RESEARCH HIGHLIGHTS

Wind-blown ice

Geophys. Res. Lett. doi:10.1029/2009GL042356 (2010)

Arctic wind patterns explain half of the annual variation in the minimum extent of Arctic sea ice, and account for about one-third of the unexpectedly rapid sea-ice decline seen in the past three decades, researchers report.

Masayo Ogi of the Japan Agency for Marine-Earth Science and Technology in Yokohama and her colleagues compared published data on summer and winter winds from 1979 to 2009 with data on September sea-ice extent. They found that certain wind anomalies — such as the summer anticyclonic (clockwise) winds over the Beaufort Sea — correlate with low sea ice. The authors say that these winds may enhance the flow of ice out through the Fram Strait east of Greenland, contributing to ice shrinkage. Their analysis identified an increasing trend in these particular wind patterns.

P. SOUDERS/CORBIS

MATERIALS SCIENCE

Ultrathin fibres heat up

Nature Nanotechnol. doi:10.1038/nnano.2010.27 (2010)

The plastic polyethylene is used in a wide range of products, from shopping bags to water pipes. One place it doesn't appear is in heat exchangers, which dissipate heat and are essential components of devices such as refrigerators and air conditioners. That's because, in its bulk form, the plastic can conduct only a paltry amount of heat. Bulk polymers typically conduct only around 0.1 watts per metre-kelvin.

Gang Chen and his colleagues at the Massachusetts Institute of Technology in Cambridge have markedly improved that figure using thin fibres of polyethylene. They created the fibres by stretching strands of polyethylene gel with a sharp tungsten tip. The 50–500-nanometre-wide strands act as conduits, conducting heat at rates as high as 104 watts per metre-kelvin — a rate similar to that of many metals. Chen and his team believe the work could lead to low-cost plastic replacements for some metal components.

PALAEONTOLOGY

Egg-stracting DNA

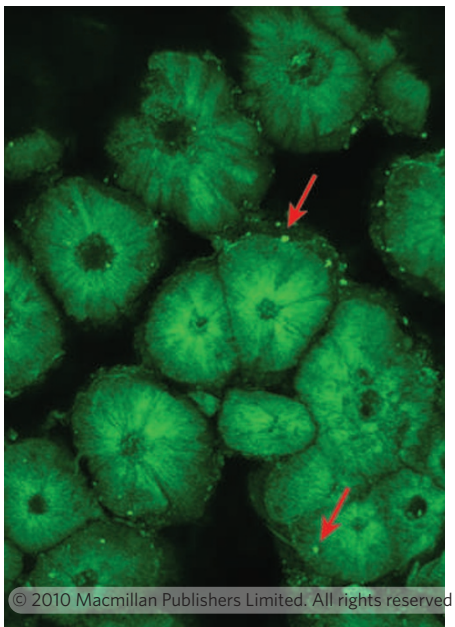
Proc. R. Soc. B doi:10.1098/rspb.2009.2019 (2010)

Improved techniques have yielded well-preserved DNA from fossilized eggshells, highlighting a potential new source of ancient genetic material.

Eggshells are commonly found at fossil sites, but previous attempts to pull DNA from them have failed. Michael Bunce at Murdoch University in Perth, Western Australia, and his colleagues took several measures to optimize DNA extraction, including warming a DNA-isolation solution containing powdered eggshell to 95 °C.

The authors tackled the eggs of several extinct species, including the New Zealand giant moa (*Dinornis robustus*; microscope image of eggshell's inner surface pictured). They say that their procedure released the DNA (red arrows) from the eggshell's calcium carbonate crystalline matrix, allowing them to double their yield. They also found that eggshells are less contaminated with bacterial DNA than fossil bones.

For a longer story on this research, see go.nature.com/lx1mzC



R. SOC.

NEUROSCIENCE

Rats on the wagon

Neuron **65,** 682–694 (2010)

Rats that regularly consume alcohol and are then denied it show increased activity in a specific brain region.

F. Woodward Hopf, at the University of California, San Francisco, and his colleagues gave rats access to either a 10% alcohol solution or sucrose for several weeks and then cut them off. After a few weeks of abstinence, the alcohol-exposed rats had increased neuronal firing in the core of the nucleus accumbens — a brain structure associated with motivation and addiction — but those that had consumed sucrose did not.

This elevated activity is linked to reduced numbers of a certain type of potassium channel that normally depresses neuronal firing. Alcohol-drinking rats that were given a drug to activate these channels — thus dampening firing in this brain region — were less likely to seek alcohol. Drugs that activate the channels in humans might prevent relapse to alcoholism, the authors say.

VIROLOGY

Infectious inheritance

Proc. Natl Acad. Sci. USA doi:10.1073/pnas.0913586107 (2010)

The genome of a common herpesvirus may hitchhike from one generation to the next on the ends of human chromosomes, and reawaken in an infectious form.

Human herpesvirus-6 infects almost everyone. Peter Medveczky of the University