

RESEARCH HIGHLIGHTS

GEOPHYSICS

Glaciers going, going...

Geophys. Res. Lett. doi:10.1029/2010GL042616 (2010)
As much as half of the glacial retreat documented in the Swiss Alps in recent decades could be due to natural cycles in the North Atlantic climate.

Matthias Huss at the Swiss Federal Institute of Technology in Zurich and his co-authors combined field data with computer modelling to develop a 100-year record of glacier surface mass balance from 1908 to 2008. The team compared their records with global climate data as well as with regional climate trends relating to multidecadal oscillations in Atlantic Ocean surface temperatures.

The findings may help to sharpen predictions of the impact of future climate change on glaciers, the authors say. J.T.



S. MCDERMOTT/CORBIS

ASTRONOMY

Clouds with an H₂ lining

Astrophys. J. 715, 1370–1382 (2010)

Stars are born inside giant clouds of gas. Figuring out where such clouds begin and end is tricky because their main component, molecular hydrogen (H₂), is often too cold to be seen by telescopes.

Paul Goldsmith and his colleagues at NASA's Jet Propulsion Laboratory in Pasadena, California, have used the orbiting Spitzer Space Telescope to find the edge of a nearby molecular cloud. By detecting emissions from transitions in the rotational states of molecular hydrogen, they found hints of a warm layer of H₂ on the surface of the cloud. The team suggests that the properties of the hot edge could be related to circulation of gas within the cloud. G.B.

ECOLOGY

What's that whale?

Genome Res. doi:10.1101/gr.102954.109 (2010)

Killer whales consist of several species, not just one, according to a genetic study.

Different populations or 'ecotypes' of killer whale (*Orcinus orca*) vary in traits such as body size, social structure and preferred prey. Yet analyses of fragments of their mitochondrial DNA — which is inherited only from the mother and is often studied to delineate species — have revealed very low levels of genetic diversity between ecotypes, probably because of low mutation rates.

Phillip Morin of the National Marine Fisheries Service in La Jolla, California, and his colleagues examined the entire mitochondrial genome of 139 whales from the North Pacific, North Atlantic and

Southern oceans. The authors found enough genetic variation to suggest renaming three of the ecotypes as separate species and classifying the rest as subspecies until more data become available. L.O.-S.

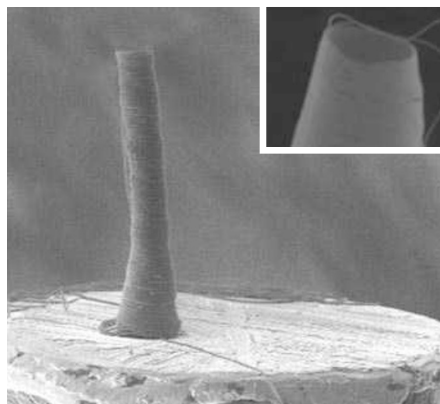
NANOMANUFACTURING

Petite pottery

Nano Lett. doi:10.1021/nl100824d (2010)

Polymer nanofibres can be spun into free-standing, hollow cylinders that look as if they might have been shaped on a tiny pottery wheel. Ho-Young Kim at Seoul National University, L. Mahadevan at Harvard University in Cambridge, Massachusetts, and their co-workers used an electric field to tease a nanometre-scale jet of polyethylene oxide solution from a capillary tube. The jet dried in mid-air and, in less than a second, coiled up into a spool a few micrometres in diameter (pictured) as it hit a sharp stainless steel tip 2 millimetres below the capillary tube.

Such structures could be used in nanometre-scale magnets, bioscaffolds or nanochannels, the researchers suggest. R.V.N.



PHYSIOLOGY

Marathon metabolites

Science Trans. Med. 2, 33ra37 (2010)

An analysis of 210 blood metabolites has yielded indicators of physical fitness.

Robert Gerszten and Gregory Lewis at Massachusetts General Hospital in Boston and their colleagues analysed blood samples taken from 70 people before and after a ten-minute run on a treadmill. The researchers found that, across the group, the levels of 21 metabolites changed during the run. Some of these metabolites are linked to cardiovascular fitness and faster running times in the Boston Marathon. Furthermore, fit volunteers showed signs of having more efficient fat metabolism than less fit individuals.

Feeding cultured cells a mixture of five of the 21 metabolites — glycerol, niacinamide, glucose-6-phosphate, pantothenate and succinate — rapidly boosted expression of the NUR77 protein, which controls glucose and lipid metabolism in muscles. H.L.

For a longer story on this research, see go.nature.com/g5P4Pb

GENOMICS

Transposition trends

Genome Res. doi:10.1101/gr.106419.110 (2010)

Researchers have mapped the genomic locations of almost every member of a family of human retrotransposons — short DNA segments thought to make up as much as one-third of the genome. These elements — which can affect physical traits — copy and then paste themselves back into the genome at various locations. Despite their abundance, they are not as well studied as other forms of genomic variation.

AM. CHEM. SOC.