

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

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

**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 202-842-1065. 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.apple.com/epstore/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.html?logo=17624; Hertz 800-654-2200 CDP#343457; Office Depot https://bsd.officedepot.com/portaLogin.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_bookrevs@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 352 and 353 of the 15 January 2010 issue or access www.sciencemag.org/about/authors

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 Riddiough, H. Jesse Smith, Phillip D. Szurromi (Tennessee), Valda Vinson, Jake S. Yeston; **ASSOCIATE EDITORS** Kristen L. Mueller, Jelena Stajic, Nicholas S. Wigginton, Laura M. Zahn; **RESEARCH ASSOCIATE** Alexis Wynne Mogul; **BOOK REVIEW EDITOR** Sherman J. Suter; **ASSOCIATE LETTERS EDITOR** Jennifer Sills; **EDITORIAL MANAGER** Cara Tate; **SENIOR COPY EDITORS** Jeffrey E. Cook, Cynthia Howe, Harry Jach, Lauren Kmeck, Barbara P. Ordway, Trista Wagener; **COPY EDITOR** Chris Filiatreau; **EDITORIAL COORDINATORS** Carolyn Kyle, Beverly Shields; **PUBLICATIONS ASSISTANTS** Ramatoulaye Diop, Joi S. Granger, Emily Guise, Jeffrey Hearn, Michael Hicks, Lisa Johnson, Scott Miller, Jerry Richardson, Jennifer A. Seibert, Brian White, Anita Winn; **EDITORIAL ASSISTANTS** Emily C. Horton, Patricia M. Moore, Miriam Weinberg; **EXECUTIVE ASSISTANT** Alison Crawford; **ADMINISTRATIVE SUPPORT** Maryrose Madrid; **EDITORIAL FELLOW** Melissa R. McCartney

EDITORIAL DIRECTOR, WEB AND NEW MEDIA Stewart Wills; **SENIOR WEB EDITOR** Tara S. Marathe; **WEB EDITOR** Robert Frederick; **WEB DEVELOPMENT MANAGER** Martyn Green; **WEB DEVELOPER** Andrew Whitesell
NEWS DEPUTY NEWS EDITORS Robert Coontz, Eliot Marshall, Jeffrey Mervis, Leslie Roberts; **CONTRIBUTING EDITORS** Elizabeth Colotta, Polly Shulman; **NEWS WRITERS** Yudhijit Bhattacharjee, Adrian Cho, Jennifer Couzin, David Grimm, Jocelyn Kaiser, Richard A. Kerr, Eli Kintisch, Greg Miller, Elizabeth Pennisi, Lauren Schenkman, Robert F. Service (Pacific NW), Erik Stokstad, Jue Wang; **INTERNS** Kristen Minogue, Nezone Mthembu, Dolly Krishnaswamy; **CONTRIBUTING CORRESPONDENTS** Jon Cohen (San Diego, CA), Daniel Ferber, Ann Gibbons, Sam Kean, Robert Koenig, Andrew Lawler, Mitch Leslie, Charles C. Mann, Virginia Morell, Gary Taubes; **COPY EDITORS** Linda B. Felaco, Melvin Gatling, Melissa Raimondi; **ADMINISTRATIVE SUPPORT** Scherraine Mack; **BUREAU SA** Daniel A. Cho: 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, Anthony Rosen; **PREFLIGHT EDITOR** David M. Tompkins; **MANAGER** Marcus Spiegler; **SPECIALIST** Jason Hillman

ART DIRECTOR Yael Kats; **ASSOCIATE ART DIRECTOR** Laura Creveling; **SENIOR ILLUSTRATORS** Chris Bickel, Katharine Sutfitt; **ILLUSTRATOR** Yana Greitman; **SENIOR ART ASSOCIATES** Holly Bishop, Preston Huey, Nayomi Kevinnyagala; **ART ASSOCIATES** Kay Engman, 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** Rachel Roberts, Alice Whaley; **ADMINISTRATIVE SUPPORT** John Cannell, Janet Clements, Louise Hartwell; **NEWS: EUROPE NEWS EDITOR** John Travis; **DEPUTY NEWS EDITOR** Daniel Clery; **CONTRIBUTING CORRESPONDENTS** Michael Balter (Paris), John Bohannon (Vienna), Martin Eserinck (Amsterdam and Paris), Gretchen Vogel (Berlin); **INTERN** Sarah Reed

