

CONTENTS

21 June 2018 / Vol 558 / Issue No 7710

THIS WEEK

EDITORIALS

343 HEALTH

The void in opioid research

The NIH needs to tackle roots of epidemic

344 DIVERSITY

Bias revisited

Nature updates its equity statistics

344 INNOVATION

Reward synthesis

Evidence syntheses are crucial to knowledge advancement



WORLD VIEW

345 How will you judge me if not by impact factor?

John Tregoning

Mixed messages are hindering early career development

RESEARCH HIGHLIGHTS

346 SELECTIONS FROM THE SCIENTIFIC LITERATURE

Reefs save money / Primordial dust / Chocolate's reward / Flu shield / Black-hole dinners / Nobelium structure

SEVEN DAYS

348 THE NEWS IN BRIEF

Mars dust / Diet-study revisions / AI ethics / Science adviser / EU energy targets / Indian water crisis



CAREERS

475 WORK-LIFE BALANCE

Play time for researchers

The importance of relaxation

477 BACK STORY

Deforestation detective

A rethink on the influence of industry

NEWS IN FOCUS

351 POLICY

World Cup security measures frustrate biochemists in Russia



352 LAB LIFE

US science academies call for culture shift to fight harassment

353 BUSINESS

Users fear that Microsoft's purchase of GitHub will threaten data sharing

354 GENETICS

Expanded gene tally fails to convince all geneticists

355 MEDICAL RESEARCH

Cancer researchers target dormant cells



FEATURES

ARTIFICIAL INTELLIGENCE

Bias detectives

The drive to make the algorithms behind machine learning fair **PAGE 357**



COMMENT

POLICY

Evidence synthesis

Reward analyses that are inclusive, rigorous, transparent and accessible, urge Christi A Donnelly and colleagues

PAGE 361



364 POLICY

A fresh approach to evidence synthesis

William J Sutherland and

Claire FR Wordley

Replace the systematic review when data are patchy

367 NUCLEAR POWER

Unblock the path to peace in North Korea

R Scott Kemp

Find new ways to verify disarmament

BOOKS & ARTS

370 ASTRONOMY

Maria Mitchell at 200

Richard Holmes

CORRESPONDENCE

372 Tech-metal risks / Replication in humanities / Persistent identifiers / Coral-reef tourism

FUTURES

480 Going back for Hitler

George

Nikolopoulos



CONTENTS

21 June 2018 / Vol 558 / Issue No 7710

RESEARCH

NEW ONLINE

373 Papers published this week at nature.com

NEWS & VIEWS

374 DNA DAMAGE

Stem cells hide from the sun

A melanocyte umbrella shields haematopoietic stem cells in zebrafish
Isabel Beerman **SEE LETTER P.445**

375 ASTRONOMY

Missing matter found in the cosmic web

Evidence of baryonic matter hidden in filaments of the cosmic web
Taotao Fang **SEE LETTER P.406**

376 CLINICAL ONCOLOGY

Windows open for cancer immunotherapy

Immunotherapies to treat non-small-cell lung cancer at various stages
Lizza E Hendriks & Benjamin Besse

378 MARINE GEOLOGY

Sea-level rise could overwhelm coral reefs

Estimates of the capacity of coral reefs to keep up with sea-level rises
Ilsa B Kuffner **SEE ARTICLE P.396**

379 NANOSCIENCE

Frictionless when flat

A challenge to the classical theory of gas flow
Chuanhua Duan **SEE LETTER P.420**

380 STEM CELLS

Intestinal-niche conundrum solved

Telocytes provide Wnt signals to support intestinal stem cells
Linda C Samuelson
SEE LETTER P.449

ARTICLES

383 **CLIMATE SCIENCES** Antarctic ice shelf disintegration triggered by sea ice loss and ocean swell
RA Massom et al.

390 **PALAEONTOLOGY** An Early Cretaceous eutherian and the placental-marsupial dichotomy
S Bi et al.

396 **MARINE GEOLOGY** Loss of coral reef growth capacity to track future increases in sea level
C T Perry et al. **SEE N&V P.378**



ON THE COVER

In deep water

The growth of tropical coral reefs is essential for maintaining reef structure and habitat diversity, and for protecting shorelines. But these important functions are under threat as reef health declines and sea levels rise. Chris Perry and colleagues show that reefs in the Atlantic and Indian Ocean are unlikely to be able to grow fast enough to deal with predicted increases in sea level. **PAGES 378 & 396**

401 **STRUCTURAL BIOLOGY** Structural basis of mitochondrial receptor binding and constriction by DRP1
R Kalia et al.

LETTERS

406 **ASTRONOMY** Observations of the missing baryons in the warm-hot intergalactic medium
F Nicastro et al. **SEE N&V P.375**

410 **OPTICS AND PHOTONICS** Gate-tunable frequency combs in graphene-nitride microresonators
B Yao et al.

415 **NANOSCALE DEVICES** Comprehensive suppression of single-molecule conductance using destructive α -interference
M H Garner et al.

420 **NANOSCIENCE** Ballistic molecular

transport through two-dimensional channels

A Keerthi et al. **SEE N&V P.379**

425 **NANOSCALE MATERIALS** Heterointerface effects in the electrointercalation of van der Waals heterostructures
D K Bediako et al.

430 **EARTH SCIENCES** Extensive retreat and re-advance of the West Antarctic Ice Sheet during the Holocene
J Kingslake et al.

435 **NEUROSCIENCE** Quantitative phosphoproteomic analysis of the molecular substrates of sleep need
Z Wang et al.

440 **MICROBIOLOGY** Novel soil bacteria possess diverse genes for secondary metabolite biosynthesis
A Crits-Christoph, S Diamond, C N Butterfield, B C Thomas & J F Banfield

445 **DNA DAMAGE** Protection from UV light is an evolutionarily conserved feature of the haematopoietic niche
F G Kapp et al. **SEE N&V P.374**

449 **STEM CELLS** GLI1-expressing mesenchymal cells form the essential Wnt-secreting niche for colon stem cells
B Degirmenci, T Valenta, S Dimitrieva, G Hausmann & K Basler
SEE N&V P.380

454 **IMMUNOLOGY** Induction and transcriptional regulation of the co-inhibitory gene module in T cells
N Chihara et al.

460 **MOLECULAR BIOLOGY** A Cdk9-PP1 switch regulates the elongation-termination transition of RNA polymerase II
P K Parua et al.

465 **STRUCTURAL BIOLOGY** Structural basis of G-quadruplex unfolding by the DEAH/RHA helicase DHX36
M C Chen et al.

470 **STRUCTURAL BIOLOGY** Structural basis for regulation of human acetyl-CoA carboxylase
M Hunkeler et al.

COVER IMAGE: TOM BRIDGE/WWW.TETRYX-IMAGES.COM