

Editor-in-Chief Jeremy Berg

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

Deputy Editors Lisa D. Chong, Andrew M. Sugden(UK), Valda J. Vinson, Jake S. Yeston

Research and Insights

DEPUTY EDITOR, EMERITUS Barbara R. Jasný **SR. EDITORS** Caroline Ash(UK), Gilbert J. Chin, Julia Fahrenkamp-Uppenbrink(UK), Pamela J. Hines, Stella M. Hurlley(UK), Paula A. Kiberstis, Marc S. Lavigne(Canada), Kristen L. Mueller, Ian S. Osborne(UK), Beverly A. Purnell, L. Bryan Ray, Guy Riddihough, H. Jesse Smith, Jelena Stajic, Peter Stern(UK), Phillip D. Szuroczy, Sacha Vignieri, Brad Wible, Nicholas S. Wigginton, Laura M. Zahn **ASSOCIATE EDITORS** Brent Grocholski, Keith T. Smith **ASSOCIATE BOOK REVIEW EDITOR** Valerie B. Thompson **LETTERS EDITOR** Jennifer Sills **LEAD CONTENT PRODUCTION EDITORS** Harry Jach, Lauren Kmeck **CONTENT PRODUCTION EDITORS** Jeffrey E. Cook, Chris Filiatreu, Cynthia Howe, Barbara P. Ordway, Catherine Wolner **SR. EDITORIAL COORDINATORS** Carolyn Kyle, Beverly Shields **EDITORIAL COORDINATORS** Aneera Dobbins, Joi S. Granger, Jeffrey Hearn, Lisa Johnson, Maryrose Madrid, Anita Wynn **PUBLICATIONS ASSISTANTS** Nida Masulis, Dona Mathieu, Le-Toya Mayne Flood, Shannon McMahon, Scott Miller, Jerry Richardson, Alice Whaley(UK), Brian White **EXECUTIVE ASSISTANT** Anna Bashkirova **ADMINISTRATIVE SUPPORT** Janet Clements(UK), Lizanne Newton(UK)

News

NEWS MANAGING EDITOR John Travis **INTERNATIONAL EDITOR** Richard Stone **DEPUTY NEWS EDITORS** Elizabeth Culotta, David Grimm, Eric Hand David Malakoff, Leslie Roberts **CONTRIBUTING EDITOR** Martin Enserink(Europe) **SR. CORRESPONDENTS** Daniel Clery(UK), Jeffrey Mervis, Elizabeth Pennisi **NEWS WRITERS** Adrian Cho, Jon Cohen, Jennifer Couzin-Frankel, Carolyn Gramling, Jocelyn Kaiser, Catherine Maticic, Kelly Service, Robert F. Service, Erik Stokstad(Cambridge, UK) **INTERNS** Jessica Boddy, Ben Panko **CONTRIBUTING CORRESPONDENTS** John Bohannon, Warren Cornwall, Ann Gibbons, Mara Hvistendahl, Sam Kean, Eli Kintisch, Kai Kupferschmidt(Berlin), Andrew Lawler, Mitch Leslie, Charles C. Mann, Eliot Marshall, Virginia Morell, Dennis Normile(Shanghai), Heather Pringle, Tania Rabesandratana(London), Emily Underwood, Gretchen Vogel(Berlin), Lizzie Wade(Mexico City) **CAREERS** Donisha Adams, Rachel Bernstein(Editor), Maggie Kuo **COPY EDITORS** Julia Cole, Dorie Chevlen, Jennifer Levin (Chief) **ADMINISTRATIVE SUPPORT** Jessica Adams

