

Further testing of immune responses should be carried out in non-human primates, the authors say.

*Clin. Cancer Res.* <http://doi.org/bsvc> (2016)

## NEUROSCIENCE

## Brain circuit for tickling found

Researchers have pinpointed a brain circuit in rats that fires when the animals are tickled.

Rats are known to chirp or 'laugh' when tickled. To find the neural mechanism, Michael Brecht and Shimpei Ishiyama at the Humboldt University of Berlin inserted electrodes into the somatosensory area of the rat brain, which responds to touch on the skin. Certain neurons in this region fired intensely when the rats were tickled on their bellies, but responded less to back-tickling and hardly at all to tail-tickling.

By stimulating these neurons with the electrodes, the researchers caused the rats to chirp in the same way they do when tickled.

*Science* 354, 756–759 (2016)

## CARDIOVASCULAR BIOLOGY

## Food chemical protects the heart

A compound found naturally in legumes, grains and mature cheese helps rodents to maintain a healthy heart.

The chemical, spermidine, extends the lifespans of yeast, flies and worms by promoting autophagy, a cellular process that degrades and recycles old components of the cell and toxic products. Frank Madeo at the University of Graz in Austria and his collaborators found that aged mice that regularly drank water containing spermidine had improved heart function compared to untreated mice of the same age, and that the compound lowered blood pressure in rats prone to developing heart failure. Spermidine reversed various age-related mechanical and metabolic changes in the heart

cells of treated animals.

The chemical seemed to exert its effects through autophagy, because it did not benefit mice with a genetic defect that impairs this process in heart-muscle cells.

*Nature Med.* <http://dx.doi.org/10.1038/nm.4222> (2016)

## MATERIALS

## Elastic polymer mimics muscles

A lightweight elastomer can stretch and contract when stimulated by low voltages, making it a promising material for artificial muscles.

Dielectric elastomers exhibit reversible physical deformations when stimulated by electricity, but previous attempts to make artificial muscles from such materials required cumbersome braces to prevent rupture during long stretches. To avoid using braces, Andrey Dobrynin at the University of Akron in Ohio, Sergei Sheiko at the University of North Carolina at Chapel Hill and their team developed a dielectric elastomer by linking together polymer strands in a bottlebrush-like structure. This resulted in a stronger and more stretchable material with a lower risk of rupture than current materials.

The synthetic elastomers could eventually have applications in fields including soft robotics, the authors say.

*Adv. Mater.* <http://doi.org/f3s534> (2016)

## INFECTION

## Red squirrels get leprosy

Two species of bacteria that cause leprosy have been found in red squirrels in Britain and Ireland — a surprising discovery because only

primates and armadillos were thought to get the disease.

Stewart Cole at the Swiss Federal Institute of Technology in Lausanne, Anna Meredith at the University of Edinburgh, UK, and their team analysed tissue samples from 110 dead red squirrels (*Sciurus vulgaris*). Thirteen showed characteristic signs of infection such as skin lesions and swelling of the snout. The authors found leprosy-causing bacteria — *Mycobacterium leprae* or *Mycobacterium lepromatosis* — in all visibly ill animals (squirrel with leprosy on ear and snout pictured) and in about one-fifth of symptom-free ones.

This could represent another threat to red squirrels in the United Kingdom and Ireland, which are already affected by other infections and by competition from grey squirrels introduced from North America.

*Science* 354, 743–746 (2016)

## PALAEOANTHONY

## Early dinosaurs emerged gradually

Dinosaurs and their precursors lived side by side in the earliest stages of dinosaur evolution.

Max Langer at the University of São Paulo in Brazil and his colleagues explored some of the oldest-known rocks that contain dinosaur fossils, aged between 237 million and 228 million years old. The team unearthed a new species of an early 'lizard-hipped' dinosaur (*Buriolestes schultzi*; pictured right), which co-existed with a non-dinosaur relative, *Ixalerpeton polesinensis* (left). The non-dinosaur had skull and bone characteristics that resemble those of later dinosaurs, showing where key parts of dinosaur anatomy came from. The dinosaur's



teeth suggested that it ate small animals, unlike later species in its class that fed only on plants.

The findings suggest that dinosaurs did not rapidly replace their predecessors during their early evolution.

*Curr. Biol.* <http://doi.org/bsww> (2016)

## ARCHAEOLOGY

## Old DNA reveals fishing habits

Analysing ancient DNA from the tropics is difficult because DNA breaks down fairly rapidly in heat, but a team has managed to tease out some of the species represented by hundreds of 100–300-year-old fish bones from Madagascar.

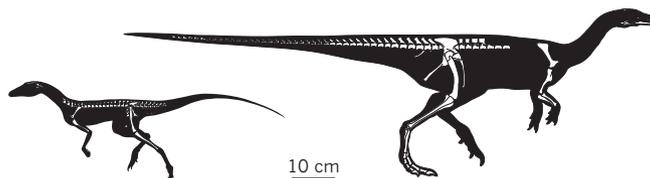
Short 'barcode' DNA sequences from a region of the genome that tends to vary between taxonomic groups can be used to identify fragmented animal bones discovered at archaeological sites. A team led by Alicia Grealy at Curtin University in Perth, Australia, applied this method to 887 fish bones from a site on the west coast of Madagascar that was occupied by humans in the eighteenth and nineteenth centuries. The authors were able to identify 23 fish families — 10 of which could be narrowed down, with some confidence, to a specific species — including two kinds of shark and various coral-reef-dwelling fish.

*J. Archaeol. Sci.* 75, 82–88 (2016)

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