



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. Lavine(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. Szuromi, Sacha Vignieri, Brad Wible, Laura M. Zahn **ASSOCIATE EDITORS** Brent Grocholski, Priscilla Kelly, Keith T. Smith **ASSOCIATE BOOK REVIEW EDITOR** Valerie B. Thompson **LETTERS EDITOR** Jennifer Sills **LEAD CONTENT PRODUCTION EDITORS** Harry Jach, Lauren Kmec **CONTENT PRODUCTION EDITORS** Jeffrey E. Cook, Chris Filiaudeau, Cynthia How, Barbara P. Ordway, Catherine Welch **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 Masiulis, Dona Mathieu, Le-Toya Mayne Flood, Shannon McMahon, Scott Miller, Jerry Richardson, Alice Whaley(UK), Gwen Grant(UK), Brian White **EXECUTIVE ASSISTANT** Anna Bashkirova **ADMINISTRATIVE SUPPORT** Janet Clements(UK), Lizanne Newton(UK), Sarah Harrison(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 Servick, Robert F. Service, Erik Stokstad(Cambridge, UK), Paul Voosen, Meredith Wadman **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 Chevien, 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 Mehmedovic **DIRECTOR, BUSINESS OPERATIONS & ANALYSIS** Eric Knott **MANAGER, BUSINESS OPERATIONS** Jessica Tierney **SENIOR BUSINESS ANALYST** Cory Lipman **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 Rodgerson **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

DIRECTOR, INSTITUTIONAL LICENSING David Celano **PUBLISHER RELATIONS, EASTERN REGION** Keith Layson **PUBLISHER RELATIONS, WESTERN REGION** Ryan Rexroth **ASSOCIATE DIRECTOR, INSTITUTIONAL LICENSING OPERATIONS** Iquo Edim **SENIOR OPERATIONS ANALYST** Lana Guz **MANAGER, AGENT RELATIONS & CUSTOMER SUCCESS** Judy Lillibridge

WEB TECHNOLOGIES PORTFOLIO MANAGER Trista Smith **TECHNICAL MANAGER** Chris Coleman **PROJECT MANAGER** Nick Fletcher **DEVELOPERS** Elissa Heller, Ryan Jensen, Jimmy Marks, Brandon Morrison

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 Khôi 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 DESIGNER** Chrystal Smith **DESIGNER** Christina Aycock **GRAPHICS MANAGER** Alberto Cuadra **GRAPHICS EDITOR** Garvin Grullón **SENIOR SCIENTIFIC ILLUSTRATORS** Chris Bickel, Katharine Sutfill **SCIENTIFIC ILLUSTRATOR** Valerie Altounian **INTERACTIVE GRAPHICS EDITOR** Jia You **SENIOR GRAPHICS SPECIALISTS** Holly Bishop, Nathalie Cary **PHOTOGRAPHY MANAGING EDITOR** William Douthitt **PHOTO EDITOR** Emily Petersen

