

1647 This Week in *Science*

## Editorial

1649 Congressional Fellowships for Science

## Letters

1651 Detection of Plastic Explosives: J. R. SPEER ■ Genes and Tongues:  
R. T. O'GRADY, I. GODDARD, R. M. BATEMAN, W. A. DIMICHELE,  
V. A. FUNK, W. J. KRESS, R. MOOI, P. F. CANNELL

## News & Comment

1653 Quiet Soviet Subs Prompt Concern  
1654 Mexican Research Center Closed  
1655 Big Changes Urged for Precollege Math  
1656 Consensus Elusive on Japan's Genome Plans  
1657 Britain Launches Genome Program  
1658 Science in Court  
1659 Election Turmoil at Soviet Academy  
Fate of R&D Tax Credit Uncertain  
1660 Waste Plan Bestirs Scots Nationalists  
France to Raise Faculty Enticements

## Research News

1661 Fusion Breakthrough?  
1663 Judging Paternity in the Hedge Sparrow's World  
1664 Brain Protein Yields Clues to Alzheimer's Disease  
1666 Species Questions in Modern Human Origins

## Articles

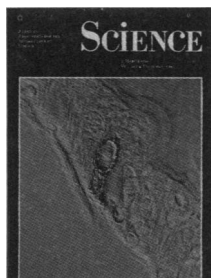
1668 Clinical Versus Actuarial Judgment: R. M. DAWES, D. FAUST, P. E. MEEHL  
1674 Polar Solvent Dynamics and Electron-Transfer Reactions: M. MARONCELLI,  
J. MACINNIS, G. R. FLEMING

## Research Articles

1681 The DNA Binding Domain of the Rat Liver Nuclear Protein C/EBP Is Bipartite:  
W. H. LANDSCHULZ, P. F. JOHNSON, S. L. MCKNIGHT  
1689 Leucine Repeats and an Adjacent DNA Binding Domain Mediate the Formation  
of Functional cFos-cJun Heterodimers: R. TURNER AND R. TJIAN  
1695 Parallel Association of Fos and Jun Leucine Zippers Juxtaposes DNA Binding  
Domains: R. GENTZ, F. J. RAUSCHER III, C. ABATE, T. CURRAN

■ SCIENCE is published weekly on Friday, except the last week in December, and with an extra issue in February 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 at an additional entry. Now combined with *The Scientific Monthly* © Copyright © 1989 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): \$70. Domestic institutional subscription (51 issues): \$110. Foreign postage extra: Canada \$32, other (surface mail) \$32, air-surface via Amsterdam \$85. First class, airmail, school-year, and student rates on request. Single copy sales: Current issue, \$3.50; back issues, \$5.00; Biotechnology issue, \$6.00 (for postage and handling, add per copy \$0.50 U.S., \$1.00 all foreign); Guide to Biotechnology Products and Instruments, \$18 (for postage and handling add per copy \$1.00 U.S., \$1.50 Canada, \$2.00 other foreign). Bulk rates on request. Change of address: allow 6 weeks, giving old and new addresses and 11-digit account number. 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, 21 Congress Street, Salem, Massachusetts 01970. The identification code for *Science* is 0036-8075/83 \$1 + .10. Postmaster: Send Form 3579 to *Science*, P.O. Box 1722, Riverton, NJ 08077. *Science* is indexed in the *Reader's Guide to Periodical Literature* and in several specialized indexes.

■ The American Association for the Advancement of Science was founded in 1848 and incorporated in 1874. Its objects are to further the work of scientists, to facilitate cooperation among them, to foster scientific freedom and responsibility, to improve the effectiveness of science in the promotion of human welfare, and to increase public understanding and appreciation of the importance and promise of the methods of science in human progress.



