

1200 New York Avenue, NW
Washington, DC 20005

Editorial: 202-326-6550, FAX 202-289-7562
News: 202-326-6581, FAX 202-371-9227

Bateman House, 82-88 Hills Road
Cambridge, UK CB2 1LQ

+44 (0) 1223 326500, FAX +44 (0) 1223 326501

SUBSCRIPTION SERVICES For change of address, missing issues, new orders and renewals, and payment questions: 866-434-AAAS (2227) or 202-326-6417, FAX 202-412-1065. Mailing addresses: AAAS, P.O. Box 96178, Washington, DC 20090-6178 or AAAS Member Services, 1200 New York Avenue, NW, Washington, DC 20005

INSTITUTIONAL SITE LICENSES please call 202-326-6755 for any questions or information

REPRINTS: Author Inquiries 800-635-7181

Commercial Inquiries 803-359-4578

PERMISSIONS 202-326-7074, FAX 202-682-0816

MEMBER BENEFITS AAAS/Barnes&Noble.com bookstore www.aaas.org/bn; AAAS Online Store www.apisource.com/aaas/ code MKB6; AAAS Travels: Bethcart Expeditions 800-252-4910; Apple Store www.wapple/eppstore/aaas; Bank of America MasterCard 1-800-833-6262 priority code FAA3YU; Cold Spring Harbor Laboratory Press Publications www.cshlpress.com/affiliates/aaas.htm; GEICO Auto Insurance www.geico.com/landingpage/go51.htm?logo=17624; Hertz 800-654-2200 CDP#343457; Office Depot https://bsd.officedepot.com/portalLogin.do; Seabury & Smith Life Insurance 800-424-9883; Subaru VIP Program 202-326-6417; VIP Moving Services www.vipmayflower.com/domestic/index.html; Other Benefits: AAAS Member Services 202-326-6417 or www.aaasmember.org.

science_editors@aaas.org (for general editorial queries)
science_letters@aaas.org (for queries about letters)
science_reviews@aaas.org (for returning manuscript reviews)
science_bookreviews@aaas.org (for book review queries)

Published by the American Association for the Advancement of Science (AAAS), *Science* serves its readers as a forum for the presentation and discussion of important issues related to the advancement of science, including the presentation of minority or conflicting points of view, rather than by publishing only material on which a consensus has been reached. Accordingly, all articles published in *Science*—including editorials, news and comment, and book reviews—are signed and reflect the individual views of the authors and not official points of view adopted by AAAS or the institutions with which the authors are affiliated.

AAAS was founded in 1848 and incorporated in 1874. Its mission is to advance science, engineering, and innovation throughout the world for the benefit of all people. The goals of the association are to: enhance communication among scientists, engineers, and the public; promote and defend the integrity of science and its use; strengthen support for the science and technology enterprise; provide a voice for science on societal issues; promote the responsible use of science in public policy; strengthen and diversify the science and technology workforce; foster education in science and technology for everyone; increase public engagement with science and technology; and advance international cooperation in science.

INFORMATION FOR AUTHORS

See pages 807 and 808 of the 6 February 2009 issue or access www.sciencemag.org/about/authors

EDITOR-IN-CHIEF **Bruce Alberts**
EXECUTIVE EDITOR **Monica M. Bradford**
NEWS EDITOR **Colin Norman**
MANAGING EDITOR, RESEARCH JOURNALS **Katrina L. Kelner**
DEPUTY EDITORS **R. Brooks Hanson, Barbara R. Jasny, Andrew M. Sugden**

