

RESEARCH HIGHLIGHTS

CLIMATE CHANGE

'Hockey stick' holds up

Proc. Natl Acad. Sci. USA **105**, 13252–13257 (2008)

A fresh analysis of climate indicators shows that the Northern Hemisphere is warmer now than it has been in at least 1,300 years.

Previous analyses of climatic history by Michael Mann of Pennsylvania State University in University Park and his colleagues produced a distinctive 'hockey stick' shape; but some of this analysis, and the tree-ring data it used, came under attack.

The latest work by Mann and his co-workers involves various climate proxies, including corals, ice cores, historical records and marine sediments. The authors show that current warming is anomalous even if all tree-ring data are eschewed.

SEXUAL IMPRINTING

Facing Oedipus

Proc. R. Soc. B doi:10.1098/rspb.2008.1021 (2008)

The suggestion that people seek mates that resemble their parents is as old as civilization. Tamas Bereczkei and his colleagues at the University of Pécs in Hungary have found new evidence linking partner choices to parental appearance.

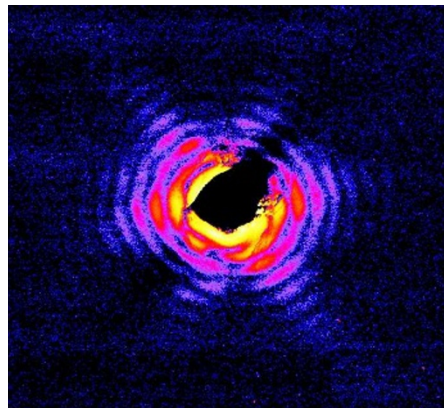
By measuring 14 facial proportions of 312 adults from 52 families, Bereczkei's team shows significant correlations in appearance between young men and their partner's father and young women and their partner's mother. This supports the theory that children are imprinted with their opposite-sex parent's face.

X-RAY PHYSICS

Superman's sharper vision

Phys. Rev. Lett. **101**, 090801 (2008)

X-rays are commonly used to study everything from semiconductors to proteins. But the special optics commonly used to focus these rays struggle to produce images better



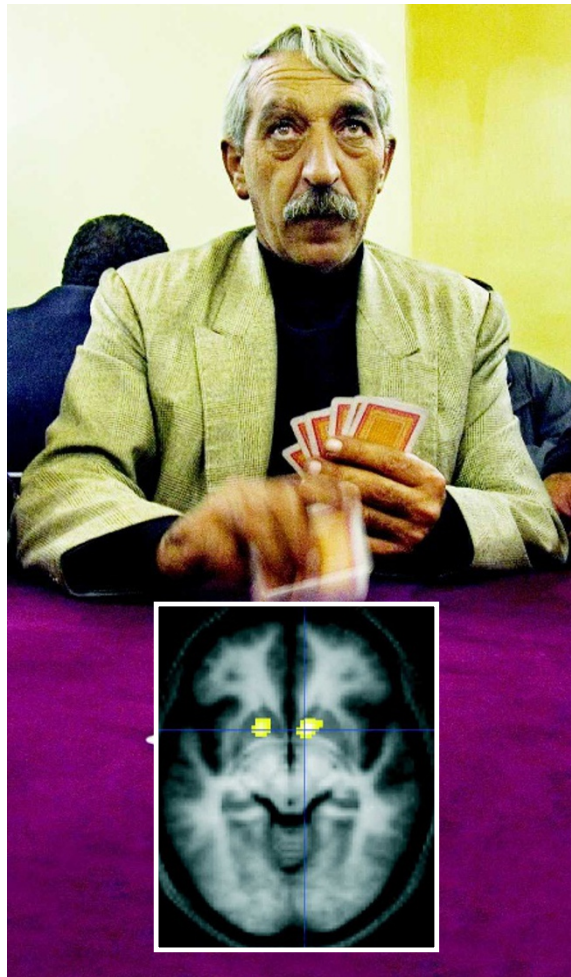
Subliminal choices

Neuron **59**, 561–567 (2008)

Humans can learn to assess risks on the basis of visual hints they are not aware of seeing.

Mathias Pessiglione of the Pitié-Salpêtrière Hospital in Paris and his colleagues repeatedly showed 20 subjects abstract symbols as they played a gambling game. Each symbol presentation involved one of three choices and was followed by a 'masking image' in a series that flickered so fast that the subjects could not consciously perceive the symbol shapes. The subjects were told that the symbols were associated with winning or losing, and then allowed to gamble.

The subjects won more than they lost, indicating that their brains recognized the unperceived symbols and learned to associate them with reward or punishment. Functional neuroimaging showed that the mechanism involves the ventral striatum, a brain area associated with assessing reward value (pictured right).



G. GEORGIU/PANOS

M. PESSIGLIONE

than a few tens of nanometres in resolution.

Christian Schroer of the Technical University in Dresden, Germany, and his colleagues have improved their X-ray vision by using better beams. A coherent X-ray beam 100 nanometres in diameter produced a diffraction pattern (pictured below left) that could be processed to reveal details of a small gold particle just 5 nanometres across. The technique may be used in future large-scale X-ray facilities.

IMMUNOLOGY

Holistic medicine

PLoS Pathog. **4**, e1000138 (2008)

Immunologists have long known that inactivated whole-virus vaccines are superior to viral-subunit or split-virus vaccines. Anke Huckriede at the University of Groningen in the Netherlands and her colleagues show that for an H5N1 influenza vaccine this enhanced efficacy is due to the action of viral single-stranded RNA molecules. These stimulate the innate

immune response, an arm of the immune system that responds quickly and boosts long-term immunity.

The team looked at Toll-like receptors (TLRs), proteins that often initiate innate immune responses. Mice lacking TLR7 — which recognizes the influenza virus's single-stranded RNAs — or other proteins in the same pathway had a degraded immune response to a whole-virus H5N1 vaccine.

ORGANIC CHEMISTRY

Tag-team catalysts

Science doi:10.1126/science.1161976 (2008)

David Nicewicz and David MacMillan at Princeton University in New Jersey have created a double-headed catalytic system to give an aldehyde molecule an alkyl group in a specific position, and with a specific geometry.

Their technique depends on a pincer movement. A ruthenium-based 'photoredox' catalyst that shifts electrons one at a time when hit with fluorescent light