

**Editor-in-Chief** Marcia McNutt

**Executive Editor** Monica M. Bradford **News Editor** Tim Appenzeller

**Managing Editor, Research Journals** Katrina L. Kelner

**Deputy Editors** Barbara R. Jasny, Andrew M. Sugden(UK), Valda J. Vinson, Jake S. Yeston

## Research and Insights

**SR. EDITORS** Caroline Ash(UK), Gilbert J. Chin, Lisa D. Chong, Maria Cruz(UK), Julia Fahrenkamp-Uppenbrink(UK), Pamela J. Hines, Stella M. Hurtley(UK), Paula A. Kiberstis, Marc S. Lavine(Canada), Kristen L. Mueller, Ian S. Osborne(UK), Beverly A. Purnell, L. Bryan Ray, Guy Riddihough, H. Jesse Smith, Peter Stern(UK), Phillip D. Szuroni, Brad Wible, Nicholas S. Wigginton, Laura M. Zahn **ASSOCIATE EDITORS** Brent Grocholski, Melissa R. McCartney, Margaret M. Moerchen, Jelena Stajic, Sacha Vignieri **BOOK REVIEW EDITOR** Sherman J. Suter **ASSOCIATE LETTERS EDITOR** Jennifer Silis **EDITORIAL MANAGER** Cara Tate **SR. COPY EDITORS** Jeffrey E. Cook, Chris Filiatreau, Cynthia Howe, Harry Jach, Lauren Kmec, Barbara P. Ordway, Trista Wagoner **SR. EDITORIAL COORDINATORS** Carolyn Kyle, Beverly Shields **EDITORIAL COORDINATORS** Ramatoulaye Diop, Joi S. Granger, Lisa Johnson, Anita Wynn **PUBLICATIONS ASSISTANTS** Aneera Dobbins, Jeffrey Hearn, Dona Mathieu, Le-Toya Mayne Flood, Shannon McMahon, Scott Miller, Jerry Richardson, Rachel Roberts(UK), Alice Whaley(UK), Brian White **ADMINISTRATIVE SUPPORT** Janet Clements(UK), Joan Cuthbert(UK), Maryrose Madrid, John Wood(UK)

## News

**NEWS MANAGING EDITOR** John Travis **INTERNATIONAL EDITOR** Richard Stone **DEPUTY NEWS EDITORS** Daniel Clery(UK), Robert Coontz, Elizabeth Culotta, David Grimm, David Malakoff, Leslie Roberts **CONTRIBUTING EDITORS** Martin Enserink(Europe), Mara Hvistendahl(Asia) **SR. CORRESPONDENTS** Jeffrey Mervis, Elizabeth Pennisi **NEWS WRITERS** Adrian Cho, Jon Cohen, Jennifer Couzin-Frankel, Carolyn Grady, Eric Hand, Jocelyn Kaiser, Kelly Servick, Robert F. Service, Erik Stokstad, Emily Underwood **CONTRIBUTING INTERNS** Hassan DuRant, Xochitl Rojas-Rocha, Nadia Whitehead **CORRESPONDENTS** Staklava Bagla(South Asia), Michael Baïter(Paris), John Bohannon, Ann Gibbons, Sam Kean, Richard A. Kerr, Eli Kintisch, Kai Kupferschmidt(Berlin), Andrew Lawler, Christina Larson(Beijing), Mitch Leslie, Charles C. Mann, Eliot Marshall, Virginia Morell, Dennis Normile(Tokyo), Heather Pringle, Tania Rabesandratana(Brussels), Gretchen Vogel(Berlin), Lizzie Wade(Mexico City) **CAREERS** Jim Austin(Editor), Donisha Adams **COPY EDITORS** Kara Estelle, Nora Kelly, Jennifer Levin **ADMINISTRATIVE SUPPORT** Scherraine Mack

