

CONTENTS

1 September 2016 / Vol 537 / Issue No 7618

THIS WEEK

EDITORIALS

7 PUBLIC HEALTH

Zika imbalance

The US should not let itself become diverted from core health priorities

7 CONSERVATION

Pachyderm plight

Newly described elephant species falls through the conservation gap



WORLD VIEW

9 Preserve personal freedom in networked societies

Christoph Bock
Anti-discrimination laws can maintain privacy where data protection is failing

RESEARCH HIGHLIGHTS

10 SELECTIONS FROM THE SCIENTIFIC LITERATURE



Water in south Asia / Fat-changing diets / Pentaquark confirmed / Cuttlefish count / Rare mineral / Environmental footprints

SEVEN DAYS

12 THE NEWS IN BRIEF

Union rights for US students / Leprosy vaccine to be tested / Robo-taxi prepares for the road / Obama creates huge marine park



CAREERS

125 ART-SCIENCE COLLABORATIONS

Change of perspective

A brush with the creative arts can reinvigorate your science

NEWS IN FOCUS

15 SEISMOLOGY

Deadly earthquake strikes central Italy

16 ENERGY

How to breathe life into an ageing nuclear power plant

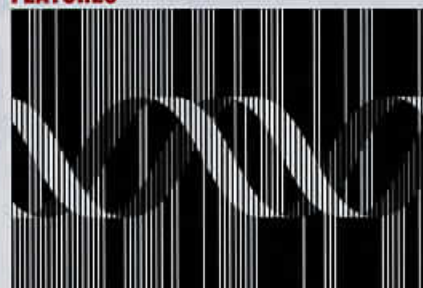
19 ANTHROPOLOGY

3D bone printouts will test whether famous hominin fell out of a tree

20 GENEALOGY

Scientific family tree reveals academic relationships between mathematicians

FEATURES



TECHNOLOGY

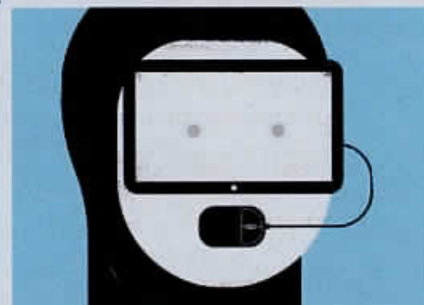
Digital DNA

Can the genetic code be used to store the explosion of computer data? **PAGE 22**

26 HEALTH

The snakebite fight

Antivenom is in desperately short supply but experts can't agree on how to fix the problem



TOOLBOX

123 COMPUTER SCIENCE

Computers on the reef

Marine ecology benefits from a fresh perspective on underwater images

COMMENT



REPRODUCIBILITY

Beware misconduct

It is time to factor in the temptation to cheat when doing science, say Donald S Kornfeld & Sandra L Titus
PAGE 29

BOOKS & ARTS

32 IN RETROSPECT

A New System of Chemical Philosophy

Philip Ball

33 BOOKS IN BRIEF

CORRESPONDENCE

34 Compromise is key to peer review / Hallmarks for labs / Island definitions / Oceanic productivity / Pokémon go birdwatching



FUTURES

128 Skin hunger

Bo Balder



CONTENTS

1 September 2016 / Vol 537 / Issue No 7618

RESEARCH

NEW ONLINE

35 Papers published this week at nature.com

NEWS & VIEWS

36 ALZHEIMER'S DISEASE

Attack on amyloid- β protein

An antibody reduces amyloid- β fibrils in people with Alzheimer's disease

Eric M Reiman [SEE ARTICLE P.50](#)

37 PLANETARY SCIENCE

Cometary dust under the microscope

Data from the Rosetta spacecraft reveal the structure of cometary dust

Ludmilla Kolokolova [SEE LETTER P.73](#)

38 STRUCTURAL BIOLOGY

Moulding the ribosome

The structure of the 90S pre-ribosome complex

Marlene Oeffinger

40 CLIMATE SCIENCE

Southern Ocean freshened by sea ice

Why the Southern Ocean is becoming less salty

Ted Maksym [SEE LETTER P.89](#)

