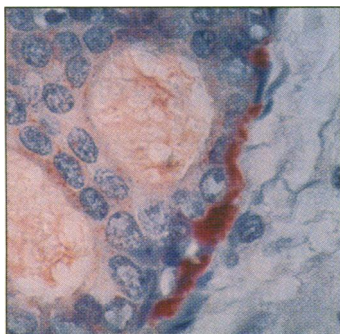




470

Radiation study fallout



526

Maspin and breast cancer

## NEWS

- How Many More After Northridge? 460
- French AIDS Scandal: Letters Provoke Unintended Response 461
- Japan's H-II Rocket to Bolster Remote Sensing Projects 462
- MicroGeneSys: Peer Review Triumphs Over Lobbying 463
- France: Researchers Nervous About Bioethics Bill 463
- Another Shakeup at LBL Genome Center 464
- New Radon Study: No Smoking Gun 465
- Germany: Expected Increase Becomes a Cut 465
- Learning by Diffusion: Nitric Oxide May Spread Memories 466
- Hubble Repair and More Wins Astronomers' Acclaim 467

## SPECIAL NEWS REPORT

- Radiation: Balancing the Record 470  
Political Fallout: A National Bioethics Board?

## POLICY FORUM

- Ecological and Genetic Factors in Conservation: A Cautionary Tale 485  
T. M. Caro and M. K. Laurenson

## PERSPECTIVES

- Molecular Geometry and Nonlinear Optics 487  
J. L. Brédas
- $\alpha$ -Helical Coiled Coils: More Facts and Better Predictions 488  
C. Cohen and D. A. D. Parry

## ARTICLE

- Molecular Dynamics in Liquids: Spin-Lattice Relaxation of Nitroxide Spin Labels 490  
B. H. Robinson, D. A. Haas, C. Mailer

## DEPARTMENTS

- THIS WEEK IN SCIENCE 449
- EDITORIAL 451  
Earthquakes and Collective Action
- LETTERS 453  
Minnesota Drug Sales: K. C. Zoon; N. Hasselmo • Heavy Ion Drivers: B. Richter • ApoE, Amyloid, and Alzheimer's Disease: J. Hardy • Academic Decision-Making: T. Shinbrot • For the Record: S. L. Mayo, R. L. Baldwin
- SCIENCESCOPE 459
- RANDOM SAMPLES 469  
Basic Researchers to Head U.K. Councils • Dig-

ging Out a Dinosaur Embryo • A Big Bang by No Other Name • Silicon Valley Moguls Chip in for E.T.

- BOOK REVIEWS 543  
*The Research Foundations of Graduate Education*, O. Amsterdamska • *Ecology and Environmental Management of Lyme Disease*, J. H. Oliver Jr. • *The Photosynthetic Reaction Center*, W. F. J. Vermaas • *Bacillus subtilis and Other Gram-Positive Bacteria*, K. F. Bott • Vignettes • Books Received

INSIDE AAAS 549

PRODUCTS & MATERIALS 561

## Board of Reviewing Editors

John Abelson  
Frederick W. Alt  
Don L. Anderson  
Michael Ashburner  
Stephen J. Benkovic  
David E. Bloom  
Floyd E. Bloom  
Piet Borst  
Michael S. Brown  
Henry R. Bourne  
James J. Bull

Kathryn Calame  
C. Thomas Caskey  
Dennis W. Choi  
John M. Coffin  
Paul J. Crutzen  
Robert Desimone  
Nicole Le Douarin  
Bruce F. Eldridge  
Paul T. Englund  
Richard G. Fairbanks  
Douglas T. Fearon

Harry A. Fozzard  
K. Friedrich  
Theodore H. Geballe  
Margaret J. Geller  
John C. Gerhart  
Roger I. M. Glass  
Stephen P. Goff  
Peter N. Goodfellow  
Corey S. Goodman  
Stephen J. Gould  
Ira Herskowitz