**Executive Publisher** Alan I. Leshner

**Publisher** Beth Rosner **Chief Digital Media Officer** Rob Covey

**BUSINESS OPERATIONS AND ADMINISTRATION DIRECTOR** Deborah Rivera-Wienhold **BUSINESS SYSTEMS AND FINANCIAL ANALYSIS DIRECTOR** Randy Yi **MANAGER OF FULFILLMENT SYSTEMS** Neal Hawkins **SYSTEMS ANALYST** Nicole Mehmedovich **ASSISTANT DIRECTOR, BUSINESS OPERATIONS** Eric Knott **MANAGER, BUSINESS OPERATIONS** Jessica Tierney **BUSINESS ANALYSTS** Cory Lipman, Cooper Tilton, Celeste Troxler **FINANCIAL ANALYST** Jeremy Clay **RIGHTS AND PERMISSIONS ASSISTANT DIRECTOR** Emilie David **PERMISSIONS ASSOCIATE** Elizabeth Sandler **RIGHTS, CONTRACTS, AND LICENSING ASSOCIATE** Lili Kiser

**MARKETING DIRECTOR** Ian King **MARKETING MANAGER** Julianne Wielga **MARKETING ASSOCIATE** Elizabeth Sattler **SR. MARKETING EXECUTIVE** Jennifer Reeves **SR. ART ASSOCIATE, PROJECT MANAGER** Tzeitel Sorrosa **ART ASSOCIATE** Seil Lee **ASSISTANT COMMERCIAL EDITOR** Selby Famer **MARKETING PROJECT MANAGER** Angelissa McArthur **SR. WRITER** Bill Zimmer **PROGRAM DIRECTOR, AAAS MEMBER CENTRAL** Peggy Mihelich **FULFILLMENT SYSTEMS AND OPERATIONS** membership@aaas.org **MANAGER, MEMBER SERVICES** Pat Butler **SPECIALISTS** LaToya Casteel, Javia Flemmings, Latasha Russell **MANAGER, DATA ENTRY** Mickie Napoleoni **DATA ENTRY SPECIALISTS** JJ Regan, Jaimee Wise, Fiona Giblin **DIRECTOR, SITE LICENSING** Tom Ryan **DIRECTOR, CORPORATE RELATIONS** Eileen Bernadette Moran **SR. PUBLISHER RELATIONS SPECIALIST** Kiki Forsythe **PUBLISHER RELATIONS MANAGER** Catherine Holland **PUBLISHER RELATIONS, EASTERN REGION** Keith Layson **PUBLISHER RELATIONS, WESTERN REGION** Ryan Rexroth **MANAGER, SITE LICENSE OPERATIONS** Iquo Edim **FULFILLMENT ANALYST** Lana Guz **ASSOCIATE DIRECTOR, MARKETING** Christina Schlecht **MARKETING ASSOCIATES** Thomas Landreth, Minah Kim

**DIRECTOR OF WEB TECHNOLOGIES** Ahmed Khadr **SR. DEVELOPER** Chris Coleman **DEVELOPER** Dan Berger **SR. PROJECT MANAGER** Trista Smith **SYSTEMS ENGINEER** Luke Johnson **PRODUCT MANAGER** Walter Jones

**CREATIVE DIRECTOR, MULTIMEDIA** Martyn Green **DIRECTOR OF ANALYTICS** Enrique Gonzales **SR. WEB PRODUCER** Sarah Crespi **WEB PRODUCER** Alison Crawford **VIDEO PRODUCER** Nguyen Nguyen **SOCIAL MEDIA PRODUCER** Meghna Sachdev

**DIRECTOR OF OPERATIONS PRINT AND ONLINE** Elizabeth Harman **PRINT PRODUCTION DIRECTOR** Wendy K. Shank **PREFLIGHT MANAGER** Marcus Spiegler **ASSISTANT MANAGER ONLINE** Lisa Stanforth **ASSISTANT MANAGER PRINT** Rebecca Doshi **SR. SPECIALISTS** Steve Forrester, Jason Hillman, Antoinette Hodal, Tara Kelly, Anthony Rosen **SPECIALISTS** Jacob Hedrick, Nichele Johnston, Lori Murphy, Kimberley Oster