Executive Publisher

Rush D. Holt
Publisher Bill Moran **Chief Digital Media Officer** Rob Covey

BUSINESS OPERATIONS AND PORTFOLIO MANAGEMENT DIRECTOR Sarah Whalen **PRODUCT DEVELOPMENT DIRECTOR** Will Schweitzer **PRODUCT DEVELOPMENT ASSOCIATE** Hannah Heckner **BUSINESS SYSTEMS AND FINANCIAL ANALYSIS DIRECTOR** Randy Yi **SENIOR SYSTEMS ANALYST** Nicole Mehmedovich **DIRECTOR, BUSINESS OPERATIONS & ANALYSIS** Eric Knott **MANAGER, BUSINESS OPERATIONS** Jessica Tierney **SENIOR BUSINESS ANALYST** Cory Lipman **SENIOR BUSINESS ANALYSTS** David Garrison, Michael Hardesty Meron Kebede, Sandy Kim **FINANCIAL ANALYST** Drew Sher **DIRECTOR, COPYRIGHTS LICENSING SPECIAL PROJECTS** Emilie David **PERMISSIONS ASSOCIATE** Elizabeth Sandler **RIGHTS, CONTRACTS, AND LICENSING ASSOCIATE** Lili Kiser **RIGHTS & PERMISSIONS ASSISTANT** Alexander Lee

MARKETING DIRECTOR Elise Swinehart **ASSOCIATE MARKETING DIRECTOR** Stacey Burke Bowers **MARKETING ASSOCIATE** Steven Goodman **CREATIVE DIRECTOR** Scott Rodgers **SENIOR ART ASSOCIATES** Paula Fry **ART ASSOCIATE** Kim Huynh

FULFILLMENT SYSTEMS AND OPERATIONS membership@aaas.org **MANAGER, MEMBER SERVICES** Pat Butler **SPECIALISTS** Terrance Morrison, Latasha Russell **MANAGER, DATA ENTRY** Mickie Napoleoni **DATA ENTRY SPECIALISTS** Brenden Aquilino, Fiona Giblin **MARKETING ASSOCIATE** Isa Sesay-Bah

PUBLISHER RELATIONS, EASTERN REGION Keith Layson **PUBLISHER RELATIONS, WESTERN REGION** Ryan Rexroth **SALES RESEARCH COORDINATOR** Aiesha Marshall **ASSOCIATE DIRECTOR, INSTITUTIONAL LICENSING OPERATIONS** Iquo Edim **SENIOR OPERATIONS ANALYST** Lana Guz **MANAGER, AGENT RELATIONS & CUSTOMER SUCCESS** Judy Lillbridge

WEB TECHNOLOGIES PORTFOLIO MANAGER Trista Smith **TECHNICAL MANAGER** Chris Coleman **PROJECT MANAGER** Nick Fletcher **DEVELOPERS** Ryan Jensen, Jimmy Marks, Brandon Morrison **BUSINESS ANALYST** Christina Wofford

DIGITAL MEDIA DIRECTOR OF ANALYTICS Enrique Gonzales **DIGITAL REPORTING ANALYST** Eric Hossinger **SR. MULTIMEDIA PRODUCER** Sarah Crespi **MANAGING DIGITAL PRODUCER** Alison Crawford **PRODUCER** Liana Birke **VIDEO PRODUCER** Chris Burns, Nguyễn Hoài Nguyễn **DIGITAL SOCIAL MEDIA PRODUCER** Brice Russ

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 **ADVERTISING OPERATIONS SPECIALIST** Ashley Jeter

DESIGN DIRECTOR Beth Rakouskas **DESIGN EDITOR** Marcy Atarod **SENIOR DESIGNERS** Garvin Grullón, Chrystal Smith **GRAPHICS MANAGING EDITOR** Alberto Cuadra **SENIOR SCIENTIFIC ILLUSTRATORS** Chris Bickel, Katharine Sutliff **SCIENTIFIC ILLUSTRATOR** Valerie Altounian **INTERACTIVE GRAPHICS EDITOR** Jia Yu **SENIOR GRAPHICS SPECIALISTS** Holly Bishop, Nathalie Cary **PHOTOGRAPHY MANAGING EDITOR** William Douthitt **SENIOR PHOTO EDITOR** Christy Steele **PHOTO EDITOR** Emily Petersen

DIRECTOR, GLOBAL COLLABORATION, CUSTOM PUBLICATIONS, ADVERTISING Bill Moran **EDITOR, CUSTOM PUBLISHING** Sean Sanders: 202-326-6430 **ADVERTISING MARKETING MANAGER** Justin Sawyers: 202-326-7061 science_advertising@aaas.org **ADVERTISING SUPPORT MANAGER** Karen Foote: 202-326-6740 **ADVERTISING PRODUCTION OPERATIONS MANAGER** Deborah Tompkins **SR. PRODUCTION SPECIALIST/GRAPHIC DESIGNER** Amy Hardcastle **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 Dembski: 847-498-4520 x3005, Steven Loerch: 847-498-4520 x3006 **UK EUROPE/ASIA** Roger Goncalves: 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@sciencecareers.org **US. SALES** Tina Burks: 202-326-6577, Nancy Toema: 202-326-6578 **EUROPE/ROW SALES** 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 rwu@aaas.org **MARKETING MANAGER** Allison Pritchard **MARKETING ASSOCIATE** Aimee Aponte

