

MICROBIOLOGY

RNA pockets help parasites to infect

Parasitic worms release tiny sacs filled with small RNAs that disable immune responses in infected mice.

The membrane-bound sacs, or exosomes, sprout from cells and contain proteins and nucleic acids. Amy Buck at the University of Edinburgh, UK, and her team found that the nematode *Heligmosomoides polygyrus*, which infects the mouse gut, produces exosomes containing microRNAs (miRNAs) and 'Y RNAs' that can affect gene expression. The exosomes also carried a protein required to process those RNAs.

Mice exposed to exosomes showed a reduced immune response to an allergen compared to unexposed mice. The sacs also lowered expression of some immune-related genes in mouse cells in a lab dish. Moreover, the animals had miRNA from another worm called *Litomosoides sigmodontis* in their blood, suggesting that miRNA is secreted by other nematodes.

Nature Commun. 5, 5488 (2014)

GEOPHYSICS

How Greenland got its ice

Changes in Earth's mantle and crust allowed Greenland to accumulate its massive ice sheet over the past few million years.

Bernhard Steinberger of the German Research Centre for Geosciences in Potsdam and his colleagues used various models to reconstruct past plate-tectonic activity. They found that pulses of molten rock from deep within Earth rose up and thinned the overlying crust, which led to an uplift of eastern Greenland by more than 3 kilometres above sea level. Then, two rotations of the crust carrying Greenland shifted it 18° farther north in latitude. Once high and northerly enough, Greenland

could begin accumulating ice year-round.

The discovery shows how changes deep inside Earth can drive environmental changes on the surface.

Terra Nova <http://doi.org/w8q> (2014)

MATERIALS

Blu-ray patterns pump up solar cells

The surface pattern on a Blu-ray disc can be used to boost solar-cell performance.

Light is absorbed and scattered in unusual ways by nanometre-scale patterns found on iridescent surfaces, such as insect wings, because the patterns are neither completely periodic nor random. They also allow solar cells to absorb more light, but making such patterns in photonic devices is difficult and expensive. Cheng Sun, Jiaying Huang and their colleagues at Northwestern University in Evanston, Illinois, discovered that the pits and islands on the surface of Blu-ray movie discs have the same pattern. They used these discs to imprint the patterns on to an organic thin film of a solar cell.

The device absorbed 22% more of the energy from incoming sunlight than an unpatterned solar cell.

Nature Commun. 5, 5517 (2014)

NEUROSCIENCE

Epilepsy controlled from a distance

Disrupting electrical activity in a brain region not directly affected by epilepsy could be a way to control treatment-resistant forms of the disorder.

Esther Krook-Magnuson and her colleagues at the University of California, Irvine, mimicked epilepsy in mice by injecting a chemical into the hippocampus, where seizures arise in a common form of the human disease that is hard to treat. The mice had been genetically modified so that electrical activity in their brains

SOCIAL SELECTION

Popular articles on social media

Old papers find new life online

Search engines have revolutionized how scientists find papers — especially articles that have been around for a while. A team of researchers at Google has documented a surge in the citation rate for older papers. The study found that 36% of citations in 2013 were to papers that were at least 10 years old — a 28% increase since 1990. Scientists had a range of responses online. Carlos Baquero, a computer scientist at the University of Minho in Braga, Portugal, tweeted: "Older articles are now more accessible and thus their impact has grown. Knowledge escapes tyranny of time."

The authors say that the digitization of journal archives and online search engines have made it easier than ever to find older papers.

Preprint at <http://arxiv.org/abs/1411.0275> (2014)



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could be controlled with light.

When the team excited or inhibited neurons in the mouse cerebellum, spontaneous seizures recorded in the hippocampus became shorter. When they excited neurons in the midline cerebellum, the seizures also became less frequent. Altering the activity of neurons in the hippocampus, however, had no effect on seizure frequency.

eNeuro <http://dx.doi.org/10.1523/eneuro.0005-14.2014> (2014)

ANIMAL BEHAVIOUR

Fish tags guide seal predators

Seals can home in on acoustic tags routinely attached to fish by marine scientists.

These small, sound-emitting devices are often used to track fish populations. Vincent Janik at the University of

St Andrews, UK, and his colleagues allowed 10 captive grey seals (*Halichoerus grypus*; pictured) to explore 20 boxes in a pool. One box was baited with an untagged fish, another contained a tagged fish and the rest were empty.

In a series of tests, the seals found the tagged fish with increasing speed, and homed in on it faster than on the untagged fish. In later experiments in which no fish bait was used, the animals still generally visited tagged boxes faster than untagged boxes.

This adds to evidence that marine mammals can use human-generated sounds to find prey in the wild.

Proc. R. Soc. B 282, 20141595 (2014)

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