LATIN AMERICA CONTRIBUTING CORRESPONDENT Antonio Regalado

ASIA Japan Office: Asca Corporation, Tomoko Furusawa, Rustic Bldg. 7F, 77 Tenjin-cho, Shinjuku-ku, 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: cindyhao@gmail.com]; Pallava Bagla [South Asia: +91 (0) 11 2271 2896; pbagla@vsnl.com]

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

BUSINESS OPERATIONS AND ADMINISTRATION DIRECTOR Deborah Rivera-Wienhold; **BUSINESS SYSTEMS AND FINANCIAL ANALYSIS DIRECTOR** Randy Yi; **MANAGER, BUSINESS ANALYSIS** Eric Knott; **MANAGER, BUSINESS OPERATIONS** Jessica Tierney; **FINANCIAL ANALYSTS** Priti Pamnani, Celeste Troxler; **RIGHTS AND PERMISSIONS: ADMINISTRATOR** Emilee David; **ASSOCIATE** Elizabeth Sandler; **MARKETING DIRECTOR** Ian King; **MARKETING MANAGERS** Allison Pritchard, Alison Chandler, Julianne Wielga; **MARKETING ASSOCIATES** Aimee Aponte, Mary Ellen Crowley, Wendy Wise; **SENIOR MARKETING EXECUTIVE** Jennifer Reeves; **DIRECTOR, SITE LICENSING** Tom Ryan; **DIRECTOR, CORPORATE RELATIONS** Eileen Bernadette Moran; **PUBLISHER RELATIONS, RESOURCES** 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 MANAGER** Christina Schlecht; **MARKETING ASSOCIATE** Laura Tutino; **ELECTRONIC MEDIA: MANAGER** Elizabeth Harman; **PROJECT MANAGER** Trista Snyder; **ASSISTANT MANAGER** Lisa Stanford; **SENIOR PRODUCTION SPECIALISTS** Ryan Atkins, Christopher Coleman, **COMPUTER SPECIALIST** Walter Jones, Kai Zhang; **PRODUCTION SPECIALISTS** Angela Feraday, Nichole Johnston, Kimberly Oster; **DIRECTOR, WEB AND NEW MEDIA** Will Collins

ADVERTISING DIRECTOR, WORLDWIDE AD SALES Bill Moran
COMMERCIAL EDITOR Sean Sanders: 202-326-6430

ASSISTANT COMMERCIAL EDITOR Tianna Hicklin 202-326-6463

PROJECT DIRECTOR, OUTREACH Brianna Blaser

PRODUCT (science_advertising@aaas.org); **MIDWEST** Rick Bongiovanni: 330-405-7080, FAX 330-405-7081; **EAST COAST/E. CANADA** Laurie Faraday: 508-747-9395, FAX 617-507-8189; **WEST COAST/W. CANADA** Lyne Stockrod: 415-931-9782, FAX 415-520-6940; **UK/EUROPE/ASIA** Roger Gonçalves: TEL/FAX +41 43 243 1358; **JAPAN** ASCA Corporation, Nanako Ide +81 (0) 3 6802 4616, FAX +81 (0) 3 6802 4615; ads@sciencemag.jp; **SENIOR TRAFFIC ASSOCIATE** Deandra Simms

