

CONTENTS

21 November 2013 / Vol 503 / Issue No 7476

THIS WEEK

EDITORIALS

311 GLOBAL WARMING

Climate negotiations soldier on

The climate talks in Warsaw highlight the fraught path to agreement

311 TAXONOMY

The new zoo

Nomenclature must continue to embrace the digital age

312 EXPLORATION

Space spectacular

Can the film *Gravity* restore the lustre to manned space missions?

WORLD VIEW

313 Thrill of space exploration is a universal constant

Colin Macilwain

The act of sending humans into space still has the power to inspire

RESEARCH HIGHLIGHTS

314 SELECTIONS FROM THE SCIENTIFIC LITERATURE

Fixed menu for lab flies / A 39-minute quantum bit / Fish farms overfeed the oceans / Evolution of the tale / Wheat and coeliac disease / Birds avoid traffic

SEVEN DAYS

316 THE NEWS IN BRIEF

Ash sensors for aircraft / Fukushima fuel rods are removed / Rare antelope caught on film / Implant to treat epilepsy wins approval

CAREERS

427 COLUMN

The ethical grey zone

Talking about workplace problems is a step towards avoiding or solving them

429 TURNING POINT

Molly Brown is reaping the rewards of combining geography with economics

429 CAREER BRIEFS

NATUREJOBS ADVERTISING FEATURE

Spotlight on Francophone regions

NEWS IN FOCUS

319 POLICY

Mexican science receives welcome shot in the arm

320 JOURNALS

Profits drive innovation at Public Library of Science

321 CLIMATE CHANGE

Budget cuts threaten to derail atmospheric monitoring efforts



322 ECOLOGY

Call to fence in lions provokes uproar among conservationists

324 NATURAL DISASTERS

Researchers seek opportunities in the wake of Typhoon Haiyan

325 SPACE

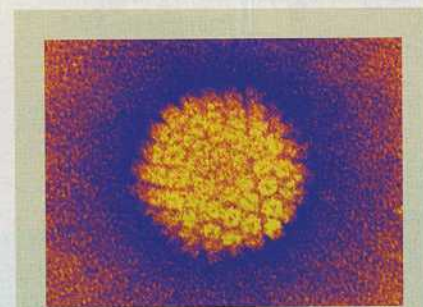
NASA call for small project offers opportunity for X-ray mission

FEATURES

327 MATERIALS SCIENCE

The quest for supercarbon

Turning graphene into a commercially viable product is proving harder than anticipated



VIROLOGY

Extended range

Human papillomavirus is causing new forms of neck and throat cancer
PAGE 330

COMMENT



SCIENTIFIC METHOD

On repeat

Reproducibility is a central tenet of the scientific process — but there are risks, warns Mina Bissell **PAGE 333**

335 POLICY

Twenty tips for interpreting scientific claims

William J Sutherland, David Spiegelhalter & Mark A Burgman

Guidance for decision-makers on how to make best use of scientific advice

BOOKS & ARTS

338 IN RETROSPECT

Brave New World

Philip Ball

340 ANTHROPOLOGY

The science of impunity

Tanguy Chouard

341 Q&A

Surfing scientist

Surfers are on the frontline of environmental change, says historian Peter Westwick

CORRESPONDENCE

342 Online courses do not reach the disadvantaged / DNA evidence crucial in rape cases / No simple inheritance of intelligence

