

# CONTENTS

12 January 2012 / Vol 481 / Issue No 7380

## THIS WEEK

### EDITORIALS

#### 113 NUCLEAR POWER

##### Get tough on nuclear safety

The Fukushima disaster means that the nuclear industry needs fresh standards

#### 113 UK SCIENCE

##### A long stretch

Can the UK government's plans for new-style universities be realized without investment?

#### 114 WHALING

##### Whales for sale

Quota trading may be the best way to save the whale

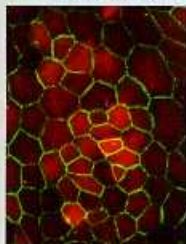
### WORLD VIEW

#### 115 Don't censor life-saving science

Peter Palese

Restricting access to research on bird flu does not serve the greater good

### RESEARCH HIGHLIGHTS



#### 116 SELECTIONS FROM THE SCIENTIFIC LITERATURE

Life without centrosomes / Extinction threat grows / Why see in colour? / Lost connections in the brain / Making silk

### SEVEN DAYS

#### 118 THE NEWS IN BRIEF

China improves information on Beijing smog / Forest fires ravage national park in Chile / Airlines protest over Europe's emissions fee / Bristol-Myers Squibb joins the drive for hepatitis C drugs / China endures severe drought

## CAREERS

#### 225 BRIDGE FUNDING

##### How to stay afloat

There are ways to bridge that funding gap — but it's tough out there

#### 227 TURNING POINT

Europe beckons for climate researcher Saffron O'Neill despite the air miles

#### 227 CAREER BRIEFS

## NEWS IN FOCUS



### ENERGY

## Power play

France sets high bar for nuclear safety

PAGE 121

#### 123 POLICY

Greece pins hopes on university reforms

#### 124 ECONOMICS

Financial cost of natural disasters soars

#### 125 PUBLIC HEALTH

US clamps down on use of antibiotics on farm animals

#### 127 ASTRONOMY

Dutch radio telescope takes pole position as probe for early Universe

#### 128 THERAPEUTICS

US centre for translational medicine gears up for action

## FEATURES



#### 130 STEM CELLS

##### Never say die

Can Advanced Cell Technology bring embryonic stem-cell therapies to the clinic?

#### 134 MISCONDUCT

##### Zero tolerance

A Chinese university's drive to clean up its act

## COMMENT

#### 137 CLIMATE CHANGE

##### Deadline 2015

Michael Jacobs

It's time to prepare for a climate summit meeting to set new policy goals

#### 139 CONSERVATION

##### A market approach to saving the whales

Christopher Costello, Leah R Gerber & Steven Gaines

The toll of whaling could be reduced by allowing quotas to be bought and sold

## BOOKS & ARTS

#### 141 CONSERVATION

##### Harpoons and heartstrings

Philip Hoare

#### 142 ENERGY

##### Curbing urban greed

David Orr

#### 143 BOOKS IN BRIEF

### Q&A

## Maestro of the swarm

Why acoustic artist Robin Meier recruits starlings and ants as his assistants PAGE 144



## CORRESPONDENCE

145 Global genomic health-check / Flood control / Sun and wind could power India / A manufactured MMR dispute

## FUTURES

#### 230 The driver

Rahul Kanakia



# CONTENTS

12 January 2012 / Vol 481 / Issue No 7380

## RESEARCH

### NEW ONLINE

- 147 Papers published this week at [nature.com](http://nature.com)

### NEWS & VIEWS

#### 148 BIOMECHANICS

**Leaping lizards and dinosaurs**  
Aerial lizard manoeuvres  
R McNeill Alexander **SEE LETTER P.181**

#### 149 ASTROPHYSICS

**Progenitors of type Ia supernovae**  
No sign of a companion star for a type Ia supernova remnant  
Pilar Ruiz-Lapuente  
**SEE LETTER P.164**