EDITORIAL SENIOR EDITORS/COMMENTARY Lisa D. Chong, Brad Wible; **SENIOR EDITORS** Gilbert J. Chin, Pamela J. Hines, Paula A. Kiberstis (Boston), Marc S. Lavine (Toronto), Beverly A. Purnell, L. Bryan Ray, Guy Riddihough, H. Jesse Smith, Phillip D. Szurmi (Tennessee), Valda Vinson, Jake S. Yeston; **ASSOCIATE EDITORS** Kristen L. Mueller, Nicholas S. Wigginton, Laura M. Zahn; **ONLINE EDITOR** Stewart Wills; **ASSOCIATE ONLINE EDITORS** Robert Frederick, Tara S. Marathe; **WEB CONTENT DEVELOPER** Martyn Green; **BOOK REVIEW EDITOR** Sherman J. Suter; **ASSOCIATE LETTERS EDITOR** Jennifer Silis; **EDITORIAL MANAGER** Cara Tate; **SENIOR COPY EDITORS** Jeffrey E. Cook, Cynthia Howe, Harry Jach, Barbara P. Ordway, Trista Waggoner; **COPY EDITORS** Chris Filatireau, Lauren Kmeic; **EDITORIAL COORDINATORS** Carolyn Kyle, Beverly Shields; **PUBLICATIONS ASSISTANTS** Ramatoulaye Diop, Carlos L. Durham, Joi S. Granger, Jeffrey Hearn, Lisa Johnson, Scott Miller, Jerry Richardson, Jennifer A. Seibert, Brian White, Anita Wynn; **EDITORIAL ASSISTANTS** Emily Guise, Michael Hicks, Patricia M. Moore; **EXECUTIVE ASSISTANT** Sylvia S. Kihara; **ADMINISTRATIVE SUPPORT** Maryrose Madrid
NEWS DEPUTY NEWS EDITORS Robert Coontz, Eliot Marshall, Jeffrey Mervis, Leslie Roberts; **Contributing Editors** Elizabeth Culotta, Polly Shulman; **NEWS WRITERS** Yudhijit Bhattacharjee, Adrian Cho, Jennifer Couzin, David Grimm, Constance Holden, Jocelyn Kaiser, Richard A. Kerr, Eli Kintisch, Andrew Lawler (New England), Greg Miller, Elizabeth Pennisi, Robert F. Service (Pacific NW), Erik Stokstad; **INTERNS** Michael Torrice, Brittany Johnson, Preyanka Makadia; **CONTRIBUTING CORRESPONDENTS** Dan Charles, Jon Cohen (San Diego, CA), Daniel Ferber, Ann Gibbons, Robert Koenig, Mitch Leslie, Charles C. Mann, Virginia Morell, Evelyn Strauss, Gary Taubes; **COPY EDITORS** Linda B. Felaco, Melvin Gatling, Melissa Raimondi; **ADMINISTRATIVE SUPPORT** Scherraine Mack, Fannie Groom; **BUREAUS** New England: 207-549-7755; San Diego, CA: 760-942-3252, FAX 760-942-4979; Pacific Northwest: 503-963-1940

PRODUCTION DIRECTOR James Landry; **SENIOR MANAGER** Wendy K. Shank; **ASSISTANT MANAGER** Rebecca Doshi; **SENIOR SPECIALISTS** Steve Forrester, Chris Redwood; **SPECIALIST** Anthony Rosen; **PREFLIGHT DIRECTOR** David M. Tompkins; **MANAGER** Marcus Spiegler; **SPECIALIST** Jason Hillman
ART DIRECTOR Yael Kats; **ASSOCIATE ART DIRECTOR** Laura Creveling; **SENIOR ILLUSTRATORS** Chris Bickel, Katharine Suttif; **ILLUSTRATOR** Yana Greenman; **SENIOR ART ASSOCIATES** Holly Bishop, Preston Huey, Nayomi Kevitivyagala; **ART ASSOCIATES** Jessica Newfield, Matthew Twombly; **PHOTO EDITOR** Leslie Blizard

