RESEARCH HIGHLIGHTS

Selections from the scientific literature

GENETICS

Disease mutations but no disease

An analysis of genetic data from more than half a million people has uncovered 13 individuals who have disease-causing mutations but are healthy.

Mendelian diseases such as cystic fibrosis begin in childhood, can be caused by a single mutation and lack effective treatments. Rong Chen at the Icahn School of Medicine at Mount Sinai in New York City and his colleagues looked for mutations in 874 genes — linked to nearly 600 childhood genetic diseases — in roughly 589,000 people. They found 13 resilient people with mutations that usually cause 1 of 8 severe Mendelian diseases.

Further study of such individuals could lead to discoveries of gene variants that protect against disease, and could even lead to new treatment strategies, the authors say.

Nature Biotechnol. **http://dx.doi.org/10.1038/nbt.3514 (2016)**

ECOLOGY

Catfish face migration barriers

Amazonian catfish make the longest known freshwater migrations, covering thousands of kilometres, but their epic voyages are threatened by new dams.

Brachyplatystoma catfish can measure up to three metres in length, and are top predators. To study their migrations, Fabrice Duponchelle of the Institute of Research for Development in Montpellier, France, and his colleagues analysed the strontium isotope ratio in ear bones from 37 *Brachyplatystoma rousseauxii* captured near breeding areas in the Amazon basin. The authors found correlations between the strontium make-up of the bones and that of rocks in different parts of the river system. They suggest that young fish migrate downstream in the lower Amazon, then return upstream as adults, swimming some 8,000 kilometres to the area where they were hatched.

Two dams built recently on the Madeira River could prevent the fish from reaching their spawning grounds, which could have ripple effects through Amazonian food webs, the authors warn.

J. Appl. Ecol. **http://doi.org/bd45 (2016)**

JON WHITE/COLORADO GEOLOGICAL SURVEY

GEOLOGY

Fluid flow in landslides

Vibrations that ripple through rocks as they tumble downhill explain why some landslides travel farther than expected. The finding could help towns to better prepare for landslide hazards.

In 'long runout' landslides, falling rocks can move tens to hundreds of kilometres on flat land — more than ten times the height from which they fell. A team led by Brandon Johnson of Brown University in Providence, Rhode Island, modelled the forces in such landslides. The scientists found that vibrations caused by slides of sufficient size reduce the pressure between rock fragments, effectively lowering friction and allowing the rocks to flow like a fluid over long distances.

A similar effect could also occur along geological faults during earthquakes.

J. Geophys. Res. Earth Surf. **http://doi.org/bd4x (2016)**

ASTRONOMY

Black-hole disk launches jet

Scientists have caught one of the best glimpses yet of a jet of plasma streaming from the black hole at the heart of a distant galaxy.

Intense magnetic fields around black holes are thought to launch these beams, which travel nearly at the speed of light, but the beams' exact origins remain unknown.

Bia Boccardi of the Max Planck Institute for Radio Astronomy in Bonn, Germany, and her colleagues used a global array of radio telescopes to image the base of the jet at the core of the galaxy Cygnus A at high resolution. They found that the base is hundreds of times wider than the event horizon of the black hole, extending into the swirling disk of material that surrounds it.

This suggests that the rotation of the disk helps to launch the jet.

Astron. Astrophys. 588, **L9 (2016)**

ANTHROPOLOGY

War uncommon in prehistoric Japan

Hunter-gatherers living in Japan thousands of years ago were not particularly violent, adding weight to a contentious idea that violence and warfare were not the norm in early history.

Hisashi Nakao at Yamaguchi University in Japan and his colleagues analysed published data on the skeletal remains of hunter-gatherers from Japan's Jomon period, between 13,000 BC and 800 BC. The team calculated the percentage of skeletons showing evidence of fatal injuries from violence, and found that mortality from violence was low, averaging