

# CONTENTS

10 January 2019 / Vol 565 / Issue No 7738

## THIS WEEK

### EDITORIALS

#### 133 CONSERVATION

##### Save the whales, again

Japan's exit from whaling commission offers opportunity for a fresh start

#### 134 MEDICAL RESEARCH

##### Brain cancer boost

New approach to treating brain tumours deploys the body's immune defences

#### 134 ANNOUNCEMENT

##### FAIR data in Earth science

*Nature* endorses push for discoverable outputs by requiring data sharing

### WORLD VIEW

#### 135 Human genome editing: ask whether, not how

*J Benjamin Hurlbut*

Society at large must have a say in the debate over CRISPR twins

### RESEARCH HIGHLIGHTS

#### 136 SELECTIONS FROM THE SCIENTIFIC LITERATURE



Rubber rise leads to forest fall / Pilot whale dialects / Hawaiian ice keeps its cool / New Zealand's ancient roots

### SEVEN DAYS

#### 138 THE NEWS IN BRIEF

US science adviser / UK universities and Brexit / Wonky asteroid / Top scientific search terms of 2018

## CAREERS

#### 255 MENTORS

##### Southern comfort

*Nature's* mentoring awards focus on supportive scientists in the US South

#### 257 COLUMN

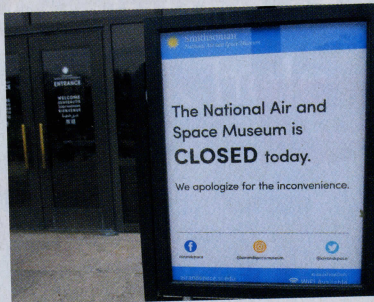
##### How to land a research internship

The importance of a solid CV and personalized recommendation letters

## NEWS IN FOCUS

#### 141 POLITICS

US government shutdown leaves scientists in despair



#### 142 PLANETARY SCIENCE

'Snowman' world snapped by NASA craft is farthest object ever explored

#### 143 GEOPHYSICS

Rapid shift in Earth's north magnetic pole sends global navigation off track

#### 144 AGRICULTURE

Quest to breed a better crop of cassava begins in Nigeria

#### 146 SPACE

China's Chang'e-4 probe becomes first to touch down on the Moon's far side

## FEATURE



### CLINICAL TRIALS

## A father's fight

Nick Sireau's battle to find an effective treatment for his sons' rare genetic condition **PAGE 148**

## COMMENT



### ECONOMICS

## One ring to rule all

Globalize the circular economy to conserve resources and energy, say Yong Geng and colleagues **PAGE 153**

### BOOKS & ARTS

#### 156 MATERIALS SCIENCE

##### The hunt for quasicrystals

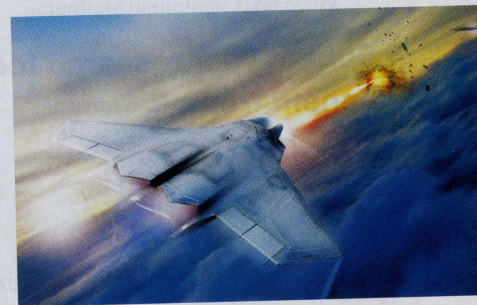
*Sharon Glotzer*

#### 157 BOOKS IN BRIEF

#### 158 PHYSICS

##### Dreaming of death rays

*Luke Fleet*



### CORRESPONDENCE

161 Unique IDs for China's reviewers / Brain-tumour treatments / South Africa fends off invasive plants / Arctic needs more than a treaty / 'Stolen colon' boost to cancer awareness

### FUTURES

260 Tomorrow, the sunset will be blue

*Jeremy Szal*

# CONTENTS

10 January 2019 / Vol 565 / Issue No 7738

## RESEARCH

### NEW ONLINE

163 Papers published this week at nature.com

### NEWS & VIEWS

#### 164 ASTROPHYSICS

##### Black hole goes with the flow

Reverberation mapping applied to a stellar-mass black hole

Daryl Haggard [SEE LETTER P.198](#)

#### 165 COMPUTATIONAL BIOCHEMISTRY

##### Designer protein delivers signal of choice

A cytokine mimic has been computationally designed from scratch

E Yvonne Jones [SEE ARTICLE P.186](#)

#### 166 COMPUTER SCIENCE

##### Unprovability comes to machine learning

Evidence of a limitation in certain machine-learning algorithms

Lev Reyzin

#### 167 METABOLISM

##### Fat cells with a sweet tooth

Glycolytic thermogenic fat identified in mice

Wenfei Sun & Christian Wolfrum

[SEE ARTICLE P.180](#)

