

MANAGING EDITOR, RESEARCH JOURNALS **Katrina L. Kelner**
DEPUTY EDITORS **R. Brooks Hanson, Barbara R. Jasny, Andrew M. Sugden, Valda J. Vinson**

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. Szuroni (Tennessee), Valda Vinson, Jake S. Veston, Laura M. Zahn (San Diego)**; ASSOCIATE EDITORS **Kristen L. Mueller, Jelena Stajic, Sacha Vignier, Nicholas S. Wigginton**; 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 Wagoner**; COPY EDITOR **Chris Filiatreau**; SENIOR EDITORIAL COORDINATORS **Carolyn Kyle, Beverly Shields**; EDITORIAL COORDINATORS **Joi S. Granger, Anita Wynn**; PUBLICATIONS ASSISTANTS **Ramatoulaye Diop, Le-Toya Mayne Flood, Aneera Dobbins, Jeffrey Hearn, Michael Hicks, Lisa Johnson, Scott Miller, Jerry Richardson, Teresa R. Sakon, Brian White**; EDITORIAL ASSISTANT **Patricia M. Moore**; EXECUTIVE EDITORIAL ASSISTANT **Yolanda O'Bannon (San Francisco)**; EXECUTIVE ASSISTANT **Alison Crawford**; ADMINISTRATIVE SUPPORT **Maryrose Madrid**; EDITORIAL FELLOW **Melissa R. McCartney**

EDITORIAL DIRECTOR, WEB AND NEW MEDIA **Stewart Wills**; SENIOR WEB EDITOR **Sarah Crespi**; WEB EDITOR **Kerry Klein**; WEB DEVELOPMENT MANAGER **Martyn Green**; WEB DEVELOPERS **Corinna Cohn, Andrew Whitesell**
NEWS DEPUTY NEWS EDITORS **Robert Court, David Grimm (Online), Eliot Marshall, Jeffrey Mervis, Leslie Roberts, John Travis**; CONTRIBUTING EDITORS **Elizabeth Culotta, Polly Shulman**; NEWS WRITERS **Yudhijit Bhattacharjee, Adrian Cho, Jennifer Couzin-Frankel, Carolyn Gramling, Jocelyn Kaiser, Richard A. Kerr, Daniel Malachuk, Greg Miller, Elizabeth Pennisi, Robert F. Service (Pacific NW), Erik Stokstad**; WEB DEVELOPER **Daniel Berger**; INTERN **Jane L. Lee**; CONTRIBUTING CORRESPONDENTS **Jon Cohen (San Diego, CA), Daniel Ferber, Ann Gibbons, Sam Keen, Andrew Lawler, Mitch Leslie, Charles C. Mann, Virginia Morell, Gary Taubes**; COPY EDITORS **Linda B. Felaco, Melvin Gallatin, Melissa Raimondi**; ADMINISTRATIVE SUPPORT **Scherraine Mack**; BUREAUS **San Diego, CA: 760-942-3252, FAX 760-942-4979; Pacific Northwest: 503-963-1940**

PRODUCTION DIRECTOR **Wendy K. Shank**; ASSISTANT MANAGERS **Rebecca Doshi, Lori Murphy**; SENIOR SPECIALISTS **Steve Forrester, Chris Redwood, Anthony Rosen**; PREFLIGHT DIRECTOR **David M. Tompkins**; MANAGER **Marcus Spiegler**; SPECIALISTS **Jason Hillman, Tara Kelly**
ART DIRECTOR **Yael Fitzpatrick**; ASSOCIATE ART DIRECTOR **Laura Creveling**; SENIOR ILLUSTRATORS **Chris Bickel, Katharine Sutliff**; ILLUSTRATORS **Yana Hammond, Briceilyn Strauch**; SENIOR ART ASSOCIATES **Hoyle Bishop, Preston Huey, Nayomi Kevitiyagala**; ART ASSOCIATE **Kay Engman**; PHOTO EDITOR **Leslie Blizard**

