

CONTENTS

17 April 2014 / Vol 508 / Issue No 7496

THIS WEEK

EDITORIALS

287 POLICY

The democracy carousel

Europe's re-examination of stem-cell rules is a waste of time and money

287 GENOMICS

Cancer crossroads

Understanding the genetics of cancer should be a major research focus

288 EDUCATION

Practical nonsense

The UK government's plan to remove practical work from exams is misguided

WORLD VIEW

289 Beware of backroom deals in the name of 'science'

Colin Macilwain

What big business calls 'sound science' can be unsound and unscientific

RESEARCH HIGHLIGHTS

290 SELECTIONS FROM THE SCIENTIFIC LITERATURE

Life with the lions / Bird conservation league table / Sunken-tree ecosystems / Lionfish rule the reef / Unreliable antiprion activity / Nimble fruit flies

SEVEN DAYS

292 THE NEWS IN BRIEF

Japan returns to nuclear power / Schaven ends fight over PhD / UK policy acting as immigration barrier / LHC spots exotic Z particle

CAREERS

421 ACADEMIC PROGRESSION

Tactical tenure manoeuvres

Tenure is still a major career goal, but careers go on without it

423 TURNING POINT

Dallas-based neurologist Joel Elmquist knows a thing or two about mentoring — and being mentored

NEWS IN FOCUS



PUBLIC HEALTH

Drug divide

Poorer nations left wanting over costly treatments for hepatitis C **PAGE 295**

296 EPIGENETICS

Sperm smuggles stress across the generation gap

297 ASTRONOMY

Panel picks over pros and cons of proposed sites for γ-ray telescope array

298 CLIMATE CHANGE

IPCC report draws criticism for lack of practical guidance

299 REPRODUCIBILITY

Stem-cell scientist comes out fighting over 'stress' paper

300 SPACE

Mini satellites — the small space hardware with big potential

FEATURES



302 POWER FROM THE OCEANS

Blue energy

The tide is turning for marine power

306 TOXICOLOGY

The plastics puzzle

Alternatives to the problem additive bisphenol A may not be a fix

COMMENT

309 POLICY

Bring sustainable energy to the developing world

Reid Detchon & Richenda Van Leeuwen
It is time to invest in affordable, clean energy technologies

312 PUBLISHING

Credit where credit is due

Liz Allen, Amy Brand, Jo Scott, Micah Altman & Marjorie Hlava
Manuscript-submission software tells us who did what in multi-author papers

BOOKS & ARTS



ASTRONOMY

Art of the eclipse

Jay M Pasachoff and Roberta J M Olson explore visual interpretations of this solar phenomenon **PAGE 314**

316 GEOLOGY

Parsing eruptions

Ted Nield

317 ANIMAL BEHAVIOUR

Nomads of necessity

Joel Greenberg

318 BOOKS IN BRIEF

CORRESPONDENCE

319 China's renewables / A cap on false positives / Vanadium batteries / Mouse gene data / Do the experiments

FUTURES

426 The vermilion market

Preston Grassmann

SOLAR ECLIPSE, 1932 BY HOWARD RUSSELL BUTLER (1856-1934). PRINCETON UNIVERSITY ART MUSEUM/ART RESOURCE NY/SCALA, FLORENCE

CONTENTS

17 April 2014 / Vol 508 / Issue No 7496

RESEARCH

NEW ONLINE

321 Papers published this week at nature.com

NEWS & VIEWS

322 EVOLUTIONARY BIOLOGY

Dating chimpanzees

Genetic tracing reveals remarkable stability in chimpanzee communities
Michael Haslam

323 GENETICS

Up and down in Down's syndrome

Trisomy 21 causes a genome-wide flattening of gene expression
Benjamin D Pope & David M Gilbert
SEE LETTER P.345

324 ORGANIC CHEMISTRY

Catalysis marches on

A method for preparing isolated quaternary stereocentres
James P Morken SEE ARTICLE P.340

326 SYNTHETIC BIOLOGY

Biocircuits in synchrony

Synchronization of two synthetic circuits in a bacterial-cell population
Ricard Solé & Javier Macía
SEE LETTER P.387

