

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. Jasny **SR. EDITORS** Gemma Alderton(UK), Caroline Ash(UK), Gilbert J. Chin, Julia Fahrenkamp-Uppenbrink(UK), Pamela J. Hines, Stella M. Hurlley(UK), Paula A. Kiberstis, Marc S. Lavine(Canada), Steve Mao, Ian S. Osborne(UK), Beverly A. Purnell, L. Bryan Ray, H. Jesse Smith, Jelena Stajic, Peter Stern(UK), Phillip D. Szurromi, Sacha Vignieri, Brad Wible, Laura M. Zahn **ASSOCIATE EDITORS** Michael A. Funk, Brent Grocholski, Priscilla N. Kelly, Seth Thomas Scanlon(UK), Keith T. Smith(UK) **ASSOCIATE BOOK REVIEW EDITOR** Valerie B. Thompson **LETTERS EDITOR** Jennifer Sills **LEAD CONTENT PRODUCTION EDITORS** Harry Jach, Lauren Kmeck **CONTENT PRODUCTION EDITORS** Amelia Beyna, Jeffrey E. Cook, Chris Filiatreau, Cynthia Howe, Catherine Wolner **SR. EDITORIAL COORDINATORS** Carolyn Kyle, Beverly Shields **EDITORIAL COORDINATORS** Aneera Dobbins, Joi S. Granger, Jeffrey Hearn, Lisa Johnson, Maryrose Madrid, Scott Miller, Jerry Richardson, Anita Wynn **PUBLICATIONS ASSISTANTS** Ope Martins, Nida Masiulis, Dona Mathieu, Hilary Stewart(UK), Alana Warnke, Alice Whaley(UK), Brian White **EXECUTIVE ASSISTANT** Jessica Slater **ADMINISTRATIVE SUPPORT** Janet Clements(UK), Lizanne Newton(UK)

News

NEWS MANAGING EDITOR John Travis **INTERNATIONAL EDITOR** Richard Stone **DEPUTY NEWS EDITORS** Elizabeth Culotta, Martin Enserink(Europe), David Grimm, Eric Hand, David Malakoff, Leslie Roberts **SR. CORRESPONDENTS** Daniel Clery(UK), Jeffrey Mervis, Elizabeth Pennisi **ASSOCIATE EDITORS** Jeffrey Brainerd, Catherine Matakac **NEWS WRITERS** Adrian Cho, Jon Cohen, Jennifer Couzin-Frankel, Jocelyn Kaiser, Kelly Servick, Robert F. Service, Erik Stokstad(Cambridge, UK), Paul Voosen, Meredith Wadman **INTERNS** Roni Dengler, Katie Langin, Matt Warren **CONTRIBUTING CORRESPONDENTS** John Bohannon, Warren Cornwall, Ann Gibbons, Mara Hivstendahl, Sam Keen, Eli Kintisch, Kai Kupferschmidt(Berlin), Andrew Lawler, Mitch Leslie, Eliot Marshall, Virginia Morell, Dennis Normile(Shanghai), Tania Rabesandratana(London), Emily Underwood, Gretchen Vogel(Berlin), Lizzie Wade(Mexico City) **CAREERS** Donisha Adams, Rachel Bernstein(Editor), Maggie Kuo **COPY EDITORS** Dorie Chevlen, Julia Cole (Senior Copy Editor), Cyra Master (Copy Chief) **ADMINISTRATIVE SUPPORT** Meagan Weiland

Executive Publisher Rush D. Holt

Publisher Bill Moran **Chief Digital Media Officer** Josh Freeman

DIRECTOR, BUSINESS STRATEGY AND PORTFOLIO MANAGEMENT Sarah Whalen **DIRECTOR, PRODUCT AND CUSTOM PUBLISHING** Will Schweitzer **MANAGER, PRODUCT DEVELOPMENT** Hannah Heckner **BUSINESS SYSTEMS AND FINANCIAL ANALYSIS** Director Randy Yi **DIRECTOR, BUSINESS OPERATIONS & ANALYST** Eric Knott **SENIOR SYSTEMS ANALYST** Nicole Mehmedovich **SENIOR BUSINESS ANALYST** Cory Lipman **MANAGER, BUSINESS OPERATIONS** Jessica Tierney **BUSINESS ANALYST** Meron Kebede, Sandy Kim, Jourdan Stewart **FINANCIAL ANALYST** Julian Iriarte **ADVERTISING SYSTEM ADMINISTRATOR** Tina Burks **SALES COORDINATOR** Shirley Young **DIRECTOR, COPYRIGHT, LICENSING, SPECIAL PROJECTS** Emilie David **DIGITAL PRODUCT ASSOCIATE** Michael Hardesty **RIGHTS AND PERMISSIONS ASSOCIATE** Elizabeth Sandler **RIGHTS, CONTRACTS, AND LICENSING ASSOCIATE** Lili Catlett **RIGHTS & PERMISSIONS ASSISTANT** Alexander Lee

