CONTENTS

19 June 2014 / Vol 510 / Issue No 7505

THIS WEEK

EDITORIALS

311 INFECTIOUS DISEASE

Present danger

Action needs to be taken over the pandemic threat posed by MERS-CoV

312 QUANTUM PHYSICS

Quanundrum

Bell's theorem turns 50

312 ROMANIA

Summer skills

Nascent neuroscience programme gives Romanian science a boost



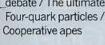
WORLD VIEW

313 Uprooting researchers can drive them out of science Russell Garwood Young scientists can tire of the nomadic existence expected of them

RESEARCH HIGHLIGHTS

314 SELECTIONS FROM THE SCIENTIFIC LITERATURE

Greenland glaciers undermined / Textile batteries / Ant engineers / Animal-research debate / The ultimate clock /



SEVEN DAYS

316 THE NEWS IN BRIEF

RIKEN biology centre under fire / Model predicts bird-flu risks / Chile rejects dam plans / Europe considers plant biofuel cap / NASA seeks icy world

CAREERS

433 LABORATORY CAREERS

Catalysts for efficient science

Laboratory management is a rewarding alternative to the tenure-track if you have a flair for organization

NATUREJOBS ADVERTISING FEATURES

Spotlight on biotech/pharma Spotlight on Rhône Alps

NEWS IN FOCUS

319 ARCHAEOLOGY

3D images breathe fresh life into historical artefacts



Tree seeds hitchhike halfway round the world in record-breaking dispersal

323 PUBLIC HEALTH

Doubts over data collection threaten to delay US National Children's Study

324 PUBLIC HEALTH

NIH draws fire over decision to continue HIV trial for pregnant women

Ireland seeks external audit of university labs

FEATURES



THE PARCHED PLANET

Water

Unconventional sources of water help to slake the world's thirst PAGE 326

330 SCHENTIFIC PUBLISHING

The inside track

A path of publication privilege at the US National Academy of Sciences

COMMENT



Taking a

Elena Cattaneo & Gilberto Corbellini Two Italian academics describe their legal fight against questionable stemcell therapies PAGE 333

336 REGULATION

Sell help not hope

Paolo Bianco & Douglas Sipp 'Free-to-choose' reasoning is being used to promote unproven medical interventions - and to raise false hopes

BOOKS & ARTS

338 EVOLUTION

The complexity chronicles Nancy Moran

339 BOOKS IN BRIEF

CORRESPONDENCE

340 NIH's gender mandate could backfire / Sharing data is easy / Europe's stance on embryos / Red-green graphics persist



FUTURES 436 Emancipation João Ramalho-Santos

FST

CONTENTS

202V of small 012 19 June 2014 / Vol 510 / Issue No 7505

RESEARCH

NEW ONLINE

341 Papers published this week at nature.com

NEWS & VIEWS

342 CANCER

Natural-born killers unleashed Inhibiting PI(3)Kδ in T_{reg} cells enhances anticancer immune responses Emilio Hirsch & Francesco Novelli SEE LETTER P.407

343 APPLIED MATHEMATICS

How chaos forgets and remembers The past, present and future of an evolving chaotic system P-M Binder & R M Pipes

344 POPULATION HEALTH

Immaturity in the gut microbial community

Delayed microbiota maturation in undernourished Bangladeshi children Elizabeth K Costello & David A Relman SEELETTER P.417

345 QUANTUM COMPUTING

Powered by magic

Quantum contextuality gives quantum computers extra oomph Stephen D Bartlett SEE ARTICLE P.351

347 CELL BIOLOGY

Balancing act

The deubiquitinating enzyme USP30 puts the brakes on mitophagy Alban Ordureau & J Wade Harper SEE ARTICLE P.370

349 QUANTUM PHYSICS

Feel the force

Measurement of the magnetic interaction between two electrons Ferdinand Schmidt-Kaler SEE LETTER P.376

ARTICLES

- 351 QUANTUM PHYSICS Contextuality supplies the 'magic' for quantum computation M Howard, J Wallman, V Veitch & J Emerson SEE N&V P.345
- 356 PLANT SCIENCES The genome of Eucalyptus grandis A A Myburg et al.
- 363 CELL BIOLOGY Single-cell RNA-seq reveals dynamic paracrine control of cellular variation A K Shalek et al.

ON THE COVER

Dropping in

Water dropies's cooling rapidly in vacuum are probed by a pulse from a femtosecond X-ray laser before they turn to ice, providing structural information on the deeply supercooled liquid phase in the 'no-man's land', where water's anomalous properties become strongly enhanced, but where ice forms too quickly for conventional measurement techniques to cope.

PAGES 381 & 385

370 NEUROSCIENCE The mitochondrial deubiquitinase USP30 opposes parkin-mediated mitophagy B Bingol et al. SEE N&V P.347

LETTERS

- 376 QUANTUM PHYSICS Measurement of the magnetic interaction between two bound electrons of two separate ions S Kotler, N Akerman, N Navon, Y Glickman & R Ozeri SEE N&V P.349
- 381 PHYSICAL CHEMISTRY Ultrafast X-ray probing of water structure below the homogeneous ice nucleation temperature

 JA Sellberg et al.
- 385 PHYSICAL CHEMISTRY Metastable liquid-liquid transition in a molecular model of water J.C. Palmer et al.
- 389 EARTH SCIENCE Possible control of subduction zone slow-earthquake periodicity by silica enrichment P Audet & R Bürgmann
- 393 CELL BIOLOGY mTORC1 controls the adaptive transition of quiescent stem cells from G₀ to G_{Alert}

 JT Rodgers et al.
- 397 BIOCHEMISTRY The metabolite α-ketoglutarate extends lifespan by

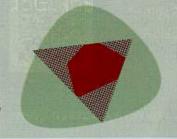
inhibiting ATP synthase and TOR R M Chin et al.

- 402 CANCER PTEN action in leukaemia dictated by the tissue microenvironment C Miething et al.
- 407 IMMUNOLOGY Inactivation of PI(3)K p1108 breaks regulatory T-cellmediated immune tolerance to cancer K Ali et al. SEE N&V P.342
- 412 CANCER CFIm25 links alternative polyadenylation to glioblastoma tumour suppression C P Masamha et al.
- 417 MICROBIOLOGY Persistent gut microbiota immaturity in malnourished Bangladeshi children S Subramanian et al. SEE N&V P.344
- 422 BIOCHEMISTRY Ribosomal oxygenases are structurally conserved from prokaryotes to humans R Chowdhury et al.
- 427 CHEMICAL BIOLOGY Co-opting sulphurcarrier proteins from primary metabolic pathways for 2-thiosugar biosynthesis E Sasaki et al.
- 432 CORRIGENDUM Fuel gain exceeding unity in an inertially confined fusion implosion O A Hurricane et al.
- 432 CORRIGENDUM Sea-level and deep-sea-temperature variability over the past 5.3 million years E J Rohling et al.

QUANTUM PHYSICS

Bit part

'Contextuality' is the magic that makes quantum computers so good. PAGE 351



GREGORY STEWARD, SLAC NATIONAL ACCELERATOR LABORATOR'S