RESEARCH HIGHLIGHTS

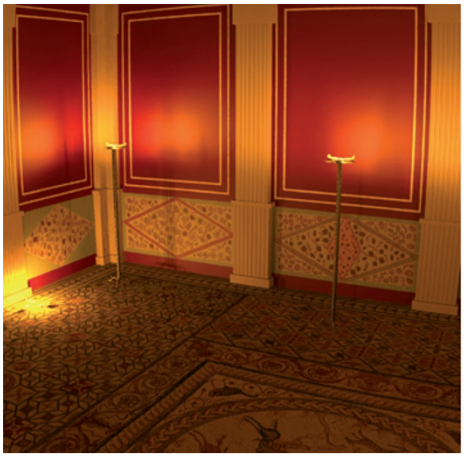
Selections from the scientific literature

EVOLUTION

Thank Grandma for longevity

Grandmothers have driven the evolution of longer lifespans, extending them by around 25 years in a theoretical population of apes, according to a mathematical model that tests the 'grandmother hypothesis'.

According to this theory, women evolved lifespans that extend well past the menopause because older women can boost their daughters' fertility — by taking care of grandchildren. Kristen Hawkes at the University of Utah in Salt Lake City and her colleagues modelled a population of apes, and found that their lifespans evolved from an ape-like range of around 35 years to a human one of roughly 60 years when older females contributed to infant care. Grandmothers enabled mothers to have their next baby sooner without reducing their previous offspring's chances of survival.
Proc. R. Soc. B **http://dx.doi.org/10.1098/rspb.2012.1751 (2012)**



A. GONÇALVES

ARCHAEOLOGY

A new light on the past

An ancient Roman home can be seen through the eyes of its long-dead owners, thanks to imaging technology that makes digital reconstructions of cultural relics appear more realistic.

Archaeological excavations of the 'House of the Fountains' — built in the first century AD in the Roman town of Conimbriga in Portugal — revealed fountain-filled gardens, wall frescoes and elaborate mosaic tile floors. To get a sense of what the house might have looked like when illuminated by candlelight, Alexandrino Gonçalves of the Polytechnic Institute of Leiria, Portugal, and his team made digital reconstructions of a room using high-dynamic-range imaging technology, which captures light intensity levels with a sensitivity similar to that of the human eye.

Volunteers favoured candlelit images (pictured left) over those illuminated with electric light (right), describing the former as "warm" and "comforting". Eye-tracking experiments suggested that volunteers focused more on the frescoes and mosaics when viewing them under candlelight than under electric lighting.
J. Archaeol. Sci. 40, **116–128 (2013)**

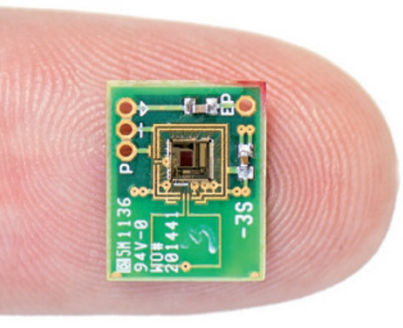
BIOELECTRONICS

Power from the ear

Researchers in Massachusetts have found a way to extract power from the ear.

Konstantina Stankovic of the Massachusetts Ear and Eye Infirmary in Boston, Anantha Chandrakasan at the Massachusetts Institute of Technology in Cambridge and their colleagues developed a chip (**pictured**) that can exploit the inner ear's electrical potential, which is generated to convert sound into neural impulses. The team inserted electrodes from the chip through a natural opening into the inner ear of an anaesthetized guinea pig. The chip extracted around 1 nanowatt of power for up to five hours — enough to power a small radio transmitter.

The system could eventually be used to harvest power for devices that diagnose and treat hearing loss in humans, the authors suggest.
Nature Biotechnol. **http://dx.doi.org/10.1038/nbt.2394 (2012)**



MICROBIOLOGY

Typhoid fever in a mouse

A mouse model of typhoid fever could help scientists to develop vaccines against a disease that infects some 20 million people and kills more than 220,000 worldwide each year.

Mice are normally immune to the bacterium *Salmonella typhi*, which causes typhoid fever in humans. However, a team led by Sankar Ghosh at Columbia University in New York has shown that mice that lack an immune-system receptor called TLR11 — which recognizes a bacterial protein called flagellin — become susceptible to *S. typhi* and develop a deadly systemic infection akin to typhoid.

When mice that lack TLR11 were vaccinated with killed *S. typhi* or with serum from previously infected mice, they proved resistant to subsequent typhoid infection.
Cell 151, **590–602 (2012)**

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