MARKETING MANAGER, PUBLISHING Shawana Arnold **MARKETING ASSOCIATE** Steven Goodman **CREATIVE DIRECTOR** Scott Rodgers **SENIOR ART ASSOCIATES** Paula Fry **ART ASSOCIATE** Kim Huynh

INTERIM DIRECTOR, INSTITUTIONAL LICENSING Iquo Edim **ASSOCIATE DIRECTOR, RESEARCH & DEVELOPMENT** Elisabeth Leonard **SENIOR INSTITUTIONAL LICENSING MANAGER** Ryan Rexroth **INSTITUTIONAL LICENSING MANAGERS** Marco Castellani, Chris Murawski **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, Brandon Morrison

DIGITAL MEDIA DIRECTOR OF ANALYTICS Enrique Gonzales **DIGITAL REPORTING ANALYST** Eric Hossinger **SR. MULTIMEDIA PRODUCER** Sarah Crespi **MANAGING DIGITAL PRODUCER** Kara Estelle-Powers **PRODUCER** Liana Birke **VIDEO PRODUCERS** Chris Burns, Nguyễn Khôi Nguyễn **DIGITAL SOCIAL MEDIA PRODUCER** Brice Russ

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 MANAGING EDITOR** Marcy Atarod **SENIOR DESIGNER** Chrystal Smith **DESIGNER** Christina Aycock **GRAPHICS MANAGING EDITOR** Alberto Cuadra **SENIOR SCIENTIFIC ILLUSTRATORS** Valerie Altonoun, Chris Bickel, Katharine Sutfill **SCIENTIFIC ILLUSTRATOR** Alice Kitterman **INTERACTIVE GRAPHICS EDITOR** Jia You **SENIOR GRAPHICS SPECIALISTS** Holly Bishop, Nathalie Cary **PHOTOGRAPHY MANAGING EDITOR** William Douthitt **PHOTO EDITOR** Emily Petersen **IMAGE RIGHTS AND FINANCIAL MANAGER** Jessica Adams **INTERN** Emily Miah

SENIOR EDITOR, CUSTOM PUBLISHING Sean Sanders: 202-326-6430 **ASSISTANT EDITOR, CUSTOM PUBLISHING** Jackie Oberst: 202-326-6463 **ASSOCIATE DIRECTOR, BUSINESS DEVELOPMENT** Justin Sawyers: 202-326-7061 **science_advertising@aaas.org** **ADVERTISING PRODUCTION OPERATIONS MANAGER** Deborah Tompkins **SR. PRODUCTION SPECIALIST/GRAPHIC DESIGNER** Amy Hardestie **SR. TRAFFIC ASSOCIATE** Christine Hall **DIRECTOR OF BUSINESS DEVELOPMENT AND ACADEMIC PUBLISHING RELATIONS, ASIA** Xiaoying Chu: +86-131 6136 3212, 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 Dembski: 847-498-4520 x3005, Steven Loerch: 847-498-4520 x3006 **UK EUROPE/ASIA** Roger Goncalves: TEL/FAX +41 43 243 1358 **JAPAN** Kaoru Sasaki (Tokyo): +81 (3) 6459 4174 ksasaki@aaas.org

GLOBAL SALES DIRECTOR ADVERTISING AND CUSTOM PUBLISHING Tracy Holmes: +44 (0) 1223 326525 **CLASSIFIED** advertise@sciencecareers.org **SALES MANAGER, US, CANADA AND LATIN AMERICA SCIENCE CAREERS** Claudia Paulsen-Young: 202-326-6577 **EUROPE/ROW SALES** Sarah Lelarge **SALES ADMIN ASSISTANT** Kelly Grace +44 (0)1223 326528 **JAPAN** Miyuki Tani(Osaka): +81 (6) 6202 6272 mtani@aaas.org **CHINA/TAIWAN** Xiaoying Chu: +86-131 6136 3212, xchu@aaas.org **GLOBAL MARKETING MANAGER** Allison Pritchard **DIGITAL MARKETING ASSOCIATE** Aimee Aponte

