

certain RNA molecules as guides to recognize specific DNA sites in genomes that the Cas9 enzyme then cuts. Two groups of researchers have designed guide RNAs to target and disrupt DNA from geminiviruses, which infect many crops. Caixia Gao of the Chinese Academy of Sciences' Institute of Genetics and Developmental Biology in Beijing and her colleagues focused on the beet severe curly top virus. They found that transgenic CRISPR-Cas9 plants had 60–80% less viral DNA than control plants, and did not show disease symptoms such as leaf curling. Similarly, Daniel Voytas of the University of Minnesota in Minneapolis and his colleagues targeted the bean yellow dwarf virus genome and found 5–87% less viral protein in infected engineered plants.

This strategy could be used to develop disease-resistant transgenic plants, the teams say. *Nature Plants* <http://dx.doi.org/10.1038/nplants.2015.144> (2015); <http://dx.doi.org/10.1038/nplants.2015.145> (2015)

MICROBIOLOGY

Diet makes gut change speed

Interactions between diet and gut microbes affect how quickly food moves through the gut.

To simulate dietary changes that occur when people travel to places with different cuisines, Jeffrey Gordon at Washington University in St Louis, Missouri, and his team took germ-free mice and transplanted them with gut microbes from people consuming one of five different diets from around the world. They then fed the mice a series of all those diets and measured transit

times of dye-stained food through the gut. They found that transit time



varied with different combinations of diet and microbial community, and that it correlated with certain metabolites produced by some bacteria.

Turmeric (pictured), a common ingredient in Bangladeshi food, in particular decreased gut motility in mice carrying microbes and eating food from Bangladesh — in part by increasing the production of bile acid, which was converted by microbes into compounds that slow down gut movement. The approach could be used to identify components of different diets that affect gut health, the authors say. *Cell* 163, 95–107 (2015)

ECOLOGY

Creatures are busy in the polar night

The high Arctic is thought to be biologically quiescent during the long 'polar night' — the winter months when the Sun never rises. But Jørgen Berge at the Arctic University of Norway in Tromsø and his colleagues have discovered a surprising level of biological activity.

During three winters in the cold and dark in Kongsfjorden, Svalbard, the team recorded, for example, growing bivalves, foraging seabirds, scavenging crabs and reproducing and respiring zooplankton.

The ecosystem seems to thrive without photosynthesis by relying on energy that has been stored or brought in with Atlantic water.

Curr. Biol. <http://doi.org/7xd> (2015)

ROBOTICS

Robot moves when squished

Soft elastic materials that buckle in a vacuum can generate robot motions.

George Whitesides at Harvard University in

SOCIAL SELECTION

Popular topics on social media

Gender-disparity study faces attack

Bias against women in science is a well-studied and well-documented phenomenon. But some cases may not be as clear cut as they first seem. A study published this week in the *Proceedings of the National Academy of Sciences* claimed that female researchers in the Netherlands are more likely than men to lose out when applying for grants. The paper gained widespread support on social media, but some commenters quickly raised doubts. In a blog post, Casper Albers, a statistician at the University of Groningen in the Netherlands, argued that the authors had fallen victim to a common statistical error, which negates the main finding.

But the paper's lead author Romy van der Lee, a psychologist at Leiden University in the Netherlands, says that she stands behind the team's conclusion that gender affects success. *Proc. Natl Acad. Sci. USA* <http://doi.org/7v9> (2015)

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Cambridge, Massachusetts, and his colleagues built soft actuators out of squishy cubes containing air pockets. They attached rigid components such as grippers or legs to the cubes and sucked the air out of the pockets using a vacuum. This caused the cubes to collapse, driving the motion of the attached robot parts. When the vacuum was removed, the cubes returned to their original shape. By repeatedly changing the applied pressure, the team made robots that could walk or grab objects (pictured).

The buckling actuators can also be stacked to allow for more-complex motions, the authors report. *Adv. Mater.* <http://doi.org/f3gcnp> (2015)

CANCER IMMUNOTHERAPY

Molecular switch controls therapy

A molecular 'remote control' could enable researchers to make a powerful cancer

therapy safer.

The therapy relies on engineered immune-system cells called T cells that recognize and kill tumours, and has shown promise in clinical trials. But the T cells can also attack and damage healthy cells. James Onuffer and Wendell Lim at the University of California, San Francisco, and their colleagues designed an approach in which the T-cell receptors that recognize cancer cells are split in two, and will only assemble and function when triggered by a compound similar to the drug rapamycin.

T cells engineered in this manner only attacked their target cells in mice when the compound was present. The approach could provide a way to modulate the timing and intensity of engineered T-cell responses in humans.

Science <http://doi.org/7v4> (2015)

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