**DESIGN DIRECTOR** Beth Rakouskas **ASSOCIATE ART DIRECTOR** Laura Creveling **SR. ILLUSTRATORS** Chris Bickel, Katharine Sutliff **ILLUSTRATOR** Valerie Altounian **SR. ART ASSOCIATES** Holly Bishop, Preston Huey **ART ASSOCIATES** Kay Engman, Garvin Grullon, Chrystal Smith **SR. PHOTO EDITOR** William Douthitt **PHOTO EDITOR** Leslie Blizard

**DIRECTOR, GLOBAL COLLABORATION, CUSTOM PUBLICATIONS, ADVERTISING** Bill Moran **EDITOR, CUSTOM PUBLISHING** Sean Sanders: 202-326-6430 **ASSISTANT EDITOR, CUSTOM PUBLISHING** Tianna Hicklin: 202-326-6463 **ADVERTISING MARKETING MANAGER** Justin Sawyers: 202-326-7061 **science\_advertising@aaas.org** **ADVERTISING MARKETING ASSOCIATE** Javia Flemmings **ADVERTISING SUPPORT MANAGER** Karen Foote: 202-326-6740 **ADVERTISING PRODUCTION OPERATIONS MANAGER** Deborah Tompkins **SR. PRODUCTION SPECIALIST/GRAPHIC DESIGNER** Amy Hardcastle **PRODUCTION SPECIALIST** Yuse Lajimnuhup **SR. TRAFFIC ASSOCIATE** Christine Hall **SALES COORDINATOR** Shirley Young **ASSOCIATE DIRECTOR, COLLABORATION, CUSTOM PUBLICATIONS/CHINA/TAIWAN/KOREA/SINGAPORE** Ruolei Wu: +86-186 0822 9345, rww@aaas.org **COLLABORATION/CUSTOM PUBLICATIONS/JAPAN** Adarsh Sandhu + 81532-81-5142 **asandhu@aaas.org** **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 **MIDWEST** Jeffrey Dembski: 847-498-4520 x3005, Steven Loerch: 847-498-4520 x3006 **UK EUROPE/ASIA** Roger Goncalves: TEL/FAX +41 243 1358 **JAPAN** Katsuyoshi Fukamizu(Tokyo): +81-3-3219-5777 **kfukamizu@aaas.org** **CHINA/TAIWAN** Ruolei Wu: +86-0082-9345

**WORLDWIDE ASSOCIATE DIRECTOR OF SCIENCE CAREERS** Tracy Holmes: +44 (0) 1223 326525, FAX +44 (0) 1223 326532 **tholmes@science-int.com** **CLASSIFIED** advertise@sciencecareers.org **US SALES** Tina Burks: 202-326-6577 **Nancy Toema**: 202-326-6578 **SALES ADMINISTRATOR** Marci Gallun **EUROPE/ROW SALES** Axel Gesatzki, Sarah Lelarge **SALES ASSISTANT** Kelly Grace **JAPAN** Hiroyuki Mashiki(Kyoto): +81-75-823-1109 **hmashiki@aaas.org** **CHINA/TAIWAN** Ruolei Wu: +86-186 0082 9345 **rww@aaas.org** **MARKETING MANAGER** Allison Pritchard **MARKETING ASSOCIATE** Aimee Aponte

**AAAS BOARD OF DIRECTORS** **RETIRING PRESIDENT, CHAIR** Phillip A. Sharp **PRESIDENT** Gerald R. Fink **PRESIDENT-ELECT** Geraldine (Ger) Richmond **TREASURER** David Evans **SHAW CHIEF EXECUTIVE OFFICER** Alan I. Leshner **BOARD** Bonnie L. Bassler, May R. Berenbaum, Carlos J. Bustamante, Claire M. Fraser, Laura H. Greene, Elizabeth Loftus, Raymond Orbach, Inder M. Verma

**SUBSCRIPTION SERVICES** For change of address, missing issues, new orders and renewals, and payment questions: 866-434-AAAS (2277) 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** 202-326-6755 **REPRINTS:** Author Inquiries 800-635-7181 **COMMERCIAL INQUIRIES** 803-359-4578 **PERMISSIONS** 202-326-6765, **permissions@aaas.org** **AAAS Member Services** 202-326-6417 or <http://membercentral.aaas.org/discouints>

Science serves as a forum for discussion of important issues related to the advancement of science by publishing material on which a consensus has been reached as well as including the presentation of minority or conflicting points of view. Accordingly, all articles published in Science—including editorials, news and comment, and books 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.

