast, UK, used a smaller telescope in La Palma, Spain, to investigate the Sun-like star 55 Cancri. The scientists’ size measurements of one of the star’s known planets were similar to those obtained using orbiting telescopes.

Such ground-based studies can complement those using space telescopes, the authors say.

*Astrophys. J. Lett.* 797, L21 (2014)

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Douglas at the Pennsylvania State University in University Park and her colleagues exposed the slugs in the lab to soya-bean plants grown from seeds coated with the neonicotinoid thiamethoxam. They found that the slugs were unaffected, but that more than 60% of ground beetles (*Chlaenius tricolor*, pictured), which feed on the slugs, died or suffered impairments such as paralysis. In field studies, thiamethoxam also lowered the number of predators on slugs, and reduced soya-bean yields by 5%.

The results indicate unintended indirect effects of neonicotinoids on non-target species in addition to known direct effects, the authors say. *J. Appl. Ecol.* <http://doi.org/10.1111/1365-2656.12014> (2014)

