

## 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, Julia Fahrenkamp-Uppenbrink(UK), Pamela J. Hines, Stella M. Hurlley(UK), Paula A. Kiberstis, Marc S. Lavine(Canada), Kristen L. Mueller, Ian S. Osborne(UK), Beverly A. Purnell, L. Bryan Ray, Guy Riddiough, H. Jesse Smith, Jelena Stajic, Peter Stern(UK), Phillip D. Szuroni, Brad Wible, Nicholas S. Wigginton, Laura M. Zahn ASSOCIATE EDITORS Brent Grocholski, Keith T. Smith, Sacha Vignieri ASSOCIATE BOOK REVIEW EDITOR Valerie B. Thompson PUBLICATIONS ASSISTANTS Aneera Dobbins, Jeffrey Hearn, Chof Chof, Jennifer Hearn, Dona Mathieu, Le-Touya Mayne Flood, Shannon McMahon, Scott Miller, Jerry Richardson, Rachel Roberts(UK), Alice Whaley(UK), Brian White EXECUTIVE ASSISTANT Anna Bashkurova ADMINISTRATIVE SUPPORT Janet Clements(UK), Lizanne Newton(UK), Maryrose Madrid, Laura-Nadine Schuhmacher (UK, Intern), Alix Welch (Intern), 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 EDITOR Martin Enserink(Europe) SR. CORRESPONDENTS Jeffrey Mervis, Elizabeth Pennisi NEWS WRITERS Adrian Cho, Jon Cohen, Jennifer Couzin-Frankel, Carolyn Gramling, Eric Hand, Jocelyn Kaiser, Catherine Matacic, Kelly Servick, Robert F. Service, Erik Stokstad(Cambridge, UK), Emily Underwood INTERNS Hanee Armitage, Emily DeMarco, Annick Laurent, Laura Olivieri, Juan David Romero CONTRIBUTING CORRESPONDENTS Michael Balter(Paris), John Bohannon, Ann Gibbons, Mara Hvistendahl, Sam Kean, 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(London), Gretchen Vogel(Berlin), Lizzie Wade(Mexico City) CAREERS Donisha Adams, Rachel Bernstein COPY EDITORS Julia Cole, Jennifer Levin (Chief) ADMINISTRATIVE SUPPORT Jessica Williams

## Executive Publisher Rush D. Holt

Publisher Kent R. Anderson Chief Digital Media Officer Rob Covey

BUSINESS OPERATIONS AND PORTFOLIO MANAGEMENT DIRECTOR Sarah Whalen BUSINESS SYSTEMS AND FINANCIAL ANALYSIS DIRECTOR Randy Yi MANAGER OF FULFILLMENT SYSTEMS Neal Hawkins SYSTEMS ANALYST Nicole Mehmedovic ASSISTANT DIRECTOR, BUSINESS OPERATIONS Eric Knott MANAGER, BUSINESS OPERATIONS Jessica Tierney BUSINESS ANALYSTS Cory Lipman, Cooper Tilton, Celeste Troxler FINANCIAL ANALYST Robert Clark 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 JR. ART ASSOCIATE Kim Huynh ASSISTANT COMMERCIAL EDITOR Selby Frame MARKETING PROJECT MANAGER Angelissa McArthur PROGRAM DIRECTOR, AAAS MEMBER CENTRAL Peggy Mihelich FULFILLMENT SYSTEMS AND OPERATIONS membership@aaas.org MANAGER, MEMBER SERVICES Pat Butler SPECIALISTS LaToya Casteel, Terrance Morrison, Latasha Russell MANAGER, DATA ENTRY Mickie Napoleoni DATA ENTRY SPECIALISTS JJ Regan, Brenden Aquilino, 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 SALES RESEARCH COORDINATOR Aiesha Marshall MANAGER, SITE LICENSE OPERATIONS Iqoo Edim SENIOR PRODUCTION SPECIALIST Robert Koepek SENIOR OPERATIONS ANALYST Lana Guz FULFILLMENT ANALYST Judy Lillibrige ASSOCIATE DIRECTOR, MARKETING Christina Schlecht MARKETING ASSOCIATES Thomas Landreth, Isa Sesay-Bah

DIRECTOR OF WEB TECHNOLOGIES Ahmed Khadr SR. DEVELOPER Chris Coleman DEVELOPERS Dan Berger, Jimmy Marks SR. PROJECT MANAGER Trista Smith SYSTEMS ENGINEER Luke Johnson

