CONTENTS

24 April 2014 / Vol 508 / Issue No 7497

THIS WEEK

EDITORIALS

431 ENVIRONMENT

A toxic legacy

Italy must marshall modern techniques to probe waste dumping in Campania

432 ASTRONOMY

A question of trust

Can prospective partners put their faith in a deal with NASA?

432 POLICY

Take care

The US should exercise caution as it builds its health-data system

WORLD VIEW

433 Iran needs to present a united front on science

Elise Auerbach

Iranian researchers must be able to interact abroad without fear of reprisals at home

RESEARCH HIGHLIGHTS

434 SELECTIONS FROM THE SCIENTIFIC LITERATURE

'Lost' plankton found / Most Earthlike exoplanet yet / Twitterati show interest in US fish imports / Emergence of necrotizing fasciitis pathogen

SEVEN DAYS

436 THE NEWS IN BRIEF

NIH reworks grant rules / Sentinel sends first images / Europe backs innovation / China's pollution problem

CAREERS

555 GRANTS

Funder storm

Continued uncertainty about US budget spending is putting the pressure on researchers trying to plan a career

557 TURNING POINT

Democrat Andrew Zwicker sees a seat in Congress as a suitable objective for a plasma physicist

557 CAREER BRIEFS

NATUREJOBS ADVERTISING FEATURE

Spotlight on Austria Spotlight on immunology

NEWS IN FOCUS

439 EPIDEMIOLOGY

Flu researchers fight back over report condemning drug stockpiles

440 SEISMOLOGY

Chile quake shakes up ideas on areas of extreme seismic stress



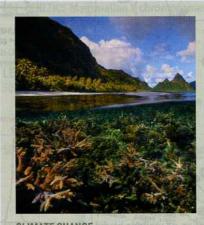
441 PHYSICS

China gears up for world's largest quantum network

443 BIOTECHNOLOGY

RNA interference undergoes a renaissance

FEATURES



CLIMATE CHANGE

Hot water

Coral reefs get help to adapt as world warms PAGE 444

448 RENEWABLE ENERGY and nutrients

Biofuels heat up

Industrial plants that make fuel from just about any organic waste

COMMENT



MEDICAL GENOMICS

Genetic data gap

Records systems should adapt so as to apply genome sciences in routine health care, says Geoffrey Ginsburg PAGE 451

BOOKS & ARTS

454 NATURAL HISTORY

A scientist's eye Linda Lear

456 MEDICINE

The commodified body

Scott Carney

457 CLIMATE SCIENCE Stratospheric folly

Tim Kruger

CORRESPONDENCE

458 Anti-Russia
sanctions bite / A
theory for ecology /
Coping with mental illness /
Ways to restore trust in medical
data collection



FUTURES 560 Popups Robert Dawson

CONTENTS

24 April 2014 / Vol 508 / Issue No 7497

RESEARCH

NEW ONLINE

459 Papers published this week at nature.com

NEWS & VIEWS

460 ELECTROCHEMISTRY

Catalysis at the boundaries An electrocatalyst that efficiently converts carbon monoxide to ethanol Aaron M Appel SEE LETTER P.504

461 SENSORY SYSTEMS Do you hear what I see?

Auditory information is processed in the visual cortex in blind people Ione Fine

462 INFECTION BIOLOGY

Nibbled to death

Trogocytosis by the parasite Entamoeba histolytica kills host cells Nancy Guillén SEE LETTER P.526

463 GENETICS

The vital Y chromosome

High gene stability across mammalian Y chromosomes Andrew G Clark SEE ARTICLES P.488 & P.494

465 CLIMATE SCIENCE

Sea levels from ancient seashells

A record of global sea level up to 5.3 million years ago Ralph Schneider SEE ARTICLE P.477

466 REPRODUCTIVE BIOLOGY

Sperm protein finds its mate

Juno identified as the egg-membrane partner protein for sperm's Izumo1 Paul M Wassarman SEE ARTICLE P.483

PERSPECTIVE

469 CLINICAL GENETICS Guidelines for investigating causality of sequence variants in human disease D G MacArthur et al.

ARTICLES

- 477 CLIMATE SCIENCE Sea-level and deep-sea-temperature variability over the past 5.3 million years EJ Rohling et al. SEE N&V P.465
- 483 REPRODUCTIVE BIOLOGY Juno is the egg Izumo receptor and is essential for mammalian fertilization E Bianchi, B Doe, D Goulding & GJ Wright SEE N&V P.466
- 488 GENETICS Origins and functional



The Y factor

Evolution of the mammalian Y sexdetermining chromosome involved an early period of rapid degeneration and gene loss. But the genes that remained have since been remarkably stable across the Y chromosomes of extant mammals. PAGES 463, 488 & 494

evolution of Y chromosomes across mammals

D Cortez et al. SEE N&V P.463

494 GENETICS Mammalian Y chromosomes retain widely expressed dosage-sensitive regulators D W Bellott et al. SEE N&V P.463

LETTERS

- 500 QUANTUM PHYSICS Superconducting quantum circuits at the surface code threshold for fault tolerance R Barends et al.
- 504 CHEMISTRY Electroreduction of carbon monoxide to liquid fuel on oxide-derived nanocrystalline copper CWLi, J Ciston & MW Kanan **SEE N&V P. 460**
- 508 VOLCANOLOGY Hybrid shallow on-axis and deep off-axis hydrothermal circulation at fast-spreading ridges J Hasenclever et al.
- 513 GEOPHYSICS Plate tectonics, damage and inheritance D Bercovici & Y Ricard
- 517 ECOLOGY Herbivores and nutrients control grassland plant diversity via light limitation ET Borer et al.

- 521 ECOLOGY Eutrophication weakens stabilizing effects of diversity in natural grasslands Y Hautier et al.
- 526 MICROBIOLOGY Trogocytosis by Entamoeba histolytica contributes to cell killing and tissue invasion KS Ralston et al. SEE N&V P.462
- 531 INFECTION BIOLOGY Inhibition of miR-25 improves cardiac contractility in the failing heart C Wahlquist et al.
- 536 STEM CELLS Foxc1 is a critical regulator of haematopoietic stem/progenitor cell niche formation Y Omatsu, M Seike, T Sugiyama, T Kume & T Nagasawa
- 541 CELL BIOLOGY Cell-cycle-regulated activation of Akt kinase by phosphorylation at its carboxyl terminus P Liu et al.
- 546 PLANT SCIENCE Nectar secretion requires sucrose phosphate synthases and the sugar transporter SWEET9 I W Lin et al.
- 550 STRUCTUAL BIOLOGY Structure of a type IV secretion system HH Low et al.
- 554 CORRIGENDUM C11orf95-RELA fusions drive oncogenic NF-kB signalling in ependymoma M Parker et al.
- 554 CORRIGENDUM Rapid remobilization of magmatic crystals kept in cold storage K M Cooper & A J R Kent



QUANTUM PHYSICS

Finding fault

 Towards quantum error correction good enough for computing. PAGE 500