AAAS BOARD OF DIRECTORS, CHAIR Geraldine L. Richmond **PRESIDENT** Barbara A. Schaal **PRESIDENT-ELECT** Susan Hockfield **TREASURER** David Evans **SHAW CHIEF EXECUTIVE OFFICER** Rush D. Holt **BOARD** Cynthia M. Beall, 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, P.O. Box 96178, Washington, DC 20090-6178 or AAAS Member Services, 1200 New York Avenue, NW, Washington, DC 20005

INSTITUTIONAL SITE LICENSES 202-326-6730 **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 of conflicting points of view. 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.

INFORMATION FOR AUTHORS See pages 624 and 625 of the 5 February 2016 issue or access www.sciencemag.org/authors/science-information-authors

SENIOR EDITORIAL BOARD

Gary King, Harvard University, Susan M. Rosenberg, Baylor College of Medicine, Ali Shilatfard, Northwestern University Feinberg School of Medicine

BOARD OF REVIEWING EDITORS

(Statistics board members indicated with \$)

Adriano Aguzzi, U. Hospital Zurich
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
Clare Baker, University of Cambridge
Enad Ban, ETH Zurich
Jordi Bascompte, University of Zurich
Franz Bauer, Pontificia Universidad Católica de Chile
Ray H. Baughman, U. of Texas, Dallas
David Baum, U. of Wisconsin
Carlo Beenakker, Leiden U.
Kamran Behnia, ESPCI-ParisTech
Yasmine Belkaid, NIAID, NIH
Philip Benfey, Duke 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 (\$) **Christian Büchel**, U. Hamburg-Eppendorf
Joseph A. Burns, Cornell U.
Carter Tribley Butts, U. of California, Irvine
György Buzsáki, New York U. School of Medicine
Bianche Capel, Duke U.
Mats Carlsson, U. of Oslo
Ib Chorkendorff, U. of Denmark
David Clapham, Children's Hospital Boston
Joel Cohen, Rockefeller U., Columbia U.
James J. Collins, MIT
Robert Cook-Deegan, Duke U.
Lisa Coussens, Oregon Health & Science 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.
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
William Dunphy, Caltech
Christopher Dye, WHO
Todd Ehlers, U. of Tuebingen
David Ehrhardt, Carnegie Inst. of Washington
Tim Elston, U. of North Carolina at Chapel Hill
Jennifer Elisseeff, U. of N
Gerhard Ertl, Fritz-Haber-Institut, Berlin
Barry Everitt, U. of Cambridge
Ernst Fehr, Johns Hopkins U.
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.
Elaïne Fuchs, Rockefeller U.
Daniel Geschwind, UCLA
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
Taejick Ha, U. of Illinois at Urbana-Champaign
Wolfgang Haefliger, ETH Zurich
Christian Haass, Ludwig Maximilians U.
Sharon Hammes-Schiffer, U. of Illinois at Urbana-Champaign
Michael Hasselmo, Boston U.
Martin Heimann, Max-Planck Inst. Jena
Yka Helariutta, U. of Cambridge
James A. Hendler, Rensselaer Polytechnic Inst.
Janet G. Hering, Swiss Fed. Inst. of Aquatic Science & Technology
Kai-Uwe Hinrichs, U. of Bremen
David Hodell, U. of Cambridge
Lora Hooper, UT Southwestern Medical Ctr. at Dallas
Tamas Horvath, Yale University
Raymond Huey, U. of Washington
Fred Hughson, Princeton U.
Auke Ijspeert, EPFL Lausanne
Stephen Jackson, USGS and U. of Arizona
Steven Jacobsen, U. of California, Los Angeles
Kai Johnson, EPFL Lausanne
Peter Jonas, Inst. of Science & Technology (IST) Austria
Matt Kaebberlein, U. of Washington
William Kaelin Jr., Dana-Farber Cancer Inst.
Daniel Kahne, Harvard U.
Daniel Kammen, U. of California, Berkeley
Abby Kavner, U. of California, Los Angeles
Hitoshi Kawakatsu, U. of Tokyo
Masashi Kawasaki, U. of Tokyo

