

CONTENTS

23 April 2015 / Vol 520 / Issue No 7548

THIS WEEK

EDITORIALS

407 POLICY

Highway to health

Africa's plans for a CDC are not enough to address the region's health problems

407 ENVIRONMENT

Decoupled ideals

An 'ecomodernist manifesto' highlights the need for investment in clean energy

408 TECHNOLOGY

More from Moore

Wanted: novel physics to extend the life of Moore's law

WORLD VIEW

409 Why I teach evolution to Muslim students

Rana Dajani

Critical thinking is a crucial asset for future generations of scientists

RESEARCH HIGHLIGHTS

410 SELECTIONS FROM THE SCIENTIFIC LITERATURE

Supernovae recalibrated / Gut biodiversity / Antarctic ice shelf to go / No to phantom clinical trials / Hawk-moths' favourite flowers / Bacterial genes in sweet potato / Uncoordinated octopus



SEVEN DAYS

412 THE NEWS IN BRIEF

Cash boost for German science / E-cigarettes increase market share / Bid to save endangered porpoise / Japan blocks restart of nuclear reactors

CAREERS

575 COLUMN

Respect the report

Ingrid Eisenstadter

Once you've got a grant, you'll need to keep your funder up to date with all aspects of your progress

NEWS IN FOCUS



415 ECOLOGY

Decline in wolf numbers threatens to end 57-year project

416 PESTICIDES

Evidence mounts that neonicotinoids are harming bees

417 NEUROLOGY

Drug that repairs myelin sheath raises hope for treating multiple sclerosis

418 GEOLOGY

Oklahoma quakes linked to oil and gas operations

420 PLANETARY SCIENCE

Climate scientists join the hunt for habitable worlds

421 PALAEOANTHROPOLOGY

Artefacts put stone tools in the hands of hominins that predate *Homo*

FEATURES

422 FORENSIC SCIENCE

The soil sleuth

Meet the Scottish scientist who uses dirt to solve crimes



CHEMISTRY

Degrees of separation

The hunt is on for cheap and efficient ways to extract and recycle rare-earth elements **PAGE 426**

COMMENT

EVALUATION

Going metric

Ten principles to guide research assessment from Diana Hicks, Paul Wouters, Ludo Waltman, Sarah de Rijcke & Ismael Rafols **PAGE 429**



432 POLICY

Five priorities for the UN Sustainable Development Goals

Yonglong Lu, Nebojsa Nakicenovic, Martin Visbeck & Anne-Sophie Stevance
Data-gathering and evaluation networks need to be restructured

