

CONTENTS

5 March 2015 / Vol 519 / Issue No 7541

THIS WEEK

EDITORIALS

5 POLICY

Gone fishing

Challenges to scientists should not be politically or personally motivated

5 PUBLIC HEALTH

Fatal fallout

Support for pregnant women in West Africa is needed in the wake of Ebola

6 NEUROSCIENCE

Hues and cry

How a dress provided a vision in blue — or was it gold?

WORLD VIEW

7 China's scientists must engage the public on GM

Qiang Wang

Scepticism of transgenic technologies needs to be tackled

RESEARCH HIGHLIGHTS

8 SELECTIONS FROM THE SCIENTIFIC LITERATURE

Crocodile country / What eyelashes do / Nest share / Altruistic bacteria / *P* values insignificant / Colorado beetle beaten / Arabia's prehistoric rivers



SEVEN DAYS

10 THE NEWS IN BRIEF

Panda problems / Scientists pay tribute to Spock / India's budget disappoints / Obama vetoes Keystone pipeline

CAREERS

121 COLUMN

Wanted: information

Viviane Callier & Nathan L. Vanderford
Postgraduates need a detailed picture of the academic and non-academic job markets

122 POSTGRADUATE CAREERS

The hunt for the elusive alumni

Universities are using social media to track post-PhD career outcomes

NATUREJOBS ADVERTISING FEATURE

Spotlight on postgraduate positions

NEWS IN FOCUS



13 PSYCHOLOGY

Ebola epidemic exerts mental-health toll

14 TECHNOLOGY

Robots compete to win DARPA challenge on emergency rescue

15 POLICY

IPCC gears up for new leader

16 NATURAL HAZARDS

World's deadliest volcanoes identified

17 BIOTECHNOLOGY

Cancer vaccine survives collapse of parent company

18 HYDROLOGY

Lake coating seeks to save water in drought-ridden US

FEATURES



20 DEVELOPING WORLD

The minority minority

Three women who have carved physical-science careers in the developing world

24 PUBLIC HEALTH

Ebola's lasting legacy

Maternal health is one of the casualties of West Africa's epidemic

TOOLBOX

119 MAPPING TOOLS

Science on the map

Mapping and visualization programs — many of which are open source — are changing our view of geographical data

COMMENT

ECONOMICS

Low-carbon investments

Private finance is beginning to address climate change and with the right policies governments can harness its power

PAGE 27



BOOKS & ARTS

30 SPACE SCIENCE

Beyond the heliopause

Roger D. Launius

31 MATHEMATICS

Groping in the dark for glimpses of beauty

Amir Alexander

32 SOCIAL ECOLOGY

Aid's inconvenient truth

Erin Bohensky

CORRESPONDENCE

33 Ecosystem fix impractical / Doping rife in athletics / Ed Ricketts *et al.* / Transparency in animal research / Glass act

