

Editor-in-Chief Jeremy Berg

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

Editor, Insights Lisa D. Chong **Editors, Research** Valda Vinson, Jake S. Yeston

Research and Insights

DEPUTY EDITORS Julia Fahrenkamp-Uppenbrink(UK), Stella M. Hurlley(UK), Phillip D. Szurmi, Sacha Vignieri **SR. EDITORIAL FELLOW** Andrew M. Sugden(UK) **SR. EDITORS** Gemma Alderton(UK), Caroline Ash(UK), Pamela J. Hines, 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), Brad Wible, Laura M. Zahn **ASSOCIATE EDITORS** Michael A. Funk, Brent Grocholski, Priscilla N. Kelly, Tage S. Rai, 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 Kmec **CONTENT PRODUCTION EDITORS** Amelia Beyna, Jeffrey E. Cook, Amber Esplin, Chris Filiatreau, Nida Masiulis, Suzanne M. White **SR. EDITORIAL COORDINATORS** Carolyn Kyle, Beverly Shields **EDITORIAL COORDINATORS** Aneera Dobbins, Joi S. Granger, Jeffrey Hearn, Lisa Johnson, Maryrose Madrid, Shannon McMahon, Jerry Richardson, Alice Whaley(UK), Anita Wynn **PUBLICATIONS ASSISTANTS** Alexander Kief, Ope Martins, Ronnel Navas, Hilary Stewart(UK), Alana Warnke, Brian White **EXECUTIVE ASSISTANT** Jessica Slater **ASI DIRECTOR, OPERATIONS** Janet Clements(UK) **ASI SR. OFFICE ADMINISTRATOR** Jessica Waddock(UK) **INTERN** Claudia Pama(UK)

News

NEWS MANAGING EDITOR John Travis **INTERNATIONAL EDITOR** Martin Enserink **DEPUTY NEWS EDITORS** Elizabeth Culotta, Lila Guterman, David Grimm, Eric Hand, David Malakoff **SR. CORRESPONDENTS** Daniel Clery(UK), Jon Cohen, Jeffrey Mervis, Elizabeth Pennisi **ASSOCIATE EDITORS** Jeffrey Brainard, Catherine Maticic **NEWS REPORTERS** Adrian Cho, Jennifer Couzin-Frankel, Jocelyn Kaiser, Kelly Servick, Robert F. Service, Erik Stokstad(Cambridge, UK), Paul Voosen, Meredith Wadman **INTERN** Alex Fox **CONTRIBUTING CORRESPONDENTS** Warren Cornwall, Ann Gibbons, Mara Hvistendahl, Sam Kean, Eli Kintisch, Kai Kupferschmidt(Berlin), Andrew Lawler, Mitch Leslie, Eliot Marshall, Virginia Morell, Dennis Normile(Shanghai), Elisabeth Pain (Careers), Charles Pillar, Michael Price, Tania Rabesandratana(Barcelona), Emily Underwood, Gretchen Vogel(Berlin), Lizzie Wade(Mexico City) **CAREERS** Denisha Adams, Rachel Bernstein(Editor), Katie Langin **COPY EDITORS** Julia Cole (Senior Copy Editor), Cyra Master (Copy Chief) **ADMINISTRATIVE SUPPORT** Meagan Weiland

Executive Publisher Rush D. Holt

Publisher Bill Moran

DIRECTOR, BUSINESS STRATEGY AND PORTFOLIO MANAGEMENT Sarah Whalen **ASSOCIATE DIRECTOR, PRODUCT DEVELOPMENT AND SCIENCE PARTNER JOURNALS** Hannah Heckner **BUSINESS SYSTEMS AND FINANCIAL ANALYSIS DIRECTOR** Randy Yi **DIRECTOR, BUSINESS OPERATIONS & ANALYST** Eric Knott **ASSOCIATE DIRECTOR, PRODUCT MANAGEMENT** Kris Bishop **SENIOR BUSINESS ANALYST** Cory Lipman **MANAGER, BUSINESS OPERATIONS** Jessica Tierney **BUSINESS ANALYSTS** Meron Kebede, Sandy Kim **ADVERTISING SYSTEM ADMINISTRATOR** Tina Burks **SALES COORDINATOR** Shirley Young **DIRECTOR, COPYRIGHT, LICENSING, SPECIAL PROJECTS** Emilie David **RIGHTS AND LICENSING COORDINATOR** Jessica Adams **DIGITAL PRODUCT STRATEGIST** Michael Hardesty **RIGHTS AND PERMISSIONS ASSOCIATE** Elizabeth Sandler **RIGHTS, CONTRACTS, AND LICENSING ASSOCIATE** Lili Catlett **RIGHTS & PERMISSIONS ASSISTANT** Alexander Lee

