

# RESEARCH HIGHLIGHTS

Selections from the scientific literature

## MATERIALS

### Trapping water from desert fog

A coated cotton fabric can absorb more than 3 times its weight in water from warm, moist air, and release it again at higher temperatures.

John Xin at the Hong Kong Polytechnic University in China, Catarina Esteves at Eindhoven University of Technology in the Netherlands and their colleagues grafted a temperature-sensitive polymer onto cotton fabric. At 16–25°C, the polymer chains interact to form a porous, sponge-like network that traps water. At higher temperatures, the material shrinks and releases its moisture in a cycle that is reversible. The material could be useful in dry, desert areas to collect water from morning dew or fog, the authors say.

**Adv. Mater.** <http://dx.doi.org/10.1002/adma.201204278> (2013)

## ANIMAL BEHAVIOUR

### Milky Way shows beetles the light

Birds, seals and humans can find their way by the stars — as, it seems, can the dung beetle, using the Milky Way.

Marie Dacke at Lund University in Sweden and her colleagues timed how long the nocturnal dung beetles (*Scarabaeus satyrus*; pictured) took to roll their dung balls from the centre of an outdoor arena to its

edge. When beetles could see the starlit sky they took less time, and followed straighter paths, than beetles that either had their upward-facing eyes covered or had to navigate on an overcast night. The authors moved their arena into a planetarium, and found that dung beetles exposed to a full starry sky took the same amount of time to exit the arena as those that could see just the Milky Way.

This is the first evidence of an insect navigating using the Milky Way, but it may not be the only animal with this capability, the authors say. **Curr. Biol.** <http://dx.doi.org/10.1016/j.cub.2012.12.034> (2013)



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## PALAEONTOLOGY

### Toothy bird had crunchy diet

Many fossil birds have simple teeth, but a fossil found in China has large, grooved teeth and is the first avian fossil to show specialized enamel.

When stomach contents cannot be recovered, palaeontologists look to the teeth for insight into diet and environment. Jingmai O'Connor at the Natural History Museum of Los Angeles County in California and her colleagues describe the fossil of *Sulcavis georum* from the early

Cretaceous period (145 million to 100 million years ago). The fossil had teeth 1–3 millimetres in length with longitudinal grooves that have never before been seen in a bird.

Whereas small, smooth teeth indicate a herbivorous diet, *S. georum* may have used its hard, powerful choppers to crunch creatures with tough exoskeletons, such as insects. **J. Vertebr. Paleontol.** 33, 1–12 (2013)

## ATMOSPHERIC SCIENCE

### Predicting storms in East Asia

Forecasting monsoons and tropical storms can be a challenge, but could be improved for East Asia because the variability of a major atmospheric high-pressure system over the western Pacific Ocean seems to be predictable. Bin Wang and his group at the University of Hawaii at Manoa in Honolulu show that the intensity of the western Pacific Subtropical High is highly correlated with the strength of the summer

monsoon and of tropical storm activity. They used climate models to examine the mechanisms that control the system's variability and found that the annual strength and location of the high-pressure system are closely linked to the temperatures of both the central Pacific and Indian oceans.

Understanding the atmosphere-ocean feedbacks that govern atmospheric dynamics could improve the prediction of droughts, floods and storms in the region, the authors suggest. **Proc. Natl Acad. Sci. USA** <http://dx.doi.org/10.1073/pnas.1214626110> (2013)