

CONTENTS

25 April 2013 / Vol 496 / Issue No 7446

THIS WEEK

EDITORIALS

397 PUBLIC HEALTH

The fight against bird flu

China's response to this year's outbreaks deserves praise.

397 PSYCHIATRY

Across the divide

Artificial divisions between mental-illness diagnoses hamper treatment

398 ANNOUNCEMENT

Reducing our irreproducibility

Nature announces measures to improve quality in life-sciences articles



WORLD VIEW

399 H7N9 is a virus worth worrying about

Peter Horby

We should not downplay the risks of the latest influenza virus

RESEARCH HIGHLIGHTS

400 SELECTIONS FROM THE SCIENTIFIC LITERATURE

Electrode therapy in depression / Bugs in the family / Autism mutations / Big-brained *Homo floresiensis* / Golden glow for silica

SEVEN DAYS

402 THE NEWS IN BRIEF

Mississippi man charged for sending ricin to authorities / Ernest Moniz nears approval as new US energy secretary / Astronomers spot new type of γ -ray burst

CAREERS

537 INTERDISCIPLINARITY

Artistic merit

Art-science collaboration as a profession — and as recreation

539 CAREER BRIEFS

NATUREJOBS ADVERTISING FEATURE

Spotlight on immunology
Spotlight on Norway

NEWS IN FOCUS



405 GLOBAL WARMING

Amazon experiment aims to measure CO₂ fertilization

407 ASTRONOMY

Company challenges convention for naming new moons and planets

408 ECOLOGY

Europe to vote on pesticide ban to protect bees

409 ENERGY

Japan manages to extract methane from hydrates beneath the ocean floor

410 GEOPHYSICS

Researchers calculate timing of Earth's recycling process

411 ETHICS

US health department endorses guidance for Internet research

FEATURES

FIREARMS RESEARCH

The gun fighter

Physician Garen Wintemute tries to pin down consequences of gun ownership

PAGE 412



416 MENTAL HEALTH

On the spectrum

Unravelling the controversy behind diagnosis of mental illness

COMMENT

419 DNA AT SIXTY

Celebrate the unknowns

Philip Ball

Molecular and evolutionary biology are in a state of flux

421 HURRICANE SANDY

After the deluge

Gordon Fishell

Rebuilding a mouse laboratory devastated by flood waters

SPRING BOOKS



424 COGNITIVE SCIENCE

Mind as mirror

Philip Ball

426 GASTRONOMY

The kitchen revolution

Nathan Myhrvold

427 BIOLOGY

Vive la différence

Suzanne Alonzo

428 GEOLOGY

Written in stone

Ted Nield

430 PHYSICS

Clockwork cosmos

Pedro Ferreira

431 NEUROSCIENCE

Drugs to build a better brain

Anjan Chatterjee

432 CULTURE

Of Genesis and genetics

Tim Radford

CORRESPONDENCE

434 DNA at sixty: the story of the Nobel nominations

FUTURES

542 The epistolary history

Alex Shvartsman

CONTENTS

25 April 2013 / Vol 496 / Issue No 7446

RESEARCH

NEW ONLINE

435 Papers published this week at nature.com

NEWS & VIEWS

436 FORUM: QUANTUM PHYSICS

A grip on misbehaviour

A tool to characterize and control the dynamics of a quantum system
Stefano Pirroni; Dorit Aharonov
SEE ARTICLE P.456

437 AUTOIMMUNITY

Rubbing salt in the wound

A high-salt diet can enhance T_H17 -cell differentiation and exacerbate EAE
John J O'Shea & Russell G Jones
SEE LETTERS P.513 & P.518

439 PARTICLE PHYSICS

Minimalism triumphant

Focus on the Higgs boson
Frank Wilczek

441 HIV

Roadmaps to a vaccine

The evolution of broadly neutralizing anti-HIV antibodies in a patient
Hugo Mouquet & Michel C Nussenzweig
SEE ARTICLE P.469

