

PLANT GENETICS

Sweet potato is already a GM crop

The sweet-potato genome contains genes from bacteria, so is an example of a naturally occurring genetically modified (GM) plant.

While combing through the genome of the domesticated sweet potato (*Ipomoea batatas*), Jan Kreuze of the International Potato Center in Lima, Peru, and his colleagues stumbled on genes that originated from one or more *Agrobacterium* species. These bacteria infect plants and transfer DNA into their hosts' genomes, so are used by researchers to genetically modify many agricultural crops. The two stretches of bacterial DNA found in the sweet potato are expressed in various tissues, and one of the sequences is found only in cultivated sweet potatoes — not in closely related wild strains.

These genes could encode traits that were desirable for domestication of the crop, and were probably transferred into an ancient sweet-potato ancestor, the authors say.

Proc. Natl Acad. Sci. USA
<http://dx.doi.org/10.1073/pnas.1419685112> (2015)

GLACIOLOGY

Antarctic ice shelf nears its demise

The remains of an ice shelf that collapsed spectacularly in 2002 may be headed for total disintegration.

The break-up of the Larsen B ice shelf was one of the largest and fastest melting events ever seen by glaciologists. Ala Khazendar of the Jet Propulsion Laboratory in Pasadena, California, and his co-workers studied satellite and airborne radar measurements of the heights and flow

speeds of glaciers feeding the remaining, southern section of Larsen B. They found that two of the glaciers thinned by 15–20 metres between 2002 and 2011, and one of them increased its flow speed by 55% from 1997 to 2012.

Modelling suggests that when most of Larsen B disintegrated, the remaining glaciers had less ice to buttress them in place, causing them to destabilize.

Earth Planet. Sci. Lett. 419, 199–210 (2015)



ROBERT CAPUTO/AURORA PHOTOS

MICROBIOLOGY

Bacterial bonanza far from the West

Members of an isolated Amazon tribe in Venezuela (pictured) have the most diverse gut bacteria ever documented in humans.

Maria Gloria Dominguez-Bello at New York University School of Medicine analysed oral, faecal and skin bacteria from 34 Yanomami villagers who had never met anyone from the West until 2009. The researchers found almost double the genetic diversity in the faecal bacteria compared with the microbiomes of US residents. The faecal and oral bacteria also carried genes for antibiotic resistance, even though the people had no known exposure to the drugs.

In a separate study, Jens Walter at the University of Alberta in Edmonton, Andrew Greenhill at Federation University Australia in Churchill and their colleagues looked at the gut microbiomes of people from two rural areas of Papua New Guinea. They found that the bacteria were extremely diverse and included lineages not seen in US populations. Using ecological modelling, the authors attributed the increased diversity to low sanitation levels, which increased the swapping of bacteria between people.

Science Adv. 1, e1500183 (2015);
Cell Rep. <http://doi.org/3vh> (2015)

CANCER BIOLOGY

Some mutations in cancer arrive late

Subpopulations of tumour cells can harbour unique mutations that crop up later in a tumour's lifetime, and these could lead to treatment resistance.

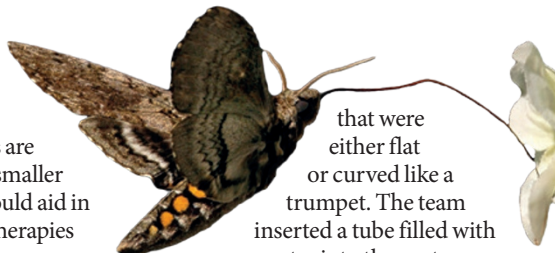
Tumours contain cells with distinct mutations. Charles Swanton of University College London and his colleagues analysed DNA sequence data from more

than 2,500 people with cancer to find out which mutations can fuel the expansion of subpopulations of tumour cells. The team found that mutations that drive cancer growth tend to emerge early in a tumour's evolution, and are typically found throughout the tumour. But the mutations can also develop later, in small subpopulations of cells.

The results suggest that some tumours become more resistant to therapy when small populations carrying resistance

genes expand. Understanding which mutations are present in these smaller groups of cells could aid in the selection of therapies for individuals.

Sci. Transl. Med. 7, 283ra54 (2015)



that were either flat or curved like a trumpet. The team inserted a tube filled with sugar water into the centre of each flower, and allowed hawk-moths (*Manduca sexta*; pictured) to feed from them. Although the moths visited each type of flower equally, they drained trumpet flowers more often than flat ones. The results suggest that the trumpet shape helps to guide the moth's probing mouthparts to nectar.