AAAS BOARD OF DIRECTORS, CHAIR Barbara A. Schaal **PRESIDENT** Susan Hockfield **PRESIDENT-ELECT** Margaret A. Hamburg **CHIEF EXECUTIVE OFFICER** Rush D. Holt **BOARD** Cynthia M. Beall, May R. Berenbaum, Carlos J. Bustamante, Kaye Husbands Fealing, Stephen P.A. Fodor, S. James Gates, Jr., Michael S. Gazzaniga, Laura H. Greene, 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 LICENSING** 202-326-6730 **REPRINTS:** Author Inquiries 800-635-7181 **COMMERCIAL INQUIRIES** 803-359-4578 **PERMISSIONS** 202-326-6765, permissions@aaas.org **AAAS Member Central Support** 866-434-2227 www.aaas.org/membercentral

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 www.sciencemag.org/authors/science-information-authors

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 Manchester
Sebastian Amigorena, Institut Curie
Meinrat O. Andrae, Max Planck Inst. Mainz
Paola Ariotti, Harvard U.
Johan Auwerx, EPFL
David Awschalom, U. of Chicago
Clare Baker, U. of Cambridge
Nenad Ban, ETH Zürich
Franz Bauer, Pontificia Universidad Católica de Chile
Ray H. Baughman, U. of Texas at Dallas
Carlo Beenakker, Leiden U.
Kamran Behnia, ESPCI
Yasmine Belkaid, NIAID, NIH
Philip Benfey, Duke U.
May Berenbaum, U. of Illinois at Urbana-Champaign
Gabriele Bergers, VIB
Bradley Bernstein, Massachusetts General Hospital
Peer Bork, EMBL
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, UKE Hamburg
Dennis Burton, The Scripps Res. Inst.
Carter Tribley Butts, U. of California, Irvine
Gyorgy Buzsáki, New York U. School of Medicine
Blanche Capel, Duke U.
Mats Carlsson, U. of Oslo
Ib Chorkendorff, Denmark TU
James J. Collins, MIT
Robert Cook-Deegan, Duke U.
Lisa Coussens, Oregon Health & Science U.
Alan Cowman, Walter & Eliza Hall Inst.
Roberta Croce, VU Amsterdam
Janet Currie, Princeton U.
Jeff L. Dangl, U. of North Carolina
Tom Daniel, U. of Washington
Chiara Daraio, Caltech
Nicolas Daughas, U. of Chicago
Frans de Waal, Emory U.
Stanislas Dehaene, Collège de France
Robert Desimone, MIT
Claude Desplan, New York U.
Sandra Díaz, Universidad Nacional de Córdoba
Dennis Discher, U. of Pennsylvania
Gerald W. Dorn II, Washington U. in St. Louis
Jennifer A. Doudna, U. of California, Berkeley
Bruce Dunn, U. of California, Los Angeles
William Dunphy, Caltech
Christopher Dye, WHO
Todd Ehlers, U. of Tübingen
Jennifer Elisseeff, Johns Hopkins U.
Tim Elston, U. of North Carolina at Chapel Hill
Barry Everitt, U. of Cambridge
Vanessa Ezenwa, U. of Georgia
Ernst Fehr, U. of Zürich
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. Potsdam
Elaine Fuchs, Rockefeller U.
Eileen Furlong, EMBL
Jay Gallagher, U. of Wisconsin
Daniel Geschwind, U. of California, Los Angeles
Karl-Heinz Glassmeier, TU Braunschweig
Ramon Gonzalez, Rice U.
Elizabeth Grove, U. of Chicago
Nicolas Gruber, ETH Zürich
Kip Guy, U. of Kentucky College of Pharmacy
Taekjip Ha, Johns Hopkins U.
Christian Haass, Ludwig Maximilians U.
Sharon Hammes-Schiffer, U. of Illinois at Urbana-Champaign
Wolf-Dietrich Hardt, ETH Zürich
Michael Hasselmo, Boston U.
Martin Heimann, Max Planck Inst. Jena
Ykä Helariutta, U. of Cambridge
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
Raymond Huey, U. of Washington
Fred Hughson, Princeton U.
Randall Hulet, Rice U.
Auke Ijspeert, EPFL
Stephen Jackson, USGS Southwest Climate Science Ctr.
Seema Jayachandran, Northwestern U.
Kai Johnson, EPFL
