GEOSCIENCE

The rapid melt of Greenland

The melting that occurred across 98.6% of the Greenland ice sheet this summer was so rare that the most recent equivalent melt was in 1889.

Ordinarily, melting occurs over about half of the surface area of Greenland's ice during summertime. Son Nghiem of NASA's Jet Propulsion Laboratory in Pasadena, California, and his colleagues detected this year's extreme melt using three satellite sensors that differ in their resolution, spatial coverage and their ability to detect thawing ice. In combination, the sensors' data revealed the extent of the melt — a result verified by temperature data from weather stations and on-the-ground observations.

The melting event coincided with an unusually warm ridge of air hovering over the ice sheet, the authors say.

Geophys. Res. Lett. **http://dx.doi.org/10.1029/2012GL053611 (2012)**

PALAEONTOLOGY

First flying fish fossil found

A series of remarkably well preserved fossils found in Xingyi, China, have allowed researchers to describe the earliest fish known to take to the air.

Potanichthys xingyiensis (**pictured**) is not an ancestor of modern flying fish. However, it is the oldest animal yet found belonging to a group of fish — the Thoracopteridae — that evolved their gliding skills separately between 200 million and 250 million years ago, according to a report by Ke-Qin Gao at Peking University in Beijing and his colleagues. The animal, measuring just 15 centimetres long, had a pair of large pectoral fins that probably functioned as its main wings, and pelvic fins that were used as secondary wings. A large and asymmetric tail probably provided thrust to launch the animal into the air.

This is the first Thoracopteride found in Asia and expands the known range of these early flying fish from the west to the east side of the prehistoric Palaeotethys Ocean.

Proc. R. Soc. B **http://dx.doi.org/10.1098/rspb.2012.2261 (2012)**

For a longer story on this research, see go.nature.com/url8m5

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STEM CELLS

Immune response spurs cell switch

Controlling cellular immune responses could help researchers to turn adult cells into embryonic-like stem cells without having to insert any genetic material.

The most efficient way to reprogram adult cells is to genetically alter them, but this can cause problems in cell therapy. John Cooke at Stanford University in California and his colleagues found that the viruses that are normally used to deliver reprogramming genes into cells alter the cells in another, unanticipated way. The inflammatory response to the virus induces changes that open up the structure of chromatin — the tightly packaged DNA and protein that makes up chromosomes.

Using virus-free reprogramming techniques and a synthetic molecule to activate an inflammatory pathway in adult cells, the researchers obtained 25 reprogrammed cell colonies per experiment. No such colonies were generated if the immune pathway was inhibited. Controlling inflammatory pathways could make it easier not only to produce genetically unaltered, reprogrammed stem cells, but also to direct cell fate in other ways.

Cell 151, **547–558 (2012)**

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NEUROSCIENCE

Two ways to forget

HIGHLY READ on www.cell.com in October

People call on two different brain mechanisms to suppress unwanted memories.

Roland Benoit and Michael Anderson at the University of Cambridge, UK, asked 36 volunteers to commit a list of words to memory, along with a partner word for each to serve as a reminder. The duo then imaged the volunteers' brains using functional magnetic resonance imaging as the subjects employed different strategies to suppress those memories. When prompted by a reminder word, half tried to suppress the memory of the partnered word, whereas the other half attempted to recall a substitute word.

Both strategies suppressed the memory, but the volunteers engaged distinct neural pathways in the brain for each. The findings may boost understanding of conditions in which the regulation of memory is disturbed, such as post-traumatic stress disorder, the authors say.

Neuron 76, **450–460 (2012)**

ENVIRONMENTAL SCIENCE

Litter bugs leave Arctic legacy

Litter on the Arctic Ocean floor has increased drastically since 2002, with plastic waste making up the majority of the debris.

Melanie Bergmann and Michael Klages of the Alfred Wegener Institute for Polar and Marine Research in Bremerhaven, Germany, analysed photographs of the ocean floor captured 2,500 metres below the surface. In 2002, the researchers identified 7 pieces of litter in a survey area of 1,926 square metres. In 2011, they reported 11 pieces in a smaller area — representing a doubling of litter density. Two-thirds of the rubbish was colonized by invertebrate species, including sponges and sea anemones (cardboard and paper packaging with a sponge, **pictured**).

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The increase may be due to shrinking sea ice, which is opening up the ocean to greater human activity and to plastic transported north by the Atlantic current, the authors suggest. With plastic production unlikely to cease, more and more of it may accumulate in the Arctic.

Mar. Pollut. Bull. **http://dx.doi.org/10.1016/j.marpolbul.2012.09.018 (2012)**

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