CONTENTS

17 January 2013 / Vol 493 / Issue No 7432

THIS WEEK

EDITORIALS

271 MENTAL HEALTH

Troubling thoughts

Fukushima Health Survey could benefit future disaster survivors worldwide

271 INSIDER TRADING

Knowledge trades

Researchers must be careful not to divulge confidential information

272 GENETICS

Natural history

Genetic studies of wild behaviour should initially focus on select species

WORLD VIEW

273 China has the capacity to lead in carbon trading

Qiang Wang

If it can guarantee transparent data collection. China would make a fertile ground for a carbon market

RESEARCH HIGHLIGHTS

274 SELECTIONS FROM THE SCIENTIFIC LITERATURE

Robot ribosome / Out of Australia / Hair-cell replacement / Predator avoidance / Global-warming estimates accurate / Wasps aren't useless



SEVEN DAYS

276 THE NEWS IN BRIEF

Europe to launch food-safety initiative / Antarctic team prepares to drill into Lake Whillans / Global investment in clean energy drops off

CAREERS

441 EDUCATION

Free-range learning

Informal science education is gaining ground despite a struggle for funding

Changes at the NIH

Francis Collins explains changes in the NIH's approach to career funding

NEWS IN FOCUS

Plans for clinical trial of antibody against HIV draw fire

280 FINANCE

Universities wrestle with the ethics of expert networks

282 STEM CELLS

US court rules in favour of research using human embryonic stem cells

283 TECHNOLOGY

Quantum dots prepare for their small-screen debut



284 GENETICS

DNA analysis provides clues to complexities of burrowing

285

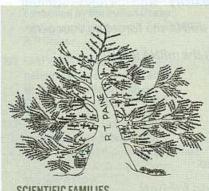
HEALTH WHO backs use of inactivated vaccine in final push to eradicate polio

FEATURES

290 NUCLEAR SAFETY

Fallout of fear

Nearly two years on from the Fukushima disaster, the psychological scars remain



SCIENTIFIC FAMILIES

academic family that changed the face of ecology PAGE 286

COMMENT



ENVIRONMENT

Model all life on Earth

Ecologists should follow climatology's lead and simulate the globe PAGE 295

298 POLICY

Two years of blogging the NIH Sally Rockey

An NIH insider's popular blog sets standards in transparency

BOOKS & ARTS

300 CONSERVATION

The commonness of rarity Stuart Pimm

301 STATISTICS

Number-crunching in the raw

David Vaux

302 FILM

Walking the edge at Sundance Jascha Hoffman

CORRESPONDENCE

304 Crowding-out true science / Cancer researchers stick to 2020 target / Whose carbon? / Journal objectivity / Sleeping-pill side effects / Lost phylogenetic trees / Marked amphibians

306 Rita Levi-Montalcini (1909-2012) Ralph A Bradshaw

FUTURES

446 Eros for Annabelle lan Whates

CONTENTS

17 January 2013 / Vol 493 / Issue No 7432

RESEARCH

NEW ONLINE

307 Papers published this week at nature.com

NEWS & VIEWS

308 EVOLUTION

A history of give and take

Foraminifera fossils link extinctions with environmental change Steven M Holland SEE LETTER P.398

309 EARTH SCIENCE

Plumbing nickel from the core
A potential new mantle source
Michael J Walter SEE LETTER P.393

310 STEM CELLS

Surf the waves of reprogramming

A molecular roadmap of cellular reprogramming to iPS cells Ignacio Sancho-Martinez & Juan Carlos Izpisua Belmonte

312 EVOLUTIONARY GENETICS

Genes for home-building

Genetic modules responsible for burrowing style in oldfield mice Patrick Goymer SEE LETTER P.402

312 NEUROSCIENCE

Memory and the single molecule

The protein PKM-ζ is less important in maintaining memory than thought Paul W Frankland & Sheena A Josselyn

SEE LETTERS P.416 & P.420

313 ANALYTICAL CHEMISTRY

Defects visualized in porous solids

Confocal fluorescence microscopy of metal-organic frameworks Christian Serre

314 COMPUTATIONAL MATERIALS SCIENCE

Trustworthy predictions

A method to precisely compute the properties of certain solids

Paul R C Kent SEE ARTICLE P.365

ARTICLES

- 365 MATERIALS SCIENCE Towards an exact description of electronic wavefunctions in real solids G H Booth, A Grüneis, G Kresse & A Alavi, SEE N&V P.314
- 371 NEUROSCIENCE Autism-related deficits via dysregulated eIF4E-dependent translational control C G Gkogkas et al.

ON THE COVER

Taking turns

A fruitfly knows right from left when confronted with an asymmetric odour plume.
A new study demonstrates a neuronal basis for that ability which makes use of the fact that central neurons on the fly's right spike a few milliseconds before those on the left.

LETTERS

- 378 ASTRONOMY Pulsed accretion in a variable protostar J Muzerolle, E Furlan, K Flaherty, Z Balog & R Gutermuth
- 381 ASTRONOMY Planetary system disruption by Galactic perturbations to wide binary stars NA Kaib, SN Raymond & M Duncan
- 385 MATERIALS SCIENCE Ultrahard nanotwinned cubic boron nitride Y Tian et al.
- 389 CLIMATE SCIENCE Multidecadal variability in East African hydroclimate controlled by the Indian Ocean J E Tierney, J E Smerdon, K J Anchukaitis & R Seager
- 393 EARTH SCIENCE Nickel and helium evidence for melt above the core–mantle boundary C Herzberg et al. SEE N&V P.309
- 398 PALAEONTOLOGY Oceanographic controls on the diversity and extinction of planktonic foraminifera SEPeters, DC Kelly & AJ Fraass SEE N&V P.308
- 402 GENETICS Discrete genetic modules are responsible for complex burrow evolution in Peromyscus mice \$N Weber, B K Peterson & H E Hoekstra SEE N&V P.312
- 406 CANCER Mosaic PPM1D mutations are associated with predisposition

to breast and ovarian cancer

E Ruark et al.

411 NEUROSCIENCE Exaggerated translation causes synaptic and behavioural aberrations associated with autism

E Santini et al.

416 NEUROSCIENCE Prkcz null mice show normal learning and memory A M Lee et al. SEE N&V P.312

- 420 NEUROSCIENCE PKM-ζ is not required for hippocampal synaptic plasticity, learning and memory

 L J Volk, J L Bachman, R Johnson,

 Y Yu & R L Huganir SEE N&V P.312
- 424 NEUROSCIENCE Asymmetric neurotransmitter release enables rapid odour lateralization in Drosophila Q Gaudry, E J Hong, J Kain, B L de Bivort & R I Wilson
- 429 MICROBIOLOGY Bacteriophage genes that inactivate the CRISPR/Cas bacterial immune system J Bondy-Denomy, A Pawluk, K L Maxwell & A R Davidson
- 433 STEM CELLS Mammalian heart renewal by pre-existing cardiomyocytes S E Senyo et al.
- 437 STRUCTURAL BIOLOGY Structure and function of the initially transcribing RNA polymerase II–TFIIB complex S Sainsbury, J Niesser & P Cramer



MATERIALS SCIENCE

Hard times

 Cubic boron nitride now rivals diamond in its ultrahard state. PAGE 385 KELLY KRAUSE/NATURE — IMAGES BY SYLVIE BOUCHARD, DARNUSZ MAJGIER/SHUTTERSTOCK