BOOKS & ARTS

434 ENVIRONMENTAL ECONOMICS

Pricing the planet

Nick Hanley

435 LIBRARY SCIENCE

The word on our archival future

Michael Lesk

CORRESPONDENCE



436 Newton's playlist / Dating the Anthropocene / Losing research data / China needs apps for environmental monitoring

FUTURES

578 Transference

Jennifer Campbell-Hicks

CONTENTS

23 April 2015 / Vol 520 / Issue No 7548

RESEARCH

NEW ONLINE

437 Papers published this week at nature.com

NEWS & VIEWS

438 DATING TECHNIQUES

Illuminating the past

The impact and future prospects of the optical dating technique

Richard G Roberts & Olav B Lian

439 STRUCTURAL BIOLOGY

Pain-sensing TRPA1 channel resolved

Structure of the TRPA1 ion channel

David E Clapham **SEE ARTICLE P.511**

441 OPTOMECHANICS

Listening to quantum grains of sound

Optical counting of phonons

Ivan Favero **SEE LETTER P.522**

442 EARTH SCIENCE

Landscape inversion by stream piracy

Low-relief landscapes in mountains caused by river-network reorganization

Jérôme Lavé **SEE LETTER P.526**

444 SENSORY SYSTEMS

The yin and yang of cortical oxytocin

Oxytocin mediates how female mice respond to cries from pups

Robert C Liu **SEE ARTICLE P.499**

445 REGENERATIVE BIOLOGY

Neuregulin-1 makes heart muscle

The NRG1-ERBB2 signalling pathway controls cardiomyocyte proliferation

Katherine E Yutzey

446 ECOLOGY

Shared ancestry predicts disease levels

Improving disease prediction by considering evolutionary relatedness

Helen M Alexander **SEE LETTER P.542**

ARTICLES

499 SOCIAL BEHAVIOUR **Oxytocin enables maternal behaviour by balancing cortical inhibition**

B J Marlin, M Mitre, J A D'amour,

M V Chao & R C Froemke **SEE N&V P.444**

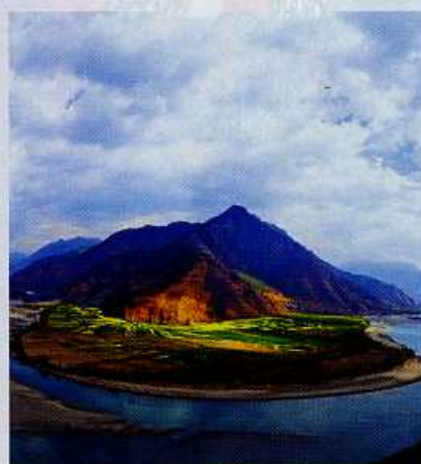
505 MOLECULAR BIOLOGY **CRISPR**

adaptation biases explain preference for acquisition of foreign DNA

A Levy et al.

511 STRUCTURAL BIOLOGY **Structure of**

the TRPA1 ion channel suggests



ON THE COVER

Shaping Shangri-La

The first bend of the Yangtze river, Yunnan Province, China. This dramatic scenery boasts up to 3 km of relief, but also high-elevation, low-relief valleys above the Yangtze, Mekong and Salween gorges. One such valley was inspiration for the mythical Shangri-La. High elevation, low relief surfaces or 'relict landscapes' were thought to be uplifted, old landscapes preserving past tectonic and environmental conditions. A new analysis of relict landscapes suggests that the high valleys may not be old passively uplifted surfaces. **PAGES 442 & 526**

regulatory mechanisms

C E Paulsen, J-P Armache, Y Gao,

Y Cheng & D Julius **SEE N&V P.439**

LETTERS

518 ASTRONOMY **Self-similar fragmentation regulated by magnetic fields in a region forming massive stars**

H-b Li et al.

522 OPTOMECHANICS **Phonon counting and intensity interferometry of a nanomechanical resonator**

J D Cohen et al. **SEE N&V P.441**

526 EARTH SCIENCE **In situ low-relief**

landscape formation as a result of river network disruption

R Yang, S D Willett & L Goren

SEE N&V P.442

530 GEOCHEMISTRY **Tungsten isotopic evidence for disproportional late accretion to the Earth and Moon**

M Touboul, I S Puchtel & R J Walker

534 GEOCHEMISTRY **Lunar tungsten isotopic evidence for the late veneer**

T S Kruijer, T Kleine, M Fischer-Gödde & P Sprung

538 PALAEOLOGY **Eocene primates of South America and the African origins of New World monkeys**

M Bond et al.

542 ECOLOGY **Phylogenetic structure and host abundance drive disease pressure in communities**

I M Parker et al. **SEE N&V P.446**

545 PLANT SCIENCES **Agrochemical control of plant water use using engineered abscisic acid receptors**

S-Y Park et al.

549 STEM CELLS **Exit from dormancy provokes DNA-damage-induced attrition in haematopoietic stem cells**

D Walter et al.

553 IMMUNOLOGY **Mitochondrial DNA stress primes the antiviral innate immune response**

A P West et al.

558 IMMUNOLOGY **Super-enhancers delineate disease-associated regulatory nodes in T cells**

G Vahedi et al.

563 CELL BIOLOGY **ATG14 promotes membrane tethering and fusion of autophagosomes to endolysosomes**

J Diao et al.

567 STRUCTURAL BIOLOGY **Structure of the *E. coli* ribosome-EF-Tu complex at <3 Å resolution by C_s-corrected cryo-EM**

N Fischer et al.

571 STRUCTURAL BIOLOGY **Hydrogens detected by subatomic resolution protein crystallography in a [NiFe] hydrogenase**

H Ogata, K Nishikawa & W Lubitz

SINO IMAGES/GETTY