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**; CONTRIBUTING EDITOR **Helen Pickersgill**; EDITORIAL SUPPORT **Samantha Hogg, Alice Whaley**; ADMINISTRATIVE SUPPORT **Janet Clements, Nicola Morris, John Wood**; NEWS: DEPUTY NEWS EDITOR, U.K. **Daniel Clerj**; CONTRIBUTING EDITOR, EUROPE **Martin Enserink**; CONTRIBUTING CORRESPONDENTS **Michael Balter (Paris), John Bohannon (Vienna), Gretchen Vogel (Berlin)**
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 3991 0630, FAX +81 (0) 3 5936 3531; dnormile@gol.com]; Hao Xin [China: cindyhao@gmail.com]; Mara Hvistendahl [China: mara@marahvistendahl.com]; Pallava Bagla [South Asia: +91 (0) 11 2271 2896; pbagla@vsnl.com]**

FULFILLMENT SYSTEMS AND OPERATIONS (membership@aaas.org); CUSTOMER SERVICE SUPERVISOR **Pat Butler**; SPECIALISTS **LaVonda Crawford, Vicki Linton, April Marshall**; MANAGER, DATA ENTRY **Mickie Napoleoni**; DATA ENTRY SPECIALISTS **Tarrika Hill, JJ Regan, Eva Mae Campbell**

BUSINESS OPERATIONS AND ADMINISTRATION DIRECTOR **Deborah Rivera-Wienhold**; BUSINESS SYSTEMS AND FINANCIAL ANALYSIS DIRECTOR **Randy Yi**; MANAGER, FULFILLMENT SYSTEMS **Frits Buning**; SYSTEMS ANALYST **Nicole Mehmedovich**; MANAGER, BUSINESS ANALYSIS **Eric Knott**; MANAGER, BUSINESS OPERATIONS **Jessica Tierney**; BUSINESS ANALYSTS **Piri Pammani, Celeste Troxler, Christine Wehrli**; RIGHTS AND PERMISSIONS: ADMINISTRATOR **Emilie David**; ASSOCIATE **Elizabeth Sandler**; MARKETING DIRECTOR **Ian King**; MARKETING MANAGERS **Allison Pritchard, Alison Chandler, Julianne Wielga, Samantha Smith**; MARKETING ASSOCIATES **Aimee Aponte, Mary Ellen Crowley**; SENIOR MARKETING EXECUTIVE **Jennifer Reeves**; DIRECTOR, SITE LICENSING **Tom Ryan**; DIRECTOR, CORPORATE RELATIONS **Eileen Bernadette Moran**; SENIOR PUBLISHER RELATIONS SPECIALIST **Kiki Forsythe**; PUBLISHER RELATIONS MANAGER **Catherine Holland**; PUBLISHER RELATIONS, EASTERN REGION **Phillip Smith**; PUBLISHER RELATIONS, WESTERN REGION **Ryan Rexroth**; CUSTOMER RELATIONS MANAGER **Iquo Edim**; MARKETING MANAGER **Christina Schlecht**; MARKETING ASSOCIATE **Chad Johnson**; ELECTRONIC MEDIA: DIRECTOR **Lizabeth Harman**; ASSISTANT MANAGER **Lisa Stanford**; PRODUCTION SPECIALISTS **Antoinette Hodal, Thomas Jaensch, Nichele Johnston, Kimberly Oster**; PROJECT MANAGER **Trista Snyder**; COMPUTER SPECIALISTS **Walter Jones, Kai Zhang**

ADVERTISING DIRECTOR, WORLDWIDE AD SALES **Bill Moran**
COMMERCIAL EDITOR **Sean Sanders**: 202-326-6430
ASSISTANT COMMERCIAL EDITOR **Tianna Hickin**: 202-326-6463