WORLDWIDE ASSOCIATE DIRECTOR OF SCIENCE CAREERS Tracy Holmes: +44 (0) 1223 326525, FAX +44 (0) 1223 326532

CLASSIFIED (advertise@sciencecareers.org); **U.S.: MIDWEST/WEST COAST/SOUTH CENTRAL/CANADA** Tina Burks: 202-326-6577; **EAST COAST/INDUSTRY** Elizabeth Early: 202-326-6578; **ADVERTISING OPERATIONS MANAGER** Kate Panganiban **SALES COORDINATORS** Rohan Edmonson, Shirley Young; **EUROPE/ROW SALES:** Susanne Kharraz, Dan Pennington, Alice Palmer; **SALES ASSISTANT** Lisa Patterson; **JAPAN** ASCA Corporation, Jie Chin +81 (0) 3 6802 4616, FAX +81 (0) 3 6802 4615; careerads@sciencemag.jp; **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** Peter C. Agre; **PRESIDENT** Alice Huang; **PRESIDENT-ELECT** Nina Fedoroff; **TREASURER** David E. Shaw; **CHIEF EXECUTIVE OFFICER** Alan I. Leshner; **BOARD** Linda P. B. Katehi, Nancy Knowlton, Stephen Mayo, Chery A. Murray, Julia M. Phillips, Sue V. Rosser, David D. Sabatini, Thomas A. Woolsey



ADVANCING SCIENCE, SERVING SOCIETY

SENIOR EDITORIAL BOARD

John I. Brauman, Chair, Stanford Univ.
Richard Losick, Harvard Univ.
Linda Partridge, Univ. College London
Michael S. Turner, University of Chicago

BOARD OF REVIEWING EDITORS

Adriano Aguzzi, Univ. Hospital Zürich
Takuzo Aida, Univ. of Tokyo
Sonia Altizer, Univ. of Georgia
David Altschuler, Broad Institute
Arturo Alvarez-Buylla, Univ. of California, San Francisco
Richard Amasino, Univ. of Wisconsin, Madison
Angelika Amon, MIT
Kathryn Anderson, Memorial Sloan-Kettering Cancer Center
Siv G. E. Andersson, Uppsala Univ.
Peter Andolfatto, Princeton Univ.
Meinrat O. Andreae, Max Planck Inst., Mainz
John A. Bargh, Yale Univ.
Ben Barres, Stanford Medical School
Marisa Bartolomei, Univ. of Penn. School of Med.
Jordi Bascompte, Estación Biológica de Doñana, CSIC
Facundo Batista, London Research Inst.
Ray H. Baughman, Univ. of Texas, Dallas
Yasmine Belkaid, NIAID, NIH
Stephen J. Benkovic, Penn State Univ.
Gregory C. Beroza, Stanford Univ.
Ton Bisseling, Wageningen Univ.
Mina Bissell, Lawrence Berkeley National Lab
Peer Bork, EMBL
Robert W. Boyd, Univ. of Rochester
Paul M. Brakefield, Leiden Univ.
Christian Büchel, Universitätsklinikum Hamburg-Eppendorf
Joseph A. Burns, Cornell Univ.
William P. Butz, Population Reference Bureau
Mats Carlsson, Univ. of Oslo
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
Jeff L. Dangl, Univ. of North Carolina
Stanlas Dehaene, Collège de France
Edward DeLong, MIT
Emmanouil T. Dermitzikis, Univ. of Geneva Medical School
Robert Desimone, MIT
Claude Despland, New York Univ.
Dennis Discher, Univ. of Pennsylvania
Scott C. Doney, Woods Hole Oceanographic Inst.
Jennifer A. Doudna, Univ. of California, Berkeley
Julian Downward, Cancer Research UK
Bruce Dunn, Univ. of California, Los Angeles
Christopher Dye, WHO
Michael B. Elowitz, Calif. Inst. of Technology
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
Wulfram Fischer, EPFL Lausanne
Charles Godfray, Univ. of Oxford
Diane Griffin, Johns Hopkins Bloomberg School of Public Health
Christian Haass, Ludwig Maximilians Univ.
Steven Hahn, Fred Hutchinson Cancer Research Center
Gregory J. Hannon, Cold Spring Harbor Lab.
Niels Hansen, Technical Univ. of Denmark
Dennis L. Hartmann, Univ. of Washington
Chris Hawkesworth, Univ. of St Andrews
Martin Heimann, Max Planck Inst., Jena
James A. Hendler, Rensselaer Polytechnic Inst.
Janet G. Hering, Swiss Fed. Inst. of Aquatic Science & Technology
Ray Hilborn, Univ. of Washington
Michael E. Himmel, National Renewable Energy Lab.
Kel Hirose, Tokyo Inst. of Technology
Ove Hoegh-Guldberg, Univ. of Queensland
Lora Hooper, UT Southwestern Medical Ctr at Dallas
Ronald R. Hoy, Cornell Univ.
Jeffrey A. Hubbell, EPFL Lausanne
Steven Jacobsen, Univ. of California, Los Angeles
Peter Jonas, Universität Freiburg