**INFORMATION FOR AUTHORS** See pages 680 and 681 of the 7 February 2014 issue or access [www.sciencemag.org/about/authors](http://www.sciencemag.org/about/authors)

## SENIOR EDITORIAL BOARD

A. Paul Alivisatos, Lawrence Berkeley Nat'l. Laboratory, Ernst Fehr, U. of Zürich  
Susan M. Rosenberg, Baylor College of Medicine, Michael S. Turner, U. of Chicago

## BOARD OF REVIEWING EDITORS

 (Statistics board members indicated with \$)

Adriano Aguzzi, U. Hospital Zürich  
Takuzo Aida, U. of Tokyo  
Leslie Aiello, Wenner-Gren Foundation  
Judith Allen, U. of Edinburgh  
Sonia Altizer, U. of Georgia  
Virginia Armbrust, U. of Washington  
Sebastian Amigorena, Institut Curie  
Kathryn Anderson, Memorial Sloan-Kettering Cancer Center  
Peter Andolfatto, Princeton U.  
Meinrat O. Andreae, Max-Planck Inst. Mainz  
Paola Ariotti, Harvard U.  
Johan Auwerx, EPFL  
David Awschalom, U. of Chicago  
Jordi Bascompte, Estación Biológica de Doñana CSIC  
Facundo Batista, London Research Inst.  
Ray H. Baughman, U. of Texas, Dallas  
David Baum, U. of Wisconsin  
Mark Bear, Massachusetts Inst. of Technology  
Kamran Behnia, ESPCI-ParisTech  
Yasmine Bekaid, NIAID, NIH  
Philip Benfey, Duke U.  
Stephen J. Benkovic, Penn State U.  
Gabriele Bergers, U. of California, San Francisco  
Christophe Bernard, Aix-Marseille U.  
Bradley Bernstein, Massachusetts General Hospital.  
Peer Bork, EMBL  
Bernard Bourdon, Ecole Normale Supérieure de Lyon  
Chris Bowler, Ecole Normale Supérieure  
Ian Boyd, U. of St. Andrews  
Emily Brodsky, U. of California, Santa Cruz  
Ron Brookmeyer, U. of California Los Angeles (\$) **Christian Büchel**, U. Hamburg-Eppendorf  
**Joseph A. Burns**, Cornell U.  
**William P. Butz**, Population Reference Bureau  
**Gyorgy Buzsáki**, New York U. School of Medicine  
**Blanche Capel**, Duke U.  
**Mats Carlsson**, U. of Oslo  
**David Clapham**, Children's Hospital Boston  
**David Clary**, U. of Oxford  
**Joel Cohen**, Rockefeller U., Columbia U.  
**Jonathan D. Cohen**, Princeton U.  
**James Collins**, Boston U.  
**Robert Cook-Deegan**, Duke U.  
**Alan Cowman**, Walter & Eliza Hall Inst.  
**Robert H. Crabtree**, Yale U.  
**Janet Currie**, Princeton U.  
**Jeff L. Dangl**, U. of North Carolina  
**Tom Daniel**, U. of Washington  
**Frans de Waal**, Emory U.  
**Stanislas Dehaene**, Collège de France  
**Robert Desimone**, MIT  
**Claude Desplan**, New York U.  
**Ap Dijksterhuis**, Radboud U. of Nijmegen  
**Dennis Discher**, U. of Pennsylvania  
**Gerald W. Dorn II**, Washington U. School of Medicine  
**Jennifer A. Doudna**, U. of California, Berkeley  
**Bruce Dunn**, U. of California, Los Angeles  
**Christopher Dye**, WHO  
**Todd Ehlers**, U. of Toebingen  
**David Ehrhardt**, Carnegie Inst. of Washington  
**Tim Elston**, U. of North Carolina at Chapel Hill  
**Gerhard Ertl**, Fritz-Haber-Institut, Berlin  
**Barry Everitt**, U. of Cambridge  
**Ernst Fehr**, U. of Zurich  
**Anne C. Ferguson-Smith**, U. of Cambridge  
**Michael Feuer**, The George Washington U.  
