RESEARCH HIGHLIGHTS

Selections from the scientific literature

MICROBIOLOGY

A cheesy tool for the laboratory

Cheese rinds could help to reveal how microbial communities form and species interact.

Microbial communities affect ecosystems and human health, but are difficult to study in the lab. To find microbial systems that can be easily manipulated, Rachel Dutton and her colleagues at Harvard University in Cambridge, Massachusetts, studied rind samples from more than 100 types of cheese, including Brie and Camembert.

They found that many of the bacterial and fungal species that grow on ageing cheese are easily cultured. The team used sequencing to identify key interactions between bacteria and fungi and to track the development of the microbial community on a cheese as it aged. Moreover, the researchers could reconstruct many of these interactions *in vitro*.

Studying cheese rinds could provide insight into other microbial communities, such as those found on skin, the authors say.

Cell 158, **422–433 (2014)**

CLIMATE CHANGE

Hotter summers despite hiatus

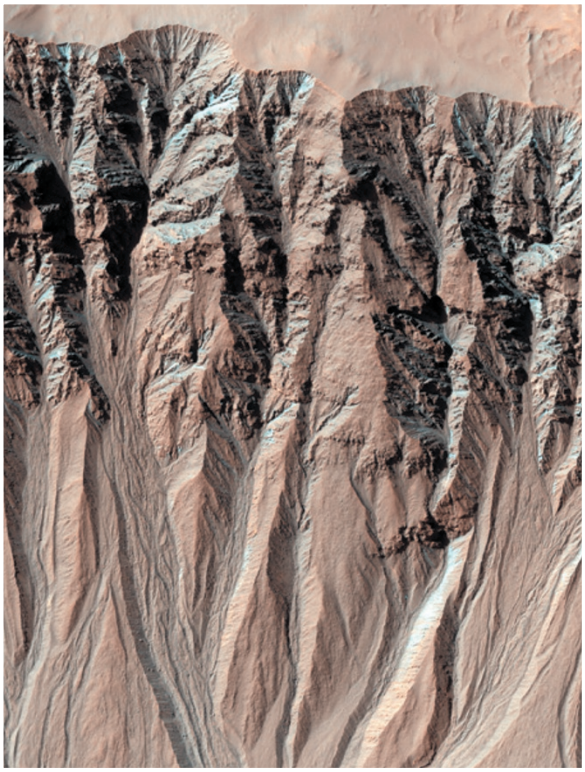
Rising greenhouse-gas levels have been making summers in the Northern Hemisphere hotter, even though global warming has been slowing in recent years.

Youichi Kamae of the National Institute for Environmental Studies in Tsukuba, Japan, and his colleagues compared the results of climate models that include the effects of human activity with those that do not.

They found that a rise in greenhouse-gas concentrations in the atmosphere has been the dominant cause of the increasing frequency of unusually hot summers in the Northern Hemisphere since the late twentieth century. In the middle latitudes, however, about half of the increase in hot summers can be attributed to natural climate variability over the Pacific and Atlantic oceans.

Heat extremes over land will probably become more frequent even if the global-warming hiatus persists, the authors conclude.

Geophys. Res. Lett. **http://doi.org/tr3 (2014)**



NASA/JPL/UNIV. ARIZONA

PLANETARY SCIENCE

Frost forms Mars gullies

Gullies on Mars were probably not created by liquid water but by the seasonal freezing and thawing of carbon dioxide, according to an analysis of high-resolution images.

Many scientists have argued that flowing water — a prerequisite for life — carved the gullies (pictured) that are widespread across Mars. Colin Dundas of the US Geological Survey in Flagstaff, Arizona, and his team studied 98 gully sites in Mars's northern hemisphere and 258 in the southern half, using data from NASA's Mars Reconnaissance Orbiter.

Looking at the same areas each year, the researchers saw the gullies growing and changing shape at the same time as carbon dioxide frost appeared and disappeared. Liquid water is not required in this process, the authors say.

Icarus **http://doi.org/trx (2014)**

PALAEONTOLOGY

Foraging patterns found in fossils

Researchers have discovered the first fossil evidence of a type of search behaviour displayed by some modern animals when looking for food.

Animals that hunt sparse prey over large areas often move in patterns known as Lévy walks — characterized by numerous small steps interspersed with rare long jumps to optimize foraging. A team led by David Sims at the Marine Biological Association in Plymouth, UK, discovered the pattern in 50-million-year-old fossilized tracks made by an extinct sea urchin, *Scolicia*. Its movements resembled those of albatrosses searching for squid over an open ocean.

The sea urchins may have evolved this foraging strategy after global resource collapses made their food supplies sparse, the researchers say.

Proc. Natl Acad. Sci. USA **http://doi.org/trs (2014)**

BIOTECHNOLOGY

Gene edits boost wheat defences

Researchers have used advanced gene-editing techniques to generate disease-resistant wheat.