SCIENCE INTERNATIONAL

EUROPE (science@science-int.co.uk) **EDITORIAL:** INTERNATIONAL MANAGING EDITOR Andrew M. Sugden; **SENIOR EDITOR/COMMENTARY** Julia Fahrenkamp-Uppenbrink; **SENIOR EDITORS** Caroline Ash, Stella M. Hurtle, Ian S. Osborne, Peter Stern; **ASSOCIATE EDITOR** Maria Cruz; **LOCUM EDITOR** Helen Pickersgill; **EDITORIAL SUPPORT** Deborah Dennison, Rachel Roberts, Alice Whaley; **ADMINISTRATIVE SUPPORT** John Cannell, Janet Clements, Louise Moore; **NEWS: EUROPE NEWS EDITOR** John Travis; **DEPUTY NEWS EDITOR** Daniel Clery; **CONTRIBUTING CORRESPONDENTS** Michael Balter (Paris), John Bohannon (Vienna), Martin Enserink (Amsterdam and Paris), Gretchen Vogel (Berlin); **INTERN** Claire Thomas

ASIA Japan Office: Asca Corporation, Eiko Ishioka, Fusako Tamura, 77 Tenjin-cho, Shinjuku, Tokyo 162-0808, Japan; +81 3 6802 4616, FAX +81 3 6802 4615, inquiry@sciencemag.jp; **ASIA NEWS EDITOR** Richard Stone (Beijing); rstone@aaas.org; **CONTRIBUTING CORRESPONDENTS** Dennis Normile [Japan: +81 (0) 3 3391 0630, FAX +81 (0) 3 5936 3531; dnormile@gol.com]; Hao Xin [China: +86 (0) 10 6307 4439 or 6307 3676, FAX +86 (0) 10 6307 4358; cindyhao@gmail.com]; Pallava Bagla [South Asia: +91 (0) 11 2271 2896; pbagla@vsnl.com]

EXECUTIVE PUBLISHER **Alan I. Leshner**
PUBLISHER **Beth Rosner**

FULFILLMENT SYSTEMS AND OPERATIONS (membership@aaas.org); **DIRECTOR** Wayne Butler; **SENIOR SYSTEMS ANALYST** Nomuna Nyamaa; **CUSTOMER SERVICE SUPERVISOR** Pat Butler; **SPECIALISTS** Latoya Casteel, LaVonda Crawford, Vicki Linton, April Marshall; **DATA ENTRY SUPERVISOR** Cynthia Johnson; **SPECIALISTS** Shirleen Hall, Tarrika Hill, William Jones

BUSINESS OPERATIONS AND ADMINISTRATION DIRECTOR Deborah Rivera-Wienhold; **ASSISTANT DIRECTOR, BUSINESS OPERATIONS** Randy Yi; **MANAGER, BUSINESS ANALYSIS** Michael LoBue; **MANAGER, BUSINESS OPERATIONS** Jessica Tierney; **FINANCIAL ANALYSTS** Priti Pammani, Celeste Troxler; **RIGHTS AND PERMISSIONS: ADMINISTRATOR** Emilie David; **ASSOCIATE** Elizabeth Sandler; **MARKETING DIRECTOR** Ian King; **MARKETING MANAGERS** Allison Pritchard, Alison Chandler, Julianne Wielga; **MARKETING ASSOCIATES** Aimee Aponte, Mary Ellen Crowley, Adrian Parham, Wendy Wyle; **MARKETING EXECUTIVE** Jennifer Reeves; **DIRECTOR, SITE LICENSING** Tom Ryan; **DIRECTOR, CORPORATE RELATIONS** Eileen Bernadette Moran; **PUBLISHER RELATIONS, eRESOURCES SPECIALIST** Kiki Forsythe; **SENIOR PUBLISHER RELATIONS SPECIALIST** Catherine Holland; **PUBLISHER RELATIONS, EAST COAST** Phillip Smith; **PUBLISHER RELATIONS, WEST COAST** Philip Tsolakidis; **FULFILLMENT SUPERVISOR** Iquo Edim; **FULFILLMENT COORDINATOR** Carrie MacDonald; **MARKETING ASSOCIATE** Mary Lagnaoui; **ELECTRONIC MEDIA: MANAGER** Elizabeth Harman; **PROJECT MANAGER** Trista Snyder; **ASSISTANT MANAGER** Lisa Stanford; **SENIOR PRODUCTION SPECIALISTS** Christopher Coleman, Walter Jones; **PRODUCTION SPECIALISTS** Nichele Johnston, Kimberly Oster