**Peter Fratzl**, Max-Planck Inst.  
**Elaine Fuchs**, Rockefeller U.  
**Daniel Geschwind**, UCLA  
**Andrew Gewirth**, U. of Illinois  
**Karl-Heinz Glassmeier**, TU Braunschweig  
**Julia R. Greer**, Caltech  
**Elizabeth Grove**, U. of Chicago  
**Kip Guy**, St. Jude's Children's Research Hospital  
**TaeKjip Ha**, U. of Illinois at Urbana-Champaign  
**Christian Haass**, Ludwig Maximilians U.  
**Steven Hahn**, Fred Hutchinson Cancer Research Center  
**Michael Hasselmo**, Boston U.  
**Martin Heimann**, Max-Planck Inst. Jena  
**Vika Heiriutu**, U. of Finland  
**James A. Hendler**, Rensselaer Polytechnic Inst.  
**Janet G. Hering**, Swiss Fed. Inst. of Aquatic Science & Technology  
**Michael E. Himmel**, National Renewable Energy Lab.  
**Keith E. Hippen**, U. of Bremen  
**Kei Hirose**, Tokyo Inst. of Technology  
**David Hodell**, U. of Cambridge  
**David Holden**, Imperial College  
**Lora Hooper**, UT Southwestern Medical Ctr. at Dallas  
**Thomas Hudson**, Ontario Inst. for Cancer Research  
**Raymond Huey**, U. of Washington  
**Steven Jacobsen**, U. of California, Los Angeles  
**Kai Johnson**, EPFL Lausanne  
**Peter Jonas**, Inst. of Science & Technology (IST), Austria  
**Matt Kaerberlein**, U. of Washington  
**William Kaelin Jr.**, Dana-Farber Cancer Inst.  
**Daniel Kahne**, Harvard U.  
**Daniel Kammen**, U. of California, Berkeley  
**Masashi Kawasaki**, U. of Tokyo  
**Joel Kingsolver**, U. of North Carolina at Chapel Hill  
**Robert Kingston**, Harvard Medical School  
**Alexander Kolodkin**, Johns Hopkins U.  
**Roberto Kolter**, Harvard Medical School  
**Alberto R. Kornblihtt**, U. of Buenos Aires  
**Leonid Kruglyak**, UCLA  
**Thomas Langer**, U. of Cologne  
**Mitchell A. Lazar**, U. of Pennsylvania  
**David Lazer**, Harvard U.  
**Thomas Lecuit**, IBM  
**Virginia Lee**, U. of Pennsylvania  
**Stanley Lemon**, U. of North Carolina at Chapel Hill  
**Ottoline Leyser**, Cambridge U.  
**Marcia C. Linn**, U. of California, Berkeley  
**Jianguo Liu**, Michigan State U.  
**Luis Liz-Marzan**, CIC bioGUNE  
**Jonathan Losos**, Harvard U.  
**Ke Lu**, Chinese Acad. of Sciences  
**Christian Lüscher**, U. of Geneva  
**Laura Machesky**, CRUK Beatson Inst. for Cancer Research  
**Anne Magurran**, U. of St. Andrews  
**Oscar Marin**, CSIC & U. Miguel Hernández  
**Charles Marshall**, U. of California, Berkeley  
**C. Robertson McClung**, Dartmouth College  
**Graham Medley**, U. of Warwick  
**Yasushi Miyashita**, U. of Tokyo  
**Richard Morris**, U. of Edinburgh  
**Alison Motsinger-Reif**, NC State U. (\$) **Sean Munro**, MRC Lab. of Molecular Biology  
**Thomas Murray**, The Hastings Center  
**James Nelson**, Stanford U. School of Med.  
**Karen Nelson**, U. of California, Berkeley  
**Daniel Neumarck**, U. of California, Berkeley  
**Timothy W. Nilsen**, Case Western Reserve U.  