**COVER** Staining of the polar distribution of a viral envelope glycoprotein in a midgut columnar epithelial cell. Paraffin sections of the caterpillar, *Trichoplusia ni*, infected with a baculovirus were immunostained with a monoclonal antibody reactive with the glycoprotein, a peroxidase conjugate and diaminobenzidine as color substrate. See page 1728. [Photomicrograph by B. Andrew Keddie using a Zeiss Axiophot with differential interference contrast optics]

## Reports

- 1703 Hexagonal Domain-Like Charge Density Wave Phase of TaS<sub>2</sub> Determined by Scanning Tunneling Microscopy: X. L. WU AND C. M. LIEBER
- 1706 Thirty Thousand Years of Human Colonization in Tasmania: New Pleistocene Dates: R. COSGROVE
- 1708 Scanning Tunnel Microscopy of Uncoated recA-DNA Complexes: M. AMREIN, R. DÜRR, A. STASIAK, H. GROSS, G. TRAVAGLINI
- 1711 Upper Jurassic Dinosaur Egg from Utah: K. F. HIRSCH, K. L. STADTMAN, W. E. MILLER, J. H. MADSEN, JR.
- 1713 Mutations in a Protein Kinase C Homolog Confer Phorbol Ester Resistance on *Caenorhabditis elegans*: Y. TABUSE, K. NISHIWAKI, J. MIWA
- 1716 In Vivo Modulation of Cytolytic Activity and Thy-1 Expression in TCR- $\gamma\delta^+$  Intraepithelial Lymphocytes: L. LEFRANCOIS AND T. GOODMAN
- 1718 Defensive Behaviors in Infant Rhesus Monkeys: Environmental Cues and Neurochemical Regulation: N. H. KALIN AND S. E. SHELTON
- 1721 Ethanol Inhibits NMDA-Activated Ion Current in Hippocampal Neurons: D. M. LOVINGER, G. WHITE, F. F. WEIGHT
- 1725 Restriction Fragment Length Polymorphisms Associated with Water Use Efficiency in Tomato: B. MARTIN, J. NIENHUIS, G. KING, A. SCHAEFER
- 1728 The Pathway of Infection of *Autographa californica* Nuclear Polyhedrosis Virus in an Insect Host: B. A. KEDDIE, G. W. APONTE, L. E. VOLKMAN
- 1731 HIV with Reduced Sensitivity to Zidovudine (AZT) Isolated During Prolonged Therapy: B. A. LARDER, G. DARBY, D. D. RICHMAN

## Technical Comments

- 1736 Factor XIIIa-Expressing Dermal Dendrocytes in AIDS-Associated Cutaneous Kaposi's Sarcomas: B. J. NICKOLOFF AND C. E. M. GRIFFITHS; R. C. GALLO, S. Z. SALAHUDDIN, S. NAKAMURA

## Book Reviews

- 1738 Caring for the Disabled Elderly, reviewed by C. E. BISHOP ■ Private Acts, Social Consequences, D. E. BEAUCHAMP ■ The Diffusion of Medical Innovation, J. R. KIMBERLY ■ Books Received

*Author Index to Volume 243 is found on pages I-X.  
Information for Contributors is found on XI-XII.*

### Board of Directors

Walter E. Massey  
*Retiring President,  
Chairman*

Richard C. Atkinson  
*President*

Donald N. Langenberg  
*President-elect*

Mary Ellen Avery  
Francisco J. Ayala  
Floyd E. Bloom  
Mary E. Clutter  
Eugene H. Cota-Robles  
Joseph G. Gavin, Jr.  
John H. Gibbons  
Beatrix A. Hamburg  
William T. Golden  
*Treasurer*

Philip H. Abelson  
*Executive Officer, Acting*

### Editorial Board

Elizabeth E. Bailey  
David Baltimore  
William F. Brinkman  
E. Margaret Burbidge  
Philip E. Converse  
Joseph L. Goldstein  
Mary L. Good  
F. Clark Howell  
James D. Idol, Jr.  
Leon Knopoff  
Oliver E. Nelson  
Helen M. Ranney  
David M. Raup  
Howard A. Schneiderman  
Larry L. Smarr  
Robert M. Solow  
James D. Watson

### Board of Reviewing Editors

John Abelson  
Qais Al-Awqati  
Don L. Anderson  
Stephen J. Benkovic  
Floyd E. Bloom  
Henry R. Bourne  
James J. Bull  
Kathryn Calame  
Charles R. Cantor  
Ralph J. Cicerone  
John M. Coffin  
Robert Dorfman  
Bruce F. Eldridge  
Paul T. Englund  
Fredric S. Fay  
Theodore H. Geballe

