

# CONTENTS

25 June 2015 / Vol 522 / Issue No 7557

## THIS WEEK

### EDITORIALS

#### 391 ENVIRONMENT

##### Hope from the Pope

The Vatican's brave advances should be extended to family planning

#### 391 BIOMEDICINE

##### Data overprotection

Harmonization of privacy rules must not be allowed to threaten research

#### 392 ANTARCTICA

##### Life under the ice

The white continent is teeming with life

### WORLD VIEW

#### 393 Judge by actions, not words

Alessia Errico

My former boss is not a sexist

### RESEARCH HIGHLIGHTS

#### 394 SELECTIONS FROM THE SCIENTIFIC LITERATURE

Climate-change economics /

Elephant graveyards / Colon-cancer

gene switch / X-rated movies /

Computerized fact-checker / Left-

handed joys / Haze over Titan



### SEVEN DAYS

#### 396 THE NEWS IN BRIEF

First woman to head US national-security laboratory / Thailand announces first MERS case

## CAREERS

#### 507 NURSING RESEARCH

##### Nurses know best

Those who spend time at the bedside are well placed to do quality-of-life research

#### 509 TRADE TALK

##### Career doctor

Outside interests gave virology researcher Thomas Magaldi an ideal CV for a career outside the lab

### nature events directory

Your guide to global scientific events and courses in 2015–2016

## NEWS IN FOCUS



#### 399 MICROBIOLOGY

The microbes in urban environments emerge from the shadows

#### 400 ECOLOGY

Bacteria trialled as a way to protect bats from white-nose syndrome

#### 401 SPACE

Astronomers claim to have glimpsed first-generation stars

#### 402 PLANETARY SCIENCE

Sentinel mission struggling to find funds to catalogue near-Earth asteroids

#### 403 ETHICS

Earth science embroiled in conflict-of-interest debate

#### 404 ANCESTRY

Sequencing of 'Kennewick Man' genome rekindles repatriation dispute

## FEATURES



### SUPERLABS

## Sir Paul's cathedral

Will Paul Nurse's gamble on the Francis Crick Institute pay off? **PAGE 406**

#### 410 NEUROSCIENCE

##### The hard science of oxytocin

Researchers dispel the myth of a 'cuddle' chemical

## COMMENT

### ETHICS

## Science can't solve it

Society, not just researchers, must decide whether advances are ready for public use, says Daniel Sarewitz **PAGE 413**



#### 415 BIOTECHNOLOGY

##### Move beyond differences

Charis Thompson

Effective governance of gene-editing research will require a melding of perspectives

### BOOKS & ARTS

#### 416 ENVIRONMENTAL POLICY

##### Legislation left out in the cold

Mark Carey

#### 417 BOOKS IN BRIEF

#### 418 PLANETARY SCIENCE

##### Space-rock alert

Alexandra Witze

### CORRESPONDENCE

419 Political shadow over Russian science / India's research sector / Misconduct behind a language barrier / Sanctions harm Iran's health care

### OBITUARY

#### 420 John Forbes Nash (1928–2015)

Martin A Nowak

### FUTURES

#### 512 Heart worm

JJ Roth

# CONTENTS

25 June 2015 / Vol 522 / Issue No 7557

## RESEARCH

### NEW ONLINE

421 Papers published this week at nature.com

### NEWS & VIEWS

#### 422 ASTROPHYSICS

##### Dust-poor galaxies at early times

Galaxies of a distant era contained less dust than expected

Veronique Buat **SEE LETTER P.455**

#### 423 NEURODEGENERATION

##### Evolved protection against human prions

A homozygous genetic variant protects against human prion diseases

Glenn Telling **SEE LETTER P.478**

#### 424 PLANT SCIENCE

##### Precision positioning with peptides

Stomatal patterning is regulated by competition between two peptides

Sacco de Vries **SEE ARTICLE P. 439**

#### 425 CLIMATE SCIENCE

##### The dynamics of temperature extremes

Temperature extremes linked to atmospheric circulation patterns

Theodore G Shepherd **SEE LETTER P.465**

#### 427 BIOCHEMISTRY

##### Unexpected role for vitamin B2

A cofactor derived from riboflavin

Catherine F Clarke & Christopher M Allan  
**SEE LETTERS P.497 & P.502**

#### 428 CELL METABOLISM

##### Sugar for sight

RdCVF protein increases glucose uptake in photoreceptors

Connie Cepko & Claudio Punzo

### REVIEW

#### 431 ECOLOGY The changing form of Antarctic biodiversity

S L Chown et al.