DIRECTOR, GLOBAL COLLABORATION, CUSTOM PUBLICATIONS, ADVERTISING Bill Moran **EDITOR, CUSTOM PUBLISHING** Sean Sanders: 202-326-6430 **ASSISTANT EDITOR, CUSTOM PUBLISHING** Jackie Oberst: 202-326-6463 **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** Army Hardcastle **SR. TRAFFIC ASSOCIATE** Christine Hall **SALES COORDINATOR** Shirley Young **ASSOCIATE DIRECTOR, COLLABORATION, CUSTOM PUBLICATIONS/CHINA/TAIWAN/KOREA/SINGAPORE** Xiaoying Chu: +86-186 0082 9345, xchu@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 Dembksi: 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 **DIRECTOR, GLOBAL COLLABORATION AND PUBLISHING SERVICES CHINA/TAIWAN** Yan Xiang: +86-186 0082 9345, xyxiang@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 **U.S. SALES** Tina Burks: 202-326-6577, Nancy Toarna: 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** Yan Xiang: +86-186 0082 9345 xyxiang@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 Hookfield **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 or 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 Shihatafard, *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*
Meinrat O. Andreae, *Max-Planck Inst. Mainz*
Paola Arlotta, *Harvard U.*
Johan Auwerx, *EPFL*
David Awschalom, *U. of Chicago*
Clare Baker, *University of Cambridge*
Nenad Ban, *ETH 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, *NIAH/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, *Hamburg-Eppendorf*
Joseph A. Burns, *Cornell U.*
Carter Tribble Butts, *U. of California, Irvine*
Gyorgy Buzsáki, *New York U. School of Medicine*
Blanche 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.*
Sandra Diaz, *Universidad Nacional de Córdoba*
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, *Caltch*
Christopher Dye, *WHO*
Todd Ehlers, *U. of Tuebingen*
David Ehrhard, *Carnegie Inst. of Washington*
Tim Elston, *U. of North Carolina at Chapel Hill*
Jennifer Elisseeff, *Johns Hopkins U.*
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.*
Elaine Fuchs, *Rockefeller U.*
Daniel Geschwind, *UCLA*
Karl-Heinz Glassmeier, *TU Braunschweig*
Ramon Gonzalez, *Rice U.*
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*
Wolf-Dietrich Hardt, *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*
Seema Jayachandran, *Northwestern U.*
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*
Abby Kavner, *U. of California, Los Angeles*
Hitoshi Kawakatsu, *U. of Tokyo*
Masashi Kawasaki, *U. of Tokyo*
V. Naray Kim, *Seoul National U.*
Robert Kingston, *Harvard Medical School*
Etienne Kochlin, *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 bioGUNE*
Jonathan Losos, *Harvard U.*
Ke Lu, *Chinese Acad. of Sciences*
Christian Lüscher, *U. of Geneva*
Laura Machesky, *CRUK Beaton Inst. for Cancer Research*
Anne Magurran, *U. of St. Andrews*
Oscar Marin, *CSIC & Miguel Hernández*
Charles Marshall, *U. of California, Berkeley*
C. Robertson McClung, *Dartmouth College*
Rodrigo Medellín, *U. of Mexico*
Graham Medley, *U. of Warwick*
Jane Memmott, *U. of Bristol*
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. (\$)*
Thomas Murray, *The Hastings Center*
Daniel Neuman, *U. of California, Berkeley*
Kitty Nijmeijer, *U. of Twente*
Helga Nowotny, *European Research Advisory Board*
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*
Kathrin Plath, *U. of California, Los Angeles*
Joshua Plotkin, *U. of Pennsylvania*
Albert Polman, *FOM Institute AMOLF*
Phillippe Poulin, *CNRS*
Jonathan Pritchard, *Stanford U.*
Win van der Putten, *Netherlands Institute of Ecology*
David Randall, *Colorado State U.*
Sarah Reisman, *Caltch*
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*
Mitinori Saitoku, *Kyoto U.*
Shimon Sakaguchi, *Kyoto U.*
Miguel Salmeron, *Lawrence Berkeley National Lab*
Jürgen Sandkühler, *Medical U. of Vienna*
Alexander Schier, *Harvard U.*
Vladimir Shalaya, *Purdue U.*
Robert Siliciano, *Johns Hopkins School of Medicine*
Dennis Simon, *Arizona State U.*
Uri Simonsohn, *U. of Pennsylvania*
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. Subramanian, *U. of Maryland*
Ira Tabas, *Columbia U.*
Sarah Teichmann, *Cambridge U.*
John Thomas, *North Carolina State U.*
Shubha Tole, *Fata Institute of Fundamental Research*
Christopher Tyler-Smith, *The Wellcome Trust Sanger Inst.*
Herbert Virsik, *Washington U.*
Bert Vogelstein, *Johns Hopkins U.*
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.*
Jan Zaenen, *Leiden U.*
Kenneth Zehr, *U. of Pennsylvania School of Medicine*
Jonathan Zehr, *U. of California, Santa Cruz*
Len Zou, *Children's Hospital Boston*
Mara Zuber, *MIT*

BOOK REVIEW BOARD

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