442 IMAGING

Magnetic bacteria on a diamond plate

Optical magnetic imaging of magnetotactic bacteria
Mihály Pósfai & Rafal E Dunin-Borkowski
SEE LETTER P.486

443 GENOMICS

Zebrafish earns its stripes

Using zebrafish to investigate the function of human genes
Alexander F Schier
SEE LETTERS P.494 & P.498

REVIEW

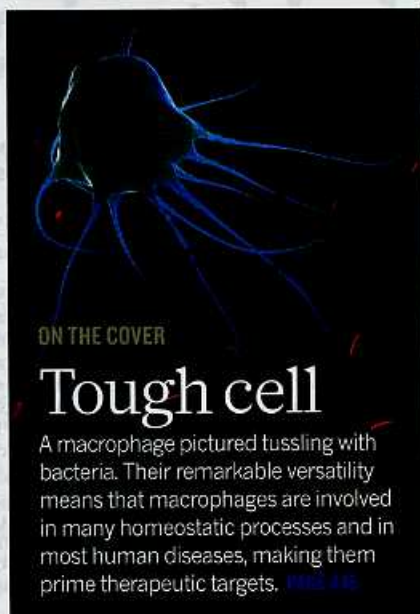
445 IMMUNOLOGY Macrophage biology in development, homeostasis and disease

T A Wynn, A Chawla & J W Pollard

ARTICLES

456 QUANTUM PHYSICS Classical

command of quantum systems
B W Reichardt, F Unger & U Vazirani
SEE N&V P.436



ON THE COVER

Tough cell

A macrophage pictured tussling with bacteria. Their remarkable versatility means that macrophages are involved in many homeostatic processes and in most human diseases, making them prime therapeutic targets. **PAGE 456**

461 SYSTEMS BIOLOGY Dynamic regulatory network controlling T_H17 cell differentiation
N Yosef et al.

469 IMMUNOLOGY Co-evolution of a broadly neutralizing HIV-1 antibody and founder virus
H-X Liao et al. SEE N&V P.441

477 STRUCTURAL BIOLOGY Accurate assessment of mass, models and resolution by small-angle scattering
R P Rambo & J A Tainer

LETTERS

482 QUANTUM PHYSICS Experimental realization of non-Abelian non-adiabatic geometric gates
A A Abdumalikov Jr et al.

486 APPLIED PHYSICS Optical magnetic imaging of living cells
D Le Sage et al. SEE N&V P.442

490 EARTH SCIENCE Anomalous sulphur isotopes in plume lavas reveal deep mantle storage of Archaean crust
R A Cabral et al.

494 GENETICS A systematic genome-wide analysis of zebrafish protein-coding gene function
R N W Kettleborough et al.
SEE N&V P.443

498 GENETICS The zebrafish reference genome sequence and its relationship to the human genome
K Howe et al. SEE N&V P.443

504 HEALTH SCIENCES The global distribution and burden of dengue
S Bhatt et al.

508 BIOCHEMISTRY Diverse type VI secretion phospholipases are functionally plastic antibacterial effectors
A B Russell et al.

513 IMMUNOLOGY Induction of pathogenic T_H17 cells by inducible salt-sensing kinase SGK1
C Wu et al. SEE N&V P.437

518 IMMUNOLOGY Sodium chloride drives autoimmune disease by the induction of pathogenic T_H17 cells
M Kleinewietfeld et al. SEE N&V P.437

523 IMMUNOLOGY Follicular T-helper cell recruitment governed by bystander B cells and ICOS-driven motility
H Xu et al.

528 BIOTECHNOLOGY High-level semi-synthetic production of the potent antimalarial artemisinin
C J Paddon et al.

533 STRUCTURAL BIOLOGY Crystal structure of a eukaryotic phosphate transporter
B P Pedersen et al.

APPLIED PHYSICS

Field trip

Magnetic minerals in live bacteria on the map, thanks to diamonds. **PAGE 486**

