CONTENTS

5 July 2012 / Vol 487 / Issue No 7405

THIS WEEK

EDITORIALS

5 LAW

Science takes the stand

Two US court decisions will have far-reaching effects

5 POLICY

Good advice

Mark Walport's appointment as UK science adviser bolsters the role

6 TECHNOLOGY

Print preview

A whole new dimension on printing is opening up



WORLD VIEW

7 Meet patients to get your motivation back Tal Nuriel Contact with those who might benefit from your research concentrates the mind

RESEARCH HIGHLIGHTS

8 SELECTIONS FROM THE SCIENTIFIC LITERATURE

An 'antismoking' antibody / The ozone forecast / Fighting for a mate / Genetic suppression of Huntington's disease

SEVEN DAYS

10 THE NEWS IN BRIEF

LHC data uncover new particle in hunt for Higgs / GlaxoSmithKline faces record fine over fraud / Panel confirms Romanian prime minister's plagiarism

CAREERS

129 PUBLISHING

Foreign tongues

English is the lingua franca but help is at hand for those for whom it is a second language

131 TURNING POINT

Award-winning photographer Martin Oeggerli still finds time for cancer research

NATUREJOBS ADVERTISING FEATURE

Spotlight on Events

NEWS IN FOCUS



13 HEALTH CARE

Victory in court for Obama's health-care bill — but at what cost?

14 ENVIRONMENT

Success of palm oil proves problematic for forests

16 PROLIFERATION

Cheap uranium-enrichment technique prompts fears of nuclear proliferation

17 EMPLOYMENT

African researchers sue Kenyan institute over working conditions

18 Q&A

Uri Simonsohn explains how he uncovered wrongdoing in psychology research

19 HUMAN RIGHTS

Turkey clamps down on outspoken academics

20 POLICY

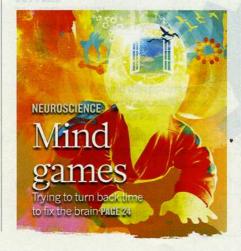
Britain turns to Wellcome Trust for its next chief science adviser

FEATURES

22 TECHNOLOGY

The print revolution

3D printing adds depth to research



COMMENT

27 NUCLEAR DETERRENCE

Decisions at the brink

David R Gibson

New analysis of tapes sheds light on President Kennedy's handling of the Cuban missile crisis

NUCLEAR PROLIFERATION

Unbalanced

It's unrealistic to think that a 'safe' balance of power can be achieved between multiple nuclear powers, states Scott D Sagan PAGE 30



SUMMER BOOKS

34 Nature regulars share their vacation picks — and there's more online



CORRESPONDENCE

38 Canadian climate protests / Unrealistic carbon pricing / The pain in Spain / Prioritize age research / Stockpile cholera vaccine / Human microbiome needs diversity

OBITUARY

40 Phillip Vallentine Tobias (1925–2012)
Bernard Wood

FUTURES

134 Waiting for Chronomatic Jeff Hecht

CONTENTS

5 July 2012 / Vol 487 / Issue No 7405

RESEARCH

NEW ONLINE

41 Papers published this week at nature.com

NEWS & VIEWS

42 PALAEOANTHROPOLOGY

The ancestral dinner table

Dietary diversity suggests wooded habitats for Australopithecus sediba Margaret J Schoeninger

SEE LETTER P.90

43 STEM CELLS

A sporadic super state

A recurrent, totipotent-like transient state of embryonic stem cells

Azim Surani & Julia Tischler

SEE ARTICLE P.57

45 ASTRONOMY

Warm dust makes a fast getaway

Rapid drop in infrared emission from a Sun-like star Margaret Moerchen SEE LETTER P.74

46 ECOLOGY

The importance of being rare

The similarity of rare and common species varies between assemblages Kevin J Gaston

47 MICROBIOLOGY

Fat, bile and gut microbes

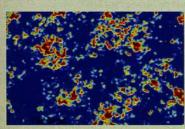
Dietary fat can favour growth of pro-inflammatory gut microorganisms

Peter J Turnbaugh SEE LETTER P.104

48 ORGANIC CHEMISTRY

Reactions at the end of a tether

A method for the enantioselective



ASTRONOMY

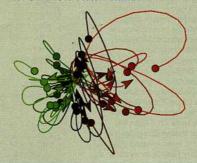
First light

We now have the technology to observe the first-ever stars. PAGE 70

NEUROSCIENCE

Brain waves

Population dynamics could be the key to unlocking the mystery of neural control in the cortex. **PAGE 51**



allylation of 1,3-diketones Stefan Roesner & Varinder K Aggarwal SEE LETTER P.86

ARTICLES

- 51 NEUROSCIENCE Neural population dynamics during reaching M M Churchland et al.
- 57 DEVELOPMENTAL BIOLOGY Embryonic stem cell potency fluctuates with endogenous retrovirus activity

 TS Macfarlan et al. SEE N&V P.43
- 64 BIOCHEMISTRY Biophysical mechanism of T-cell receptor triggering in a reconstituted system J R James & R D Vale

LETTERS

- 70 ASTRONOMY The signature of the first stars in atomic hydrogen at redshift 20
 - E Visbal, R Barkana, A Fialkov, D Tseliakhovich & C M Hirata
- 74 ASTRONOMY Rapid disappearance of a warm, dusty circumstellar disk C Melis et al. SEE N&V P.45
- 77 MATERIALS Optical nano-imaging of gate-tunable graphene plasmons J Chen et al.
- 82 MATERIALS Gate-tuning of graphene plasmons revealed by infrared nano-imaging Z Fei et al.

- 86 CHEMISTRY Direct and highly regioselective and enantioselective allylation of β-diketones W A Chalifoux, S K Reznik & J L Leighton SEE N&V P.48
- 90 ANTHROPOLOGY The diet of Australopithecus sediba A G Henry et al. SEE N&V P.42
- 94 GENOMICS Butterfly genome reveals promiscuous exchange of mimicry adaptations among species
 The Heliconius Genome Consortium
- 99 NEUROSCIENCE Compartmentalized calcium dynamics in a C. elegans interneuron encode head movement M Hendricks, H Ha, N Maffey & Y Zhang
- 104 MEDICINE Dietary-fat-induced taurocholic acid promotes pathobiont expansion and colitis in II10^{-/-} mice

 S Devkota et al. SEE N&V P.47
- 109 DISEASE Reduced airway surface pH impairs bacterial killing in the porcine cystic fibrosis lung A A Pezzulo et al.
- 114 MOLECULAR BIOLOGY SIRT7 links
 H3K18 deacetylation to maintenance
 of oncogenic transformation
 M F Barber et al.
- 119 STRUCTURAL BIOLOGY SbsB structure and lattice reconstruction unveil Ca²⁺ triggered S-layer assembly E Baranova et al.
- 123 BIOTECHNOLOGY Programmable single-cell mammalian biocomputers S Ausländer, D Ausländer, M Müller, M Wieland & M Fussenegger
- 128 CORRIGENDUM Fetal load and the evolution of lumbar lordosis in bipedal hominins

 KK Whitcome, LJ Shapiro

 & D E Lieberman
- 128 ERRATUM Genome-wide structure and organization of eukaryotic pre-initiation complexes H S Rhee & B F Pugh
- 128 CORRIGENDUM Conditional modulation of spike-timing-dependent plasticity for olfactory learning S Cassenaer & G Laurent

5 JULY 2012 | VOL 487 | NATURE | 3