# CONTENTS

6 June 2019 / Vol 570 / Issue No 7759

### THIS WEEK

### **EDITORIALS**

5 HEALTH CARE

#### Break with tradition

More evidence is needed for traditional Chinese remedies despite WHO listing

### **5 RESEARCH MANAGEMENT**

### Integrity for all

Don't conflate research integrity and misconduct: everyone can improve

### **WORLD VIEW**



7 Make reports of research misconduct public *C K Gunsalus*Secrecy over investigations squanders opportunities for institutions to learn and progress

### **RESEARCH HIGHLIGHTS**

## 8 SELECTIONS FROM THE SCIENTIFIC LITERATURE

Fossil fish followed school rules / Cool catalysts / Night light's effects / Surround-sound tracking / Ancient lava flow on Mars



### **SEVEN DAYS**

### 10 THE NEWS IN BRIEF

Hungarian science march / South African ministries merge / Huawei ban rescinded / Plan S delayed / Ebola cases double

### CAREERS

### 127 FUNDING

Hunt for hidden research riches

Why it pays to think outside the box when it comes to grant-funding sources

### **NEWS IN FOCUS**

### 13 GEOPOLITICS

Chinese American scientists uneasy amid US government crackdown



15 GEOLOGY

Japan's research ship drills deeper into the sea floor than ever before

### 16 PUBLISHING

Unusual peer-review experiment seeks to tackle reproducibility in anaesthesia

### 16 GENE EDITING

Anti-HIV mutation might shorten lives of CRISPR twins



17 CELL BIOLOGY

Researchers use glue ingredient to grow large numbers of blood stem cells

### **FEATURE**



### COMMENT



PUBLISHING

# Make all data FAIR

Require and support best practice in releasing and sharing results, urge Shelley Stall and colleagues PAGE 27

30 IMPACT

Credit data generators for data reuse Heather H Pierce et al. Enduring links will lead to a virtuous scholarly cycle

### **BOOKS & ARTS**

33 FICTION

A digital god: Neal Stephenson rides again
Paul McEuen

34 PHYCOLOGY

A brief history of slime Christopher Howe



35 BOOKS IN BRIEF

### CORRESPONDENCE

36 Preprints and *Nature*'s dark past /
Two views on nuclear-energy risks and climate / Marine protection in France /
Polar-research priorities

### **FUTURES**

132 Twenty-six seconds on Tetonia-3
Wendy Nikel

## CONTENTS

6 June 2019 / Vol 570 / Issue No 7759

### RESEARCH

### **NEW ONLINE**

37 Papers published this week at nature.com

### **NEWS & VIEWS**

38 GEOPHYSICS

**Earth's early evolution explored**An explanation for the advent and evolution of plate tectonics on Earth Whitney Behr SEE ARTICLE P.52

39 MATERIALS SCIENCE

The thinnest sheets of metal oxides
The fabrication of free-standing
monolayers of perovskite oxides
Yorick A Birkhölzer & Gertjan Koster
SEE LETTER P.87

**40 NEUROSCIENCE** 

### Closing in on what motivates motivation

Dopamine release can occur independently of neuronal activation Margaret E Rice SEE ARTICLE P.65

42 EVOLUTION

### Look and learn

Male hummingbirds learn songs and visual displays from others Natasha Bray

43 EVOLUTIONARY BIOLOGY

## Fearful effects on ecological competitors

Support for the refuge-competition model of species coexistence
Oswald J Schmitz SEE ARTICLE P.58

### **PERSPECTIVE**

45 NUCLEAR PHYSICS Revisiting the cold case of cold fusion C P Berlinguette et al.





ON THE COVER

# Community crisis

Robert Pringle and his team studied the effects of introducing predators into island ecosystems by importing combinations of a competitive species and a top predator to 16 Bahamian islands. The top predator destabilized coexistence between native and introduced species, defying the idea that introducing a top predator enhances diversity. **PAGES 43 & 58** 

### **ARTICLES**

52 GEOPHYSICS Surface erosion events controlled the evolution of plate tectonics on Earth

S V Sobolev & M Brown SEE N&V P.38

- 58 EVOLUTIONARY BIOLOGY Predatorinduced collapse of niche structure and species coexistence R M Pringle et al. SEE N&V P.43
- 65 NEUROSCIENCE Dissociable dopamine dynamics for learning and motivation A Mohebi et al. SEE N&V P.40
- 71 GENOMICS Exome sequencing of 20,791 cases of type 2 diabetes and 24,440 controls

  J Flannick et al
- 77 DEVELOPMENTAL BIOLOGY Molecular recording of mammalian embryogenesis

M M Chan et al.

### **LETTERS**

83 ASTRONOMY A cool accretion disk around the Galactic Centre black hole

- E M Murchikova, E S Phinney, A Pancoast & R D Blandford
- 87 MATERIALS SCIENCE Freestanding crystalline oxide perovskites down to the monolayer limit

DJi et al. SEE N&V P.39

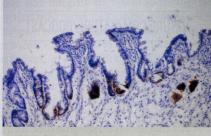
- 91 NANOSCALE MATERIALS Epitaxial growth of a 100-square-centimetre single-crystal hexagonal boron nitride monolayer on copper L. Wang et al.
- 96 ELECTRONIC MATERIALS Lattice anchoring stabilizes solutionprocessed semiconductors *M Liu* et al.
- 102 SOLID EARTH SCIENCES Magnetism in cold subducting slabs at mantle transition zone depths

  1 Kupenko et al.
- 107 STEM CELLS Tracing the origin of adult intestinal stem cells

  J Guiu et al.
- 112 TUMOUR IMMUNOLOGY Targeting the CBM complex causes T<sub>reg</sub> cells to prime tumours for immune checkpoint therapy

  M Di Pilato et al.
- 117 CELL BIOLOGY Hypo-osmotic-like stress underlies general cellular defects of aneuploidy

  H-J Tsai et al.
- 122 MOLECULAR BIOLOGY Transcriptional cofactors display specificity for distinct types of core promoters V Haberle et al.



STEM CELLS

## Cryptic cue

Diverse epithelial cells contribute to the intestinal stem cell pool. **PAGE 107**