### ARTICLES

439 **PLANT SCIENCES** Competitive binding of antagonistic peptides fine-tunes stomatal patterning  
J S Lee et al. **SEE N&V P.424**

444 **CARDIOVASCULAR DISEASE** HIF-driven SF3B1 induces KHK-C to enforce fructolysis and heart disease  
P Mirtschink et al.

450 **CELL BIOLOGY** Atomic structure of the



ON THE COVER

## Double protection

This adapted image shows condensed mitotic chromosomes (blue); co-localization of telomeric TTAGGG repeats (green) and a DNA damage marker (red) indicates that telomeres are recognized as damage in cells that spontaneously arrest in mitosis during crisis. Cells forming a tumour must overcome two barriers — senescence and a proliferative block known as crisis. **PAGE 492**

#### APC/C and its mechanism of protein ubiquitination

L Chang, Z Zhang, J Yang, S H McLaughlin & D Barford

### LETTERS

455 **ASTROPHYSICS** Galaxies at redshifts 5 to 6 with systematically low dust content and high [C II] emission  
P L Capak et al. **SEE N&V P.422**

459 **PLANETARY SCIENCE** A giant comet-like cloud of hydrogen escaping the warm Neptune-mass exoplanet GJ 436b  
D Ehrenreich et al.

462 **SEMICONDUCTORS** Linking high harmonics from gases and solids  
G Vampa et al.

465 **ATMOSPHERIC SCIENCE** Contribution of changes in atmospheric circulation patterns to extreme temperature trends  
D E Horton et al. **SEE N&V P. 425**

470 **EVOLUTION** Sexual selection protects against extinction  
A J Lumley et al.

474 **STEM CELLS** PPAR- $\alpha$  and glucocorticoid receptor synergize to promote erythroid progenitor self-renewal  
H-Y Lee et al.

478 **NEURODEGENERATION** A naturally occurring variant of the human prion protein completely prevents prion disease  
E A Asante et al. **SEE N&V P.423**

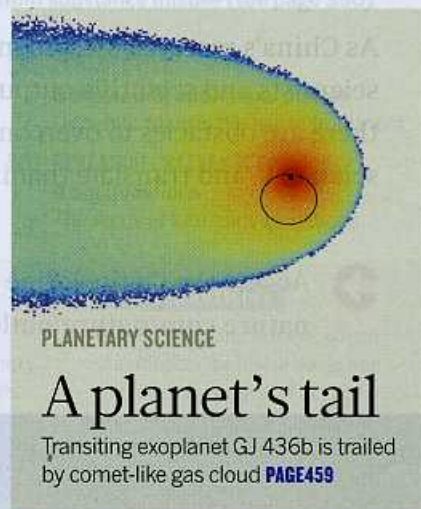
482 **CELL BIOLOGY** The *Drosophila* TNF receptor Grindelwald couples loss of cell polarity and neoplastic growth  
D S Andersen et al.

487 **IMMUNOLOGY** Viraemia suppressed in HIV-1-infected humans by broadly neutralizing antibody 3BNC117  
M Caskey et al.

492 **CELL BIOLOGY** Cell death during crisis is mediated by mitotic telomere deprotection  
M T Hayashi, A J Cesare, T Rivera & J Karlseder

497 **BIOCHEMISTRY** New cofactor supports  $\alpha,\beta$ -unsaturated acid decarboxylation via 1,3-dipolar cycloaddition  
K A P Payne et al. **SEE N&V P.427**

502 **BIOCHEMISTRY** UbiX is a flavin prenyltransferase required for bacterial ubiquinone biosynthesis  
M D White et al. **SEE N&V P.427**



PLANETARY SCIENCE

## A planet's tail

Transiting exoplanet GJ 436b is trailed by comet-like gas cloud **PAGE 459**

ILLUSTRATION BY JAMIE SIMON, THE SALK INSTITUTE