

CONTENTS

29 January 2015 / Vol 517 / Issue No 7536

THIS WEEK

EDITORIALS

527 ARCHAEOLOGY

Human history defies easy stories Skull discovery highlights the messy business of human evolution

527 POLICY

Senate vs science

A handful of Republicans accepting global warming is not a political victory

528 LAB LIFE

Technical support

Behind every successful lab is a team of technicians helping research to happen

529 Gather data to reveal true extent of doping in sport

Roger Pielke Jr

Without complete information, the shadow of suspicion hangs over clean athletes and great performances

RESEARCH HIGHLIGHTS

530 SELECTIONS FROM THE SCIENTIFIC LITERATURE



MYC link to longevity / Dammed rivers disrupted / Bird flight captured / How sodium goes bang / Papers with a flourish / Australopithecine Multicellular yeast

SEVEN DAYS

532 THE NEWS IN BRIEF

Volcano creates island in Tonga / Palestinian physicist freed / Tigers stage comeback in India / Doomsday Clock edges closer to midnight / Marine ecosystem under Antarctica

CAREERS

645 CAREER COUNSELLING

Pick a path

Many postdocs are unaware of the breadth of opportunity open to them they should take advice

647 CAREER BRIEFS

NEWS IN FOCUS



535 POLICY

Obama launches personal drive to tackle climate change

536 ROSETTA MISSION

Search for Philae comet lander faces dilemma

537 PSYCHOLOGY

Idea of 'smart unconscious' confronted with fresh challenge

538 OCEANOGRAPHY

US ocean sciences told to turn tide on research spending

540 HEALTH CARE

White House puts precision focus on targeted therapies

541 ARCHAEOLOGY

Skull fragment places humans and Neanderthals in close proximity

FEATURES



From snake milkers to glass-blowers, Nature celebrates the unsung heroes of the laboratory PAGE 542

COMMENT

547 CULTURAL HERITAGE

Save Libyan archaeology

Savino di Lernia

The Gaddafi regime abandoned Libya's archaeological heritage and without more help from the international community it will happen again

BOOKS & ARTS

SOCIOBIOLOGY

Altruists together

Herbert Gintis takes stock of two books on human behaviour PAGE 550



551 BOOKS IN BRIEF

CORRESPONDENCE

553 AAAS in safe hands / The science of predicting shale-gas production / Think 'soil' in 2015

554 Donald Metcalf (1929-2014)

Douglas Hilton



FUTURES 650 The puppet Michael Adam Robson

CONTENTS

29 January 2015 / Vol 517 / Issue No 7536

RESEARCH

NEW ONLINE

555 Papers published this week at nature.com

NEWS & VIEWS

556 STEM CELLS

Emergency back-up for lung repair Identification of a cell population that repairs severe alveolar damage Emma L Rawlins

SEE LETTERS P.616 & P.621

557 ASTROPHYSICS

Stellar clocks

Obtaining better estimates for the ages of Sun-like stars David Soderblom SEE LETTER P. 589

558 PLANT BIOLOGY

Seeing the wood and the trees

The gene regulatory network that controls xylem formation Anthony Bishopp & Malcolm J Bennett SEE ARTICLE P.571

559 PRECISION MEASUREMENT

Relativity tested with a split electron Testing Lorentz invariance by manipulating an electron wave packet V Alan Kostelecký SEE LETTER P. 592

CRISPR engineering turns on genes Using the CRISPR/Cas9 system to activate gene expression Seung Woo Cho & Howard Y Chang **SEE ARTICLE P.583**

562 EARTH SCIENCE

Free and forced climate variations The nature of short-term climate trends James Risbey SEE ARTICLE P.565

563 CANCER

Risk factors and random chances Investigating the variation in cancer incidence between tissues Dominik Wodarz & Ann G Zauber

ARTICLES

- 565 CLIMATE SCIENCE Forcing, feedback and internal variability in global temperature trends J Marotzke & P M Forster SEE N&V P.562
- 571 PLANT SCIENCE An Arabidopsis gene regulatory network for secondary cell wall synthesis M Taylor-Teeples et al. SEE N&V P.558



ON THE COVER

Head and neck cancers

Perception, a 'face built out of many lines' by Norwegian artist Espen Kluge. The Cancer Genome Atlas team presents a genome-wide overview of alterations and highlights critical genetic events of potential biological and clinical significance in head and neck squamous cell carcinomas with different human papillomavirus status PAGE 576

- 576 CANCER Comprehensive genomic characterization of head and neck squamous cell carcinomas The Cancer Genome Atlas Network
- 583 MOLECULAR BIOLOGY Genome-scale transcriptional activation by an engineered CRISPR-Cas9 complex S Konermann et al. SEE N&V P.560

LETTERS

- 589 ASTRONOMY A spin-down clock for cool stars from observations of a 2.5-billion-year-old cluster S Meibom et al. SEE N&V P.557
- 592 QUANTUM PHYSICS Michelson-Morley analogue for electrons using trapped ions to test Lorentz symmetry T Pruttivarasin et al. SEE N&V P.559
- 596 MATERIALS SCIENCE Anomalous dispersions of 'hedgehog' particles J H Bahng et al.
- 600 OHEMISTRY Metal-catalysed azidation of tertiary C-H bonds suitable for late-stage functionalization A Sharma & J F Hartwig

- 605 GEODYNAMICS Effects of electron correlations on transport properties of iron at Earth's core conditions P Zhang, R E Cohen & K Haule
- 608 GENOMICS Resolving the complexity of the human genome using singlemolecule sequencing MJP Chaisson et al.
- 612 TUBERCULOSIS Interception of host angiogenic signalling limits mycobacterial growth S H Oehlers et al.
- 616 STEM CELLS p63*Krt5* distal airway stem cells are essential for lung regeneration W Zuo et al. SEE N&V P.556
- 621 STEM CELLS Lineage-negative progenitors mobilize to regenerate lung epithelium after major injury A E Vaughan et al. SEE N&V P.556
- 626 CANCER IAPP-driven metabolic reprogramming induces regression of p53-deficient tumours in vivo A Venkatanarayan et al.
- 631 CELL BIOLOGY The mitotic checkpoint complex binds a second CDC20 to inhibit active APC/C D Izawa & J Pines
- 635 BIOCHEMISTRY Uncovering the polymerase-induced cytotoxicity of an oxidized nucleotide B D Freudenthal et al.
- 640 STRUCTURAL BIOLOGY Structural insight into autoinhibition and histone H3-induced activation of DNMT3A X Guo et al.

MATERIALS SCIENCE

In the mix

'Hedgehog' particles ease the path to unlikely colloidal solutions. PAGE 596



