and their group targeted a form of retinitis pigmentosa. This is a common cause of blindness in which mutations in the gene *RPGR* lead to the death of light-sensing photoreceptors in the retina. The authors tested their gene-therapy approach in four dogs with mutations that model a form of the disorder. After injecting a virus carrying human *RPGR* into one eye of each animal, the authors found that the photoreceptors' structure appeared normal, and that their light-responsiveness had improved in three of the four treated eyes. In the untreated eyes, the cells were shrunken, fewer in number and less responsive to light.

The authors say that their findings open the door to gene therapy in humans for certain kinds of retinitis pigmentosa.

Proc. Natl Acad. Sci. USA **http://dx.doi.org/10.1073/pnas.1118847109 (2012)**

PHYSICS

Quantum motion captured

Even if cooled to a temperature of absolute zero, all objects will retain a fundamental jitter in their physical positions due to quantum 'zero-point' fluctuations. Oskar Painter and his colleagues at the California Institute of Technology in Pasadena have, for the first time, detected this motion in a tangible object and measured an asymmetric property that arises from it.

The researchers patterned a one-micrometre-wide silicon beam to allow for a strong interaction between laser light sent into the beam and the motion of the beam. As the beam was cooled to below 1 Kelvin, a striking asymmetry emerged. The energy of the laser photons increased the motion of the beam, but, as per the laws of quantum mechanics, the beam's fundamental jitter could not add to the energy of the laser photons.

Phys. Rev. Lett. 108, **033602 (2012)**

GENOMIC MEDICINE

Sequencing diagnoses disease

In a study that shows both its promise and limitations in the clinic, researchers have used genomic sequencing to diagnose the genetic cause of disease in individual children — but succeeded in only a small proportion of them.

A team led by David Thorburn at the Murdoch Childrens Research Institute in Melbourne, Australia, and Vamsi Mootha at Harvard Medical School in Boston, Massachusetts, sequenced DNA from 42 unrelated children with symptoms of inherited disorders of the mitochondria — the cell's energy-producing organelles. The authors sequenced the mitochondrial DNA, as well as the coding regions of more than 1,000 nuclear genes that encode mitochondrial proteins. They found mutations in known or possible disease-causing genes in 23 of the children, and 10 received a firm diagnosis.

In the other cases, the causative gene may fall outside the sequenced regions, or the disease may be caused by weak interactions between several mutated genes, the authors say.

Sci. Transl. Med. 4, **118ra10 (2012)**

CANCER

Drug drives cancer stem cells

Cancer drugs that attack tumour-sustaining blood vessels may spur proliferation of the stem cells that contribute to the disease.

One such drug, bevacizumab, fails to prolong the survival of patients with advanced breast cancers, and studies have shown that patients on similar drugs often relapse. To find out why, Max Wicha and his team at the University of Michigan in Ann Arbor implanted human breast tumours into mice and treated them with bevacizumab and another blood-vessel-blocking drug, sunitinib. Treated tumours produced more cancer stem cells than untreated ones. The low-oxygen environment that the drugs create in tumours switches on a molecular pathway that encourages cancer stem cells to divide.

Combining these drugs with others that target cancer stem cells could yield a better outcome, the authors suggest.

Proc. Natl Acad. Sci. USA **http://dx.doi.org/10.1073/pnas.1018866109 (2012)**

COMMUNITY CHOICE

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ANIMAL BEHAVIOUR

Hair defence against bed bugs

HIGHLY READ on http://royalsocietypublishing.org in December

Hirsute individuals are better able to sense blood-sucking bed bugs crawling on their skin than are their less hairy counterparts.

Isabelle Dean and Michael Siva-Jothy at the University of Sheffield, UK, tested the ability of 29 volunteers to detect the presence of bed bugs (*Cimex lectularius*) on a shaved and an unshaved arm. The volunteers detected the insects more frequently with their unshaved arm than their shaved one, and unshaved arms with a greater density of hair were more sensitive to the insects. Hairier skin also upped the time bed bugs took to find a feeding location.

Humans may have evolved less body hair to make parasites easier to see and remove, but the authors suggest that fine body hair has been maintained to enhance their detection.

Biol. Lett. **http://dx.doi.org/10.1098/rsbl.2011.0987 (2011)**

GEOLOGY

Explosion in Death Valley

The volcanic eruption responsible for the giant Ubehebe Crater in California's Death Valley may have occurred more recently than previously thought. This could mean that the risk of similar explosions happening today is higher than anticipated.

When magma encounters groundwater, distinctive explosions, such as those of Ubehebe, ensue. But how this could have happened in Death Valley, the driest area in North America, has been unclear. Brent Goehring at Purdue University in West Lafayette, Indiana, and his colleagues dated the crater (**pictured**) using the rate of accumulation of beryllium-10 isotopes in rocks exposed by the eruption. They conclude that the crater probably appeared 800–2,100 years ago, during a period in which Death Valley underwent prolonged drought.

The authors suggest that there may be enough permanent groundwater to drive further explosive eruptions in Death Valley.

Geophys. Res. Lett. **http://dx.doi.org/10.1029/2011gl050130 (2012)**

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