Peter Jonas, Inst. of Science & Technology Austria
Matt Kaeblerlein, U. of Washington
William Kaelin Jr., Dana-Farber Cancer Inst.
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 Nat. U.
Robert Kingston, Harvard Medical School
Etienne Koechlin, 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, U. of Cambridge
Wendell Lim, U. of California, San Francisco
Marcia C. Linn, U. of California, Berkeley
Jianguo Liu, Michigan State U.
Luis Liz-Marzán, CIC bioMAGNUE
Jonathan Losos, Harvard U.
Ke Lu, Chinese Acad. of Sciences
Christian Lüscher, U. of Geneva
Laura Machesky, Cancer Research UK Beatson Inst.
Anne Magurran, U. of St. Andrews
Oscar Marín, King's College London
Charles Marshall, U. of California, Berkeley
Christopher Marx, U. of Idaho
C. Robertson McClung, Dartmouth College
Rodrigo Medellín, U. of Mexico
Graham Medley, London School of Hygiene & Tropical Med.
Jane Memmott, U. of Bristol
Tom Misteli, NCI, NIH
Yasushi Miyashita, U. of Tokyo
Mary Ann Moran, U. of Georgia
Richard Morris, U. of Edinburgh
Alison Mutsaers-Reif, NC State U. (\$) **\$**
Daniel Neumark, U. of California, Berkeley
Kitty Nijmeijer, TU Eindhoven
Rachel Nowotny, Austrian Council
Rachel O'Reilly, U. of Warwick
Joe Orenstein, U. of California, Berkeley & Lawrence Berkeley Nat. 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. Cologne
Giovanni Parmigiani, Dana-Farber Cancer Inst. (\$) **\$**
John H. J. Petrini, Memorial Sloan Kettering Cancer Center
Samuel Pfaff, Salk Inst. for Biological Studies
Kathrin Plath, U. of California, Los Angeles
Martin Plenio, Ulm U.
Albert Polman, FOM Institute for AMOLF
Elvira Poloczanska, Alfred-Wegener-Inst.
Philippe Poulin, CNRS
Jonathan Pritchard, Stanford U.
David Randall, Colorado State U.
Sarah Reisman, Caltech
Félix A. Rey, Institut Pasteur
Trevor Robbins, U. of Cambridge
Amy Rosenzweig, Northwestern U.
Mike Ryan, U. of Texas at Austin
Mitinori Saitou, Kyoto U.
Shimon Sakaguchi, Osaka U.
Miquel Salmeron, Lawrence Berkeley National Lab
Jürgen Sandkühler, Medical U. of Vienna
Alexander Schier, Harvard U.
Wolfram Schlenker, Columbia U.
Susanna Scott, U. of California, Santa Barbara
Vladimir Shalaev, Purdue U.
Beth Shapiro, U. of California, Santa Cruz
Jay Shendure, U. of Washington
Robert Siliciano, Johns Hopkins School of Medicine
Uri Simonsohn, U. of Pennsylvania
Alison Smith, John Innes Centre
Richard Smith, U. of North Carolina at Chapel Hill (\$) **\$**
Mark Smyth, QIMR Berghofer
Pam Solts, U. of Florida
John Speakman, U. of Aberdeen
Allan C. Spradling, Carnegie Institution for Science
Eric Steig, U. of Washington
Paula Stephan, Georgia State U. & Nat. Bureau of Economic Res.
V. S. Subrahmanian, U. of Maryland
Ira Tabas, Columbia U.
Sarah Teichmann, U. of Cambridge
Shubha Tole, Tata Inst. of Fundamental Research
Wim van der Putten, Netherlands Inst. of Ecology
Bert Vogelstein, Johns Hopkins U.
David Wallach, Weizmann Inst. of Science
Jane-Ling Wang, U. of California, Davis (\$) **\$**
David Waxman, Fudan U.
Jonathan Weissman, U. of California, San Francisco
Chris Winkle, U. of Missouri (\$) **\$**
Ian A. Wilson, The Scripps Res. Inst. (\$) **\$**
Timothy D. Wilson, U. of Virginia
Yu Xie, Princeton U.
Jan Zaenen, Leiden U.
Kenneth Zaret, U. of Pennsylvania School of Medicine
Jonathan Zehr, U. of California, Santa Cruz
Len Zon, Boston Children's Hospital
Maria Zuber, MIT