ADVERTISING DIRECTOR, WORLDWIDE AD SALES Bill Moran

PRODUCT (science_advertising@aaas.org); **MIDWEST/WEST COAST/W. CANADA** Rick Bongiovanni: 330-405-7080, FAX 330-405-7081; **EAST COAST/E. CANADA** Laurie Faraday: 508-747-9395, FAX 617-507-8189; **UK/EUROPE/ASIA** Roger Gonçalves: TEL/FAX +41 43 243 1358; **JAPAN** Mashu Yoshikawa: +81 (0) 3 3235 5961, FAX +81 (0) 3 3235 5852; **SENIOR TRAFFIC ASSOCIATE** Deandra Simms

COMMERCIAL EDITOR Sean Sanders: 202-326-6430

PROJECT DIRECTOR, OUTREACH Brianna Blaser

CLASSIFIED (advertise@sciencecareers.org); **U.S.:** **SALES MANAGER** Daryl Anderson: 202-326-6543; **MIDWEST** Tina Burks: 202-326-6577; **EAST COAST** Alexis Fleming: 202-326-6578; **WEST/SOUTH CENTRAL** Nicholas Hintibide: 202-326-6533; **SALES COORDINATORS** Rohan Edmonson, Shirley Young; **INTERNATIONAL: SALES MANAGER** Tracy Holmes: +44 (0) 1223 326525, FAX +44 (0) 1223 326532; **SALES** Susanne Kharraz, Dan Pennington, Alex Palmer; **SALES ASSISTANT** Lisa Patterson; **JAPAN** Mashu Yoshikawa: +81 (0) 3 3235 5961, FAX +81 (0) 3 3235 5852; **ADVERTISING SUPPORT MANAGER** Karen Foote: 202-326-6740; **ADVERTISING PRODUCTION OPERATIONS MANAGER** Deborah Tompkins; **SENIOR PRODUCTION SPECIALIST/GRAPHIC DESIGNER** Amy Hardcastle; **SENIOR PRODUCTION SPECIALIST** Robert Buck; **SENIOR TRAFFIC ASSOCIATE** Christine Hall

AAAS BOARD OF DIRECTORS RETIRING PRESIDENT, Chair James J. McCarthy; **PRESIDENT** Peter C. Agre; **PRESIDENT-ELECT** Huang Jian; **TREASURER** David E. Shaw; **CHIEF EXECUTIVE OFFICER** Alan I. Leshner; **BOARD ALICE GAST**, Linda P. B. Katche, Nancy Knowlton, Cherry A. Murray, Julia M. Phillips, Thomas D. Pollard, David S. Sabatini, Thomas A. Woolsey



ADVANCING SCIENCE, SERVING SOCIETY

SENIOR EDITORIAL BOARD

John I. Brauman, Chair, Stanford Univ.
Richard Losick, Harvard Univ.
Marcia McNutt, Monterey Bay Aquarium Research Inst.
Linda Partridge, Univ. College London
Michael S. Turner, University of Chicago