DIRECTOR, INSTITUTIONAL LICENSING Iqou Edim **ASSOCIATE DIRECTOR, RESEARCH & DEVELOPMENT** Elisabeth Leonard **SENIOR INSTITUTIONAL LICENSING MANAGER** Ryan Rexroth **INSTITUTIONAL LICENSING MANAGERS** Marco Castellani, Chris Murawski **SENIOR OPERATIONS ANALYST** Lana Zug **MANAGER, AGENT RELATIONS & CUSTOMER SUCCESS** Judy LillibrIDGE

WEB DEVELOPMENT DIRECTOR David Levy **PROJECT MANAGER** Virginia Bramante

DIGITAL MEDIA DIRECTOR OF ANALYTICS Enrique Gonzales **MULTIMEDIA MANAGER** Sarah Crespi **WEB CONTENT STRATEGY MANAGER** Kara Estelle-Powers **DIGITAL PRODUCER** Jessica Hubbard **VIDEO PRODUCERS** Chris Burns, Meagan Cantwell

DIGITAL/PRINT STRATEGY MANAGER Jason Hillman **QUALITY TECHNICAL MANAGER** Marcus Spiegler **DIGITAL PRODUCTION MANAGER** Lisa Stanford **ASSISTANT MANAGER DIGITAL/PRINT** Rebecca Doshi **SENIOR CONTENT SPECIALISTS** Steve Forrester, Antoinette Hodal, Lori Murphy **CONTENT SPECIALISTS** Jacob Hedrick, Kimberley Oster

CREATIVE DIRECTOR Beth Rakoukas **DESIGN MANAGING EDITOR** Marcy Atarod **SENIOR DESIGNER** Chrystal Smith **DESIGNER** Christina Aycock **GRAPHICS MANAGING EDITOR** Alberto Cuadra **GRAPHICS EDITOR** Nirja Desai **SENIOR SCIENTIFIC ILLUSTRATORS** Valerie Altounian, Chris Bickel **SCIENTIFIC ILLUSTRATOR** Alice Kitterman **INTERACTIVE GRAPHICS EDITOR** Jia You **SENIOR GRAPHICS SPECIALISTS** Valeri Bishop, Nathalie Cary **PHOTOGRAPHY MANAGING EDITOR** William Douthitt **PHOTO EDITOR** Emily Petersen

SENIOR EDITOR, CUSTOM PUBLISHING Sean Sanders: 202-326-6430 **ASSISTANT EDITOR, CUSTOM PUBLISHING** Jackie Oberst: 202-326-6463 **ADVERTISING PRODUCTION OPERATIONS MANAGER** Deborah Tompkins **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 + 815322-81-5142 asandhu@aaas.org **EAST COAST/E. CANADA** Laurie Faraday: 508-747-9395, FAX 617-507-8189 **WEST COAST/W. CANADA** Lynne Stokrod: 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** Kaoru Sasaki (Tokyo): + 81 (3) 6459 4174 ksasaki@aaas.org

ASSOCIATE DIRECTOR, BUSINESS DEVELOPMENT Justin Sawyers **GLOBAL MARKETING MANAGER** Allison Pritchard **DIGITAL MARKETING ASSOCIATE** Aimee Aponte **MARKETING MANAGER, JOURNALS** Shawana Arnold **MARKETING ASSOCIATES** Mike Romano, Tori Velasquez **SENIOR DESIGNER** Kim Huynh **TRADE SHOW COORDINATOR** Andrew Clamp

