RESEARCH HIGHLIGHTS

INFECTIOUS DISEASE

Bat blight

Science **329,** 679–682 (2010);
Emerging Infect. Dis. **16,** 1237–1242 (2010)

Bad news from the bat cave: white-nose syndrome, a fungus that has been killing hibernating bats in eastern North America, could soon lead to regional extinctions. A team led by Winifred Frick at the University of Santa Cruz in California modelled the effect of the disease in the little brown bat (*Myotis lucifugus*) over the next 100 years, using data from 22 bat populations in 5 US states. The researchers found a 99% chance of regional extinction for this species in the next 16 years if infection and death rates stay as they are now.

Meanwhile, Gudrun Wibbelt at the Leibniz Institute for Zoo and Wildlife Research in Berlin, Germany, and her colleagues discovered the fungus, *Geomyces destructans* (pictured colonizing bat hair, right panel), in five bat species sampled in Germany, Switzerland and Hungary (mouse-eared bat with white-nose syndrome, left panel). Their survey suggests that white-nose syndrome is widespread in Europe — but bats do not die of the disease. This could be because their colonies tend to be smaller, or because they co-evolved with the fungus. Learning how they live with the fungus could help ecologists to manage the outbreak across the pond.

EMERGING INFECT. DIS.

PALAEONTOLOGY

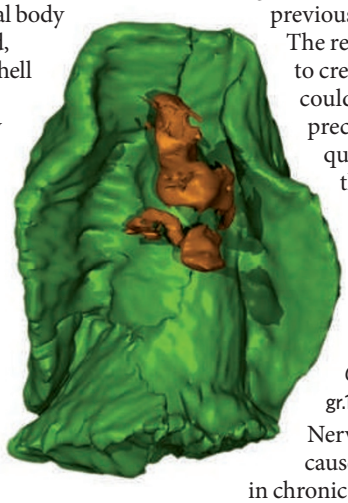
Small, soft, Silurian

Biol. Lett. doi:10.1098/rsbl.2010.0540 (2010)

Hard-bodied aquatic filter feeders called lophophorates are often found in the fossil record, but soft-bodied examples are rare. Now Mark Sutton of Imperial College London and his colleagues describe a tiny specimen from around 425 million years ago, during the Silurian period.

The 1.7-millimetre-long *Drakozoon kalumon* (pictured) has a conical body partly enclosed by a broad hood, and was found attached to the shell of a hard-bodied brachiopod. Coincidentally, *Drakozoon* may actually be a primitive relative of the brachiopods.

Its relative absence from the fossil record could well be a preservation bias, the authors suggest, and the invertebrate could have been a significant part of the Palaeozoic lophophorate community.



R. SOC.

SPECTROSCOPY

Ultraviolet combs

Phys. Rev. Lett. **105,** 063001 (2010)

Modern atomic clocks and our knowledge of fundamental physical constants both depend on precise measurements of the radiation emitted by atoms or molecules. Such high-resolution spectroscopy is made possible by the frequency comb laser, which generates an array — or comb — of photons at regular, finely spaced and well defined frequencies.

Kjeld Eikema and his colleagues at the Free University of Amsterdam have, for the first time, performed spectroscopy experiments with a frequency comb laser in the extreme ultraviolet region of the spectrum, down to wavelengths of 51 nanometres — beating the previous record of 125 nanometres. The results might be extended to create X-ray combs, and could also be used to make precision tests of the theory of quantum electrodynamics, the researchers say.

GENETICS

Where pain lives

Genome Res. doi:10.1101/gr.104976.110 (2010)

Nerve damage such as that caused by surgery can result in chronic pain, but the factors controlling its severity are largely unknown.

After years of genetic mapping, Ariel Darvasi of the Hebrew University of Jerusalem in Israel and his colleagues have isolated a gene that seems to contribute to chronic pain in a mouse model of human disorders such as phantom limb pain, which is often experienced by amputees. The gene, *Cacng2*, encodes a protein believed to interact with neuronal receptors.

A seizure-prone mouse strain known as stargazer with a mutation in this gene has, the researchers found, a high propensity for neuropathic pain. In humans, the team found variations in the *CACNG2* genetic region that are associated with chronic pain after mastectomy.

AGEING

Delayed damage

Proc. Natl Acad. Sci. USA doi:10.1073/pnas.1002220107 (2010)

Exercise and drastic dieting known as caloric restriction are known to have anti-ageing effects in the brain. Work in mice now suggests that the lifestyle changes preserve communication between nerves and muscles.

Jeff Lichtman and Joshua Sanes of Harvard University in Cambridge, Massachusetts, and their colleagues studied the connections between nerves and muscles in mice. These junctions deformed and deteriorated as mice aged, but cutting calories by 40% for life after the mice reached 16 weeks of age lessened the damage. Exercise also reduced age-related decline, and a month of frequent