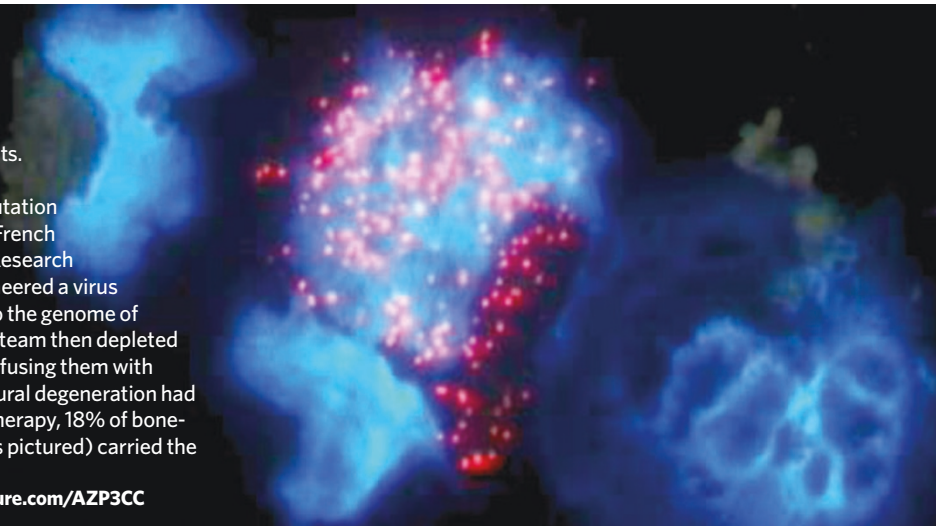


## RESEARCH HIGHLIGHTS

**Nerve repair***Science* **326**, 818–823 (2009)

Researchers have slowed a fatal brain disease by inserting a gene into stem cells and then transplanting them into two patients. X-linked adrenoleukodystrophy (ALD) is a neurodegenerative disease caused by a mutation in the *ABCD1* gene. Patrick Aubourg of the French National Institute for Health and Medical Research (INSERM) in Paris and his colleagues engineered a virus to insert a functioning copy of the gene into the genome of the patients' bone-marrow stem cells. The team then depleted the patients of their bone marrow before infusing them with the repaired cells. Sixteen months later, neural degeneration had stopped in both patients. Two years after therapy, 18% of bone-marrow stem cells in one patient (four cells pictured) carried the working gene (cell with red dots).

For a longer story on this research, see [go.nature.com/AZP3CC](http://go.nature.com/AZP3CC)



P. AUBOURG

**CLIMATE SCIENCE****Volcano chills***Geophys. Res. Lett.* **10.1029/2009GL040882** (2009)

Analyses of ice cores from Greenland and Antarctica have revealed a previously unknown tropical volcanic eruption that spewed huge amounts of ash and gas in 1809. The event resulted in a decade, starting in 1810, of the coldest temperatures recorded in the past 500 years.

Jihong Cole-Dai of South Dakota State University in Brookings and his colleagues identified unique isotopic signatures of volcanic sulphate in the core layers from 1810 and 1811 that point towards the eruption. Its exact location remains unknown. The researchers report that the release of sulphur gases, which form Sun-blocking aerosols, by this volcano and the famed 1815 Tambora eruption in Indonesia was sufficient to bring about the cold decade, which included the 'year without a summer' in 1816.

**LONGEVITY****Sweet food, short life***Cell Metab.* **10**, 379–391 (2009)

Nematode worms fed on a diet spiked with glucose die about 20% earlier than those consuming just the bacterium *Escherichia coli*.

Cynthia Kenyon and her colleagues at the University of California, San Francisco, found that dietary glucose inhibits the DAF-16 and HSF-1 proteins, which are known to lengthen nematode lifespan. This in turn lowers the activity of the gene *aqp-1*, which codes for a glycerol channel, suggesting that glucose shortens lifespan by affecting glycerol metabolism.

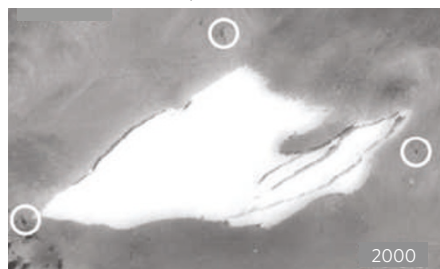
Worms consuming glycerol also died

earlier. The authors think that the worms metabolize glucose into glycerol, which then initiates life-shortening processes.

**CLIMATE CHANGE****Kilimanjaro's loss***Proc. Natl Acad. Sci. USA* doi:10.1073/pnas.0906029106 (2009)

Between 2000 and 2007, the area covered by the iconic glaciers of Mount Kilimanjaro shrank by 26%. In addition, the ice thinned rapidly, according to an analysis of aerial photographs and ground measurements by Lonnie Thompson of Ohio State University in Columbus and his colleagues.

One of the ice fields, the Furtwängler (pictured below), halved in thickness — by nearly five metres — between 2000 and 2009 at one drill site. The glaciers now cover just 15% of the area they covered in 1912. The



researchers predict that, probably owing to global warming, Africa's highest peak will be ice-free by 2033.

For a longer story on this research, see [go.nature.com/IWMvvU](http://go.nature.com/IWMvvU)

**NEUROSCIENCE****Early stress marks genes***Nature Neurosci.* doi:10.1038/nn.2436 (2009)

Changes in gene expression caused by factors other than variation in the DNA code — 'epigenetic' changes — are partly responsible for the mental and physical health problems often associated with stress in early life.

Dietmar Spengler and his colleagues at the Max Planck Institute of Psychiatry in Munich, Germany, stressed newborn mice by separating them from their mothers. As adults, the mice secreted abnormally high levels of the stress hormone corticosterone, were less able to cope with stressful situations and had memory impairments. They also had fewer methyl groups attached to the regulatory region for the gene that encodes the hormone vasopressin, a key player in the biochemical pathway that leads to corticosterone release. The reduced methylation resulted in a rise in vasopressin expression.

**ASTRONOMY****Galaxies far, far away***Astron. Astrophys.* doi:10.1051/0004-6361/200912299 (2009)

Astronomers have identified the most distant cluster of galaxies yet. The object, called JKCS 041, is 3.1 billion parsecs away, and existed when the Universe was just a quarter of its current age, say Stefano Andreon of the Brera Astronomical Observatory in Milan,

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