

# RESEARCH HIGHLIGHTS

## Fast evolver

*Proc. Natl Acad. Sci. USA* **103**, 10334–10339 (2006)

When the Andes mountains were pushed up to near their final height between 2 million and 4 million years ago, it created new habitats for hardy plants. Colin Hughes and Ruth Eastwood of Oxford University, UK, chart how lupins, such as those pictured, took advantage of the opportunity.

They show that one species from the genus *Lupinus*, which arrived in the Andes around 1.5 million years ago, has since diversified into 81 different species. This suggests that each new branch of its phylogenetic tree divides, on average, every 320,000 years — a species diversification rate that makes it the fastest-evolving plant group discovered so far. Only the cichlid fish of East Africa's rift lakes are known to be evolving more quickly.



C. HUGHES

## GEOLOGY

### Eruption frozen in time

*J. Geophys. Res.* **111**, D12107 (2006)

The timing and magnitude of a medieval volcanic eruption — one of the largest in recent history — have been pinned down by analysis of ice-core records.

The eruption of the South Pacific volcano, Kuwae, in Vanuatu, was probably a single burst in either late 1452 or early 1453, conclude Chaochao Gao of Rutgers State University in New Jersey and her colleagues. They looked at 33 ice cores from Antarctica and Greenland, which reveal the eruption as a spike in sulphate concentration.

They estimate that the eruption released more sulphate (which cools the climate) than any other event in the past 700 years. The results could serve as a reference to improve the dating of ice-core records.

Kinesin proteins are responsible for transporting materials around in cells, guided along protein rods known as microtubules. Giovanni Cappello of the Curie Institute in Paris, France, Maxime Dahan of the Kastler Brossel Laboratory, Paris, and their co-workers filmed them going about their work in living mammalian cells by attaching semiconductor nanoparticles to the motor proteins. The nanoparticles glowed like light bulbs under a fluorescence microscope, allowing the researchers to track each protein's trajectory (pictured below).

The kinesin molecules typically switched between spells of linear motion, when they were attached to microtubules, and random, diffusive motion when they left the tracks.

## RNA INTERFERENCE

### What a turn-off

*Proc. Natl Acad. Sci. USA* **103**, 10456–10460 (2006)

Neuroscientists have succeeded in turning female mice completely off sex by silencing a single receptor in a specific region of the brain.

Donald Pfaff and Sonoko Ogawa of The Rockefeller University in New York and their colleagues used RNA interference to switch off the oestrogen receptor- $\alpha$  in neurons of the hypothalamic ventromedial nucleus — a

region of the brain previously shown to have a role in sexual behaviour. This caused the female mice to angrily reject the advances of males, instead of assuming a receptive posture.

Although genetic mutations can be induced to knock out the receptor completely, this may affect how the mouse's brain develops. Using RNA interference allowed the researchers to study the receptor in normally developed adult mice.

## NEUROBIOLOGY

### Miraculous recovery

*J. Clin. Invest.* **116**, 2005–2011 (2006)

Brain scans of patients who have been in a minimally conscious state (MCS) for long periods are providing new insights into how nerve cells adapt after a traumatic brain injury.

Researchers led by Henning Voss of the Citigroup Biomedical Imaging Center and Weill Medical College of Cornell University in New York studied the damaged brains of two patients using a technique known as diffusion tensor imaging. One patient had regained the ability to talk after a car accident left him in an MCS for 19 years. The other had remained in an MCS for 6 years.

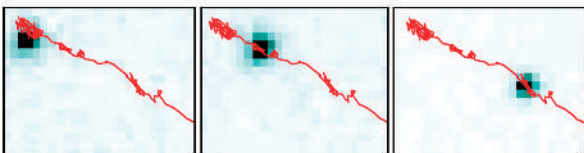
Although large parts of both brains showed damage, the recovered patient's brain revealed regional changes that correlated with clinical improvements. The authors propose that this could represent the regrowth of nerve fibres.

## BIOPHYSICS

### Off the tracks

*Nano Lett.* doi:10.1021/nl060921t (2006)

Motor proteins have been watched as they march along their biomolecular tracks.



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