running reversed some of the effects of ageing in elderly mice. However, the benefits of exercise seemed to be limited to nerve junctions in muscles that were directly exerted.

NANOBIOTECHNOLOGY

More light on algae

Appl. Phys. Lett. **97,** 043703 (2010)

The use of major crop plants such as maize (corn) in biofuel production is a source of contention, but there are other options; including photosynthetic algae, which can be grown in bioreactors. Radhakrishna Sureshkumar at Syracuse University in New York and his co-workers show that metallic nanoparticles in these reactors can boost algal growth by intensifying the light that the algae receive.

They designed silver nanoparticles of a size and shape that reflected or 'backscattered' only blue light — a wavelength at which the green microalga *Chlamydomonas reinhardtii* grows optimally. This reflection occurred as a result of interactions between the incoming light and oscillations of the electron charge at the nanoparticles' surface.

The researchers tested their particles in a mini bioreactor consisting of a Petri dish holding *C. reinhardtii* culture sitting atop another dish containing a suspension of the nanoparticles. When the authors shone light through the top of the algae dish, algal growth increased by more than 30%.

GENETICS

Long and the short of it

Cell doi:10.1016/j.cell.2010.06.040 (2010)

Geneticists have been puzzled by long RNA molecules that are made by mammalian genomes but do not code for protein. What, if anything, do they do? John Rinn and Maite Huarte at the Broad Institute in Cambridge, Massachusetts, and their colleagues report that one long non-coding RNA is important in a cell's response to the protein p53.

Best known as a tumour suppressor, p53 controls the transcription of many genes. The team showed that it also triggers the production of several long non-coding RNAs and that one of these, lincRNA-p21, stifles the expression of many genes further downstream in the p53 response pathway, and promotes cell suicide. It seems to do this by associating with a second protein, hnRNP-K. The authors propose that other proteins like p53 activate long non-coding RNAs that help to silence genes.

ASTRONOMY

Cosmic pattern

Astrophys. J. **718,** L194–L198 (2010)

The IceCube Neutrino Observatory will study high-energy neutrinos produced in distant supernovae and black holes once it is completed, in 2011. Meanwhile, it is already picking up a lot of background cosmic rays.

By spotting elementary particles called muons that appear when cosmic rays strike Earth's atmosphere, Rasha Abbasi and Paolo Desiati at the University of Wisconsin–Madison and their colleagues with the IceCube Collaboration produced the first map of cosmic rays with energies in the multi-teraelectronvolt region in the Southern Hemisphere and detected them preferentially emanating from a particular location. The findings support previous cosmic-ray sky maps made in the Northern Hemisphere, although they do not shed light on the cause of the directional preference, which remains a mystery.

EVOLUTION

Sharing a birthday

Biol. Lett. doi:10.1098/rsbl.2010.0555 (2010)

In groups of banded mongooses, which rear their young together, two-thirds of females give birth on the same night, despite mating on different days.

A. YOUNG

Sarah Hodge at the University of Exeter, UK, and her colleagues looked at pup survival in 13 groups of Ugandan banded mongooses (*Mungos mungo*; pictured) over almost 13 years. Synchronous litters suffered fewer deaths before the young mongooses left the den, suggesting that adults who might otherwise kill others' offspring are unlikely to do so when they might risk accidentally killing their own young. Synchronous litters also have fewer pup deaths after they emerge into the world, suggesting that late-born pups lose out in competition for food with bigger littermates. Similar pressures may operate in other species, the authors speculate.

JOURNAL CLUB

Ian Howat
Ohio State University, Columbus

A glaciologist ponders iceberg calving from a safe distance.

If the sea level rises catastrophically, it will be due to rapid retreat of Earth's ice sheets. At the perimeter of these sheets, where warm, saline waters meet flowing ice, complex processes occur, including the fracturing of ice to form icebergs — a process known as calving. Calving is poorly understood owing to a lack of detailed observations: researchers willing to install instruments in frigid water beneath a continually collapsing wall of ice that is prone to frequent floods of meltwater have been scarce.

To better understand calving, Jason Amundsen at the University of Alaska Fairbanks and his colleagues took a clever, and much safer, approach. They deployed an impressive array of instruments several kilometres from the calving front on and near Jakobshavn Isbræ, one of Greenland's largest glaciers. They then 'listened' to the sounds of calving using sophisticated audio equipment, 'watched' the motion of the ice with time-lapse photography and 'felt' the rumble of icebergs using seismometers and tide gauges.

By combining these remote observations with straightforward theory, they found that the ice front behaves similarly to road traffic, with dense packs of icebergs and sea ice forming a jam. Once this icy mélange weakens, large bergs capsize, pushing others out of the way, and the calving wall retreats. Calving continues until the front migrates far enough inland that the ice is too thick to fracture all the way through, putting on the brakes (J. M. Amundson *et al. J. Geophys. Res.* doi:10.1029/2009JF001405; 2010).

The results are encouraging to those interested in modelling ice-sheet behaviour because they provide a mechanism to explain relationships between ice thickness, fracturing and retreat. They also provide a great example of how a diverse arsenal of observational tools can solve the most formidable problems in Earth science.

View the archive at **http://blogs.nature.com/nature/journalclub**