Eric F. Johnson  
Stephen M. Kosslyn  
Michael LaBarbera  
Charles S. Levings III  
Alexander Levitzki  
Harvey F. Lodish  
Richard Losick  
Diane Mathis  
Anthony R. Means  
Shigetada Nakanishi  
Roger A. Nicoll

William H. Orme-Johnson III  
Stuart L. Pimm  
Yeshayau Pocker  
Dennis A. Powers  
Ralph S. Quatrano  
V. Ramanathan  
Douglas C. Rees  
T. M. Rice  
Erkki Ruoslahti  
David C. Rubie

Gottfried Schatz  
Jozef Schell  
Ronald H. Schwartz  
Terrence J. Sejnowski  
Ellen Solomon  
Thomas A. Steitz  
Michael P. Stryker  
Richard F. Thompson  
Robert T. N. Tjian  
Emil R. Unanue  
Geerat J. Vermeij

Bert Vogelstein  
Harold Weintraub  
Zena Werb  
George M. Whitesides  
Owen N. Witte  
William A. Wulf  
Keith Yamamoto

Photomicrograph of garnet in crossed polarized light. The dark layers are nearly pure andradite (calcium-iron garnet), whereas the light layers also contain varying amounts of grossular (calcium-aluminum garnet). This sample is from the metamorphic aureole of the Drammen

granite in the Permian Oslo Rift. Analysis of the garnet provides information on the evolution of the hydrothermal system during metamorphism. (Field width is 3.2 mm.) See page 505. [Photomicrograph: Bjørn Jamtveit]



## RESEARCH ARTICLE

- Life on Land in the Precambrian** 494  
R. J. Horodyski and L. P. Knauth

## REPORTS

- Dynamics Affecting the Primary Charge Transfer in Photosynthesis** 499  
J. N. Gehlen, M. Marchi, D. Chandler

- Decomposition of the Modulated Waves in a Rotating Couette System** 502  
Y. Takeda, W. E. Fischer, J. Sakakibara

- Constraints on Transport and Kinetics in Hydrothermal Systems from Zoned Garnet Crystals** 505  
B. Jamtveit and R. L. Hervig

- Glacial-Interglacial Changes in Moisture Sources for Greenland: Influences on the Ice Core Record of Climate** 508  
C. D. Charles, D. Rind, J. Jouzel, R. D. Koster, R. G. Fairbanks

- Large First Hyperpolarizabilities in Push-Pull Polyenes by Tuning of the Bond Length Alternation and Aromaticity** 511  
S. R. Marder, L.-T. Cheng, B. G. Tiemann, A. C. Friedli, M. Blanchard-Desce, J. W. Perry, J. Skindhøj

- Meiosis-Induced Double-Strand Break Sites Determined by Yeast Chromatin Structure** 515  
T.-C. Wu and M. Lichten

- Effective Tumor Vaccine Generated by Fusion of Hepatoma Cells with Activated B Cells** 518  
Y. Guo, M. Wu, H. Chen, X. Wang, G. Liu, G. Li, J. Ma, M.-S. Sy

- Parallel Neuronal Mechanisms for Short-Term Memory** 520  
E. K. Miller and R. Desimone

- Phospholipase D: A Downstream Effector of ARF in Granulocytes** 523  
S. Cockcroft, G. M. H. Thomas, A. Fensome, B. Geny, E. Cunningham, I. Gout, I. Hiles, N. F. Totty, O. Truong, J. J. Hsuan

- Maspin, a Serpin with Tumor-Suppressing Activity in Human Mammary Epithelial Cells** 526  
Z. Zou, A. Anisowicz, M. J. C. Hendrix, A. Thor, M. Neveu, S. Sheng, K. Rafidi, E. Seftor, R. Sager

- Visualization of Quantal Synaptic Transmission by Dendritic Calcium Imaging** 529  
T. H. Murphy, J. M. Baraban, W. G. Wier, L. A. Blatter

- Locally Distributed Synaptic Potentiation in the Hippocampus** 532  
E. M. Schuman and D. V. Madison