#### 150 ANGELMAN SYNDROME

**Drugs to awaken a paternal gene**  
Use of topoisomerase inhibitors to induce expression of *UBE3A* gene  
Arthur L Beaudet **SEE LETTER P.185**

#### 152 APPLIED PHYSICS

**Nanowire electronics comes of age**  
Three-dimensional nanowire structures gain ground  
Tomás Palacios

#### 153 EARTH SCIENCE

**Limits of the power law**  
Multi-scale modelling of the deformation of magnesium oxide  
Andrew M Walker  
**SEE LETTER P.177**

#### 154 COGNITION

**Your face looks familiar**  
Wasps learn to identify their peers  
Lars Chittka & Adrian Dyer

### ARTICLE

- 157 **CANCER** The genetic basis of early T-cell precursor acute lymphoblastic leukaemia  
J Zhang et al.

### LETTERS

- 164 **ASTRONOMY** An absence of ex-companion stars in the type Ia supernova remnant SNR 0509-67.5  
B E Schaefer & A Pagnotta  
**SEE N&V P.149**
- 167 **ASTRONOMY** One or more bound planets per Milky Way star from microlensing observations  
A Cassan et al.



#### ON THE COVER

## Giant leap

This agama lizard, leaping to a vertical surface from a low-friction vault, is using its tail to stabilize its trajectory. This 'swinging appendage' method may have been used by velociraptors, and is ideal for incorporation into highly manoeuvrable tailed robots.

**PAGES 148 & 181**

- 170 **PHYSICS** Implementation of a Toffoli gate with superconducting circuits  
A Fedorov, L Steffen, M Baur, M P da Silva & A Wallraff
- 173 **CHEMISTRY** Charge order and three-site distortions in the Verwey structure of magnetite  
M S Senn, J P Wright & J P Attfield
- 177 **GEOPHYSICS** Modelling the rheology of MgO under Earth's mantle pressure, temperature and strain rates  
P Cordier, J Amodeo & P Carrez  
**SEE N&V P.153**
- 181 **EVOLUTION** Tail-assisted pitch control in lizards, robots and dinosaurs  
T Libby et al. **SEE N&V P.148**
- 185 **NEUROSCIENCE** Topoisomerase inhibitors unsilence the dormant allele of *Ube3a* in neurons  
H-S Huang et al. **SEE N&V P.150**
- 190 **CANCER** A microRNA regulon that mediates endothelial recruitment and metastasis by cancer cells  
K J Png, N Halberg, M Yoshida & S F Tavazoie
- 195 **STEM CELLS** *Ars2* maintains neural stem-cell identity through direct

#### transcriptional activation of *Sox2*

C Andreu-Agullo, T Maurin, C B Thompson & E C Lai

- 199 **IMMUNOLOGY** Acquisition of a multifunctional IgA<sup>+</sup> plasma cell phenotype in the gut  
J H Fritz et al.
- 204 **MICROBIOLOGY** Cysteine methylation disrupts ubiquitin-chain sensing in NF- $\kappa$ B activation  
L Zhang et al.
- 209 **CELL BIOLOGY** Basic amino-acid side chains regulate transmembrane integrin signalling  
C Kim et al.
- 214 **STRUCTURAL BIOLOGY** Subnanometre-resolution structure of the intact *Thermus thermophilus* H<sup>+</sup>-driven ATP synthase  
W C Y Lau & J L Rubinstein
- 219 **STRUCTURAL BIOLOGY** An unanticipated architecture of the 750-kDa  $\alpha_6\beta_6$  holoenzyme of 3-methylcrotonyl-CoA carboxylase  
C S Huang, P Ge, Z H Zhou & L Tong
- 224 **ERRATUM** Thermalization and its mechanism for generic isolated quantum systems  
M Rigol, V Dunjko & M Olshanii

#### STRUCTURAL BIOLOGY

## Power pack

The structure of the molecule that powers rotary ATPases. **PAGE 214**