Before the advent of 3D printers, ecologists who studied plant-pollinator interactions had to breed flowers or sculpt fake ones by hand. The 3D-printing technology allowed Campos's team to quantify flower shape and produce precise models with ease.

Funct. Ecol. 29, 462-468 (2015)

PALAEOLOGY

Ancient seas bore bone-fed worms

Bone-eating worms devour dead whales in today's oceans, but their ancient relatives might have emerged millions of years before their modern food source.

Modern *Osedax* worms drill distinctive holes in bone, with the oldest examples found in whale and fish bones from around 30 million years ago. But Silvia Danise and Nicholas Higgs of Plymouth University, UK, found these boreholes in the fossilized remains of an extinct marine reptile and a turtle, both roughly 100 million years old.

The discovery shifts the evolution of *Osedax*-type worms to well before the rise of early whales, about 50 million years ago. The ancient worms probably survived on the bones of turtles and other animals before whales appeared.

Biol. Lett. 11, 20150072 (2015)

ECOLOGY

Like a moth to a trumpet flower

Hawk-moths are better at finding nectar in flowers shaped like the bell of a trumpet than in those that resemble a flat disc.

Eric Octavio Campos and his colleagues at the University of Washington in Seattle used a 3D printer to create flowers



ANIMAL BEHAVIOUR

Octopus crawls with no rhythm

Octopuses can move quickly in any direction, regardless of which way the eyes and body are facing.

Binyamin Hochner of the Hebrew University in Jerusalem and his colleagues studied the animal's movement by analysing videos of crawling octopuses (*Octopus vulgaris*; pictured). They found that the radially symmetrical octopus moves by extending and shortening its arms, and that it tends to crawl diagonally relative to its line of sight.

The octopus also seems to lack any rhythmic pattern when coordinating the movement of its arms, unlike most other animals. The authors suggest that octopuses make last-minute decisions

SOCIAL SELECTION

Popular articles on social media

Full disclosure of clinical trials

Phantom clinical trials are a well-known phenomenon in biomedical research. Trials are conducted, but the results never see the light of day. To tackle this, the World Health Organization (WHO) released a statement in *PLoS Medicine* on 14 April calling for full disclosure of clinical-trial results — a stand that drew wide support from commenters on social media. “Great news!” tweeted Antonietta Filia, an epidemiologist at Italy's National Institute of Health in Rome. Joseph Hayes, a psychiatrist at University College London, suggested in a tweet that such a policy would uncover many less-than-spectacular results. “WHO says all trials should be reported. Journal of Negative & Null Findings to have highest Impact Factor.”

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PLoS Med. 12, e1001819 (2015)

about which arm to move to determine their direction of crawling.

Curr. Biol. <http://doi.org/3vd> (2015)

ASTROPHYSICS

Many flavours of supernova

Exploding stars grouped in one family because of their similarities actually form two distinct groups. This may have important cosmic implications because the explosions, called supernovae, are the primary evidence that the Universe's expansion is accelerating.

Half of type Ia supernovae seem to have similar intrinsic brightnesses when seen in the visible spectrum. But when Peter Milne of the University of Arizona in Tucson and his team analysed data from the Hubble Space Telescope and NASA's Swift satellite, they found that the supernovae fell into two subfamilies, each brighter than the other in a different part of the ultraviolet spectrum.

The relative abundances of the two subfamilies seem to have changed over the past several billion years, a fact that could complicate their use as markers of cosmic expansion, the authors say.

Astrophys. J. 803, 20 (2015)

ANIMAL BEHAVIOUR

Dazzling colours distract predators

Many animals have coloration that shifts depending on the angle from which they are viewed, and this may help them to avoid predators.

This ‘interference coloration’ has evolved several times in beetles, birds, fish and other creatures, but it is not clear why. Thomas Pike, now at the University of Lincoln, UK, trained laboratory Japanese quails (*Coturnix japonica*) to peck at moving targets on a screen. When the targets changed from green to blue as they moved across the screen, the quails required many more pecking attempts to successfully ‘capture’ the mock prey. They were also less accurate with their pecks than when the targets stayed the same colour.

The findings suggest that this kind of coloration impairs a predator's ability to accurately locate prey.

Biol. Lett. 11, 20150159 (2015)

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