

CONTENTS

27 August 2015 / Vol 524 / Issue No 7566

THIS WEEK

EDITORIALS

387 POLICY

FDA vulnerability revealed

Politics has no place in the objective assessment for drug approvals

387 CULTURAL HERITAGE

Heroism in Syria

Scholars are exhibiting huge courage in trying to save historical artefacts

WORLD VIEW

389 **We must build resilience into our communities**

Erwann Michel-Kerjan

Innovative approaches can help society to cope with natural disasters

RESEARCH HIGHLIGHTS

390 SELECTIONS FROM THE SCIENTIFIC LITERATURE



Hummingbird feeding / Catalysing carbon conversion / Jellyfish stings / Hominin hand bone / Bacterial evolution in cystic fibrosis / Cosmic neutrinos / Twitter etiquette for ecologists

SEVEN DAYS

392 THE NEWS IN BRIEF

Supplies finally head for space station / Conservation cull kills wrong birds / EPA targets methane emissions / Female libido drug approved

CAREERS

507 COLUMN

Know your network

Peter Fiske

Use social media and the personal touch to develop a network of professional relationships

508 TRADE TALK

Impact assessor

Biophysicist Arie Meir on what it takes to be a team leader at Google.org

NEWS IN FOCUS

395 PSYCHOLOGY

Long-term mental-health effects of Hurricane Katrina revealed

396 OCEAN SCIENCE

Blob of warm Pacific water spurs calls for refined management of fish stocks

397 CLIMATE

Peat bog manipulated to assess its response to a warming world



398 BIOTECHNOLOGY

Hobbyists embrace CRISPR technology to rewrite genes in the garage

399 ECOSYSTEMS

Urban ecology comes of age

FEATURES

CLIMATE

Beat the city heat

Cooling urban areas in the face of rising temperatures is not as easy as it seems

PAGE 402



406 HEALTH

Tick trouble

The tricky business of how to arrest tick-borne diseases

TECHNOLOGY

503 GENOMICS

The DNA of a nation

Software innovations help drive the UK bid to interpret 100,000 sequenced human genomes

COMMENT

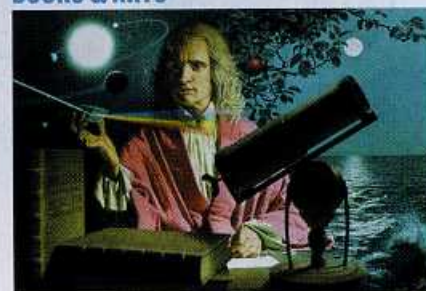
409 WATER AND CLIMATE

Recognize anthropogenic drought

Amir AghaKouchak, David Feldman, Martin Hoerling, Travis Huxman & Jay Lund

California's present woes make clear the importance of water management

BOOKS & ARTS



HISTORY OF SCIENCE

Crucible of change

Philip Ball gets a fresh perspective on the scientific revolution **PAGE 412**

413 DIGITAL PRIVACY

Subverting surveillance

Anthony King

414 SCIENCE FICTION

Cosmology boot camp

John Gilbey

CORRESPONDENCE

415 Cutting food waste / A brain lymphatic system / Lifelong learning / Henry Moseley, physicist / National protected areas

OBITUARY

416 **Yoichiro Nambu (1921–2015)**

Michael S Turner



FUTURES

510 **Under an uncaring sky**
William Meikle

RESEARCH

NEW ONLINE

417 Papers published this week at nature.com

NEWS & VIEWS

418 MATERIALS SCIENCE

Superlattice substitution
Random particle replacement in two-dimensional superlattices
Daniel Vanmaekelbergh

SEE LETTER P.450

419 CELL BIOLOGY

Surviving import failure
Adaptive responses to dysfunctional mitochondrial protein import
Cole M Haynes

SEE LETTERS P.481 & P.485

420 STRUCTURAL BIOLOGY

Lipid gymnastics
The crystal structure of the bacterial flippase PglK
Alice Verchère & Anant K Menon

SEE ARTICLE P.433

422 PARTICLE PHYSICS

Positrons ride the wave
Acceleration of positron bunches using a plasma wave
Philippe Piot

SEE LETTER P.442

423 EVOLUTION

Gene transfer in complex cells
Most prokaryotic genes in eukaryotes come from endosymbiotic transfer
John M Archibald

SEE ARTICLE P.427

424 PHOTONICS

A stable narrow-band X-ray laser
An atomic laser with the shortest operating wavelength to date
Linda Young