42 ECOLOGY

More is less

An increase in limiting resources reduces grassland diversity

Ryan Wilkinson [SEE LETTER P.93](#)

42 CANCER

Suffocation of gene expression

Oxygen shortage causes DNA hypermethylation by limiting TET activity

Dan Ye & Yue Xiong [SEE ARTICLE P.63](#)

43 ANCIENT DNA

Muddy messages about American migration

Ancient remains reveal when a migration route to America opened

Suzanne McGowan [SEE ARTICLE P.45](#)

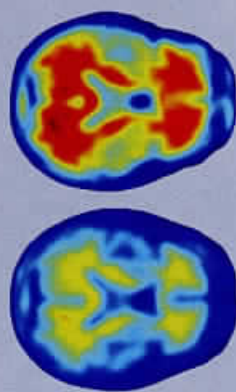
ARTICLES

45 ENVIRONMENTAL SCIENCE Postglacial viability and colonization in North America's ice-free corridor

M W Pedersen et al. [SEE N&V P.43](#)

50 NEUROLOGICAL DISORDERS The antibody aducanumab reduces A β plaques in Alzheimer's disease

J Sevigny et al. [SEE N&V P.36](#)



ON THE COVER

Plaque attack

Amyloid plaque reduction with aducanumab, seen in example amyloid PET images at baseline and week 54. Aducanumab, a human monoclonal antibody that selectively targets aggregated A β , reduces soluble and insoluble A β in the brain, an action accompanied by a dose-dependent slowing of aspects of clinical decline. [PAGES 36 & 50](#)

57 DEVELOPMENTAL BIOLOGY

A developmental coordinate of pluripotency among mice, monkeys and humans

T Nakamura et al.

63 CANCER Tumour hypoxia causes

DNA hypermethylation by reducing TET activity

B Thienpont et al. [SEE N&V P.42](#)

LETTERS

69 PLANETARY SCIENCE A combined transmission spectrum of the Earth-sized exoplanets TRAPPIST-1 b and c

J de Wit et al.

73 PLANETARY SCIENCE Aggregate dust particles at comet 67P/Churyumov-Gerasimenko

M S Bentley et al. [SEE N&V P.37](#)

76 QUANTUM OPTICS Dynamically encircling an exceptional point for

asymmetric mode switching

J Doppler et al.

80 QUANTUM OPTICS Topological energy transfer in an optomechanical system with exceptional points

H Xu, D Mason, L Jiang & J G E Harris

84 ULTRAFAST LASERS Ablation-cooled material removal with ultrafast bursts of pulses

C Kerse et al.

89 CLIMATE SCIENCES Sea-ice transport driving Southern Ocean salinity and its recent trends

F A Haumann, N Gruber, M Münnich, I Frenger & S Kern [SEE N&V P.40](#)

93 ECOLOGY Addition of multiple limiting resources reduces grassland diversity

W S Harpole et al. [SEE N&V P.42](#)

97 NEUROSCIENCE Serotonin engages an anxiety and fear-promoting circuit in the extended amygdala

C A Marcinkiewicz et al.

102 CANCER HER2 expression identifies dynamic functional states within circulating breast cancer cells

N V Jordan et al.

107 CELL BIOLOGY An endosomal tether undergoes an entropic collapse to bring vesicles together

D H Murray et al.

112 CANCER Small molecule stabilization of the KSR inactive state antagonizes oncogenic Ras signalling

N S Dhawan, A P Scopton & A C Dar

117 STRUCTURAL BIOLOGY Structural basis for inhibition of a voltage-gated Ca²⁺ channel by Ca²⁺ antagonist drugs

L Tang et al.

122 CORRIGENDUM A novel multiplegstage antimalarial agent that inhibits protein synthesis

B Baragaña et al.

122 CORRIGENDUM Robust neuronal dynamics in premotor cortex during motor planning

N Li, K Daie, K Svoboda & S Druckmann

122 CORRIGENDUM Convection in a volatile nitrogen-ice-rich layer drives Pluto's geological vigour

W B McKinnon et al.