327 THERMOELECTRICITY

The ugly duckling

A high thermoelectric efficiency for single crystals of tin selenide
Joseph P Heremans SEE LETTER P.373

328 CELL BIOLOGY

The stressful influence of microbes

Changing metabolite levels drive the mitochondrial stress response
Suzanne Wolff & Andrew Dillin
SEE LETTER P.406

REVIEW

331 BIOCHEMISTRY The ensemble nature of allostery

H N Motlagh, J O Wrabl, J Li & V J Hilser

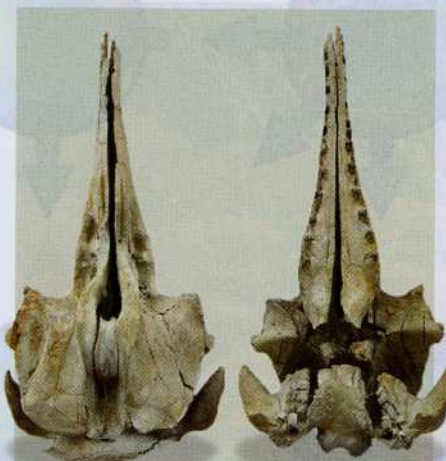
ARTICLES

340 ORGANIC CHEMISTRY Enantioselective construction of remote quaternary stereocentres

T-S Mei, H H Patel & M S Sigman
SEE N&V P.324

345 GENETICS Domains of genome-wide gene expression dysregulation in Down's syndrome

A Letourneau et al. SEE N&V P.323



EVOLUTION

Distant echo

New fossils point to the early evolution of echolocation in whales. PAGE 383

351 NEUROSCIENCE Brainstem nucleus MdV mediates skilled forelimb motor tasks

M S Esposito, P Capelli & S Arber

357 NEUROSCIENCE Skilled reaching relies on a V2a propriospinal internal copy circuit

E Azim, J Jiang, B Alstermark & T M Jessell

LETTERS

364 GEOCHEMISTRY Isotopic links between atmospheric chemistry and the deep sulphur cycle on Mars

H B Franz et al.

369 PHYSICS Coherent suppression of electromagnetic dissipation due to superconducting quasiparticles

I M Pop et al.

373 THERMOELECTRICITY Ultralow thermal conductivity and high thermoelectric figure of merit in SnSe crystals

L-D Zhao et al. SEE N&V P.327

378 CLIMATE SCIENCE Mid-latitude interhemispheric hydrologic seesaw over the past 550,000 years

K-n Jo et al.

383 EVOLUTION A new fossil species supports an early origin for toothed whale echolocation

J H Geisler, M W Colbert & J L Carew

387 SYSTEMS BIOLOGY Rapid and tunable post-translational coupling of genetic circuits

A Prindle et al. SEE N&V P. 326

392 MORPHOGENESIS Apical constriction drives tissue-scale hydrodynamic flow to mediate cell elongation

B He, K Doubrovinski, O Polyakov & E Wieschaus

397 IMMUNOLOGY A committed precursor to innate lymphoid cells

M G Constantinides, B D McDonald, P A Verhoef & A Bendelac

402 VIROLOGY Protection against filovirus diseases by a novel broad-spectrum nucleoside analogue BCX4430

T K Warren et al.

406 CELL BIOLOGY *Caenorhabditis elegans* pathways that surveil and defend mitochondria

Y Liu, B S Samuel, P C Breen & G Ruvkun SEE N&V P. 328

411 PLANT SCIENCE miRNAs trigger widespread epigenetically activated siRNAs from transposons in *Arabidopsis*

K M Creasey et al.

416 STRUCTURAL BIOLOGY Structural basis for translocation by AddAB helicase-nuclease and its arrest at χ sites

W W Krajewski et al.

420 CORRIGENDUM Ptpn11 deletion in a novel progenitor causes metachondromatosis by inducing hedgehog signalling

W Yang et al.

420 CORRIGENDUM Identification of pre-leukaemic haematopoietic stem cells in acute leukaemia

L I Shlush et al.

420 CORRIGENDUM Regulatory evolution through divergence of a phosphoswitch in the transcription factor CEBPB

V J Lynch, G May & G P Wagner