BOARD OF REVIEWING EDITORS

Takuzo Aida, Univ. of Tokyo.
Joanna Aizenberg, Harvard Univ.
Sonia Altshuler, Univ. of Georgia
David Altshuler, Broad Institute
Arturo Alvarez-Buylla, Univ. of California, San Francisco
Richard Amasino, Univ. of Wisconsin, Madison
Angelika Amon, MIT
Meinart A. Andreae, Max Planck Inst., Mainz
Kristi S. Anseth, Univ. of Colorado
John A. Bargh, Yale Univ.
Cornelia I. Bargmann, Rockefeller Univ.
Ben Barres, Stanford Medical School
Marisa Bartolomei, Univ. of Penn. School of Med.
Facundo Batista, London Research Inst.
Ray H. Baughman, Univ. of Texas, Dallas
David J. Benkovic, Penn State Univ.
Tom Bischoff, Wageningen Univ.
Mina Bissell, Lawrence Berkeley National Lab
Peer Bork, EMBL
Robert W. Boyd, Univ. of Rochester
Paul M. Brakefield, Leiden Univ.
Stephen Buratowski, Harvard Medical School
Joseph A. Burns, Cornell Univ.
William P. Butz, Population Reference Bureau
Mats Carlsson, Univ. of Oslo
Peter Carmeliet, Univ. of Leuven, VIB
Mildred Cho, Stanford Univ.
David Clapham, Children's Hospital, Boston
David Clary, Oxford University
J. M. Claverie, CNRS, Marseille
Jonathan D. Cohen, Princeton Univ.
Andrew Cossins, Univ. of Liverpool
Robert H. Crabtree, Yale Univ.
Wolfgang Cramer, Potsdam Inst. for Climate Impact Research

F. Fleming Crim, Univ. of Wisconsin
William Cumberland, Univ. of California, Los Angeles
Jeff L. Dangl, Univ. of North Carolina
Stanislas Dehaene, Collège de France
Edward DeLong, MIT
Emmanouil T. Dermitsakis, Wellcome Trust Sanger Inst.
Robert Desimone, MIT
Claude Desplan, New York Univ.
Dennis Discher, Univ. of Pennsylvania
Scott C. Doney, Woods Hole Oceanographic Inst.
W. Ford Doolittle, Dalhousie Univ.
Jennifer A. Doudna, Univ. of California, Berkeley
Julian Downward, Cancer Research UK
Denis Duboule, Univ. of Geneva/EPFL Lausanne
Christopher Dye, WHO
Gerhard Ertl, Fritz-Haber-Institut, Berlin
Mark Estelle, Indiana Univ.
Barry Everitt, Univ. of Cambridge
Paul G. Falkowski, Rutgers Univ.
Ernst Fehr, Univ. of Zurich
Tom Fenchel, Univ. of Copenhagen
Alain Fischer, INSERM
Scott E. Fraser, Cal Tech
Nicola D. Frith, Univ. College London
Wulfraam Gerstner, EPFL Lausanne
Charles Godfrey, Univ. of Oxford
Diane Griffin, Johns Hopkins Bloomberg School of Public Health
Christian Haass, Ludwig Maximilians Univ.
Niels Hansen, technical Univ. of Denmark
DNIS H. Hartmann, Univ. of Washington
Chris Hawkesworth, Univ. of Bristol
Martin Heimann, Max Planck Inst., Jena
James A. Hendler, Rensselaer Polytechnic Inst.
Ronald R. Hoy, Cornell Univ.
Olli Ikkala, Helsinki Univ. of Technology
Meyer B. Jackson, Univ. of Wisconsin Med. School
Stephen Jackson, Univ. of Cambridge
Steven Jacobsen, Univ. of California, Los Angeles
Peter Jonas, Universität Freiburg

