

# RESEARCH HIGHLIGHTS

Selections from the scientific literature

## PALAEONTOLOGY

### Ancient tooth tells of migration

African ancestors of modern apes first migrated to Eurasia 3 million years earlier than previously thought.

According to fossil records, African 'hominoids' colonized Eurasia around 14 million years ago, giving rise to the evolution of 'hominids' such as orangutans and humans. But a fossilized hominoid tooth found in southern Germany in 1973 suggests that Eurasia's permanent colonization was pre-dated by a less successful wave of hominoid migration.

Madelaine Böhme at the Eberhard Karls University of Tübingen in Germany and her colleagues dated the tooth's age at around 17 million years by analysing the evolutionary state of small mammalian fossils found with it. They then calibrated its age using the magnetic polarity of the surrounding sediment. This corresponds to the direction of Earth's magnetic field, which has reversed occasionally during the planet's history.

*J. Hum. Evol.* doi:10.1016/j.jhevol.2011.04.012 (2011)

## ANIMAL BEHAVIOUR

### Birds eavesdrop to skirt chipmunks

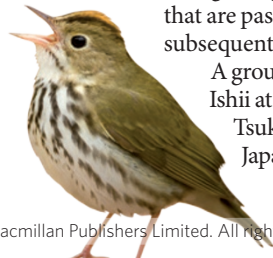
Birds that nest low to the ground tune in to the calls of predatory chipmunks in deciding where to set up home.

Ground-nesting birds avoid the territories of egg-eating eastern chipmunks (*Tamias striatus*), but what tips the birds off to predator hotspots has not been

S. LESLIE/MINDEN PICTURES/FLPA



clear. So Quinn Emmering and Kenneth Schmidt of Texas Tech University in Lubbock played chipmunk or frog calls from speakers on plots of land in Millbrook, New York, during two nesting seasons. They found that both the ovenbird (*Seiurus aurocapilla*; pictured right) and the veery (*Catharus fuscescens*; left) built their nests farther from the centre of plots on which chipmunk sounds were broadcast than from those playing frog calls or nothing at all. The effect was most prominent in ovenbirds, which nested an average of 20 metres farther from chipmunk playback stations



than from controls.

This adds to a growing body of evidence that prey animals exploit the communications of their predators — putting this communicative behaviour under selective pressure.

*J. Anim. Ecol.* doi:10.1111/j.1365-2656.2011.01869.x (2011)

## EPIGENETICS

### Stressed genes are inherited

Stress in fruitflies can cause changes in gene expression that are passed on to subsequent generations.

A group led by Shunsuke Ishii at the RIKEN Tsukuba Institute in Japan studied the

protein ATF2 in *Drosophila*. They found that this protein is needed for the formation of heterochromatin — tightly packed DNA-protein complexes that block the expression of certain genes. Stress causes phosphorylation of ATF2, dislodging it from heterochromatin. When *Drosophila* embryos were exposed to heat shock during development, the resulting flies expressed certain genes that are normally silenced by heterochromatin, such as a gene for red eye colour.

The errant heterochromatin packaging and red eye colour were also seen in offspring of males that had been exposed to heat stress during development. *Cell* 145, 1049–1061 (2011)



## ECOLOGY

### An ecological boost from climate change

Global warming could up the productivity of California's and Oregon's fisheries, thanks to a poleward shift in ocean currents.

William Sydeman at the Farallon Institute for Advanced Ecosystem Research in Petaluma, California, and his group assessed the position of the North Pacific Current — which flows eastwards towards North America, then divides to flow north and south along the coast — from 2002 to 2007. They matched up data from the Argo array of floating ocean sensors with various

ecosystem indicators, including the abundance of certain species of zooplankton (pictured).

The team found that biological productivity along coastal California rose when the current shifted north, a trend that is expected to increase as the climate warms. The results suggest that a more northerly current could increase the transport of nutrient-rich subarctic waters into the current that flows south towards California. *Geophys. Res. Lett.* doi:10.1029/2011GL047212 (2011)

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