

the bacterial outer membrane and the exchange of ions, and inducing pathways for cell death — and are likely to be more stable and less toxic than most antimicrobials under development, the authors say. *Nature Microbiol.* 1, 16162 (2016)

## ELECTRONICS

## Protection for transistors

The performance of transistors made of black phosphorus can be maintained with the addition of tellurium.

Layers of black phosphorus just a few molecules thick show great promise in advanced electronic devices. But exposure to oxygen and moisture causes damaging corrosion and bubbles to form within days. To avoid this, Zhongyuan Liu of Yanshan University in Qinhuangdao, China, and his colleagues produced samples of the material that were doped with the rare metalloid tellurium. This slowed bubble growth, and the material retained 50% of its conductivity after three weeks, whereas the undoped versions retained only 2%.

Similar approaches could allow black phosphorus to be used in high-performance batteries and computer memory, the authors say. *Adv. Mater.* <http://doi.org/f3rcsr> (2016)

## ASTRONOMY

## Galaxy collisions make waves fast

When galaxies with supermassive black holes at their centres collide, they could produce a burst of gravitational waves within just 10 million years.

Gravitational waves were first detected earlier this year, sparking great interest in finding more. Some scientists have predicted that wave production happens on timescales of a billion years or more, which would mean future searches would detect relatively few waves.

Fazeel Mahmood Khan at the Institute of Space Technology in Islamabad and his colleagues simulated a galaxy collision and predicted that there are many more such waves to detect.

This is a promising finding for projects that aim to look for gravitational waves, such as one proposed by the European Space Agency using the Evolved Laser Interferometer Space Antenna. *Astrophys. J.* 828, 73 (2016)

## INFECTION

## Feed a virus, starve a bacterium

Feeding mice helps them to fight viral infection, whereas starvation is a better strategy against bacterial infection — lending support to the proverb ‘feed a cold, starve a fever’.

Ruslan Medzhitov and his colleagues at Yale University School of Medicine in New Haven, Connecticut, studied the effects of feeding on mice that were infected with either the bacterium *Listeria monocytogenes* or an influenza virus. Bacterium-infected mice that were deprived of food stayed alive, whereas well-fed animals died. By contrast, almost all mice with flu died when they were starved, but most survived when they were fed. During bacterial inflammation, glucose from food inhibited a metabolic process that protects brain tissue from damage, whereas the sugar protected the brain during viral inflammation.

The findings suggest that different types of inflammatory response have their own metabolic programs. *Cell* 166, 1512–1525 (2016)

## ENGINEERING

## Fabric harvests two energy forms

A lightweight fabric can harvest both solar and mechanical energy to power electronic devices.

Zhong Lin Wang at the Georgia Institute of

Technology in Atlanta, Xing Fan at Chongqing University in China and their co-workers wove a fabric (pictured) using wool fibres and two types of polymer wire: a photovoltaic one and another that collects mechanical energy. The 320-micrometre-thick flexible fabric converted energy from both sunlight and movement, making enough electricity to charge a mobile phone or power a wristwatch.

Along with exploiting solar power, such a device could harvest energy from the motion of walking, the wind blowing or a moving car. *Nature Energy* <http://dx.doi.org/10.1038/nenergy.2016.138> (2016)

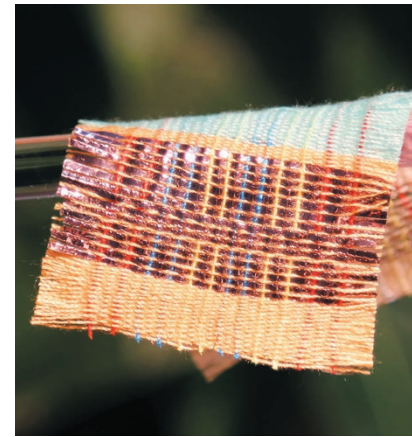
## CONSERVATION

## Hawaiian bird-life collapse

Populations of native birds on the Hawaiian island of Kauai have declined drastically in the face of climate change.

Eben Paxton, of the US Geological Survey's Pacific Island Ecosystems Research Center in Hawaii, and his colleagues analysed data on seven native species of forest bird on Kauai. Between 2000 and 2012, populations of six of these (including *Drepanis coccinea*; pictured) shrank by an average of 68% in their core range in the island's interior, and by an average of 94% in the surrounding areas. Two of these species could be detected only in the interior region in 2012 surveys.

The main driving force behind these declines



is probably increased temperatures that have allowed the spread of avian malaria, the authors say. They add that native birds are likely to go extinct in the next few decades at the current rates of decline. *Sci. Adv.* 2, e1600029 (2016)

## CANCER BIOLOGY

## Location matters in cancer growth

A tumour's genetic mutations often dictate which metabolic pathways it uses for rapid growth, but the tissue it develops from can also be an important factor.

Matthew Vander Heiden at the Massachusetts Institute of Technology in Cambridge and his colleagues studied tumours that bore mutations in two genes — *Kras* and *Trp53* — and that grew in either the lung or the pancreas in mice. They found that lung tumours tended to incorporate certain amino acids into proteins, and to use these amino acids as a source of nitrogen. But in the pancreas, the tumours relied less heavily on metabolizing the amino acids than the lung tumours did.

Personalized treatments for cancer should take into account both a tumour's genetics and its location, the authors say. *Science* 353, 1161–1165 (2016)

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