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

AAAS BOARD OF DIRECTORS, CHAIR Margaret A. Hamburg **PRESIDENT** Steven Chu **PRESIDENT-ELECT** Claire M. Fraser **TREASURER** Carolyn N. Ainslie **CHIEF EXECUTIVE OFFICER** Rush D. Holt **BOARD** Cynthia M. Beall; May R. Berenbaum; Rosina M. Bierbaum; Ann Bostrom; Stephen P.A. Fodor; S. James Gates, Jr.; Laura H. Greene; Kaye Husbands Fealing; Maria Klawe; Robert B. Millard; William D. Provine

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 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*
James Analytis, *U. of California, Berkeley*
Paola Ariotta, *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*
Peter Bearman, *Columbia U.*
Carlo Beenakker, *Leiden U.*
Yasmine Belkaid, *NIAD, NIH*
Philip Benfey, *Duke U.*
Gabriele Bergers, *VI*
Bradley Bernstein, *Mass. General Hospital*
Peer Bork, *EMBL*
Chris Bowler, *École 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, *Scripps Research*
Carter Tribley Butts, *U. of California, Irvine*
György Buzsáki, *New York U. School of Med.*
Blanche Capel, *Duke U.*
Annmarie Carlton, *U. of California, Irvine*
Lars Erik Cederman, *ETH Zürich*
Nick Chater, *U. of Warwick*
Ib Chorkendorff, *Denmark TU*
James J. Collins, *MIT*
Robert Cook-Deegan, *Arizona State U.*
Alan Cowman, *Walter & Eliza Hall Inst.*
Carolyn Coyne, *U. of Pittsburgh*
Roberta Croce, *VU Amsterdam*
Jeff L. Dangl, *U. of North Carolina*
Tom Daniel, *U. of Washington*
Chiara Daraio, *Caltech*
Nicolas Dauphas, *U. of Chicago*
Frans de Waal, *Emory U.*
Stanislas Dehaene, *Collège de France*
Claude Desplan, *New York U.*
Sandra Díaz, *Universidad Nacional de Córdoba*
Hong Ding, *Inst. of Physics, CAS*
Dennis Discher, *U. of Penn.*
Jennifer A. Doudna, *U. of California, Berkeley*
Bruce Dunn, *U. of California, Los Angeles*
William Dunphy, *Caltech*
Christopher Dye, *U. of Oxford*
Todd Ehlers, *U. of Tübingen*
Jennifer Elisseeff, *Johns Hopkins U.*
Tim Elston, *U. of North Carolina*
Andrea Encelada, *Universidad San Francisco de Quito*
Nader Engheta, *U. of Penn.*
Karen Ersche, *U. of Cambridge*
Barry Everitt, *U. of Cambridge*
Vanessa Ezenwa, *U. of Georgia*
Michael Feuer, *The George Washington U.*
Toren Finkel, *U. of Pittsburgh Med. Ctr.*
Kate Fitzgerald, *U. of Mass.*
Gwenn Flowers, *Simon Fraser U.*
Peter Fratzl, *Max Planck Inst. Potsdam*
Elaine Fuchs, *Rockefeller U.*
Eileen Furlong, *EMBL*
Jay Gallagher, *U. of Wisconsin*
Susan Gelman, *U. of Michigan*
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 Haas, *Ludwig Maximilians U.*
Sharon Hammes-Schiffer, *Yale U.*
Wolf-Dietrich Hardt, *ETH Zürich*
Louise Harra, *U. College London*
Jian He, *Clemson U.*
Carl-Philipp Heisenberg, *IST Austria*
Ykä Helariutta, *U. of Cambridge*
Janet G. Hering, *Eawag*
Kai-Uwe Hinrichs, *U. of Bremen*
David Hodell, *U. of Cambridge*
Lora Hooper, *UT Southwestern Med. Ctr.*
Fred Hughson, *Princeton U.*
Randall Hulet, *Rice U.*
Auke Ijspeert, *EPFL*
Akiko Iwasaki, *Yale U.*
Stephen Jackson, *USGS and U. of Arizona*
Kai Johnsson, *EPFL*
Peter Jonas, *IST 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*
