

NEUROSCIENCE

A window into nerve repair

Some neurons regenerate better than others.

Researchers led by Vincenzo De Paola at Imperial College London severed nerve cells in mouse brains, using lasers to minimize scarring and inflammation. The authors set glass panes into the skulls of the animals and monitored regrowth in more than 100 neurons for up to a year. More than half of the cut neurons from the deepest layer of the brain's cortex regrew, but only about one-fifth of those in its other layers did. Neurons in the brains of juvenile mice were also more likely to regrow than those in adult brains.

Regrowth depends, at least in part, on the neurons themselves and not just external factors such as neural-support cells, the authors say. They suggest that long-term imaging could be used to test potential neuron-repair strategies in the brains of living animals.

Nature Commun. 4, 2038 (2013)

MATERIALS SCIENCE

Ratchet action misshapes pearls

Perfectly round pearls (pictured) owe their spherical shape to spiral



growth patterns of nacre, the iridescent material also known as mother of pearl. By contrast, non-spherical pearls such as drop pearls have longitudinal growth fronts positioned such that they work like teeth on a ratchet, spinning the gem as it grows in an oyster.

Julyan Cartwright of the University of Granada, Spain, and his team calculated the forces exerted by nacre particles sticking to and bouncing off the growth fronts of a developing pearl. The forces proved strong enough to rotate the pearl once every 20 days (the speed at which pearls have previously been found to

rotate) and to influence its ultimate shape.

Microscopic control over macroscopic motion could be a useful design principle for building tiny machines, the researchers suggest.

Langmuir <http://dx.doi.org/10.1021/la4014202> (2013)

CANCER

Drug outdoes standard therapy

A large clinical trial has confirmed the promise of a targeted drug therapy in advanced non-small-cell lung cancer.

The drug crizotinib, which targets an oncogenic protein

large, less-acidic lakes can support more and healthier chicks. The researchers suggest that adult loons might survive best on lakes that offer the types of fish and other prey that the birds are most familiar with. A trade-off between reproductive success and survival rate could help to explain the apparently maladaptive habitat choices seen in loons and other species, the authors say.

Proc. R. Soc. B 280, 20130979 (2013)



ANIMAL BEHAVIOUR

Familiar nest sites beat better lakes

When common loons (*Gavia immer*, pictured) settle down to breed, they pick sites similar to the ones they hatched in, even if better sites are available.

As part of a 20-year study, researchers led by Walter Piper at Chapman University in Orange, California, tagged and observed birds across glacial lakes in the north-central United States. Loons that were reared on small, acidic lakes tended to settle on similar sites, even though

encoded by the mutated *ALK* gene, extended progression-free survival in patients with *ALK* mutations by 7.7 months, compared with 3 months for chemotherapy alone. The results from the trial, which included 347 patients, are reported by Alice Shaw at Massachusetts General Hospital in Boston and her colleagues, and come just six years after the discovery of *ALK* fusion mutations in cancer and two years after the drug was approved for non-small-cell lung carcinoma in the United States on the basis of smaller clinical trials.

A related paper from a team also led by Shaw