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 **Lynne Stickrod**: 415-931-9782, FAX 415-520-6940; UK/EUROPE/ASIA **Roger Gonçalves**: TEL/FAX +41 43 243 1358; JAPAN, Makiko Hara: +81 (0) 3 6802 4616, FAX +81 (0) 3 6802 4615; ads@sciencemag.jp; CHINA/TAIWAN **Ruolei Wu**: +86 1367 1015 294 rwu@aaas.org

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

CLASSIFIED (advertise@sciencemag.org); U.S.: MIDWEST/WEST COAST/SOUTH CENTRAL/CANADA **Tina Burks**: 202-326-6577; EAST COAST/INDUSTRY **Elizabeth Early**: 202-326-6578; SALES ADMINISTRATOR **Marci Gallun**; EUROPE/ROW SALES **Simone Lux, Lucy Nelson**; SALES ASSISTANT **Kelly Grace**; JAPAN **Yuri Kobayashi** +81 (6) 6627-9250; careerads@sciencemag.jp; CHINA/TAIWAN **Ruolei Wu**: +86 1367 1015 294 rwu@aaas.org; ADVERTISING SUPPORT MANAGER **Karen Foote**: 202-326-6740; ADVERTISING PRODUCTION OPERATIONS MANAGER **Deborah Tompkins**; SENIOR PRODUCTION SPECIALIST/GRAPHIC DESIGNER **Amy Hardcastle**; PRODUCTION SPECIALIST **Yuse Lajimimuh**; SENIOR TRAFFIC ASSOCIATE **Christine Hall**; SALES COORDINATOR **Shirley Young**

AAAS BOARD OF DIRECTORS RETIRING PRESIDENT, CHAIR **Nina V. Fedoroff**; PRESIDENT **William H. Press**; PRESIDENT-ELECT **Phillip A. Sharp**; TREASURER **David E. Shaw**; CHIEF EXECUTIVE OFFICER **Alan I. Leshner**; BOARD **Ray B. Berenbaum, Bonnie L. Bassler, Stephen L. Mayo, Raymond Orbach, Julia M. Phillips, Sue V. Rosser, David D. Sabatini, Inder M. Verma**

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.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_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 752 and 753 of the 10 February 2012 issue or access www.sciencemag.org/about/authors

SENIOR EDITORIAL BOARD

A. Paul Alivisatos, Lawrence Berkeley Nat'l. Laboratory
Cori Bargmann, The Rockefeller Univ.
Ernst Fehr, Univ. of Zurich
Erin O'Shea, Harvard Univ.
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
Sebastian Amigorena, Institut Curie
Angelika Amon, MIT
Kathryn Anderson, Memorial Sloan-Kettering Cancer Center
Siv G. E. Andersson, Uppsala Univ.
Peter Andolfatto, Princeton Univ.
Mélanie O. Andrade, Max Planck Inst., Mainz
Johan Auwerx, EPFL
David Awschalom, Univ. of California Santa Barbara
John A. Bargh, Yale Univ.
Ben Barres, Stanford Medical School
Jordi Bascompte, Estación Biológica de Doñana, CSIC
Fausto Battista, London Research Inst.
Ray D. Bargman, Univ. of Texas, Dallas
David Baum, Univ. of Wisconsin
Mark Bear, Massachusetts Inst. of Technology
Yasmine Belkaid, NIAID, NIH
Philip Benfey, Duke Univ.
Stephen J. Benkovic, Penn State Univ.
Gregory C. Berzosa, Stanford Univ.
Gabriele Bergers, Univ. of San Francisco
Peer Bork, EMBL
Bernard Bourdon, Ecole Normale Supérieure de Lyon
Ian Boyd, Univ. of St. Andrews
Christian Büchel, Universitätsklinikum Hamburg-Eppendorf
Joseph A. Burns, Cornell Univ.
William P. Butz, Population Reference Bureau
György Buzsáki, Rutgers Univ.
Mats Carlsson, Univ. of Oslo
Mildred Cho, Stanford Univ.
David Clapham, Children's Hospital, Boston
David Clark, Univ. of Oxford
Jonathan D. Cohen, Princeton Univ.
Robert Cook-Deegan, Duke Univ.
James Collins, Boston Univ.
Alan Cowman, Walter & Eliza Hall Inst.
Robert H. Crabtree, Yale Univ.
Wolfgang Cramer, Medit. Inst. for Ecology & Paleocology
F. Fleming Crim, Univ. of Wisconsin
Jeff L. Dangl, Univ. of North Carolina