SEE LETTER P.446

ARTICLES

427 **STRUCTURAL BIOLOGY** Endosymbiotic origin and differential loss of eukaryotic genes

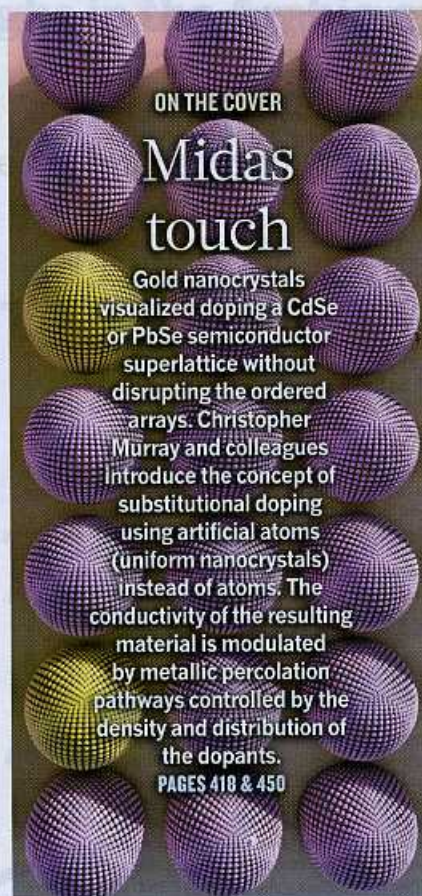
C Ku et al. SEE N&V P.423

433 **STRUCTURAL BIOLOGY** Structure and mechanism of an active lipid-linked oligosaccharide flippase

C Perez et al. SEE N&V P.420

LETTERS

439 **PLANETARY SCIENCE** The disruption of multiplanet systems through resonance with a binary orbit



J R Touna & S Sridhar

442 **PLASMA PHYSICS** Multi-gigaelectronvolt acceleration of positrons in a self-loaded plasma wakefield

S Corde et al. SEE N&V P.422

446 **PHOTONICS** Atomic inner-shell laser at 1.5-ångström wavelength pumped by an X-ray free-electron laser

H Yoneda et al. SEE N&V P.424

450 **NANOMATERIALS** Substitutional doping in nanocrystal superlattices

M Cargnello et al. SEE N&V P.418

454 **CHEMISTRY** Multimetallic catalysed cross-coupling of aryl bromides with aryl triflates

L K G Ackerman, M M Lovell & D J Weix

458 **GEOPHYSICS** Western US intermountain seismicity caused by changes in upper mantle flow

T W Becker et al.

462 **DEVELOPMENTAL BIOLOGY** The pre-vertebrate origins of neurogenic placodes

P B Abitua et al.

466 **NEUROSCIENCE** Sidekick 2 directs formation of a retinal circuit that detects differential motion

A Krishnaswamy, M Yamagata, X Duan, Y K Hong & J R Sanes

471 **VIROLOGY** SEC14L2 enables pan-genotype HCV replication in cell culture

M Saeed et al.

476 **DEVELOPMENTAL BIOLOGY** Cell mixing induced by myc is required for competitive tissue invasion and destruction

R Levayer, B Hauert & E Moreno

481 **CELL BIOLOGY** A cytosolic network suppressing mitochondria mediated proteostatic stress and cell death

X Wang & X J Chen SEE N&V P.419

485 **CELL BIOLOGY** Mistargeted mitochondrial proteins activate a proteostatic response in the cytosol

L Wrobel et al. SEE N&V P.419

489 **CELL BIOLOGY** Kinetochores-localized PP1-Sds22 couples chromosome segregation to polar relaxation

N T L Rodrigues et al.

493 **MOLECULAR BIOLOGY** Structural basis for stop codon recognition in eukaryotes

A Brown, S Shao, J Murray, R S Hegde & V Ramakrishnan

497 **BIOPHYSICS** Conformational dynamics of a class C G-protein-coupled receptor

R Vafabakhsh, J Levitz & E Y Isacoff

502 **CORRIGENDUM** *In vivo* engineering of oncogenic chromosomal rearrangements with the CRISPR/Cas9 system

D Maddalo et al.

502 **ERRATUM** No signature of ejecta interaction with a stellar companion in three type Ia supernovae

R P Olling et al.

502 **ERRATUM** A strong ultraviolet pulse from a newborn type Ia supernova

Y Cao et al.