

expansion of the ocean, whereas the central and eastern Pacific saw decreases. *Proc. Natl Acad. Sci. USA* <http://dx.doi.org/10.1073/pnas.1519132113> (2016)

## METABOLISM

## Beige fat boosts metabolism

Human 'beige' fat cells implanted in mice can improve the animals' glucose metabolism and liver-fat profiles.

The presence of beige fat — brown fat cells within white fat-storing tissue — is correlated with better metabolic health, but it was not known whether beige fat causes this. To see whether there is a causal link, Silvia Corvera of the University of Massachusetts Medical School in Worcester and her colleagues grew human beige fat cells in the lab, placed them in mice, and found that they formed well-defined adipose tissue. Animals with the implants had lower blood-glucose levels, absorbed the glucose more quickly than did untreated controls, and had less fat in their livers.

The results suggest that beige fat could have therapeutic use, the authors say.

*Nature Med.* <http://dx.doi.org/10.1038/nm.4031> (2016)

## MATERIALS

## Add water for 3D-printed flowers

Researchers have 3D-printed hydrogel composites that swell and morph into flower shapes when immersed in water.

Lakshminarayanan

Mahadevan and Jennifer Lewis at Harvard University in Cambridge, Massachusetts, and their colleagues used an ink made of cellulose fibrils embedded in a hydrogel matrix, which mimics plant-cell walls and swells in water. By controlling the alignment of the fibrils in the ink during printing, the team produced flat materials that bend and twist when placed in water, producing structures that mimic flowers (**pictured**).

The approach could be used to create designer, shape-changing structures for biomedical applications or smart textiles, the authors say. *Nature Mater.* <http://dx.doi.org/10.1038/nmat4544> (2016)

## CHEMISTRY

## Polymers woven into stretchy web

Organic polymers woven into a 3D framework offer a new way of making flexible materials with tunable properties.

Covalent organic frameworks are highly porous structures with many promising applications, but they are typically rigid. Omar Yaghi of the University of California, Berkeley, Osamu Terasaki of Stockholm University and their colleagues created such a framework, dubbed COF-505. It is made of individual building blocks of copper ions that carry fragments of a polymer. Joining these units together with linear molecules formed crystals with the same tetrahedral geometry as diamond.

The researchers then removed the copper ions

## SOCIAL SELECTION

Popular topics on social media

## House bugs crawl over social media

Many commenters on Twitter this week felt their skin crawl after reading that some US households are home to more than 200 different species of insects and other creatures, according to one study. Entomologists collected more than 10,000 specimens of arthropods (insects and other animals with exoskeletons and segmented bodies) from 50 homes in Raleigh, North Carolina, and found surprising diversity. Their results, published in *PeerJ*, suggest that the average home contained 93 different species, from spiders and flies to cockroaches and beetles. Out of the 304 arthropod families identified, 149 were rare. And only 5 out of the 554 rooms examined — 4 bathrooms and 1 bedroom — contained no bugs at all. Joachim Maes, an ecologist at the European Commission's Institute for Environment and Sustainability in Ispra, Italy, tweeted: "We are literally surrounded by biodiversity." The study analysed only the types of species present, and the authors recommend a more-in-depth study

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of confined spaces in homes — such as under the stairs — to get more-accurate data on the number and diversity of household bugs.

*PeerJ* 4, e1582 (2016)

to leave interwoven, helical polymer threads that were collectively ten times more elastic than the precursor. The copper ions could also be replaced, raising the possibility of loading the polymer weave with metal catalysts, or of using it to absorb metal ions from liquid waste.

*Science* 351, 365–369 (2016)

## ANIMAL BEHAVIOUR

## Voles console stressed friends

Prairie voles seem to console their distraught cage-mates — a behaviour previously seen only in humans and in other animals with advanced cognition, such as great apes and elephants.

James Burkett, Larry Young and their colleagues at Emory University in Atlanta, Georgia, separated pairs of prairie voles (*Microtus ochrogaster*; **pictured**) in the lab and measured how long the rodents groomed each other when they were reunited. Voles spent significantly more time grooming partners that



had been subjected to noise and mild electric shocks during the separation period, even though they had not observed the stressful event.

The unstressed voles showed the same levels of stress hormones as their stressed cage-mates. This response disappeared when the researchers chemically blocked the brain receptor for oxytocin, a hormone involved in empathy in humans.

Further research on this consolation behaviour in rodents could yield insight into certain psychiatric disorders that involve a lack of empathy, the authors say.

*Science* 351, 375–378 (2016)

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NATURE WATER

