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##### Play nicely

Digital companies are trying to make the Internet a less toxic place

#### 549 POLICY

##### Time out

Daylight-saving change highlights the conflict with our internal clocks

#### 550 HEALTH

##### Honey trap

Psychology may be able to help the fight against obesity

### WORLD VIEW

#### 551 Sugar tax could sweeten a market failure

Adam Briggs

Policy may help to curb consumption of foods that carry large carbon footprints

### RESEARCH HIGHLIGHTS

#### 552 SELECTIONS FROM THE SCIENTIFIC LITERATURE

Birth of a planet / Yosemite rocks / Tumour-cell reservoirs / Basketball menagerie / Foot-feathering genes / Zika virus in the Americas / Zebrafish of many colours



### SEVEN DAYS

#### 554 THE NEWS IN BRIEF

Hydrogen seen on Ceres / Canada boosts science spending / Japan confirms scientific whaling / Philippines launches microsatellite

## CAREERS

#### 669 TECHNOLOGY

##### Smartphone science

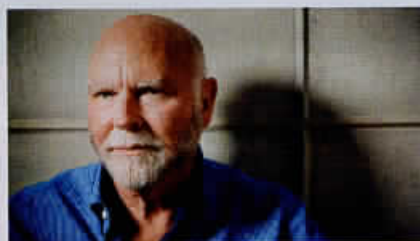
A global network and computing power just waiting for your experiment

#### 671 TURNING POINT

##### Reactor manager

Plasma physicist Thomas Klinger thinks nuclear fusion power will be a practical proposition — in the long run

## NEWS IN FOCUS



#### 557 BIOTECHNOLOGY

Venter's 'minimal cell' raises stakes in race towards synthetic life

#### 559 POLITICS

Nature's survey reveals that scientists support Britain staying in the EU

#### 560 MEDICAL RESEARCH

Transgender teenagers tracked in major study

#### 561 FUNDING

US biological research collections left in limbo by budget freeze

#### 562 CLIMATE

Global warming promises bleak future for Antarctic ice sheet

## FEATURES



### PHYSICS

## A day in the life

24 hours at the synchrotron that never sleeps

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#### 568 PSYCHOLOGY

##### Good gaming

Scientists are hoping to tame toxic behaviour in the world's biggest online game

## COMMENT

### TECHNOLOGY

## Lost skills

Tools that allow us to find our way automatically are eroding our natural navigation abilities [PAGE 573](#)



### BOOKS & ARTS

#### 576 FILM

##### In search of Ramanujan

Andrew Robinson

#### 577 PSYCHOLOGY

##### Time piece

Hedderik van Rijn

#### 578 AGRICULTURE

##### Future farming

Anthony King

#### 579 SOCIETY

##### Inching towards equality

Athene Donald

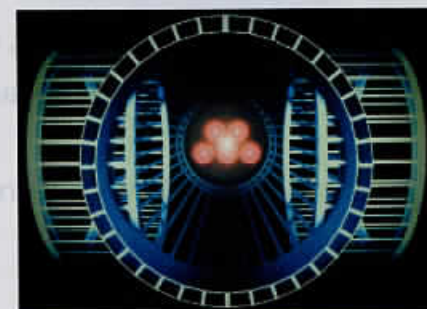
### CORRESPONDENCE

580 Blocking Alzheimer's transfer / Australia feeling the heat / Where EU grants go / Germany costly for animal studies / Brazil poor on mine safety

### FUTURES

#### 674 Tailchaser

Paul Currian





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## RESEARCH

### NEW ONLINE

581 Papers published this week at nature.com

### NEWS & VIEWS

#### 582 FORUM: CELL BIOLOGY

##### Calcium contradictions in cilia

A discussion of evidence against  $\text{Ca}^{2+}$ -based mechanosensation in cilia  
Dominic P Norris; Peter K Jackson  
SEE LETTER P.656

#### 583 CANCER IMMUNOTHERAPY

##### Killers on sterols

Increased membrane cholesterol levels boost the activity of  $\text{CD8}^+$  T cells  
Michael L Dustin  
SEE LETTER P.651