Tom Daniel, Univ. of Washington
Frans de Waal, Emory Univ.
Stantias Dehaene, Collège de France
Robert Desimone, MIT
Claude Desplan, New York Univ.
Ap Dijksterhuis, Radboud Univ. of Nijmegen
Dennis Discher, Univ. of Pennsylvania
Gerald W. Dorn II, Washington Univ. School of Medicine
Amittai A. Douv, Univ. of California, Berkeley
Julian Downward, Cancer Research UK
Bruce Dunn, Univ. of California, Los Angeles
Christopher Dye, WHO
David Ehrhardt, Carnegie Inst. of Washington
Tim Eiston, Univ. of North Carolina
Gerhard Ertl, Fritz-Haber-Institut, Berlin
Barry Everitt, Univ. of Cambridge
Pavel F. Falkowski, Rutgers Univ.
Ernst Fehr, Univ. of Zurich
Tom Felchel, Univ. of Copenhagen
Michael Feuer, The George Washington Univ.
Alain Fischer, INSERM
Susan Fiske, Princeton Univ.
Anne C. Ferguson-Smith, Univ. of Cambridge
Wulfram Gerstner, EPFL Lausanne
Karl-Heinz Glassmeier, TU Braunschweig
Elizabeth Grove, Univ. of Chicago
Kipp Guy, St. Jude's Children's Research Hospital
Taejip Ha, Univ. of Illinois at Urbana-Champaign
Christian Haas, Ludwig Maximilians Univ.
Steven Hahn, Fred Hutchinson Cancer Research Center
Gregory J. Hannon, Cold Spring Harbor Lab.
Martin Heimann, Max Planck Inst., Jena
Isaac Held, NOAA
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.
Kai-Inse Hinrichs, Univ. of Bremen
Kei Hirose, Tokyo Inst. of Technology
David Holdell, Univ. of Cambridge
David Holden, Imperial College
Lora Hooper, UT Southwestern Medical Ctr at Dallas
Jeffrey A. Hubbell, EPFL Lausanne
Steven Jacobsen, Univ. of California, Los Angeles
Kai Johnson, EPFL Lausanne
Peter Jonas, Universität Freiburg
William Kaetzel Jr., Dana-Farber Cancer Inst.
Daniel Kahne, Harvard Univ.
Joel Kingsolver, Univ. of North Carolina at Chapel Hill
Robert Kingston, Harvard Medical School

