

## RESEARCH HIGHLIGHTS

**Remember this**

*J. Exp. Biol.* doi:10.1242/jeb.018531 (2008)

The nautilus, the archaic cousin of octopus, cuttlefish and squid, has surprisingly good powers of recollection even though it lacks the dedicated brain regions for learning and memory that other cephalopods have.

Robyn Crook and Jennifer Basil at Brooklyn College in New York trained a dozen *Nautilus pompilius* (pictured) to associate the smell of fish with a blue light, demonstrated by the creatures eventually extending their tentacles merely in response to a flash. The nautili could remember this training for up to 24 hours, and their recall within the first hour proved as good as that of cephalopods with far more complex neuroanatomies.

The discovery could lead to a more complete picture of brain evolution.



D. PERRINE/NATURE.PLC.COM

**NEUROSCIENCE****Shiver stoppers**

*Cell Stem Cell* 2, 553–565 (2008)

Human glial progenitor cells can differentiate into cells that make the nerve cell insulator myelin, and it now seems they can be used to treat a neurological disorder in mice. The cells come from the white matter of the brains of second-trimester human fetuses.

A team led by Steven Goldman at the University of Rochester Medical Center in New York inserted about 300,000 human glial progenitor cells into the brain of each of 26 'shiverer' mice — which cannot make normal myelin — shortly after birth. Four of the treated animals lived for more than a year. Post mortem revealed well-myelinated neurons. All of the control mice died before they reached 21 weeks of age.

**ZOOLOGY****The skin off my back**

*Biol. Lett.* doi: 10.1098/rsbl.2008.0217 (2008)

The mothers of many species give their all to rear their young. But the South American amphibian *Siphonops annulatus* takes this dedication to an unusual extreme by allowing her offspring to eat her skin.

Alexander Kupfer of the Friedrich-Schiller University in Jena, Germany, and his colleagues report that *S. annulatus* nestlings have 44 spoon-shaped teeth. These teeth bear claw-like protrusions that the nestlings use to tear away the outer layer of their mother's skin.

The same group has previously described 'maternal dermatophagy', as such skin-feasting is called, in an African amphibian, *Boulengerula taitanus*. It therefore seems

likely that the behaviour arose before Africa and South America separated, more than 100 million years ago.

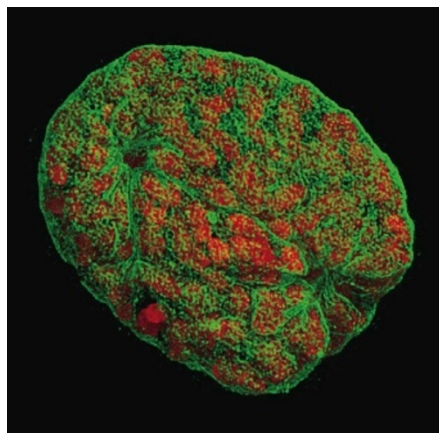
**MICROSCOPY****Laser focus**

*Science* 320, 1332–1336 (2008)

Cellular structures as small as 100 nanometres can be viewed in three-dimensional (3D) colour images thanks to a technique that doubles the resolution of fluorescence light microscopy.

The technique illuminates samples with three interfering beams of laser light, enabling it to circumvent the resolution limit of traditional light microscopy that is set by the wavelengths of visible light.

John Sedat at the University of California, San Francisco, and Heinrich Leonhardt at the Ludwig Maximilian University of Munich, Germany, and their colleagues developed this '3D structured illumination microscopy' and used it to construct the first 3D colour image



of a nuclear pore and its environment. The picture (below) shows a mouse nucleus with condensed chromosomes (red), surrounded by a fibrous network called the nuclear lamina (green).

**MOLECULAR BIOLOGY****Lost in transcription**

*Nature Methods* doi:10.1038/nmeth.1226; doi:10.1038/nmeth.1223 (2008)

High-throughput sequencing techniques have been harnessed to catalogue the messenger RNA (mRNA) molecules produced by many types of mouse cell.

The catalogue is known as the transcriptome. Barbara Wold and her colleagues at the California Institute of Technology in Pasadena sequenced mRNA from mouse brain, liver and skeletal muscle. They found that about 3,500 mouse genes are alternatively spliced — that is, the initial mRNA sequence can be chopped up and put back together in various ways to form different mRNA sequences.

Meanwhile, Sean Grimmond at the University of Queensland in St Lucia, Australia, and his collaborators sequenced mRNA from mouse embryonic stem cells. The results should help elucidate pathways controlling embryonic stem cells' ability to develop into any cell type.

**ANIMAL BEHAVIOUR****Best and brightest**

*J. Avian Biol.* 39, 277–282 (2008)

Most nestlings have cryptic plumage to reduce the odds that predators will see them, but chicks of a few species are

L. SCHERMELLEH &amp; P. CARLTON