OBITUARY

34 Carl Djerassi (1923–2015)

Philip Ball

FUTURES



124 Simon Clash: the Galaxy's greatest hero

James Aquilone

RESEARCH

NEW ONLINE

35 Papers published this week at nature.com

NEWS & VIEWS

36 HIV

Tied down by its own receptor

Gene therapy as an alternative to

HIV vaccination

Nancy L Haigwood

SEE LETTER P.87

37 MATERIALS SCIENCE

Nanoscale locomotion without fuel

Graphene flake moves in response to

stiffness of underlying substrate

Amanda S Barnard

38 NEUROSCIENCE

A cellular basis for the munchies

How cannabinoid compounds

stimulate food intake

Sachin Patel & Roger D Cone

SEE ARTICLE P.45

40 MOLECULAR BIOLOGY

Signals across domains of life

A eukaryotic ribosome-recruiting signal

that works in a prokaryote

Eric Jan SEE LETTER P.110

41 MATERIALS SCIENCE

Gating mechanism under pressure

Liquid-filled pores reversibly open and

close at critical pressures

Mathias Ulbricht

SEE LETTER P.70

42 CATALYSIS

Dual catalysis at the flick of a switch

Light-activated reactions of allylic

carbon-hydrogen bonds

James J Devery III & Corey R J Stephenson

SEE LETTER P.74

ARTICLES

45 NEUROSCIENCE Hypothalamic POMC

neurons promote cannabinoid-

induced feeding

M Koch et al. SEE N&V P.38

51 NEUROSCIENCE A motor cortex circuit

for motor planning and movement

N Li, T-W Chen, Z V Guo, C R Gerfen

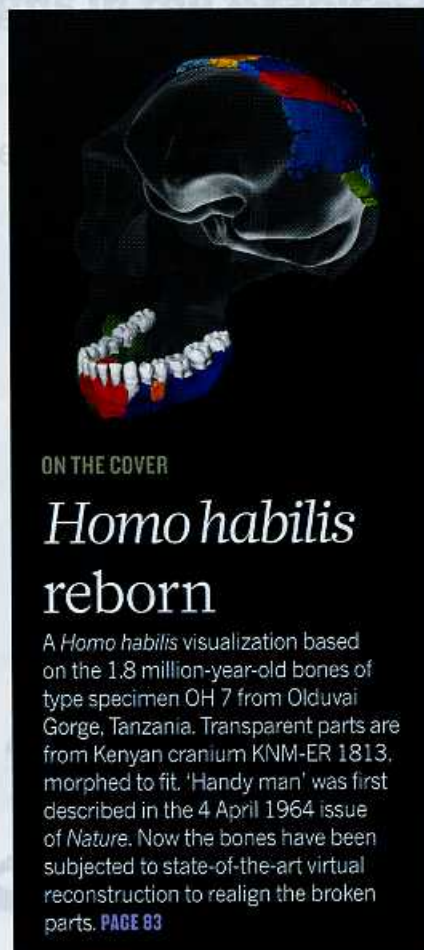
& K Svoboda

57 DISEASE A gp130-Src-YAP module

links inflammation to epithelial

regeneration

K Taniguchi et al.



ON THE COVER

Homo habilis reborn

A *Homo habilis* visualization based on the 1.8 million-year-old bones of type specimen OH 7 from Olduvai Gorge, Tanzania. Transparent parts are from Kenyan cranium KNM-ER 1813, morphed to fit. 'Handy man' was first described in the 4 April 1964 issue of *Nature*. Now the bones have been subjected to state-of-the-art virtual reconstruction to realign the broken parts. **PAGE 83**

LETTERS

63 ASTROPHYSICS The double-degenerate,

super-Chandrasekhar nucleus of the

planetary nebula Henize 2-428

M Santander-García et al.

66 QUANTUM PHYSICS State preservation

by repetitive error detection in a

superconducting quantum circuit

J Kelly et al.

70 MATERIALS SCIENCE Liquid-based gating

mechanism with tunable multiphase

selectivity and antifouling behaviour

X Hou, Y Hu, A Grinthal, M Khan

& J Aizenberg SEE N&V P.41

74 ORGANIC CHEMISTRY The direct

arylation of allylic sp^3 C-H bonds via

organic and photoredox catalysis

J D Cuthbertson & D W C MacMillan

SEE N&V P.42

78 ECOLOGY Drought impact on

forest carbon dynamics and

fluxes in Amazonia

C E Doughty et al.

83 PALAEOANTHROPOLOGY Reconstructed *Homo*

habilis type OH 7 suggests deep-

rooted species diversity in early *Homo*

F Spoor et al.

87 IMMUNOLOGY AAV-expressed eCD4-Ig

provides durable protection from

multiple SHIV challenges

M R Gardner et al. SEE N&V P.36

92 INFLAMMATION Dietary emulsifiers

impact the mouse gut microbiota

promoting colitis and metabolic

syndrome

B Chassaing et al.

97 AGEING Dauer-independent insulin/

IGF-1-signalling implicates collagen

remodelling in longevity

C Y Ewald, J N Landis, J P Abate,

C T Murphy & T K Blackwell

102 CANCER Axitinib effectively inhibits

BCR-ABL1(T315I) with a distinct

binding conformation

T Pemovska et al.

106 BIOCHEMISTRY Folding of an intrinsically

disordered protein by phosphorylation

as a regulatory switch

A Bah et al.

110 MOLECULAR BIOLOGY Initiation of

translation in bacteria by a structured

eukaryotic IRES RNA

T M Colussi et al. SEE N&V P.40

114 STRUCTURAL BIOLOGY Structure of the

F-actin-tropomyosin complex

J von der Ecken et al.

118 CORRIGENDUM Ultraviolet radiation

accelerates BRAF-driven

melanomagenesis by targeting TP53

A Viros et al.

118 ERRATUM Deconstructing

transcriptional heterogeneity

in pluripotent stem cells

R M Kumar et al.

118 CORRIGENDUM Mutant IDH inhibits

HNF-4 α to block hepatocyte

differentiation and promote

biliary cancer

S K Saha et al.