

CONTENTS

9 August 2012 / Vol 488 / Issue No 7410

THIS WEEK

EDITORIALS

129 POLICY

Who calls the shots?

US lawmakers need to push for research into firearms-related violence

129 PLANETARY SCIENCE

Take a look

Make the most of Curiosity. It's likely to be the last Mars lander for some time



WORLD VIEW

131 Arab liberals must stay in the game

Ehsan Masood

The newly elected Islamist governments are supporting science — but for how long?

RESEARCH HIGHLIGHTS

132 SELECTIONS FROM THE SCIENTIFIC LITERATURE

Extrasolar planet 'too old' / Optically useful nanorods / Ebb and flow of Greenland ice / Neural boost from metformin / First thoughts



SEVEN DAYS

134 THE NEWS IN BRIEF

Deforestation falls in Brazil / Monsanto wins patent dispute with DuPont / First Higgs papers appear / The decline of the single author

CAREERS

241 JOB APPLICATIONS

Straight to the top of the pile

When listing your career and achievements, short and sweet is best

243 TURNING POINT

Crowd-funding via the Petridish website was a boon to entomologist Brian Fisher

NEWS IN FOCUS



137 PLANETARY SCIENCE

NASA celebrates successful arrival of the Curiosity rover on Mars

139 BIOMEDICINE

Japan launches bank for induced pluripotent stem cells

140 TECHNOLOGY

UK graphene centre aims to be innovation powerhouse

143 GLOBAL WARMING

Analysis links greenhouse gases to extreme weather events

144 PHYSICS

Russian entrepreneur injects wealth into prize for theoretical physics

FEATURES

148 CANCER

Open ambition

How epigenetics could revolutionize anticancer therapy — one day

ENGINEERING

Material gain

How to make things by breaking them

PAGE 146



COMMENT

151 SCIENCE IN THE MEDIA

Let's talk about sex

Andrew B Barron & Mark J F Brown

Researchers can limit the damage caused by irresponsible media coverage of their work

BOOKS & ARTS



PANDEMICS

Pay the price

Trade and disease are likely bed-fellows, says Andy Tatem PAGE 153

154 TECHNOLOGY

Beyond the body

Ewen Callaway

155 BOOKS IN BRIEF

CORRESPONDENCE

- 157 Sport and drugs don't mix / Research results should be shared / The Higgs vocabulary



FUTURES

246 Ways to enjoy Nutrient Blend 14
Luc Reid

CONTENTS

9 August 2012 / Vol 488 / Issue No 7410

RESEARCH

NEW ONLINE

159 Papers published this week at nature.com

NEWS & VIEWS

160 FORUM: ASTROBIOLOGY

Frontier or fiction

Two experts discuss the scientific status of astrobiology
Antonio Lazcano & Kevin P Hand

162 PALAEOANTHROPOLOGY

Facing up to complexity

New fossils from Koobi Fora boost theories of parallel *Homo* lineages
Bernard Wood [SEE LETTER P.201](#)

163 OPTICS

Gain and loss mixed in the same cauldron

Parity-time symmetry in a large-scale optical system
Luca Razzari & Roberto Morandotti
[SEE ARTICLE P.167](#)

164 ATMOSPHERIC CHEMISTRY

The X factor

A 'new' atmospheric oxidant
Dwayne Heard [SEE LETTER P.193](#)

165 STRUCTURAL BIOLOGY

Dynamic binding

Conformational entropy modulates protein-DNA binding
Andrew J Baldwin & Lewis E Kay
[SEE LETTER P.236](#)

ARTICLES

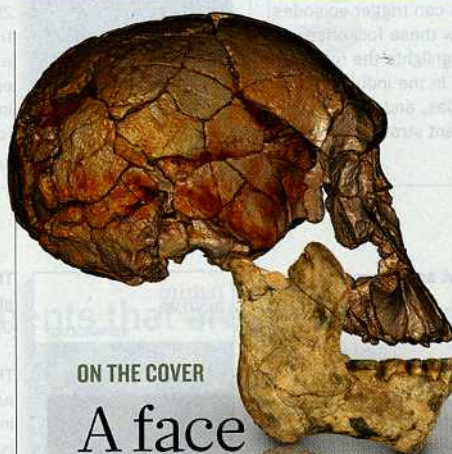
167 PHYSICS Parity-time synthetic photonic lattices

A Regensburger et al. [SEE N&V P.163](#)

GENOMICS

Top fruit

The genome sequence of what may be the world's favourite 'fruit'. [PAGE 213](#)



ON THE COVER

A face in the crowd

Three newly discovered fossils, two jaws and a well preserved face, support the idea that there were at least two contemporary *Homo* species, in addition to *Homo erectus*, in the early Pleistocene of eastern Africa.

[PAGES 162 & 201](#)

172 NEUROSCIENCE Deconstruction of a neural circuit for hunger

D Atasoy, J N Betley, H H Su & S M Sternson

178 MICROBIOLOGY Gut microbiota composition correlates with diet and health in the elderly

M J Claesson et al.

LETTERS

185 PHYSICS Quantum teleportation and entanglement distribution over 100-kilometre free-space channels

J Yin et al.

189 APPLIED PHYSICS A III-V nanowire channel on silicon for high-performance vertical transistors

K Tomioka, M Yoshimura & T Fukui

193 EARTH SCIENCES A new atmospherically relevant oxidant of sulphur dioxide

R L Mauldin III et al. [SEE N&V P.164](#)

197 ENVIRONMENTAL SCIENCE Water balance of global aquifers revealed by groundwater footprint

T Gleeson et al.

201 EVOLUTION New fossils from Koobi Fora in northern Kenya confirm taxonomic

diversity in early *Homo*

M G Leakey et al. [SEE N&V P.162](#)

205 PALAEOLOGY A transitional snake from the Late Cretaceous period of North America

N R Longrich, B-A S Bhullar & J A Gauthier

209 ECOLOGY Atmospheric CO₂ forces abrupt vegetation shifts locally, but not globally

S I Higgins & S Scheiter

213 GENOMICS The banana (*Musa acuminata*) genome and the evolution of monocotyledonous plants

A D'Hont et al.

218 NEUROSCIENCE Human dorsal anterior cingulate cortex neurons mediate ongoing behavioural adaptation

S A Sheth et al.

222 IMMUNOLOGY HVEM signalling at mucosal barriers provides host defence against pathogenic bacteria

J-W Shui et al.

226 CELL DEATH Programmed elimination of cells by caspase-independent cell extrusion in *C. elegans*

D P Denning, V Hatch & H R Horvitz

231 MOLECULAR BIOLOGY Site-specific DICER and DROSHA RNA products control the DNA-damage response

S Francia et al.

236 PROTEIN SCIENCE Protein activity regulation by conformational entropy

S-R Tzeng & C G Kalodimos [SEE N&V P.165](#)

PALAEOLOGY

Snake past

A long-neglected fossil suggests a terrestrial origin for snakes.

[PAGE 205](#)