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 Lizabeth Harman DIGITAL/PRINT STRATEGY MANAGER Jason Hillman QUALITY TECHNICAL MANAGER Marcus Spiegler PROJECT ACCOUNT MANAGER Tara Kelly DIGITAL PRODUCTION MANAGER Lisa Stanford ASSISTANT MANAGER DIGITAL/PRINT Rebecca Doshi SENIOR CONTENT SPECIALISTS Steve Forrester, Antoinette Hodal, Lori Murphy, Anthony Rosen CONTENT SPECIALISTS Jacob Hedrick, Kimberley Oster

DESIGN DIRECTOR Beth Rakouskas DESIGN EDITOR Marcy Atarod SENIOR DESIGNER Garvin Grullón DESIGNER Chrystal Smith GRAPHICS MANAGING EDITOR Alberto Cuadra SENIOR SCIENTIFIC ILLUSTRATORS Chris Bickel, Katharine Sutliff SCIENTIFIC ILLUSTRATOR Valerie Altounian SENIOR ART ASSOCIATES Holly Bishop, Preston Huey SENIOR PHOTO EDITOR William Douthitt PHOTO EDITORS Leslie Blizard, Christy Steele

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 Sawyer: 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 Lajjiminuhup SR. TRAFFIC ASSOCIATE Christine Hall SALES COORDINATOR Shirley Young ASSOCIATE DIRECTOR, COLLABORATION, CUSTOM PUBLICATIONS/CHINA/TAIWAN/KOREA/SINGAPORE Ruolei Wu: +86-186 0082 9345, rwu@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 Dembicki: 847-498-4520 x3005, Steven Loerch: 847-498-4520 x3006 UK EUROPE/ASIA Roger Gonçalves: TEL/FAX +41 43 243 1358 JAPAN Katsuyoshi Fukamizu(Tokyo): +81-3-3219-5777 kfukamizu@aaas.org CHINA/TAIWAN Ruolei Wu: +86-186 0082 9345, rwu@aaas.org

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

AAAS BOARD OF DIRECTORS RETIRING PRESIDENT, CHAIR Gerald R. Fink PRESIDENT Geraldine (Geri) Richmond PRESIDENT-ELECT Barbara A. Schaaf TREASURER David Evans SHAW CHIEF EXECUTIVE OFFICER Rush D. Holt BOARD MEMBER Bonnie L. Bassler, May R. Berenbaum, Carlos J. Bustamante, Stephen P.A. Fodor, Claire M. Fraser, Michael S. Gazzaniga, Laura H. Greene, Elizabeth Loftus, Mercedes Pascual 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, PO 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/discovers

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 678 and 679 of the 6 February 2015 issue or access [www.sciencemag.org/about/authors](http://www.sciencemag.org/about/authors)

## SENIOR EDITORIAL BOARD

Robert H. Grubbs, California Institute of Technology, Gary King, Harvard University  
Susan M. Rosenberg, Baylor College of Medicine, Ali Shihata, Northwestern University  
Feinberg School of Medicine, Michael S. Turner, U. of Chicago

