

CONTENTS

24 May 2012 / Vol 485 / Issue No 7399

THIS WEEK

EDITORIALS

415 CLIMATE CHANGE

A charter for geoengineering

Global regulations for climate-fixing projects are urgently needed

415 HEALTH

In from the cold

Fukushima disaster proves the value of forgotten UN agency

416 ZOOLOGY

A whale of a story

Cetacean sensory organ makes a splash

WORLD VIEW

417 **We must set planetary boundaries wisely**

Simon L Lewis

Turning back the environmental clock is not as simple as it may sound

RESEARCH HIGHLIGHTS



418 SELECTIONS FROM THE SCIENTIFIC LITERATURE

Rare genes punch above their weight / Evolution of crayfish teeth / Lost groundwater / White roofs are cool / Brittle star out on a limb

SEVEN DAYS

420 THE NEWS IN BRIEF

South Korean institute seeks global status / Plan for Chilean dam blocked / GM crop trial targeted by protestors / Canada cuts freshwater research

CAREERS

535 POSTGRADUATE OPTIONS

Academia misses the mark

Postgrads get little help when looking for non-academic careers

537 TURNING POINT

Calcium channels led to work on neurodevelopment for Colombian researcher Ricardo Dolmetsch

537 CAREER BRIEFS

NEWS IN FOCUS

423 RADIATION HEALTH

Risk to health of Fukushima fallout found to be minimal

425 FACILITIES

Lax standards in Asia-Pacific region spark debate over biosafety labs

426 MEDICINE

US steps up work on Alzheimer's disease

427 POLICY

Research-agency heads come together for global initiative

428 ASTRONOMY

Hubble turns its attention to contested exoplanet

429 CLIMATE CHANGE

Geoengineering project runs out of steam

430 AGRICULTURE

Researchers scramble to beat herbicide resistance in weeds

FEATURES

431 POLICY

The biosecurity oversight

Research on mutant flu viruses has proved a tough test for the US security watchdog



UNDERGROUND PHYSICS

Deep thoughts

Italy's Gran Sasso laboratory faces up to an uncertain future **PAGE 435**

COMMENT

439 MICROBIOLOGY

Recover the lost art of drug discovery

Kim Lewis

More eclectic methodology could provide much-needed new antibiotics

441 ENVIRONMENT

The hidden costs of flexible fertility

Richard Owen & Susan Jobling

It's time we faced up to the problem of environmental oestrogen pollution

BOOKS & ARTS



BEHAVIOURAL ECOLOGY

Telling tails

Manfred Milinski welcomes a 'must-read' book on evolution and behaviour **PAGE 444**

442 DEVELOPMENT

Striking out for new territory

Wendy Wolford

443 BOOKS IN BRIEF

445 Q&A

The graphic historian

Jonathan Fetter-Vorm talks about crafting science chronicles

CORRESPONDENCE

446 Probiotics over-regulated / A national identity for plants / Wallace and Darwin delinked / Freshwater fish at risk

FUTURES

540 The common app

Robert Scherrer

CONTENTS

24 May 2012 / Vol 485 / Issue No 7399

RESEARCH

NEW ONLINE

447 Papers published this week at nature.com

NEWS & VIEWS

448 FORUM: CLIMATE CHANGE

Flowering in the greenhouse

Phenological responses to artificial warming compared with observations
This Rutishauser, Reto Stöckli, John Harte & Lara Kueppers [SEE LETTER P.494](#)

450 APPLIED CHEMISTRY

Molecules meet materials

A solid-state dye-sensitized solar cell
Thomas E Mallouk [SEE LETTER P.486](#)

451 ALZHEIMER'S DISEASE

Changes in brain blood vessels may precede neurodegeneration

A breach in the blood-brain barrier
Peter Carmeliet & Bart De Strooper
[SEE LETTER P.512](#)

452 GEOCHEMISTRY

Portrait of Earth's coming of age

A discontinuity in Earth's magma composition 2.5 billion years ago
William M White [SEE LETTER P.490](#)

453 NEUROSCIENCE

Crystal-clear brains

Brain-wide neuronal activity of a vertebrate during learning
Joseph R Fetcho [SEE ARTICLE P.471](#)

455 PARTICLE PHYSICS

A reminder of the beauty we know

Precise measurement of the W-boson mass
Jonathan Butterworth

456 ASTROPHYSICS

Startling superflares

Emissions from 365 superflares observed by the Kepler satellite
Bradley E Schaefer [SEE LETTER P.478](#)

ARTICLES

459 EVOLUTION Peroxiredoxins are conserved markers of circadian rhythms

R S Edgar et al.

465 CELL BIOLOGY Rab5 is necessary for the biogenesis of the endolysosomal system *in vivo*

A Zeigerer et al.

471 NEUROSCIENCE Brain-wide neuronal dynamics during



ON THE COVER

In at the krill

A Bryde's whale (*Balaenoptera edeni*) feeds on sardines off Baja California, Mexico. Like the other rorqual whales, this species is a lunge-feeder, scooping up large volumes of prey-laden water while swimming at speed. To coordinate this the whales use a previously unknown sensory organ located in the jaw. [PAGE 498](#)

motor adaptation in zebrafish

M B Ahrens et al. [SEE N&V P.453](#)

LETTERS

478 ASTRONOMY Superflares on solar-type stars

H Maehara et al. [SEE N&V P.456](#)

482 PHYSICS Tunable ion-photon entanglement in an optical cavity

A Stute et al.

486 MATERIAL SCIENCE All-solid-state dye-sensitized solar cells with high efficiency

I Chung, B Lee, J He, R P H Chang & M G Kanatzidis [SEE N&V P.450](#)

490 EARTH SCIENCE Statistical geochemistry reveals disruption in secular lithospheric evolution about 2.5 Gyr ago

C B Keller & B Schoene [SEE N&V P.452](#)

494 ECOLOGY Warming experiments underpredict plant phenological responses to climate change

E M Wolkovich et al. [SEE N&V P.448](#)

498 ZOOLOGY Discovery of a sensory organ that coordinates lunge feeding in rorqual whales

N D Pyenson et al.

502 GENOMICS Melanoma genome sequencing reveals frequent PREX2 mutations

M F Berger et al.

507 NEURODEGENERATION Sustained translational repression by eIF2 α -P mediates prion neurodegeneration

J A Moreno et al.

512 NEUROSCIENCE Apolipoprotein E controls cerebrovascular integrity via cyclophilin A

R D Bell et al. [SEE N&V P.451](#)

517 NEUROBIOLOGY Glycolytic oligodendrocytes maintain myelin and long-term axonal integrity

U Fünfschilling et al.

522 CELL BIOLOGY Cryptic peroxisomal targeting via alternative splicing and stop codon read-through in fungi

J Freitag, J Ast & M Böcker

526 MOLECULAR BIOLOGY The complex of tmRNA-SmpB and EF-G on translocating ribosomes

D J F Ramrath et al.

530 PLANT SCIENCES Evolution of the chalcone-isomerase fold from fatty-acid binding to stereospecific catalysis

M N Ngaki et al.

534 ERRATUM Aerosols implicated as a prime driver of twentieth-century North Atlantic climate variability

B B B Booth, N J Dunstone, P R Halloran, T Andrews & N Bellouin

NEUROSCIENCE

Just thinking

Virtual-reality images of a single active zebra-fish brain cell. [PAGE 471](#)

