

Nature Publishing Group
The Macmillan Building,
4 Crinan St, London N1 9XW, UK
e-mail: nature@nature.com



NATURE'S MISSION, 1869:

'The objective which it is proposed to attain by this periodical may be broadly stated as follows. It is intended, first, to place before the general public the grand results of scientific work and scientific discovery; and to urge the claims of science to move to a more general recognition in education and in daily life... Secondly, to aid scientific men [sic] themselves, by giving early information of all advances made in any branch of natural knowledge throughout the world, and by affording them an opportunity of discussing the various scientific questions which arise from time to time.'

Nature's mission statement was updated in 2000:

► www.nature.com/nature/about
Submissions and Guide to Authors:
► www.nature.com/nature/authors

Author and referee policies and services:

► www.nature.com/authors

Nature® (ISSN 0028-0836) is published by Nature Publishing Group, a division of Macmillan Publishers Ltd (The Macmillan Building, 4 Crinan Street, London N1 9XW). Registered as a newspaper at the British Post Office.

North and South American orders to: subscriptions@natureny.com (Tel: +1 866 363 7860). Other orders to subscriptions@nature.com (Tel: +44 (0)1256 329242; Fax: +44 (0)1256 812358). Authorization to photocopy material for internal or personal use, or internal or personal use of specific clients, is granted by Nature to libraries and others registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided the relevant copyright fee is paid direct to CCC, 222 Rosewood Drive, Danvers MA 01923, USA. Identification code for Nature: 0028-0836/03. CPC PUB AGREEMENT #40032744. In the US Nature (ISSN 0028-0836) is published weekly on Thursday, except the last week in December by Nature Publishing Group, 75 Varick St, 9th Fl, New York NY 10013-1917, USA. US Periodicals postage paid at New York NY, and additional mailing post offices. US POSTMASTER: send address changes to Nature, Subscription Dept, 342 Broadway PMB 301, New York NY 10013-3910, USA. Published in Japan by NPG Nature Asia-Pacific, Chiyoda Building, 2-37 Ichigayatamachi, Shinjuku-ku, Tokyo 162-0843, Japan. © 2010 Macmillan Publishers Limited. All rights reserved.



nature publishing group

nature

EDITORIALS

- 7 Congress must act to defend human stem-cell research | Floating above the plate tectonics fray

RESEARCH HIGHLIGHTS

- 8 Planetary *pas de deux* | Skin cancer target | Biosynthetic corneas | Forests threatened by intensifying storms | Gut flora transplant
- 9 JOURNAL CLUB Nanotechnology in three dimensions
John A Rogers

NEWS

- 10 NEWS BRIEFING
- 12 US district court halts federal funding of human stem-cell research
- 14 Review recommends new structure for beleaguered IPCC
- 15 Overfishing threatens ecologically important Antarctic krill stocks
- 16 Mystery of the disappearing oil plume in the Gulf of Mexico
- 17 Cold-snap implicated in mass fish deaths in Bolivia

NEWS FEATURES

- 18 Nanotechnology: Small wonders
Corie Lok
- 22 Deepwater Horizon: After the oil
Amanda Mascarelli

COLUMN

- 26 WORLD VIEW Politicize me
Daniel Sarewitz

CORRESPONDENCE

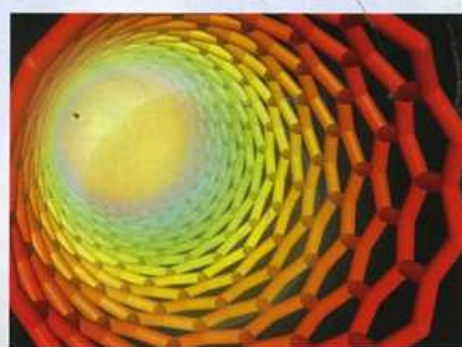
- 27 Stem-cell research judgement | Ireland's smart economy jeopardized | Play up and do the game | A vote against mosquitoes

OPINION

- 28 Seafood stewardship in crisis
Jennifer Jacquet, Daniel Pauly et al.



Stocks control: keeping seafood on the menu, p. 28.



Think big: handling the nanotechnology boom, p. 18.

