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### EPPENDORF AWARD FOR YOUNG EUROPEAN INVESTIGATORS



Presented in partnership with Nature

Turn to the pages following News & Views for an interview with 2009 winner, Oscar Fernández-Capetillo.



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### NEWS & VIEWS

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##### Beyond infrastructure

A survey of global hydrology highlights the value of the watershed concept  
Margaret A Palmer [SEE ARTICLE P.555](#)

#### 535 LOW-TEMPERATURE PHYSICS

##### Paired in one dimension

The quest for an exotic form of superconductivity continues  
Immanuel Bloch [SEE LETTER P.567](#)

#### 537 HIV

##### Antibodies with a split personality

Antibody arms may grab two separate epitopes on the HIV surface  
Andreas Plückthun [SEE LETTER P.591](#)

#### 538 BIOGEOCHEMISTRY

##### Ocean biomes blended

Modelling work conveys a mixed message about nutrient ratios  
Raymond N Sambrotto [SEE ARTICLE P.550](#)

#### 539 GENOMICS

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Sadaf Shadan

#### 540 BIODIVERSITY

##### A standard for species

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#### 541 NANOSCIENCE

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#### 543 MEDICAL RESEARCH Translating cancer research into targeted therapeutics

J S de Bono & A Ashworth

### ARTICLES

#### 550 EARTH SCIENCE Ocean nutrient ratios governed by plankton biogeography

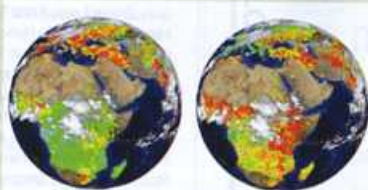
T S Weber & C Deutsch [SEE N&V P. 538](#)

#### 555 ENVIRONMENTAL SCIENCE Global threats to human water security and river biodiversity

C J Vörösmarty et al. [SEE N&V P.534](#)

#### 562 MOLECULAR BIOLOGY Structure of RCC1 chromatin factor bound to the nucleosome core particle

R D Makde, J R England, H P Yennawar & S Tan



### ON THE COVER

## Troubled waters

The security of water supply for humans and the biodiversity of rivers are often seen as competing goals, but need that be the case? A new global-scale analysis of freshwater resources advances the field by considering threats both to river biodiversity (the left-hand globe) and to human water security, after accounting for investments in infrastructure and water services (right). [PAGES 534 & 555](#)

### LETTERS

#### 567 PHYSICS Spin-imbalance in a one-dimensional Fermi gas

Y-a Liao et al. [SEE N&V P.535](#)

#### 570 APPLIED PHYSICS Generation of three-qubit entangled states using superconducting phase qubits

M Neeley et al.

#### 574 APPLIED PHYSICS Preparation and measurement of three-qubit entanglement in a superconducting circuit

L DiCarlo et al.

#### 579 GEOPHYSICS Vertical extension of the subglacial drainage system into basal crevasses

J T Harper, J H Bradford, N F Humphrey & T W Meierbachtol

#### 583 GEOPHYSICS Decay of aftershock density with distance does not indicate triggering by dynamic stress

K Richards-Dinger, R S Stein & S Toda

#### 587 EVOLUTION Genome-wide analysis of a long-term evolution experiment with *Drosophila*

M K Burke et al.

#### 591 IMMUNOLOGY Polyreactivity increases the apparent affinity of anti-HIV antibodies by heterologation

H Mouquet et al. [SEE N&V P.537](#)

#### 596 DRUG DISCOVERY Clinical efficacy of a RAF inhibitor needs broad target blockade in *BRAF*-mutant melanoma

G Bollag et al.

#### 600 CELL BIOLOGY Selectivity mechanism of the nuclear pore complex characterized by single cargo tracking

A R Lowe et al.

#### 604 CELL BIOLOGY *In vivo* imaging of labelled endogenous $\beta$ -actin mRNA during nucleocytoplasmic transport

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#### 608 MOLECULAR BIOLOGY Identification of a quality-control mechanism for mRNA 5'-end capping

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#### 612 MOLECULAR BIOLOGY Two enzymes bound to one transfer RNA assume alternative conformations for consecutive reactions

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#### 617 CELL BIOLOGY Anisotropies in cortical tension reveal the physical basis of polarizing cortical flows

M Mayer, M Depken, J S Bois, F Jülicher & S W Grill

#### 622 CORRIGENDUM Release of chromatin protein HMGB1 by necrotic cells triggers inflammation

P Scaffidi, T Misteli & M E Bianchi

#### 622 CORRIGENDUM Treatment frontiers

K Smith

#### 622 ERRATUM The genetics of ageing

C J Kenyon