

details about how much methane can be detected on the planet and where.

Using data from two high-resolution spectrometers on Hawaii, they report evidence for periodic, localized plumes of methane in the highland region known as Arabia Terra. By comparing measurements made at different times they estimate that the gas has an atmospheric lifetime of at most a few Earth years. The mechanism of its removal, like the mechanism of its production, is currently unknown.

ENTOMOLOGY

Hammers of the wasps

Biol. J. Linn. Soc. **96**, 82–102 (2009)

A number of parasitic wasp species have independently evolved echolocation techniques to find host insects deep within trees.

Several species of parasitic wasp attack beetle larvae living inside wood, leading researchers to wonder how they find their prey. To this end, Nina Laurenne at the Museum of Natural History in Helsinki and her colleagues have surveyed the hammer-shaped antennal tips that these species whack against the trees. This hammering allows the wasps to locate the regions where they are wont to find their prey.

A phylogenetic analysis conducted by the researchers suggests that these hammers are not a one-off innovation and have appeared and disappeared during the course of evolution, seemingly in response to the needs of wasp species moving into this niche.

NEUROBIOLOGY

Scent slides away

Neuron **61**, 57–79 (2009)

To adjust its behaviour to suit ever-changing environments, an animal's sensory neurons must not only be able to respond to a change — such as a new smell — but also to gauge when the novelty has worn off, and the response is no longer appropriate.

The olfactory neurons of the tiny worm *Caenorhabditis elegans* achieve this by synthesising a key adaptation protein at just the right place and time: in the neuron's sensory cilia when the odour is first encountered.

Noelle L'Etoile from the University of California, Davis, and her colleagues have now shown that this synthesis is increased by RNA-binding proteins known as PUF — which is surprising because PUF proteins suppress protein synthesis during the adaptation of neurons that occurs in the course of development.

CLIMATE

De-fogged

Nature Geosci. **10**:1038/ngeo414 (2009)

During the past 30 years, the skies of Europe have become clearer. Robert Vautard of the Laboratory for Climatic and Environmental Science (LSCE) in Gif-sur-Yvette, France, and his colleagues studied records of visibility at weather stations across the continent. They found that low-visibility conditions such as fog, mist and haze have declined by as much as 50% over the period. The pattern of improvement is correlated with local declines in sulphur dioxide emissions, suggesting a role for pollution control.

This brightening of the skies, the researchers say, could have contributed to Europe's reported daytime warming during that time by 10–20%, with a particularly marked effect in eastern Europe.



EVOLUTION

Run rabbit run

Proc. Natl Acad. Sci. USA **106**, 952–954 (2009)

Predation by humans drives changes in exploited prey much faster than other evolutionary pressures do.

Previous research has shown that commercial fishers and trophy hunters can mould traits such as average size at reproductive age in wild populations, but no single study has revealed the pace at which these changes generally take place. In a meta-analysis of work on the morphology and life histories of 29 species, including fish, mammals and plants, Chris Darimont of the University of California, Santa Cruz and his colleagues found that changes in human-harvested systems occurred more than 300% faster than in natural systems, and 50% faster than in systems affected by other human influences, such as pollution.

The authors suggest that human predation works so quickly because it is often felt by large proportions of the adults in populations.

D. BOHRER, WHITE HOUSE/AP PHOTO

JOURNAL CLUB

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A cell biologist looks at the risk and promise of a new insight into stem cells and cancer.

I study both stem and tumour cells, and am fascinated by their close relationship. Both exhibit pluripotency — the capacity to develop into any cell type — and the ability to cause cancer. Even some apparently normal stem cells can cause tumours, whereas others, sometimes from the same culture, lack this power. It seems that not all stem cells are created equal — even in the same dish.

A recent paper from Mickie Bhatia's group (T. E. Werbowetski-Ogilvie *et al.* *Nature Biotechnol.* **27**, 91–97; 2009) is the first to directly address this heterogeneity in human embryonic stem cell (ESC) cultures. The team found that individual human ESC lines contain significant subpopulations that vary in a number of ways, including in tumorigenicity.

Variant human ESC lines were about 20 times more tumorigenic than the cultures they had been derived from and showed small changes in chromosome structure. These could be identified by array-based comparative genomic hybridization (aCGH), but were not detectable by standard karyotyping. Thus for 'normal' stem cells being considered for use in regenerative medicine, karyotyping is not enough. Screening should also include aCGH, and perhaps an analysis of gene-expression patterns.

This previously covert diversity has implications for both tumour biology and medical applications involving stem cells. It may shed light on the 'locked in' self-renewal that is emerging as an important feature of many sorts of tumour and tumour stem cell.

The heterogeneity of human ESC cultures represents an additional hurdle in terms of producing safe stem-cell-based transplants. At the same time, it may offer a valuable bonus: the chance to purify variant human ESC sub-lines that are less tumorigenic.

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