#### 168 EARTH SCIENCE

##### Experiments cast light on mantle mineralogy

The properties of a basalt-derived mineral at high pressures

Johannes Buchen [SEE LETTER P.218](#)

#### 170 IMMUNOTHERAPY

##### Immune cells track hard-to-target tumours

Personalized vaccines boost immune responses targeting brain tumours

Neeha Zaidi & Elizabeth M Jaffee

[SEE LETTERS P.234 & P.240](#)

### ARTICLES

#### 173 CONDENSED-MATTER PHYSICS

##### Electromagnetic and gravitational responses of photonic Landau levels

N Schine, M Chalupnik, T Can, A Gromov & J Simon

#### 180 METABOLISM

##### Thermal stress induces glycolytic beige fat formation via a myogenic state

Y Chen et al. [SEE N&V P.167](#)

#### 186 COMPUTATIONAL BIOCHEMISTRY

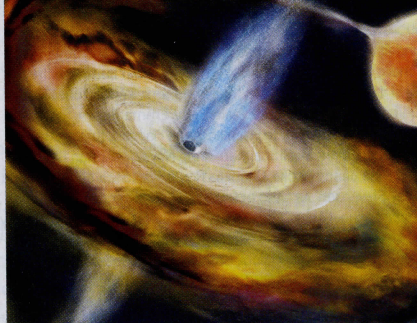
##### De novo design of potent and

### ON THE COVER

## Evolution of a black hole

An artist's impression of a black hole that has started to accrete material from a nearby star. Erin Kara and colleagues have studied a newly identified black hole transient. Their results suggest that the transition from a hard to a soft X-ray spectrum at this point results from a reduction in the corona rather than a change in the accretion disk's radius.

[PAGES 164 & 198](#)



##### selective mimics of IL-2 and IL-15

D-A Silva et al. [SEE N&V P.165](#)

#### 192 STRUCTURAL BIOLOGY

##### Structural basis of Notch recognition by human $\gamma$ -secretase

G Yang et al.

### LETTERS

#### 198 ASTROPHYSICS

##### The corona contracts in a black-hole transient

E Kara et al. [SEE N&V P.164](#)

#### 202 STELLAR EVOLUTION

##### Core crystallization and pile-up in the cooling sequence of evolving white dwarfs

P-E Tremblay et al.

#### 206 EXOPLANETS

##### A warped disk around an infant protostar

N Sakai et al.

#### 209 OPTICAL PHYSICS

##### The ultrafast Einstein-de Haas effect

C Dornes et al.

#### 213 MATERIALS CHEMISTRY

##### Chemical control of structure and guest uptake by a

##### conformationally mobile porous material

A P Katsoulidis et al.

#### 218 EARTH SCIENCE

##### Sound velocity of CaSiO<sub>3</sub> perovskite suggests the presence of basaltic crust in the Earth's lower mantle

S Gréaux et al. [SEE N&V P.168](#)

#### 222 CONSERVATION BIOLOGY

##### The global distribution and trajectory of tidal flats

N J Murray et al.

#### 226 PALAEOANTHROPOLOGY

##### U-Pb-dated flowstones restrict South African early hominin record to dry climate phases

R Pickering et al.

#### 230 MICROBIAL GENETICS

##### Genomic insights into the 2016–2017 cholera epidemic in Yemen

F-X Weill et al.

#### 234 IMMUNOTHERAPY

##### Neoantigen vaccine generates intratumoral T cell responses in phase Ib glioblastoma trial

D B Keskin et al. [SEE N&V P.170](#)

#### 240 IMMUNOTHERAPY

##### Actively personalized vaccination trial for newly diagnosed glioblastoma

N Hilf et al. [SEE N&V P.170](#)

#### 246 NEUROIMMUNOLOGY

##### Brain regulatory T cells suppress astrogliosis and potentiate neurological recovery

M Ito et al.

#### 251 GENOMICS

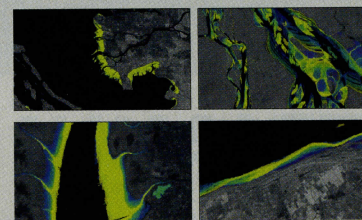
##### Genomic encoding of transcriptional burst kinetics

A J M Larsson et al.

### CONSERVATION BIOLOGY

## Tidal flats

Mapping shows changes in tidal flats between 1984 and 2016. [PAGE 222](#)



COVER IMAGE: AURORE SIMONNET