Genetically altering *Triticum aestivum* wheat is difficult to do, in part because the plant has six sets of chromosomes instead of the two sets found in humans. So Caixia Gao and

Jin-Long Qiu of the Chinese Academy of Sciences in Beijing and their colleagues used two gene-editing approaches — TALEN enzymes and the CRISPR–Cas9 system — to disable a gene called *MLO* in all of the plants' chromosomes. This made the plants resistant to fungal diseases called powdery mildew. Knocking out all versions of the gene yielded the greatest resistance.

For the many crops that have multiple genome copies, such techniques can lead to improvements that are not possible through conventional breeding, the authors suggest.

Nature Biotechnol. **http://dx.doi.org/10.1038/nbt.2969 (2014)**

ZOOLOGY

Mystery bird is dodo relative

A dead pigeon specimen that has lain for years in a UK museum has been confirmed by DNA analysis as a new species — and as a relative of the dodo.

Tim Heupink of Griffith University in Brisbane, Australia, and his colleagues extracted and sequenced very short DNA fragments from the only remaining specimen of the spotted green pigeon (*Caloenas maculata*; artist's impression **pictured**). After being described in 1783, it ended up in a museum in Liverpool, UK, but nothing else was known about it.

Some researchers had claimed that the specimen was merely a Nicobar pigeon (*Caloenas nicobarica*), but the authors determined that *C. maculata* is a separate species and that both birds share an ancestor with the dodo (*Raphus cucullatus*). This ancestor was probably a semi-terrestrial bird that island-hopped from southeast Asia or India across the oceans, eventually evolving into the dodo and other pigeon species that live on remote islands.

BMC Evol. Biol. 14, **136 (2014)**

SPOTTED GREEN PIGEON BY JOSEPH SMIT/BULL. LIVERPOOL MUSEUMS 1898/NATL MUSEUMS LIVERPOOL

MICROBIOLOGY

Injuries invite ulcer microbe

A microbe that can lead to the formation of stomach ulcers and cancer quickly finds its way to tiny injuries in the stomach lining and colonizes them, slowing healing.

Marshall Montrose at the University of Cincinnati in Ohio and his colleagues exposed mice with stomach injuries to *Helicobacter pylori* and found that the damaged sites had larger colonies of the microbe than healthy areas.

Bacterial strains that had been engineered to be immobile or to be insensitive to their environment were less able to infect wounds than were normal strains. Moreover, the authors found that the bacterium takes only a few minutes to navigate from elsewhere in the stomach to damaged areas to slow repair.

They suggest that even microscopic injuries in the stomach that occur through eating and other normal activities are vulnerable to infection.

PLoS Pathogens 10, **e1004275 (2014)**

ASTROPHYSICS

Radio burst from beyond the Galaxy

A telescope has detected a mysterious millisecond burst of radio waves that seems to be coming from outside the Milky Way.

Laura Spitler at the Max Planck Institute for Radio Astronomy in Bonn, Germany, and her colleagues found the burst using the Arecibo radio telescope in Puerto Rico. The Parkes telescope in New South Wales, Australia, had previously picked up similar pulses — matching in brightness and duration — but a lack of comparable findings from other instruments at the time led astronomers to speculate that the signals were caused by instrument error or by radio interference from human sources.

Possible origins of the pulses include evaporating black holes, mergers of neutron stars or flares from magnetically active stars, say the authors.

Astrophys. J. 790, **101–109 (2014)**

SOCIAL SELECTION

Popular articles on social media

Spotlight falls on top 1% in science

An analysis led by John Ioannidis, a health-policy researcher at Stanford University, found that less than 1% of all researchers managed to publish every year from 1996 to 2011, but that those elite few were authors on more than 41% of all papers in the same period. Many noted the similarity between this and claims that the top 1% of US earners hold an inordinate share of the country's wealth. "Occupy!" tweeted Karen James, a geneticist at MDI Biological Laboratory in Maine, alluding to the Occupy Wall Street movement that calls for economic equality. Chris Cramer, a chemist at the University of Minnesota in Minneapolis, tweeted that it was "an interesting example of the top 1% CONTRIBUTING 41% (instead of owning?)."

PLoS ONE 9, **e101698 (2014)**

Based on data from altmetric.com. Altmetric is supported by Macmillan Science and Education, which owns Nature Publishing Group.

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ARCHAEOLOGY

Clovis people were hunters in Mexico

Elephant-like animals called gomphotheres (*Cuvieronius* sp.), thought to have gone extinct long before humans arrived in the Americas, might have stuck around long enough to be hunted by prehistoric people.

At a site called El Fin del Mundo in Sonora, Mexico, a team led by Guadalupe Sanchez of the National Autonomous University of Mexico in Sonora discovered gomphothere bones (jawbone **pictured**) intermingled with stone spear points from 13,400 years ago. These stone tools were made by some of the earliest people to inhabit North America, a group known as the Clovis people. Archaeologists knew that Clovis hunters pursued mammoths and mastodons, but this discovery adds gomphotheres to their diet.

IVAN ALARCÓN-DURAN

The finding simultaneously extends the period during which these animals were alive and makes the Mexican site one of the oldest and southernmost Clovis sites known.

Proc. Natl Acad. Sci. USA **http://doi.org/tr4 (2014)**

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