RESEARCH HIGHLIGHTS

Selections from the scientific literature

GEOPHYSICS

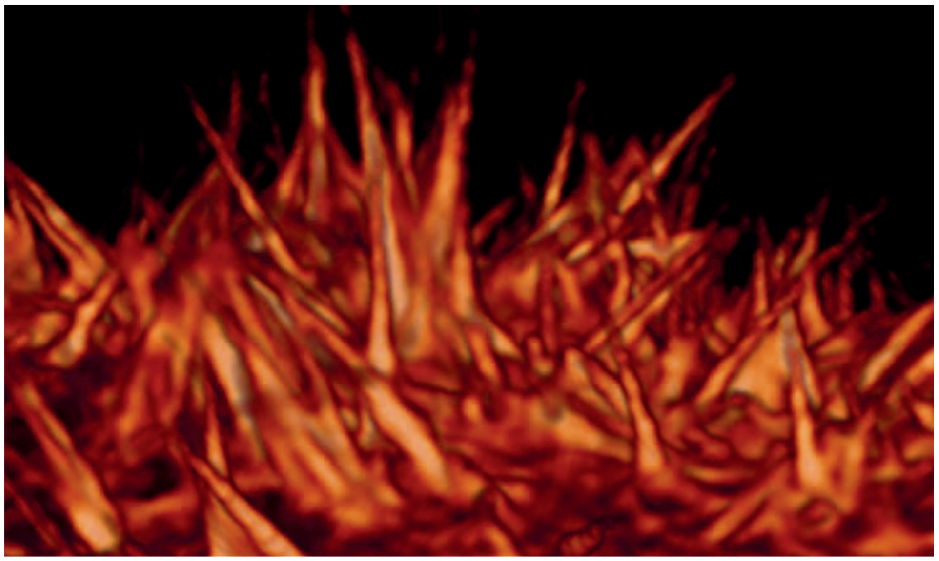
Faster ice melt, higher sea levels

Ice loss on Greenland and Antarctica is accelerating at three times the rate of mountain ice loss. If it continues, this melting will dominate sea-level rise this century.

Eric Rignot at the University of California, Irvine, and his colleagues compared calculations based on 18 years' worth of data on climate and ice discharge with 8 years' worth of data from the Gravity Recovery and Climate Experiment, which uses satellite measurements to assess ice mass. The authors estimate that the rate of loss is increasing by around 36.3 gigatonnes of ice a year, with a cumulative loss of 475 gigatonnes in 2006.

At current rates, melting ice sheets, mountain glaciers and ice caps around the world, as well as the thermal expansion of the oceans, could cause sea levels to rise by up to 32 centimetres by mid-century.

Geophys. Res. Lett. **doi:10.1029/2011GL046583 (2011)**



BETZIG LAB, JANELIA FARM

CELL BIOLOGY

Seeing cells with sheets of light

Illumination with a thin sheet of light can be used to generate high-resolution, three-dimensional movies of living cells.

The technique, called plane-illumination microscopy, had been applied to multicellular specimens, but the light sheets were too thick to capture high-resolution images in single cells. Eric Betzig of the Howard Hughes Medical Institute's Janelia Farm Research Campus in Ashburn, Virginia, and his colleagues generated thinner sheets of light using 'Bessel beams' — a special class of narrow, non-diffracting light beams.

The team used the new microscope to produce three-dimensional images of fluorescently labelled subcellular features from stacks of planar images captured at almost 200 planes per second. The stacks were then assembled into movies showing the dynamics of certain features, such as tiny projections called filopodia (**pictured**), at a resolution of 0.3 micrometres.

Nature Methods **doi:10.1038/nmeth.1586 (2011)**

ANIMAL BEHAVIOUR

Chickens feel for each other

Rats and mice show changes in behaviour when they see close relatives in distress. It seems that chickens might also display signs of empathy — an ability to share another's emotional state. If farm animals empathize more widely with their fellows, farmers may need to take extra measures to limit stress to animals during handling, transportation and slaughter.

Joanne Edgar at the University of Bristol, UK, and her co-workers placed individual hens and their chicks in boxes, separating hen and chicks with a clear plastic sheet, and puffed the chicks with bursts of air. In response, the mothers' behaviour and physiology changed, with greater clucking and an increased heart beat.

Proc. R. Soc. B **doi:10.1098/rspb.2010.2701 (2011)**

NEUROSCIENCE

Cell support for memory

Star-shaped cells in the brain called astrocytes are thought to provide biochemical support to neurons and may even be involved in neuronal communication. Now these cells have been found to play a part in the formation of long-term memories — by providing their neighbouring neurons with lactate.

Cristina Alberini at Mount Sinai School of Medicine in New York, Pierre Magistretti at the Swiss Federal Institute of Technology in Lausanne and their colleagues trained rats to avoid a part of a cage where they were likely to receive a mild electric shock.

When the researchers dripped a drug that blocks lactate formation in

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