

CONTENTS

18 April 2013 / Vol 496 / Issue No 7445

THIS WEEK

EDITORIALS

269 POLICY

Look after the pennies

The US must not waver from an evidence-based approach to spending

269 STEM CELLS

Smoke and mirrors

Italy's plan to deregulate stem-cell therapies is misguided and dangerous

270 HISTORY

Due credit

The *Nature* Podcast delves into 12 landmark papers from the archive

WORLD VIEW

271 Austerity-led brain drain is harming Greek science

Varvara Trachana

The university sector may never recover from an exodus of young researchers

RESEARCH HIGHLIGHTS

272 SELECTIONS FROM THE SCIENTIFIC LITERATURE

Pain in the brain / Biofilm as fertilizer / Price measures fish stocks / Plants hate deserts / Solar cell advance / Bedbug trap / Squids that glow

SEVEN DAYS

274 THE NEWS IN BRIEF

Health agencies launch bid to fight pneumonia and diarrhoea / Russia injects cash into space programme / IVF pioneer dies / Romania's research council resigns

CAREERS

387 REGULATORY SCIENCE

Researchers in the pipeline

Concern over food and drug safety means work for regulatory scientists

389 TURNING POINT

Adam de la Zerda found quantum physics ideal preparation for cancer research

NATUREJOBS ADVERTISING FEATURE

Spotlight on Switzerland

NEWS IN FOCUS



POLICY

2014 budget

Obama's spending plan backs translational research **PAGE 277**

281 CONSERVATION

Synthetic biologists seek ways to save the world

282 QUANTUM MECHANICS

Simplified theorem puts communication in context

283 GENETICS

Coelacanth genome sheds light on evolutionary tree

284 GLOBAL WARMING

Megadroughts prove problematic for climate models

FEATURES

286 ECOLOGY

Splinters of the Amazon

The legacy of Thomas Lovejoy's fragmented approach to forestry

PUBLIC HEALTH

Moving target

Getting vaccine to nomadic peoples proves a challenge for the effort to eradicate polio **PAGE 290**



COMMENT

293 SUSTAINABILITY

Choose satellites to monitor deforestation

Jim Lynch, Mark Maslin, Heiko Balzer & Martin Sweeting

Eyes in the sky would help curb illegal logging



295 EVOLUTIONARY THEORY

Heed the father of cladistics

Quentin Wheeler, Leandro Assis & Olivier Rieppel

Willi Hennig's approach to taxonomy embraced all kinds of data

BOOKS & ARTS

297 CAREERS

A guide to the life scientific

Stuart Pimm

298 MEDICAL HISTORY

Feeling no pain

John Carmody

299 PUBLISHING

The word on popular science

Josie Glausiusz



CORRESPONDENCE

300 Europe's appetite for African fish / Plan roads locally / Reagents not up to scratch / An app for soil data / China patent explained

FUTURES

392 Survivors and saviours

Philip T Starks

CONTENTS

18 April 2013 / Vol 496 / Issue No 7445

RESEARCH

NEW ONLINE

301 Papers published this week at nature.com

NEWS & VIEWS

302 ARCHAEOLOGY

A potted history of Japan

Lipid analysis suggests Late Pleistocene people used pots for cooking
Simon Kaner **SEE LETTER P.351**

303 ASTRONOMY

A cosmic growth spurt in an infant galaxy

Discovery of the highest-redshift infrared-selected starburst galaxy
Desika Narayanan & Chris Carilli
SEE LETTER P.329

304 SENSORY BIOLOGY

A whiff of genome

Polymorphic peptides activate distinct nasal sensory neurons
Thomas Boehm

306 PHYSICAL CHEMISTRY

Molecular motion watched

Ultrafast electron-diffraction study of a phase transition
Bradley Siwick & Eric Collet
SEE LETTER P.343

307 BIOGEOCHEMISTRY

Nitrogen deposition and forest carbon

The photosynthetic response of evergreen forests to nitrogen deposition
Beverly Law

308 COMPLEX SYSTEMS

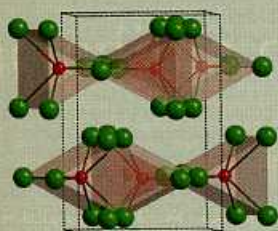
Spatial signatures of resilience

Recovery length can indicate distance

MATERIALS SCIENCE

Tough going

Crystalline iron carbide gains strength from being stressed. **PAGE 339**



ON THE COVER

Bay watch

An African coelacanth and diver in Sodwana Bay, South Africa. 'Rediscovered' in 1938, coelacanths were thought long extinct. The genome contains slowly evolving protein-coding genes, perhaps explaining why today's coelacanth looks so like its 300-million-year-old fossil ancestors.

PAGE 331



to a threshold in a complex system
Stephen R Carpenter **SEE LETTER P.355**

ARTICLES

311 GENOMICS The African coelacanth genome provides insights into tetrapod evolution

C T Amemiya et al.

317 STRUCTURAL BIOLOGY Gating of the TrkH ion channel by its associated RCK protein TrkA

Y Cao et al.

323 STRUCTURAL BIOLOGY The structure of the KtrAB potassium transporter

R S Vieira-Pires, A Szollosi & J H Morais-Cabral

LETTERS

329 ASTRONOMY A dust-obscured massive maximum-starburst galaxy at a redshift of 6.34

D A Riechers et al. **SEE N&V P.303**

334 PHYSICS High-fidelity readout and control of a nuclear spin qubit in silicon

J J Pla et al.

339 MATERIALS SCIENCE Unexpected strain-stiffening in crystalline solids

C Jiang & S G Srinivasan

343 PHYSICS Mapping molecular motions leading to charge delocalization with ultrabright electrons

M Gao et al. **SEE N&V P.306**

347 ENVIRONMENTAL SCIENCE Terrestrial water fluxes dominated by transpiration

S Jasechko et al.

351 ARCHAEOLOGY Earliest evidence for the use of pottery

O E Craig et al. **SEE N&V P.302**

355 ECOLOGY Slower recovery in space before collapse of connected populations

L Dai, K S Korolev & J Gore **SEE N&V P.308**

359 NEUROSCIENCE Rescuing cocaine-induced prefrontal cortex hypoactivity prevents compulsive cocaine seeking

B T Chen et al.

363 MORPHOGENESIS Visualization of an endogenous retinoic acid gradient across embryonic development

S Shimozone, T Imura, T Kitaguchi, S-i Higashijima & A Miyawaki

367 VIROLOGY A pathogenic picornavirus acquires an envelope by hijacking cellular membranes

Z Feng et al.

372 CELL BIOLOGY Landscape of the PARKIN-dependent ubiquitylome in response to mitochondrial depolarization

S A Sarraf et al.

377 BIOCHEMISTRY A conformational switch in HP1 releases auto-inhibition to drive heterochromatin assembly

D Canzio et al.

382 STRUCTURAL BIOLOGY Structural basis of kynurenine 3-monooxygenase inhibition

M Amaral et al.

386 CORRIGENDUM Serine is a natural ligand and allosteric activator of pyruvate kinase M2

B Chaneton et al.

386 CORRIGENDUM Mitochondrial Atp1f1 regulates haem synthesis in developing erythroblasts

D I Shah et al.