Roberto Kolter, Harvard Medical School
Alberto R. Kornblitt, Univ. of Buenos Aires
Leonid Kruglyak, Princeton Univ.
Thomas Lange, Univ. of Cologne
Mitchell A. Lazar, Univ. of Pennsylvania
David Lazer, Harvard Univ.
Virginia Lee, Univ. of Pennsylvania
Ottoline Leyser, Cambridge Univ.
Olle Lindvall, Univ. Hospital, Lund
Marcia C. Linn, Univ. of California, Berkeley
John Lis, Cornell Univ.
Jiangou Liu, Michigan State Univ.
Jonathan Losos, Harvard Univ.
Le Lu, Chinese Acad. of Sciences
Laura Macheyko, CRUK Beatson Inst. for Cancer Research
Anne Magurran, Univ. of St Andrews
Oscar Marin, CSIC & Univ. Miguel Hernández
Charles Marshall, Univ. of California, Berkeley
Martin M. Matz, Baylor College of Medicine
Garham Medley, Univ. of Warwick
Yasushi Miyashita, Univ. of Tokyo
Richard Morris, Univ. of Edinburgh
Edward Mose, Norwegian Univ. of Science and Technology
Pär Nordlund, Karolinska Inst.
Thomas Murray, The Hastings Center
Naoto Nagao, Univ. of Tokyo
James Nelson, Stanford Univ. School of Med.
Timothy W. Nilsen, Coast Western Reserve Univ.
Helga Nowotny, European Research Advisory Board
Luke O'Neill, Trinity College, Dublin
Stuart Newman, New York Medical College
M. Phuan Ong, Princeton Univ.
Joe Orenstein, Univ. of California, Berkeley & Lawrence Berkeley National Lab
Stuart H. Orkin, Dana-Farber Cancer Inst.
Harry Orr, Univ. of Minnesota
Christine Ortiz, MIT
Andrew Oswald, Univ. of Warwick
Jane Parker, Max-Planck Inst. of Plant Breeding Research
Donald R. Paul, Univ. of Texas at Austin
P. David Pearson, Univ. of California, Berkeley
Reginald M. Plummer, Univ. of California, Irvine
John H. J. Petriani, Memorial Sloan-Kettering Cancer Center
Simon Philippot, Univ. of Florida
Joshua Plotkin, Univ. of Pennsylvania
Philippe Poulin, CNRS
Colin Riewe, Univ. of Cambridge
Trevor Robbins, Univ. of Cambridge
Barbara A. Romanowicz, Univ. of California, Berkeley
Jens Rostrup-Nielsen, Haldor Topsøe



ADVANCING SCIENCE. SERVING SOCIETY

Mike Ryan, Univ. of Texas, Austin
Shimon Sakaguchi, Kyoto Univ.
Miquel Salmeron, Lawrence Berkeley National Lab
Jürgen Sandkühner, Medical Univ. of Vienna
Randy Seeley, Univ. of Cincinnati
Vladimir Shalaev, Purdue Univ.
Joseph Silk, Institut d'Astrophysique de Paris
Denis Simon, Univ. of Oregon
Alison Smith, John Innes Centre
Davor Solter, Inst. of Medical Biology, Singapore
Peter Sorger, Harvard Medical School
John Speakman, Univ. of Aberdeen
Allan C. Spradling, Carnegie Institution of Washington
Jonathan Sprent, Garvan Inst. of Medical Research
Paula Stephan, Georgia State Univ. and National Bureau of Economic Research
Elsbeth Stern, ETH Zürich
Ira Tabas, Columbia Univ.
Yoshiko Takahashi, Korea Inst. of Science and Technology
Sarah Teichmann, Cambridge Univ.
John Thomas, Duke Univ.
Herbert Virsik, Washington Univ.
Bert Vogelstein, Johns Hopkins Univ.
Jonathan Waxman, Fudan Univ.
Bruce D. Walker, Harvard Medical School
Douglas Wallace, Dalhousie Univ.
Ian Wainman, Univ. of Oxford
David A. Wardle, Swedish Inst. of Agric Sciences
Jonah Waser, Univ. of Göttingen
Detlef Weigel, Max-Planck Inst., Tübingen
Jonathan Weissman, Univ. of California, San Francisco
Sue Westler, Univ. of California, Riverside
Kathy Wiltschko, Oxford Univ.
Ian A. Wilson, The Scripps Res. Inst.
Timothy D. Wilson, Univ. of Virginia
Jan Zaenen, Leiden Univ.
Kenneth Zaret, Univ. of Penn. School of Medicine
Mayana Zuber, University of Sao Paulo
Jonathan Zehr, Univ. of California, Santa Cruz
Mariana Zuber, MIT

BOOK REVIEW BOARD

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