

non-coding RNAs. The authors found that *C. fragrantissima* uses the same processes to switch between life stages, meaning that these regulatory elements were likely to have been used by the last universal common ancestor of all animals, the authors say. *eLife* <http://doi.org/8kh> (2015)

DISEASE

Plague is an ancient pathogen

Plague was plaguing humanity thousands of years earlier than previously thought, but in a less transmissible form.

Yersinia pestis bacteria, which are thought to have been behind the Black Death that killed millions in the fourteenth century, have previously been found in burial sites dating back 1,500 years.

But Eske Willerslev at the Natural History Museum of Denmark in Copenhagen and his colleagues looked even further back. They analysed DNA obtained from the teeth of 101 humans (pictured) who died in Europe and Asia between 2,800 and 5,000 years ago and found *Y. pestis* DNA in seven individuals. Analysis of the DNA showed that a strain similar to the Black Death strains was widespread in the Bronze Age, but only the more recent strains had a gene called *ymt*, which helps *Y. pestis* to colonize the guts of fleas. Without fleas to aid transmission, plague spreads less efficiently.

Cell <http://dx.doi.org/10.1016/j.cell.2015.10.009> (2015)



STEM CELLS

Molecular menu creates neurons

Astrocyte cells in the brain can be reprogrammed into neurons using a precise sequence of molecules. The technique may one day be useful in brain repair.

Similar cells have previously been reprogrammed into neurons using viruses, but Gong Chen and Gang-Yi Wu at Pennsylvania State University in University Park and their colleagues now show that the transformation can be done with small molecules.

They treated human astrocytes with nine different molecules in sequence, converting them into neurons that survived for more than five months in culture and more than one month after transplantation into a mouse brain. The method works for human brain astrocytes but not for human spinal astrocytes or mouse astrocytes, suggesting that different sets of molecules may be needed for different astrocytes or to obtain different neuronal subtypes, the authors report. *Cell Stem Cell* <http://doi.org/8m5> (2015)

LAB TOOLS

Superconducting sensors warm up

An extremely sensitive, superconductor-based magnetic sensor can work at around 77 kelvin, a temperature achievable with liquid nitrogen rather than the expensive liquid helium required by typical existing devices, which operate at just above absolute zero.

Superconducting quantum-interference devices (SQUIDs) can sense individual quanta of magnetic flux by measuring voltage induced in a loop of superconducting material. Boris Chesca of Loughborough University, UK, and his team connected hundreds of loops in series to boost the signal. The authors

SOCIAL SELECTION

Popular topics
on social media

Backlash over journals blacklisting

Researchers on social media are split over the decision of academic librarian Jeffrey Beall to add the *Frontiers* journals to his 'blacklist' of "questionable publishers". Beall, at the University of Colorado Denver, announced the move in a tweet, saying that it followed "wide disapproval from scientists". His website Scholarly Open Access maintains a list of journals that may be "predatory publishers" — a term Beall coined for publications that charge scientists fees to publish research but that do not offer services such as peer review, or that make misleading claims on impact factors or indexing. Critics of Beall's blacklisting of *Frontiers* maintain that the open-access publisher is reputable and does offer proper peer review. Daniël Lakens, an experimental psychologist at the Eindhoven University of Technology in the Netherlands and an associate editor at *Frontiers in Psychology: Cognition*,

tweeted: "Frontiers being added to Beall's list reveals the big weakness of Beall's list: It's not based on solid data, but on Beall's intuition." Beall told *Nature* that he stands by his decision.

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say that their SQUID design is as sensitive as many devices already in use and is ready for production. The higher operating temperature makes it ideal for applications such as portable magnetic resonance imaging machines, they say. *Appl. Phys. Lett.* 107, 162602 (2015)

ATMOSPHERIC SCIENCE

Arctic snow is not becoming dirtier

Dust and soot might not be behind the observed darkening of the Greenland ice sheet (pictured).

Tiny particles of dirt absorb sunlight that would be reflected into space by ice — contributing to local warming. Satellite measurements suggest that the amount of sunlight reflected by Greenland's icy

surface has been decreasing since 2001.

But surveys of the snow in northwest Greenland conducted in 2013 and 2014 by Chris Polashenski at the US Army Cold Regions Research and Engineering Laboratory in Fort Wainwright, Alaska, and his colleagues, found that the concentration of dark-coloured particles was much the same as in previous decades. Rather than dirtier ice, the declining reflectivity seen in satellite measurements could be due to a degrading sensor on NASA's Earth-observing satellite Terra. *Geophys. Res. Lett.* <http://doi.org/8kg> (2015)

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