Masashi Kawasaki, *U. of Tokyo*
V. Narry Kim, *Seoul Nat. U.*
Robert Kingston, *Harvard Med. School*
Nancy Knowlton, *Smithsonian Institution*
Etienne Koelchlin, *École Normale Supérieure*
Alexander Kolodkin, *Johns Hopkins U.*
Thomas Langer, *U. of Cologne*
Mitchell A. Lazar, *U. of Penn.*
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 biomaGUNE*
Jonathan Losos, *Harvard U.*
Ke Lu, *Chinese Acad. of Sciences*
Christian Lüscher, *U. of Geneva*
Fabienne Mackay, *U. of Melbourne*
Anne Magurran, *U. of St. Andrews*
Oscar Marín, *King's College London*
Charles Marshall, *U. of California, Berkeley*
Christopher Marx, *U. of Idaho*
Geraldine Masson, *CNRS*
C. Robertson McClung, *Dartmouth College*
Rodrigo Medellín, *U. of Mexico*
Graham Medline, *London School of Hygiene & Tropical Med.*
Jane Memmott, *U. of Bristol*
Edward Miguel, *U. of California, Berkeley*
Tom Misteli, *NCI, NIH*
Yasushi Miyashita, *U. of Tokyo*
Alison Motsinger-Reif, *NC State U. (\$)*
Daniel Nettle, *Newcastle U.*
Daniel Neumarck, *U. of California, Berkeley*
Kitty Nijmeijer, *TU Eindhoven*
Beatriz Noheda, *U. of Groningen*
Helga Nowotny, *Austrian Council*
Rachel O'Reilly, *U. of Warwick*
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*
Elizabeth Levy Paluck, *Princeton U.*
Jane Parker, *Max Planck Inst. Cologne*
Giovanni Parmigiani, *Dana-Farber Cancer Inst. (\$)*
Samuel Pfaff, *Salk Inst. for Biological Studies*
Julie Pfeiffer, *UT Southwestern Med. Ctr.*
Matthieu Piel, *Institut Curie*
Kathrin Plath, *U. of California, Los Angeles*
Martin Polman, *Ulm U.*
Albert Polman, *FOM Inst. for AMOLF*
Elvira Poloczanska, *Alfred-Wegener-Inst.*
Julia Pongratz, *Ludwig Maximilians U.*
Philippe Poulin, *CNRS*
Jonathan Pritchard, *Stanford U.*
David Randall, *Colorado State U.*
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 Nat. Lab*
Nitin Samarth, *Penn. State U.*
Jürgen Sandkühner, *Med. U. of Vienna*
Alexander Schier, *Harvard U.*
Wolfram Schlenker, *Columbia U.*
Susannah Scott, *U. of California, Santa Barbara*
Vladimir Shalaev, *Purdue U.*
Jie Shan, *Cornell U.*
Beth Shapiro, *U. of California, Santa Cruz*
Jay Shendure, *U. of Washington*
Brian Shoichet, *U. of California, San Francisco*
Robert Siliciano, *Johns Hopkins U. School of Med.*
Lucia Sivilotti, *U. College London*
Alison Smith, *John Innes Centre*
Richard Smith, *U. of North Carolina (\$)*
Mark Smyth, *QIMR Berghofer*
Pam Soltis, *U. of Florida*
John Speakman, *U. of Aberdeen*
Tara Spres-Jones, *U. of Edinburgh*
Allan C. Spradling, *Carnegie Institution for Science*
Paula Stephan, *Georgia State U.*
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.*
Kathleen Vohs, *U. of Minnesota*
David Wallace, *Weizmann Inst. of Science*
Jane-Ling Wang, *U. of California, Davis (\$)*
David Waxman, *Fudan U.*
Jonathan Weissman, *U. of California, San Francisco*
Chris Wickle, *U. of Missouri (\$)*
Terrie Williams, *U. of California, Santa Cruz*
Ian A. Wilson, *Scripps Research (\$)*
Yu Xie, *Princeton U.*
Jan Zaenen, *Leiden U.*
Kenneth Zaret, *U. of Penn. School of Med.*
Jonathan Zehr, *U. of California, Santa Cruz*
Maria Zuber, *MIT*