#### 585 APPLIED PHYSICS

##### Gravity measurement on chips

A miniature gravimeter based on microelectromechanical systems  
Hazel Rymmer  
SEE LETTER P.614

#### 586 RESPIRATORY DISORDERS

##### Ironing out smoking-related airway disease

Analysing pathways involved in chronic obstructive pulmonary disease  
Thomas J Mariani

#### 587 PHYSICAL CHEMISTRY

##### A close-up view of coupled molecules

Visualization of dipole-dipole interactions at the atomic level  
Guillaume Schull  
SEE LETTER P.623

#### 588 NEUROSCIENCE

##### Making risk-takers settle

Neurons in the nucleus accumbens modulate risk-seeking behaviour in rats  
Nick G Hollon & Paul E M Phillips  
SEE LETTER P.642

### ARTICLES

#### 591 CLIMATE SCIENCES Contribution of Antarctica to past and future sea-level rise

R M DeConto & D Pollard

#### 598 CELL BIOLOGY Cullin-RING ubiquitin E3 ligase regulation by the COP9 signalosome

S Cavadini et al.

#### 604 STRUCTURAL BIOLOGY Structure of promoter-bound TFIID and



### ON THE COVER

## Rising tides

A Landsat 8 natural-colour mosaic of the ice cliff at the terminus of Thwaites Glacier, West Antarctica, on 9 January 2016. Robert DeConto and David Pollard use a newly improved numerical ice-sheet model calibrated to Pliocene and last interglacial sea-level estimates to develop projections of Antarctica's evolution over the next five centuries, driven by a range of greenhouse gas scenarios. **PAGE 591**

### model of human pre-initiation complex assembly

R K Louder et al.

### LETTERS

#### 610 ASTROPHYSICS R-process enrichment from a single event in an ancient dwarf galaxy

A P Ji, A Frebel, A Chiti & J D Simon

#### 614 SOLID EARTH SCIENCES Measurement of the Earth tides with a MEMS gravimeter

R P Middlemiss et al. **SEE N&V P.585**

#### 618 NANOSCALE MATERIALS Soft surfaces of nanomaterials enable strong phonon interactions

D Bozyigit et al.

#### 623 OPTICAL PHYSICS Visualizing coherent intermolecular dipole-dipole coupling in real space

Y Zhang et al. **SEE N&V P.587**

#### 628 GEOCHEMISTRY Komatiites reveal a hydrous Archaean deep-mantle reservoir

A V Sobolev et al.

#### 633 CLIMATE-CHANGE ECOLOGY Boreal and temperate trees show strong acclimation of respiration to warming

P B Reich et al.

#### 637 EVOLUTIONARY BIOLOGY The mid-developmental transition and the evolution of animal body plans

M Levin et al.

#### 642 COGNITIVE NEUROSCIENCE Nucleus accumbens D2R cells signal prior outcomes and control risky decision-making

K A Zalocusky et al. **SEE N&V P.588**

#### 647 ENDOCRINOLOGY Bidirectional electromagnetic control of the hypothalamus regulates feeding and metabolism

S A Stanley et al.

#### 651 CANCER IMMUNOTHERAPY Potentiating the antitumour response of $\text{CD8}^+$ T cells by modulating cholesterol metabolism

W Yang et al. **SEE N&V P.583**

#### 656 CELL BIOLOGY Primary cilia are not calcium-responsive mechanosensors

M Delling et al. **SEE N&V P.582**

#### 661 CELL BIOLOGY $\beta$ -Arrestin biosensors reveal a rapid, receptor-dependent activation/deactivation cycle

S Nuber et al.

#### 665 CELL BIOLOGY The conformational signature of $\beta$ -arrestin2 predicts its trafficking and signalling functions

M-H Lee et al.

### SOLID EARTH SCIENCES

## Tide mark

This gravimeter-on-a-chip can detect the tides — and fly. **PAGE 614**



KNUT CHRISTIANSON, USING DATA AVAILABLE FROM THE US GEOLOGICAL SURVEY