RESEARCH HIGHLIGHTS

Selections from the scientific literature

GENETICS

Modified CRISPR tags RNA in cell

A popular gene-editing technique called CRISPR–Cas9 has been adapted to bind to and track RNA in living cells.

Many labs have adopted CRISPR–Cas9 as a way to edit DNA, using a 'guide RNA' to direct the Cas9 enzyme to the specific DNA sequence to be cut. Gene Yeo of the University of California, San Diego, and his colleagues expanded the technique to target RNA. The team inactivated the Cas9 enzyme that normally slices DNA, and fused it to a fluorescent protein. They then provided a modified guide RNA that directed the disabled enzyme to bind to RNAs.

The approach allowed them to track the fluorescently tagged RNA in living cells, without hindering its movement and function.

Cell **http://doi.org/bdg7 (2016)**

REX LISMAN/GETTY

ANIMAL BEHAVIOUR

Snakes strike with super speed

Both venomous and non-venomous snakes can strike faster than mammalian prey and predators can react.

David Penning and his colleagues at the University of Louisiana at Lafayette analysed the defensive strikes of non-venomous Texas ratsnakes (*Pantherophis obsoletus*) and two species of venomous snake: western cottonmouth vipers (*Agkistrodon piscivorus leucostoma*; pictured) and western diamond-backed rattlesnakes (*Crotalus atrox*). They found that all snakes could accelerate at more than 160 metres per second squared (ms^{-2}) and reach speeds approaching 3 metres per second. This enables the animals to cover average distances of 13.6–16.7 centimetres in 66–74 milliseconds.

The highest recorded accelerations of nearly 300 ms^{-2} from a ratsnake and a rattlesnake were roughly 10 times those of jackrabbits attempting to escape.

Biol. Lett. 12, **20160011 (2016)**

GENOMICS

Finding our inner Denisovan

Traces of DNA from Denisovans, an extinct group of archaic humans from Asia, have been found in modern humans from Papua New Guinea and elsewhere in Melanesia.

Studies have shown that all non-Africans owe about 2% of their ancestry to Neanderthals, but only Melanesians seem to harbour substantial levels of Denisovan DNA as well. To better characterize the Denisovan heritage of modern humans, Joshua Akey at the University of Washington in Seattle, Svante Pääbo at the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany, and their team sequenced the genomes of 35 people from Melanesia, and analysed the genomes of another 1,496 people from around the world.

They found that the Melanesians derived between 1.9% and 3.4% of their ancestry from Denisovans. Long stretches of the genomes that were devoid of both Denisovan and Neanderthal DNA included genes that are expressed in certain parts of the brain and one, *FOXP2*, that is involved in speech and language.

Science **http://dx.doi.org/10.1126/science.aad9416 (2016)**

PLANETARY SCIENCE

A peek at Pluto's rich landscapes

Data collected by NASA's New Horizons probe during its Pluto fly-by last year has revealed just how geologically active Pluto is, and that its moon Charon was once active but is now dead.

Jeffrey Moore at the NASA Ames Research Center in Moffett Field, California, and his team report a huge 870,000-km^2 basin on Pluto's surface that contains moving ice layers. It is about 10 million years old at most, and is probably still active. Ancient craters elsewhere on Pluto seem to be up to 4 billion years old and show evidence of tectonics and glacial flow. By contrast, Charon is not active, although it seems to have experienced heavy volcanic activity around 4 billion years ago.

In another paper, William Grundy at the Lowell Observatory in Flagstaff, Arizona, and his team report that methane, carbon monoxide and nitrogen ices are sublimating, condensing and flowing on the surface of Pluto.

Science **http://doi.org/bdg8; http://doi.org/bdg9 (2016)**