Barbara B. Kahn, Harvard Medical School
Daniel Kahne, Harvard Univ.
Gerard Karsenty, Columbia Univ. College of P&S
Bernhard Keimer, Max Planck Inst., Stuttgart
Elizabeth A. Kelloff, Univ. of Missouri, St. Louis
Hanna Kokko, Univ. of Helsinki
Lee Kump, Penn State Univ.
Mitchell A. Lazar, Univ. of Tokyo
David Lazer, Harvard Univ.
Virginia Lee, Univ. of Pennsylvania
Olle Lindvall, Univ. Hospital, Lund
Marcia C. Linn, Univ. of California, Berkeley
John Lis, Cornell Univ.
Richard Losick, Harvard Univ.
Ke Lu, Chinese Acad. of Sciences
Andrew P. Mackenzie, Univ. of St. Andrews
Raul Madariaga, Ecole Normale Supérieure, Paris
Anne Magurran, Univ. of St. Andrews
Charles Marshall, Harvard Univ.
Virginia Miller, Washington Univ.
Yasushi Miyashita, Univ. of Tokyo
Richard Morris, Univ. of Edinburgh
Edvard Mose, Norwegian Univ. of Science and Technology
Naoto Nishida, Univ. of California, Irvine
James Nelson, Stanford Univ. School of Med.
Timothy W. Nilsen, Case Western Reserve Univ.
Roeland Nolte, Univ. of Nijmegen
Helga Nowotny, European Research Advisory Board
Eric N. Olson, Univ. of Texas, SW
Stuart H. Orkin, Dana-Farber Cancer Inst.
Erin O'Shea, Harvard Univ.
Elinor Ostrom, Indiana Univ.
Jonathan T. Overpeck, Univ. of Arizona
John Pendry, Imperial College
Reginald M. Penner, Univ. of California, Irvine
Simon Philippot, Univ. of Florida
Philippe Poulin, CNRS
Mary Power, Univ. of California, Berkeley
Molly Przeworski, Univ. of Chicago
Colin Renne, Univ. of Cambridge
Trevor Robbins, Univ. of Cambridge
Barbara A. Romanowicz, Univ. of California, Berkeley
Jens Rostrop-Nielsen, Haldor Topsoe
Edward M. Rubin, Lawrence Berkeley National Lab
Shimon Sakaguchi, Kyoto Univ.

Jürgen Sandkühler, Medical Univ. of Vienna
David W. Schindler, Univ. of Alberta
Georg Schulz, Albert-Ludwigs-Universität
Paul Schulze-Lefert, Max Planck Inst., Cologne
Christine Seidman, Harvard Medical School
Terrance J. Sejnowski, The Salk Institute
Richard J. Shavelson, Stanford Univ.
David Sibley, Washington Univ.
Joseph Silk, Univ. of Oxford
Montgomery Slatkin, Univ. of California, Berkeley
Davor Solter, Inst. of Medical Biology, Singapore
Joan Steitz, Yale Univ.
Elsbeth Stern, ETH Zürich
Jerome Strauss, Virginia Commonwealth Univ.
Urg Tschopp, Univ. of Lausanne
Derek van der Kooy, Univ. of Toronto
Bert Vogelstein, Johns Hopkins Univ.
Ulrich H. von Andrian, Harvard Medical School
Bruce D. Walker, Harvard Medical School
Christopher A. Walsh, Harvard Medical School
David A. Wardle, Swedish Univ. of Agric Sciences
Graham Warren, Yale Univ. School of Med.
Colin Watts, Univ. of Dundee
Detlef Weigel, Max Planck Inst., Tübingen
Jonathan Weissman, Univ. of California, San Francisco
Sue Wessler, Univ. of Georgia
Ellen D. Williams, Univ. of Maryland
Ian A. Wilson, The Scripps Res.
Jerry Workman, Stowers Inst. for Medical Research
Xiaoliang Sunney Xie, Harvard Univ.
John R. Yates III, The Scripps Res. Inst.
Jan Zaenen, Leiden Univ.
Huda Zoghbi, Baylor College of Medicine
Maria Zuber, MIT

BOOK REVIEW BOARD

John Aldrich, Duke Univ.
David Bloom, Harvard Univ.
Angela Creager, Princeton Univ.
Richard Swedner, Univ. of Chicago
Ed Wasserman, DuPont
Lewis Wolpert, Univ. College London