Barbara B. Kahn, Harvard Medical School
Daniel Kahne, Harvard Univ.
Bernhard Keimer, Max Planck Inst., Stuttgart
Robert Kingston, Harvard Medical School
Hanna Kokko, Univ. of Helsinki
Alberto R. Kornblith, Univ. of Buenos Aires
Leonid Krut'ylak, Princeton Univ.
Lee Kump, Penn State Univ.
Mitchell A. Lazar, Univ. of Pennsylvania
David Lazer, Harvard Univ.
Virginia Lee, Univ. of Pennsylvania
Julian Lewis, Cancer Research UK
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
Laura Machuga, CRUK Beatson Inst. for Cancer Research
Andrew P. Mackenzie, Univ. of St Andrews
Anne Magurran, Univ. of St Andrews
Oscar Marin, CSIC & Univ. Miguel Hernández
Charles Marshall, Univ. of California, Berkeley
Martin M. Matzuk, Baylor College of Medicine
Graham Medley, Univ. of Warwick
Virginia Miller, Washington Univ.
Yasushi Miyashita, Univ. of Tokyo
Richard Morris, Univ. of Edinburgh
Sean Mullen, Norwegian Univ. of Science and Technology
Sean Munro, MRC Lab. of Molecular Biology
Naoto Nagaosa, Univ. of Tokyo
James Nelson, Stanford Univ. School of Med.
Timothy W. Nilsen, Case Western Reserve Univ.
Pär Nordlund, Karolinska Inst.
Beiga Nowotny, European Research Advisory Board
Stuart H. Orkin, Dana-Farber Cancer Inst.
Christine Ortiz, MIT
Elinor Ostrom, Indiana Univ.
Andrew Oswald, Univ. of Warwick
Jonathan T. Overpeck, Univ. of Arizona
David Pearson, Univ. of California, Berkeley
John Pendry, Imperial College
Reginald M. Penner, Univ. of California, Irvine
John H. J. Petrini, Memorial Sloan-Kettering Cancer Center
Simon Philpott, Univ. of Florida
Philipppe Poulin, CNRS

Colin Renfrew, 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.
Michael J. Sanderson, Univ. of Arizona
Jürgen Sandkühner, Medical Univ. of Vienna
Randy Seeley, Univ. of Cincinnati
Christine Seidman, Harvard Medical School
David Sibley, Washington Univ.
Joseph Silk, Univ. of Oxford
Montgomery Slatkin, Univ. of California, Berkeley
Davor Sotler, Inst. of Medical Biology, Singapore
Allan C. Spradling, Carnegie Institution of Washington
Jonathan Sprent, Garvan Inst. of Medical Research
Elisbeth Stern, ETH Zürich
Yoshiko Takahashi, Nara Inst. of Science and Technology
Jürg Tschopp, Univ. of Lausanne
Bert Vogelstein, Johns Hopkins Univ.
Bruce D. Walker, Harvard Medical School
Christopher A. Walsh, Harvard Medical School
David A. Wardle, Swedish Inst. of Agric Sciences
Colin Watts, Univ. of Dundee
Detlef Weigel, Max Planck Inst., Tübingen
Jonathan Weissman, Univ. of California, San Francisco
Sue Westler, Univ. of Georgia
Ian A. Wilson, The Scripps Res. Inst.
Tim Wilson, Univ. of Virginia
Kieliang Sunney Xia, 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 Creavin, Princeton Univ.
Richard Swedder, Univ. of Chicago
Ed Wasserman, DuPont
Lewis Wolpert, Univ. College London