V. Narry Kim, Seoul National U.
Robert Kingston, Harvard Medical School
Etienne Kochkin, Ecole Normale Supérieure
Alexander Kolodkin, Johns Hopkins U.
Thomas Langer, U. of Cologne
Mitchell A. Lazar, U. of Pennsylvania
David Lazer, Harvard U.
Thomas Lecuit, IBDM
Virginia Lee, U. of Pennsylvania
Stanley Lemon, U. of North Carolina at Chapel Hill
Ottoline Leyser, Cambridge U.
Wendell Lim, U.C. San Francisco
Marcia C. Linn, U. of California, Berkeley
Jianguo Liu, Michigan State U.
Luis Liz-Marzan, CIC biomAGUNE
Jonathan Losos, Harvard U.
Ke Lu, Chinese Acad. of Sciences
Christian Lüscher, U. of Geneva
Laura Machesky, CRUK Beatson Inst. for Cancer Research
Aene Magurran, U. of St. Andrews
Oscar Marin, CSIC & U. Miguel Hernández
Charles Marshall, U. of California, Berkeley
C. Robertson McClung, Dartmouth College
Rodrigo Medley, U. of Mexico
Graham Medlyn, U. of Warwick
Tom Misteli, NCJ
Yasushi Miyashita, U. of Tokyo
Mary Ann Moran, U. of Georgia
Richard Morris, U. of Edinburgh
Alison Murray-Reif, NC State U. (\$) **Thomas Murray**, The Hastings Center
Daniel Neumarck, U. of California, Berkeley
Katie Nijmeijer, U. of Twente
Heiga Novotny, European Research Advisory Board
Ben Olken, MIT
Rachel O'Reilly, Warwick U.
Joe Orenstein, U. of California
Berkeley & Lawrence Berkeley National Lab
Harry Orr, U. of Minnesota
Pilar Ossorio, U. of Wisconsin
Andrew Oswald, U. of Warwick
Isabella Pagano, Istituto Nazionale di Astrofisica
Margaret Palmer, U. of Maryland
Steve Palumbi, Stanford U.
Jane Parker, Max-Planck Inst. of Plant Breeding Research
Giovanni Parmigiani, Dana-Farber Cancer Inst. (\$) **John H. J. Petrini**, Memorial Sloan-Kettering Cancer Center
Samuel Pfaff, Salk Institute for Biological Studies
Joshua Plotkin, U. of Pennsylvania
Albert Polman, FOM Institute AMOLF
Philippe Poulin, CNRS
Jonathan Pritchard, Stanford U.
Wim van der Putten, Netherlands Institute of Ecology
David Randall, Colorado State U.
Felix Rey, Institut Pasteur
Trevor Robbins, U. of Cambridge
Jim Roberts, Fred Hutchinson Cancer Research Ctr.
Amy Rosenzweig, Northwestern University
Mike Ryan, U. of Texas, Austin
Mitsuru Saitou, Kyoto U.
Shimon Sakaguchi, Kyoto U.
Miquel Salmeron, Lawrence Berkeley National Lab
Jürgen Sandkühler, Medical U. of Vienna
Alexander Schier, Harvard U.
Vladimir Shalae, Purdue U.
Robert Siliciano, Johns Hopkins School of Medicine
Denis Simon, Arizona State U.
Uri Simonsohn, U. of Pennsylvania
Alison Smith, John 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.
Shubha Tole, Tata Institute of Fundamental Research
Christopher Tyler-Smith, The Wellcome Trust Sanger Inst.
Herbert Virgin, Washington U.
Bert Vogelstein, Johns Hopkins U.
Cynthia Volkert, U. of Göttingen
David Wallach, Weizmann Inst. of Science
Ian Walmsey, U. of Oxford
Jane-Ling Wang, U. of California, Davis (\$) **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.
Jean 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 Sweder, U. of Chicago, Ed Wasserman, DuPont