FUTURES

432 Unsolved logistical problems in time travel: spring semester

Marissa Lingen

CONTENTS

21 November 2013 / Vol 503 / Issue No 7476

RESEARCH

NEW ONLINE

343 Papers published this week at nature.com

NEWS & VIEWS

344 EXTRASOLAR PLANETS

An infernal Earth

Accurate mass measurements of Earth-sized exoplanet Kepler-78b

Drake Deming **SEE LETTERS P.377 & P.381**

345 PLANT BIOMECHANICS

High-endurance algae

The genicular joints of a coralline alga confer fatigue resistance

Emily Carrington

346 BIOGEOCHEMISTRY

Conduits of the carbon cycle

Quantification of CO₂ emissions from inland waters

Bernhard Wehrli **SEE ARTICLE P.355**

347 ANTIBIOTICS

Killing the survivors

An acyldepsipeptide eliminates persister cells in *S. aureus* infections

Kenn Gerdes & Hanne Ingmer

SEE ARTICLE P.365

350 CLIMATE SCIENCE

The challenge of hot drought

Analysis of North American drought variability over the past millennium

Jonathan T Overpeck

351 HUMAN EVOLUTION

Group size determines cultural complexity

Experiments show complex skills are better maintained in larger groups

Peter Richerson **SEE LETTER P.389**

352 HIV

Slipping under the radar

Capsid-mutant viruses trigger interferon production in host cells

Stephen P Goff **SEE LETTER P.402**

ARTICLES

- 355 **BIOGEOCHEMISTRY** Global carbon dioxide emissions from inland waters
P A Raymond et al. **SEE N&V P.346**

- 360 **DEVELOPMENTAL BIOLOGY** Nanog, Pou5f1 and SoxB1 activate zygotic gene expression during the maternal-to-zygotic transition
M T Lee et al.

ON THE COVER

Good bounce

Water strikes the water-averse wing of a *Morpho* butterfly. Drops bounce faster from a superhydrophobic surface with a morphology that redistributes liquid mass so that it no longer spreads and retracts symmetrically, a strategy that dramatically shortens contact time between drop and surface, with useful practical implications. **PAGE 385**



- 365 **MICROBIOLOGY** Activated ClpP kills persisters and eradicates a chronic biofilm infection
B P Conlon et al. **SEE N&V P.347**

- 371 **MOLECULAR BIOLOGY** DNMT1-interacting RNAs block gene-specific DNA methylation
A Di Ruscio et al.

LETTERS

- 377 **EXTRASOLAR PLANETS** An Earth-sized planet with an Earth-like density
F Pepe et al. **SEE N&V P.344**

- 381 **EXTRASOLAR PLANETS** A rocky composition for an Earth-sized exoplanet
A W Howard et al. **SEE N&V P.344**

- 385 **MATERIALS SCIENCE** Reducing the contact time of a bouncing drop
J C Bird, R Dhiman, H-M Kwon & K K Varanasi

- 389 **EVOLUTION** Experimental evidence for the influence of group size on cultural complexity
M Derex, M-P Beugin, B Godelle & M Raymond **SEE N&V P.351**

- 392 **STEM CELLS** A canonical to non-canonical Wnt signalling switch in haematopoietic stem-cell ageing
M C Florian et al.

- 397 **IMMUNOLOGY** *Staphylococcus* δ -toxin induces allergic skin disease by activating mast cells
Y Nakamura et al.

- 402 **IMMUNOLOGY** HIV-1 evades innate immune recognition through specific cofactor recruitment
J Rasaiyaah et al. **SEE N&V P.352**

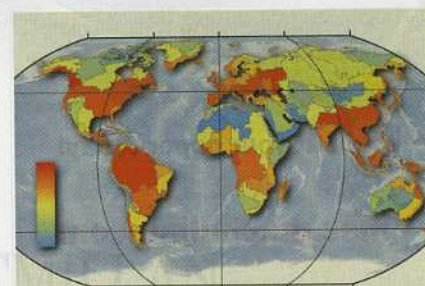
- 406 **IMMUNOLOGY** Antigen-specific B-cell receptor sensitizes B cells to infection by influenza virus
S K Dougan et al.

- 410 **MOLECULAR BIOLOGY** The nuclear receptor Rev-erba controls circadian thermogenic plasticity
Z Gerhart-Hines et al.

- 414 **PLANT SCIENCES** Temperature-dependent regulation of flowering by antagonistic FLM variants
D Posé et al.

- 418 **PROTEIN DESIGN** Precision is essential for efficient catalysis in an evolved Kemp eliminase
R Blomberg et al.

- 422 **STRUCTURAL BIOLOGY** Structural basis for ligase-specific conjugation of linear ubiquitin chains by HOIP
B Stieglitz et al.



BIOGEOCHEMISTRY

Water ways

Tracking carbon dioxide from the rivers, lakes and marshes to the atmosphere. **PAGE 355**