CONTENTS

6 February 2014 / Vol 506 / Issue No 7486

THIS WEEK

EDITORIALS

5 BIOMEDICAL RESEARCH

Animal farm

Misrepresentation of addiction by animal-rights activists should not be allowed to derail research

6 IMMIGRATION

Invisible borders

Free mobility of scientists is crucial

6 THE AMAZON

Trick of the light

Carbon in the balance and photosynthesis out of the shadows

WORLD VIEW

7 China must protect high-quality arable land Xiangbin Kong

Loss of food-producing land to urban growth threatens food security

RESEARCH HIGHLIGHTS

8 SELECTIONS FROM THE SCIENTIFIC LITERATURE



Prion
portraits / The
Anglo-Saxon
succession /
Gene editing in
a primate / US
leads in global
warming /
Social lizards /
Galaxies that
failed

SEVEN DAYS

10 THE NEWS IN BRIEF

Panama combats dengue with GM mosquitoes / Butterfly migration hits historic low / Cancer burden predicted to rise / AstraZeneca pulls out of neglected tropical diseases

CAREERS

121 TELECOMMUTING

No place like home

Researching from home can work but you need to manage your time — and maintain your profile

123 CAREER BRIEFS

NEWS IN FOCUS



13 CRIMINOLOGY
US launches bid to fix faulty forensics

14 IMMIGRATION

Visa problems dog scientists heading to the UK

16 CITIZEN SCIENCE

@Home computer projects lose their lustre

17 PUBLISHING

Elsevier opens journals to text mining

18 VITICULTURE

Ferment over move of gene bank for grapevines

19 SEMICONDUCTORS

Phosphorus version of graphene shows promise for circuits

FEATURES



WINTER OLYMPICS

Downhill forecast

Climate change threatens a radical change to winter sports PAGE 20

24 BIOMEDICINE

The changing face of primate research Fresh obstacles undermine European harmony on experiments using monkeys

COMMENT

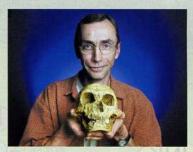
27 CLIMATE ECONOMICS

Make supply chains climate-smart

Anders Levermann

Networks of trade, production and transport must adapt to cope with floods and storms to come

BOOKS & ARTS



EVOLUTION

The human puzzle

Henry Gee enjoys memoir of ancient DNA detective Svante Pääbo PAGE 30

A gustin A missing BOOKS IN BRIEFOR A missing A

32 GEOLOGY

Bedrock of China

Xu Xing

33 08/

The sound hunter

Acoustic engineering professor Trevor Cox on the joys of 'sound tourism'

CORRESPONDENCE

34 The use of medical data / Planck Collaboration data / Carbon dioxide storage

OBITUARY

35 John Cornforth (1917–2013) Jim Hanson

FUTURES

126 Vessels for destruction A G Carpenter



CONTENTS

6 February 2014 / Vol 506 / Issue No 7486

RESEARCH

NEW ONLINE

37 Papers published this week at nature.com

NEWS & VIEWS

38 FORUM: MICROBIOLOGY

A talented genus

Biosynthetically diverse bacteria isolated from marine sponges Marcel Jaspars; Greg Challis

SEE ARTICLE P.58

39 CANCER

Interference identifies immune modulators

RNA-interference screening of T-cell gene activity in melanoma Lars Zender SEE ARTICLE P.52

41 ATMOSPHERIC SCIENCE

Drought and fire change sink to sourceFactors that increase carbon emissions over the Amazon basin

Jennifer K Balch SEE LETTER P.76

42 IMMUNOLOGY

Oiling the wheels of autoimmunity

Recognition of CD1a-bound skin oils by self-reactive T cells Mitchell Kronenberg & Wendy L Havran

13 PARTICLE PHYSICS

Quarks are not ambidextrous

Parity-symmetry breaking in electron–quark scattering experiments William J Marciano SEE LETTER P.67

44 ECOLOGY

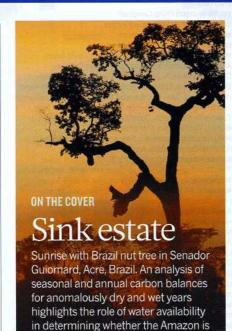
Plant diversity rooted in pathogens

Fungal pathogens determine negative density dependence in tropical forests Helene C Muller-Landau

SEE LETTER P.85

ARTICLES

- 47 PALAEOECOLOGY Fifty thousand years of Arctic vegetation and megafaunal diet E Willerslev et al.
- 52 CANCER In vivo discovery of immunotherapy targets in the tumour microenvironment P Zhou et al. SEE N&V P.39
- 58 MICROBIOLOGY An environmental bacterial taxon with a large and distinct metabolic repertoire M C Wilson et al. SEE N&V P.38



LETTERS

63 ASTROPHYSICS A cosmic web filament revealed in Lyman-α emission around a luminous high-redshift quasar S Cantalupo, F Arrigoni-Battaia, J X Prochaska, J F Hennawi & P Madau

sink or source for carbon. PAGES 41 & 76

- 67 PARTICLE PHYSICS Measurement of parity violation in electron-quark scattering The Jefferson Lab PVDIS Collaboration SEE N&V P.43
- 71 QUANTUM PHYSICS An optical lattice clock with accuracy and stability at the 10⁻¹⁸ level

BJ Bloom et al.

76 ATMOSPHERIC SCIENCE Drought sensitivity of Amazonian carbon balance revealed by atmospheric measurements

L V Gatti et al. SEE N&V P.41

- 81 ATMOSPHERIC CHEMISTRY Convective forcing of mercury and ozone in the Arctic boundary layer induced by leads in sea ice

 C W Moore et al.
- 85 ECOLOGY Pathogens and insect herbivores drive rainforest plant diversity and composition

R Bagchi et al. SEE N&V P.44

- 89 PLANT EVOLUTION Three keys to the radiation of angiosperms into freezing environments

 A E Zanne et al.
- 93 PSYCHOLOGY Modelling the effects of subjective and objective decision making in scientific peer review I-U Park, M W Peacey & M R Munafò
- 97 POPULATION GENETICS Sequence variants in SLC16A11 are a common risk factor for type 2 diabetes in Mexico The SIGMA Type 2 Diabetes Consortium
- 102 STRUCTURAL BIOLOGY Structure of the SecY channel during initiation of protein translocation E Park et al.
- 107 STRUCTURAL BIOLOGY Structures of the Sec61 complex engaged in nascent peptide translocation or membrane insertion M Gogala et al.
- 111 MOLECULAR BIOLOGY Aprataxin resolves adenylated RNA-DNA junctions to maintain genome integrity
 P Tumbalé, J S Williams, M J Schellenberg, T A Kunkel & R S Williams
- of the Lsm complex bound to the 3' end sequence of U6 small nuclear RNA
 L Zhou et al.



QUANTUM PHYSICS

Good timing

The most precise atomic clock yet, based on multiple strontium atoms PAGE 71

& ROBERTHARDING.COM