BOOKS & ARTS

- 30 Soil Atlas of the Northern Circumpolar Region by the Joint Research Centre of the European Commission
Reviewed by Philippe Ciais
- 31 Mood Matters: From Rising Skirt Lengths to the Collapse of World Powers by John L Casti
Reviewed by David Berreby
- 32 Inception, a film directed by Christopher Nolan
Reviewed by Christof Koch

NEWS & VIEWS

- 33 Biological physics: Filaments band together
Jean-François Joanny & Sriram Ramaswamy See Letter p. 73
- 34 Microbiology: Altruistic defence
Hyun Youk & Alexander van Oudenaarden See Letter p. 82
- 35 Astrophysics: Unexpected warm water
Bengt Gustafsson See Letter p. 64
- 36 Alzheimer's disease: Selectively tuning γ -secretase
Peter St George-Hyslop & Gerold Schmitt-Ulms See Letter p. 95
- 37 Laser science: Suckers for light
Claire F Gmachl
- 39 Regenerative medicine: Heart redevelopment
Richard P Harvey
- 41 OBITUARY Donald Charles Backer (1943–2010)
S R Kulkarni

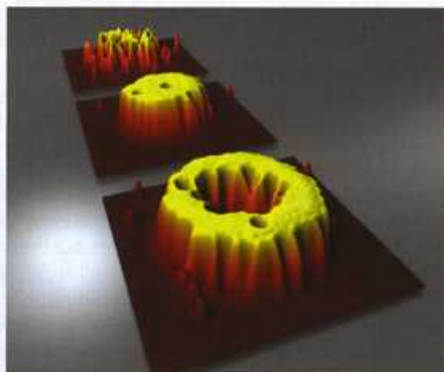
NATUREJOBS

- 119 Q&A Fekrije Selimi on the challenges of neuroscience
- 120 CAREERS Choosing a postdoc post: The right fit
Jeffrey Perkel

FUTURES

- 124 Health tips for traveller
David W Goldman

Visualizing single particles
in a quantum fluid, p. 68.



REVIEWS

- 43 **The impacts of climate change on water resources and agriculture in China**
S Piao, P Ciais, Y Huang, Z Shen, S Peng, J Li, L Zhou, H Liu, Y Ma, Y Ding, P Friedlingstein, C Liu, K Tan, Y Yu, T Zhang & J Fang

ARTICLES

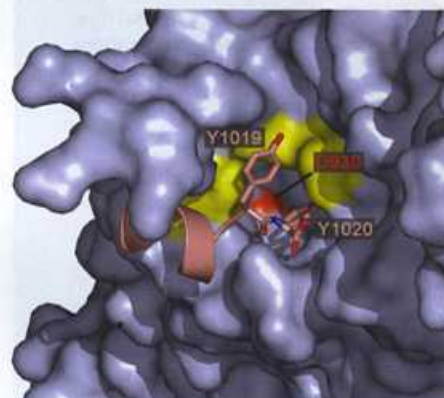
- 52 **Integrating common and rare genetic variation in diverse human populations**
The International HapMap 3 Consortium
- 59 **Neurotrophin receptors TrkA and TrkC cause neuronal death whereas TrkB does not**
V Nikolettou, H Lickert, J M Frade, C Rencurel, P Giallonardo, L Zhang, M Bibel & Y-A Barde

LETTERS

- 64 **Warm water vapour in the sooty outflow from a luminous carbon star**
L Decin, M Agúndez, M J Barlow, F Daniel, J Cernicharo, R Lombaert, E De Beck, P Royer, B Vandenbussche, R Wesson, E T Polehampton, J A D L Blommaert, W De Meester, K Exter, H Feuchtgruber, W K Gear, H L Gomez, M A T Groenewegen, M Guélin, P C Hargrave, R Huygen, P Imhof, R J Ivison, C Jean, C. Kahane, F Kerschbaum, S J Leeks, T Lim, M Matsuura, G Olofsson, T Posch, S Regibo, G Savini, B Sibthorpe, B M Swinyard, J A Yates & C Waelkens **See N&V p. 35**
- 68 **Single-atom-resolved fluorescence imaging of an atomic Mott insulator**
J F Sherson, C Weitenberg, M Endres, M Cheneau, I Bloch & S Kuhr
- 73 **Polar patterns of driven filaments**
V Schaller, C Weber, C Semmrich, E Frey & A R Bausch

