RAINA PLOWRIGHT

(**pictured**) or rodents. The authors found that bats, with an average of 1.79 viruses per species, host significantly more zoonotic viruses per species than rodents, with 1.48 viruses per species.

Bat species that live longer or produce more litters per year tended to harbour more zoonotic viruses, and a proclivity for living closely with related species was the biggest determinant of zoonotic-viral richness.

The transfer of viruses could occur more frequently between bat species, which tend to live close together, than rodent ones, and the authors suggest that this could partly explain the higher prevalence of viruses in bats.

Proc. R. Soc. B 280, **20122753 (2013)**

LONGEVITY

Fish oils turn on cellular recycling

The polyunsaturated fats found in fish oils may promote longevity by triggering autophagy, a process that helps cells to survive starvation conditions by degrading and recycling excess cell components.

A team led by Gary Ruvkun of Massachusetts General Hospital in Boston found that when they starved the nematode worm *Caenorhabditis elegans*, the creatures boosted their production of omega-6 polyunsaturated fatty acids — which are found in fish oils. Supplementing cells from *C. elegans* and humans with these fatty acids activated autophagy. Worms fed omega-6 fatty acids lived longer than those that did not receive the fats — an effect erased by disabling the worms' autophagy machinery.

This mechanism could explain the health benefits that are seen in people who eat diets rich in fish oils, the researchers say.

Genes Dev. **http://dx.doi.org/10.1101/gad.205294.112 (2013)**

OPTOMECHANICS

Measuring twist with light

A device that uses light to measure torsion — the amount of twist — of an object at the nanometre scale improves on the sensitivity of previous techniques.

Measuring torsion is key to studies of a wide range of forces, from gravity to electromagnetism. John Davis at the University of Alberta in Edmonton, Canada, and his colleagues have built a torsion detector consisting of a pair of paddles placed next to an optical cavity. Because the paddles' refractive index is higher than that in the cavity, their movement distorts light waves that are trapped within it. By measuring this distortion, the researchers were able to detect subtle torsional shifts in the paddle's positions with roughly 100-times greater sensitivity than other techniques that do not use light.

The researchers suggest that the technique could be useful for studying magnetic materials at the nanoscale.

Appl. Phys. Lett. 102, **053102 (2013)**

EVOLUTION

Symbiosis leads to diversity

Species interactions such as competition and predation spur on diversification — as can symbiotic relationships, a study of plant-invading insects has found.

Many species of a family of insects known as gall midges (Cecidomyiidae) rely on fungi to help them break down plant tissues; in return, the female gall midges deposit the fungal spores along with their eggs when they move from plant to plant. In a survey of the literature, Jeffrey Joy at Simon Fraser University in Burnaby, British Columbia, Canada, found that gall midges that are associated with fungi tend to use a wider variety of host plants (**pictured**) compared with those with no association. Moreover, his analysis of gall-midge lineages revealed that symbiotic insect species are more than 17 times as diverse as non-symbiotic ones.

Forming a relationship with plant-digesting fungi could allow for greater evolutionary diversity in other insect species by providing them with a greater number of potential hosts, Joy suggests.

Proc. R. Soc. B **http://dx.doi.org/10.1098/rspb.2012.2820 (2013)**

JEFFREY JOY

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MICROBIOLOGY

Antibiotic strikes new target

HIGHLY READ on aac.asm.org in January

An antibiotic that disables protein synthesis seems to inhibit the growth of several strains of drug-resistant bacteria that are known to cause hospital infections.

Dickon Alley at Anacor Pharmaceuticals in Palo Alto, California, and his colleagues synthesized the antibacterial agent, which blocks the production of an enzyme that is essential for microbial protein synthesis and is designed to fight Gram-negative bacteria — which have an outer envelope that hampers the entry of antibiotics. The agent inhibited the growth of resistant bacteria — including the multidrug-resistant *Pseudomonas aeruginosa* — both *in vitro* and in a mouse model of infection. The properties of the antibacterial allow it to avoid the main mechanisms that Gram-negative bacteria use to fend off these drugs.

In a clinical trial, the antibiotic successfully cleared urinary-tract infections in some patients, but failed to do so in others because of bacterial resistance. The researchers say they are working to avoid this problem.

Antimicrob. Agents Chemother. **http://dx.doi.org/10.1128/AAC.02058-12 (2013)**

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