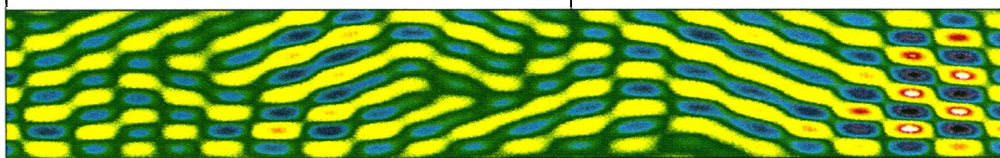
## TECHNICAL COMMENTS

- Experimental Support for the "Hydrophobic Zipper" Hypothesis** 536  
A. M. Gronenborn and G. M. Clore

- Alzheimer's Disease and Possible Gene Interaction** 537  
P. St George-Hyslop, D. C. McLachlan, T. Tuda, E. Rogaev, H. Karlinsky, C. F. Lippa, D. Pollen; M. A. Pericak-Vance, E. H. Corder, A. M. Saunders, P. C. Gaskell, W. J. Strittmatter, A. D. Roses, D. E. Schmechel, G. W. Small, J. L. Haines

502

Fluid flow: rolling and rotating



## AAAS Board of Directors

F. Sherwood Rowland  
*Retiring President,  
Chairman*  
Eloise E. Clark  
*President*  
Francisco J. Ayala  
*President-elect*

Robert A. Frosch  
Florence P. Haseltine  
William A. Lester, Jr.

Alan Schriesheim  
Jean'ne M. Shreeve  
Chang-Lin Tien  
Warren M. Washington  
Nancy S. Wexler

William T. Golden  
*Treasurer*  
Richard S. Nicholson  
*Executive Officer*

■ **SCIENCE (ISSN 0036-8075)** is published weekly on Friday, except the last week in December, by the American Association for the Advancement of Science, 1333 H Street, NW, Washington, DC 20005. Second-class postage (publication No. 484460) paid at Washington, DC, and additional mailing offices. Copyright © 1994 by the American Association for the Advancement of Science. The title SCIENCE is a registered trademark of the AAAS. Domestic individual membership and subscription (51 issues): \$92 (\$50 allocated to subscription). Domestic institutional subscription (51 issues): \$215. Foreign postage extra: Mexico, Caribbean (surface mail) \$50; other countries (air assist delivery) \$95. First class, airmail, student and emeritus rates on request. Canadian rates with GST available upon request, GST #125488122. **Change of address:** allow 6 weeks, giving old and new addresses and 11-digit

account number. **Postmaster:** Send change of address to *Science*, P.O. Box 2033, Marion, OH 43305-2033. **Single copy sales:** \$6.00 per issue prepaid includes surface postage; Guide to Biotechnology Products and Instruments, \$20. Bulk rates on request. **Authorization to photocopy** material for internal or personal use under circumstances not falling within the fair use provisions of the Copyright Act is granted by AAAS to libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that the base fee of \$1 per copy plus \$0.10 per page is paid directly to CCC, 27 Congress Street, Salem, MA 01970. The identification code for *Science* is 0036-8075/83 \$1 + .10. *Science* is indexed in the *Reader's Guide to Periodical Literature* and in several specialized indexes.

# Science

**263 (5146)**

*Science* **263** (5146), 449-561.

**ARTICLE TOOLS**

<http://science.sciencemag.org/content/263/5146>

**PERMISSIONS**

<http://www.sciencemag.org/help/reprints-and-permissions>

Use of this article is subject to the [Terms of Service](#)

---

*Science* (print ISSN 0036-8075; online ISSN 1095-9203) is published by the American Association for the Advancement of Science, 1200 New York Avenue NW, Washington, DC 20005. 2017 © The Authors, some rights reserved; exclusive licensee American Association for the Advancement of Science. No claim to original U.S. Government Works. The title *Science* is a registered trademark of AAAS.