**Per Nordlund**, Karolinska Inst.  
**Hai Nowotny**, European Research Advisory Board  
**Ben Olken**, MIT  
**Luke O'Neill**, Trinity College, Dublin  
**Joe Orenstein**, U. of California  
**Berkeley & Lawrence Berkeley National Lab**  
**Harry Orr**, U. of Minnesota  
**Andrew Oswald**, U. of Warwick  
**Steve Palumbi**, Stanford U.  
**Jane Parker**, Max-Planck Inst. of Plant Breeding Research  
**Giovanni Parmigiani**, Dana-Farber Cancer Inst. (\$) **Donald R. Paul**, U. of Texas, Austin  
**John H. J. Petrini**, Memorial Sloan-Kettering Cancer Center  
**Joshua Plotkin**, U. of Pennsylvania  
**Phillippe Poulain**, CNRS  
**David Randall**, Colorado State U.  
**Colin Renfrew**, U. of Cambridge  
**Trevor Robbins**, U. of Cambridge  
**Jim Roberts**, Fred Hutchinson Cancer Research Ctr.  
**Barbara A. Romanowicz**, U. of California, Berkeley  
**Jens Rostrop-Nielsen**, Haldor Topsøe  
**Mike Ryan**, U. of Texas, Austin  
**Minoru Saitou**, Kyoto U.  
**Shimon Sakaguchi**, Kyoto U.  
**Miguel Salmeron**, Lawrence Berkeley National Lab  
**Jürgen Sandkühler**, Medical U. of Vienna  
**Alexander Schier**, Harvard U.  
**Randy Seeley**, U. of Cincinnati  
**Vladimir Shalvaev**, Purdue U.  
**Roberto Sillaco**, Johns Hopkins School of Medicine  
**Jensp Silk**, Institut d'Astronomie de Paris  
**Denise Simon**, Arizona State U.  
**Alison Smith**, Johns Innes Centre  
**Richard Smith**, U. of North Carolina (\$) **John Speakman**, U. of Aberdeen  
**Allan C. Spradling**, Carnegie Institution of Washington  
**Jonathan Sprent**, Garvan Inst. of Medical Research  
**Eric Steig**, U. of Washington  
**Paula Stephan**, Georgia State U. and National Bureau of Economic Research  
**Molly Stevens**, Imperial College London  
**V. S. Subrahmanian**, U. of Maryland  
**Ira Tabas**, Columbia U.  
**Sarah Teichmann**, Cambridge U.  
**John Thomas**, North Carolina State U.  
**Christopher Tyler-Smith**, The Wellcome Trust Sanger Inst.  
**Herbert Virgin**, Washington U.  
**Bert Vogelstein**, Johns Hopkins U.  
**Cynthia Volkert**, U. of Göttingen  
**Douglas Wallace**, Dalhousie U.  
**David A. Wardle**, Weizmann Inst. of Science  
**Ian Walmsley**, U. of Oxford  
**David A. Wardle**, Swedish U. of Agric. Sciences  
**David Waxman**, Fudan U.  
**Jonathan Weissman**, U. of California, San Francisco  
**Chris Wikle**, U. of Missouri (\$) **Ian A. Wilson**, The Scripps Res. Inst. (\$) **Timothy D. Wilson**, U. of Virginia  
**Rosemary Wyse**, Johns Hopkins U.  
**Jan Zaenen**, Leiden U.  
**Kenneth Zaret**, U. of Pennsylvania School of Medicine  
**Jonathan Zehr**, U. of California, Santa Cruz  
**Len Zon**, Children's Hospital Boston  
**Maria Zuber**, MIT

## BOOK REVIEW BOARD

David Bloom, Harvard U., Samuel Bowring, MIT, Angela Creager, Princeton U., Richard Swedner, U. of Chicago, Ed Wasserman, DuPont