- 78 **Olivine water contents in the continental lithosphere and the longevity of cratons**
A H Peslier, A B Woodland, D R Bell & M Lazarov
- 82 **Bacterial charity work leads to population-wide resistance**
H H Lee, M N Molla, C R Cantor & J J Collins **See N&V p. 34**
- 86 **OncomiR addition in an *in vivo* model of microRNA-21-induced pre-B-cell lymphoma**
P P Medina, M Nolde & F J Slack
- 91 **A spindle-independent cleavage furrow positioning pathway**
C Cabernard, K E Prehoda & C Q Doe
- 95 **Gamma-secretase activating protein is a therapeutic target for Alzheimer's disease**
G He, W Luo, P Li, C Remmers, W J Netzer, J Hendrick, K Bettayeb, M Flajolet, F Gorelick, L P Wennogle & P Greengard **See N&V p. 36**
- 99 **Neurological disease mutations compromise a C-terminal ion pathway in the Na⁺/K⁺-ATPase**
H Poulsen, H Khandelia, J P Morth, M Bublitz, O G Mouritsen, J Egebjerg & P Nissen
- 103 **Genome-wide measurement of RNA secondary structure in yeast**
M Kertesz, Y Wan, E Mazar, J L Rinn, R C Nutter, H Y Chang & E Segal
- 108 **Mechanism of the ATP-dependent DNA end-resection machinery from *Saccharomyces cerevisiae***
H Niu, W-H Chung, Z Zhu, Y Kwon, W Zhao, P Chi, R Prakash, C Seong, D Liu, L Lu, G Ira & P Sung
- 112 **DNA end resection by Dna2-Sgs1-RPA and its stimulation by Top3-Rmi1 and Mre11-Rad50-Xrs2**
P Cejka, E Cannavo, P Polaczek, T Masuda-Sasa, S Pokharel, J L Campbell & S C Kowalczykowski

A regulatory role for
the C-terminus of the
Na⁺/K⁺-ATPase
pump, p. 99



NATURE ONLINE

ADVANCE ONLINE PUBLICATION

PUBLISHED ON 29 AUGUST 2010

Identification of a quality-control mechanism for mRNA 5'-end capping

X Jiao, S Xiang, C-S Oh, C E Martin, L Tong & M Kiledjian

doi:10.1038/nature09338

PUBLISHED ON 1 SEPTEMBER 2010

Selectivity mechanism of the nuclear pore complex characterized by single cargo tracking

A R Lowe, J J Siegel, P Kalab, M Siu, K Weis & J T Liphardt

doi:10.1038/nature09285

NEW PODCAST AND VIDEOS

On this week's podcast, regular features and background on the latest Nature papers. Go to iTunes or download from:

www.nature.com/podcast

For the latest videos from Nature, and the other NPG journals:

www.youtube.com/NatureVideoChannel



High-speed graphene transistors with a self-aligned nanowire gate

L Liao, Y-C Lin, M Bao, R Cheng, J Bai, Y Liu, Y Qu, K L Wang, Y Huang & X Duan

doi:10.1038/nature09404

BRIEF COMMUNICATIONS ARISING

PUBLISHED ON 1 SEPTEMBER 2010

Arising from: 'A precision measurement of the gravitational redshift by the interference of matter waves' by H Müller, A Peters & S Chu *Nature* **463**, 926-929 (2010).

Atom gravimeters and gravitational redshift

P Wolf, L Blanchet, C J Bordé, S Reynaud, C Salomon & C Cohen-Tannoudji

doi:10.1038/nature09340

Reply: Müller et al. doi:10.1038/nature09341

Arising from 'REST maintains self-renewal and pluripotency of embryonic stem cells' by S K Singh et al. *Nature* **453**, 223-227 (2008).

Can controversies be put to REST?

H F Jørgensen & A G Fisher doi:10.1038/nature09305

Reply: Singh et al. doi:10.1038/nature09306