

for this effect in polaritons, which each comprise a photon and a bound pair of charges, in a semiconductor device at low temperature. They confirmed that widely spaced polaritons share an almost pure quantum state. Atoms in the ever-intriguing Bose–Einstein condensates share one pure quantum state, but debate is likely to continue over whether polariton condensates deserve the Bose–Einstein label, says Deng.

NEUROBIOLOGY

Sensory deprivation

Nature Neurosci. doi:10.1038/nn1978 (2007)

Visual deprivation during the first five months of life may permanently damage interactions between the body's audio and visual systems.

Lisa Putzar of the University of Hamburg in Germany and her colleagues examined people born with dense cataracts who had no pattern vision for at least five months, but then gained good vision. Compared with controls, those born with cataracts were less likely to be distracted by a burst of noise interrupting a test containing visual cues — a sign that interference between the audio and visual systems is reduced. Those who had cataracts at birth also showed poorer audio–visual integration: they were less able than controls to recognize the words of speakers in videos with degraded audio tracks despite having similar lip-reading skills.

ARCHAEOLOGY

Keep paddling

Science 317, 1907–1911 (2007)

The first inhabitants of Hawaii are thought to have originated from Polynesia. The discovery of an adze — an axe-like tool — made from Hawaiian basalt on a Tuamotu atoll in East Polynesia provides the first material evidence that ancient voyagers made a round trip of more than 8,000 kilometres from the South Pacific to Hawaii and back again. Scientists long thought that journeys between remote Pacific islands must have been accidental or one-time events, although oral histories and recent research hinted otherwise.

Kenneth Collerson and Marshall Weisler at the University of Queensland in Australia examined trace elements and isotope ratios in stone adzes found on the Tuamotu islands. The adzes were from a number of Pacific islands, with one bearing the chemical fingerprint of Hawaii. Collerson suggests that pieces of rock may have been taken from island to island as a memento by travellers commemorating their long and arduous journeys.

CLIMATE MONITORING

Melt maps

Geophys. Res. Lett. 34, L18504 (2007)

Microwave radiation emitted by snow and ice can indicate whether the surface is dry or wet. Wet surfaces imply melting. In an analysis of satellite data collected in Antarctica between 1987 and 2006, researchers confirm previous reports of extensive inland melting in early 2005 and document complex patterns of coastal and inland melting over the years. A team led by Marco Tedesco, of the University of Maryland in Baltimore, looked only at periods of 'persistent melting', defined as a period of one consecutive day and night or three days in a row. The researchers used a new method that takes advantage of a particular microwave frequency. Tedesco says he used the same method to determine that high-altitude melting in Greenland set a record in 2007.



G. CHAPPELLE/AFP/GETTY

MASS SPECTROMETRY

Hands off

Angew. Chem. Int. Edn doi:10.1002/anie.200702200 (2007)

A new technique allows the chemical make-up of human skin, plant tissue, frozen meat and other living materials to be determined quickly without harming the biological surface under scrutiny or having to treat it before analysis.

Renato Zenobi and Huanwen Chen at ETH Zurich in Switzerland and their colleagues blow a stream of nitrogen, a neutral gas, across a surface and collect a sample of what is dislodged. The sample is then transported to an extractive electrospray ionization mass spectrometer, where it can be directly analysed for its chemical composition. Using the technique, it is possible to quickly detect, from a human hand, the difference in caffeine levels before and after a person drinks a cup of coffee.

JOURNAL CLUB

Manyuan Long
University of Chicago, Illinois,
USA

An evolutionary geneticist is surprised by genes of unknown origin.

I once thought that, like us, every gene must have a mother. But recent work has identified some genes that seem to have no genetic ancestry. These 'motherless' genes pose a new challenge to understanding the molecular mechanisms and evolutionary forces that shape our DNA. This isn't the first time we've had to revise our ideas about gene evolution.

About 40 years ago, geneticist Susumu Ohno proposed that new genes originate when an existing gene duplicates, then one of the copies evolves a new function. Working with Chuck Langley in the early 1990s, I had the luck to discover a gene in flies that added another strand to Ohno's story. The gene, named *Jingwei*, is a chimaera that formed through the combination of two existing genes.

Since then, researchers have identified many other 'new' genes assembled from unrelated genes and mobile DNA elements. Often the sequences' origins can be identified. When they can't, researchers have simply assumed that subsequent evolution has masked the relationship of the gene to its ancestral sequences.

But this is unlikely to be the case for *hydra*, a gene found recently in *Drosophila melanogaster* and closely related species (S.-T. Chen *et al.* *PLoS Genet.* 3, e107; 2007). No homologous sequences are found in a species that diverged from those carrying *hydra* only 13 million years ago — too recently for mutations to have obscured any related sequences. This implies that *hydra* arose *de novo*.

Another group has found a further 16 *de novo* genes in flies, which they propose evolved from non-coding DNA (D. J. Begun *et al.* *Genetics* 176, 1131–1137; 2007 and M. T. Levine *et al.* *Proc. Natl Acad. Sci. USA* 103, 9935–9939; 2006). These genes beg further study: what initiated their formation?

Discuss these papers at <http://blogs.nature.com/nature/journalclub>