## BOARD OF REVIEWING EDITORS (Statistics board members indicated with S)

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  
Sebastian Amigorena, Institut Curie  
Kathryn Anderson, Memorial Sloan-Kettering Cancer Center  
Meinrat O. Andreae, Max-Planck Inst. Mainz  
Paola Arlotta, 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  
Carlo Beenakker, Leiden U.  
Kamran Behnia, ESPCI-Paris Tech  
Yasmine Belkaid, NIAID, NIH  
Philip Benfey, Duke U.  
Stephen J. Benkovic, Penn State U.  
May Berenbaum, U. of Illinois  
Gabriele Bergers, U. of California, San Francisco  
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 (S)  
Christian Büchel, U. Hamburg-Eppendorf  
Joseph A. Burns, Cornell U.  
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.  
James Collins, Boston U.  
Robert Cook-Deegan, Duke U.  
Alan Cowman, Walter & Eliza Hall Inst.  
Robert H. Crabtree, Yale U.  
Roberta Croce, Vrije Universiteit  
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  
Todd Ehlers, U. of Tuebingen  
David Ehrhardt, Carnegie Inst. of Washington  
Tim Elston, U. of North Carolina at Chapel Hill  
Gerhard Ertl, Fritz-Haber-Institut, Berlin  
Barr Everitt, U. of Cambridge  
Ernst Fehr, U. of Zurich  
Anne C. Ferguson-Smith, U. of Cambridge  
Michael Feuer, The George Washington U.  
Toren Finkel, NHLBI, NIH  
Kate Fitzgerald, U. of Massachusetts  
Peter Fratzl, Max-Planck Inst.  
Elaine Fuchs, Rockefeller U.  
Daniel Geschwind, UCLA  
Andrew Gewirth, U. of Illinois  
Karl-Heinz Glassmeier, TU Braunschweig  
Ramon Gonzalez, Rice U.  
Julia R. Greer, Caltech  
Elizabeth Grove, U. of Chicago  
Nicolas Gruber, ETH Zurich  
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  
Yika Helariutta, U. of Cambridge  
James A. Hendler, Rensselaer Polytechnic Inst.  
Janet G. Hering, Swiss Fed. Inst. of Aquatic Science & Technology  
Kai-Yue Hinrichs, U. of Bremen  
Kei Hirose, Tokyo Inst. of Technology  
David Holdell, U. of Cambridge  
David Holden, Imperial College  
Lora Hooper, UT Southwestern Medical Ctr. at Dallas  
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 Kaeblerlein, 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  
Y. Narry Kim, Seoul National U.  
Joel Kingsolver, U. of North Carolina at Chapel Hill  
Robert Kingston, Harvard Medical School  
Etienne Kochkin, Ecole Normale Supérieure  
Alexander Kolodkin, Johns Hopkins U.  
Alberto R. Kornblitt, 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, CSIC/biomaGUNE  
Jonathan Losos, Harvard U.  
Ke Lu, Chinese Acad. of Sciences  
Christian Lüscher, U. of Geneva  
Laura Machesky, CRUK Beatson Inst. for Cancer Research  
Aime Magurran, U. of St. Andrews  
Osar Marin Moran, U. of Miguel Hernández  
Charles Marshall, U. of California, Berkeley  
C. Robertson McClung, Dartmouth College  
Graham Medley, U. of Warwick  
Tom Misteli, NCI  
Yasushi Miyashita, U. of Tokyo  
Mary Ann Moran, U. of Georgia  
Richard Morris, U. of Edinburgh  
Alison Moutter-Reif, NC State U. (S)  
Sean Munro, MRC Lab. of Molecular Biology  
Thomas Murray, The Hastings Center  
James Nelson, Stanford U. School of Med.  
Daniel Neumar, U. of California, Berkeley  
Kitty Nijmeijer, U. of Twente  
Par Nordlund, Karolinska Inst.  
Heiga Noriyoung, European Research Advisory Board  
Ben Olken, MIT  
Joe Orenstein, U. of California  
Berkeley & Lawrence Berkeley National Lab  
Henry 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. (S)  
Donald R. Paul, U. of Texas, Austin  
John H. A. Petri, Memorial Sloan-Kettering Cancer Center  
Joshua Plotkin, U. of Pennsylvania  
Albert Pollan, FOM Institute AMOLF  
Philipp Polunin, CNRS  
Jonathan Pritchard, Stanford U.  
David Randall, Colorado State U.  
Clint Renfrew, U. of Cambridge  
Felix Rey, Institut Pasteur  
Trevor Robbins, U. of Cambridge  
John Roberts, Fred Hutchinson Cancer Research Ctr.  
Barbara A. Romanowicz, U. of California, Berkeley  
Jens Rostrup-Nielsen, Haldor Topsøe  
Mike Ryan, U. of Texas, Austin  
Mitsuru Saitou, Kyoto U.  
Shimon Sakaguchi, Kyoto U.  
Miquel Salmeron, Lawrence Berkeley National Lab  
Jürgen Sandkühner, Medical U. of Vienna  
Alexander Schier, Harvard U.  
Randy Seeley, U. of Cincinnati  
Vladimir Shalva, Purdue U.  
Robert Silliciano, Johns Hopkins School of Medicine  
Denis Simon, Arizona State U.  
Alison Smith, John Innes Centre  
Richard Smith, U. of North Carolina (S)  
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.  
Shubha Tole, Tata Institute of Fundamental Research  
Christopher Tyler-Smith, The Wellcome Trust Sanger Institute  
Herbert Virgin, Washington U.  
Berth Vogelstein, Johns Hopkins U.  
Cynthia Volkert, U. of Göttingen  
Douglas Wallace, Dalhousie U.  
David Wallace, Weizmann Inst. of Science  
Ian Walsmsley, U. of Oxford  
Jane-Ling Wang, U. of California, Davis  
David A. Wardle, Swedish U. of Agric. Sciences  
David Waxman, Fudan U.  
Jonathan Weissman, U. of California, San Francisco  
Chris Wikle, U. of Missouri (S)  
Ian A. Wilson, The Scripps Res. Inst. (S)  
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