Roger I. M. Glass  
Stephen P. Goff  
Robert B. Goldberg  
Corey S. Goodman  
Jack Gorski  
Stephen J. Gould  
Richard M. Held  
Gloria Heppner  
Eric F. Johnson  
Konrad B. Krauskopf  
Charles S. Levings III  
Richard Losick  
Karl L. Magleby  
Philippa Marrack  
Joseph B. Martin  
John C. McGiff  
Mortimer Mishkin  
Carl O. Pabo

Yeshayau Pocker  
Michael I. Posner  
Dennis A. Powers  
Russell Ross  
James E. Rothman  
Erkki Ruoslahti  
Ronald H. Schwartz  
Vernon L. Smith  
Robert T. N. Tjian  
Virginia Trimble  
Emil R. Unanue  
Geerat J. Vermeij  
Bert Vogelstein  
Harold Weintraub  
Irving L. Weissman  
George M. Whitesides  
Owen N. Witte  
William B. Wood

---

**American Association for the Advancement of Science**

*Science* serves its readers as a forum for the presentation and discussion of important issues related to the advancement of science, including the presentation of minority or conflicting points of view, rather than by publishing only material on which a consensus has been reached. 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 the AAAS or the institutions with which the authors are affiliated.

---

**Publisher:** Philip H. Abelson, *Acting*

**Editor:** Daniel E. Koshland, Jr.

**Deputy Editor:** John I. Brauman (*Physical Sciences*)

---

**EDITORIAL STAFF**

**Managing Editor:** Patricia A. Morgan

**Assistant Managing Editor:** Nancy J. Hartnagel

**Senior Editor:** Eleanore Butz

**Associate Editors:** Keith W. Brocklehurst, Martha Coleman, R. Brooks Hanson, Barbara Jasny, Katrina L. Kelner, Edith Meyers, Linda J. Miller, Phillip D. Szuromi, David F. Voss

**Letters Editor:** Christine Gilbert

**Book Reviews:** Katherine Livingston, *editor*

**This Week in Science:** Ruth Levy Guyer

**Contributing Editor:** Lawrence I. Grossman

**Chief Production Editor:** Ellen E. Murphy

**Editing Department:** Lois Schmitt, *head*; Mary McDaniel,

Patricia L. Moe, Barbara E. Patterson

**Copy Desk:** Joi S. Granger, Jane Hurd, MaryBeth Shartle,

Beverly Shields

**Production Manager:** Karen Schools Colson

**Assistant Production Manager:** James Landry

**Graphics and Production:** Holly Bishop, James J. Olivarri,

Yolanda M. Rook

**Covers Editor:** Grayce Finger

**Manuscript Systems Analyst:** William Carter

---

**NEWS STAFF**

**News Editor:** Barbara J. Culliton

**Deputy News Editors:** Roger Lewin, Colin Norman

**News and Comment/Research News:** William Booth, Gregory Byrne, Mark H. Crawford, Constance Holden, Richard A. Kerr, Eliot Marshall, Jean L. Marx, Robert Pool, Leslie Roberts, Marjorie Sun, M. Mitchell Waldrop

**European Correspondent:** David Dickson

**Contributing Writer:** John Walsh

---

**BUSINESS STAFF**

**Circulation Director:** John G. Colson

**Fulfillment Manager:** Ann Ragland

**Business Staff Manager:** Deborah Rivera-Wienhold

**Classified Advertising Supervisor:** Karen Morgenstern

**Guide to Biotechnology Products and Instruments:**

Shauna S. Roberts

---

**ADVERTISING REPRESENTATIVES**

**Director:** Earl J. Scherago

**Traffic Manager:** Donna Rivera

**Traffic Manager (Recruitment):** Gwen Canter

**Advertising Sales Manager:** Richard L. Charles

**Marketing Manager:** Herbert L. Burkland

**Employment Sales Manager:** Edward C. Keller

**Sales:** New York, NY 10036; J. Kevin Henebry, 1515 Broadway (212-730-1050); Scotch Plains, NJ 07076; C. Richard

Callis, 12 Unami Lane (201-889-4873); Chicago, IL 60914;

Jack Ryan, 525 W. Higgins Rd. (312-885-8675); San Jose, CA

95112; Bob Brindley, 310 S. 16th St. (408-998-4690); Dorset,

VT 05251; Fred W. Dieffenbach, Kent Hill Rd. (802-867-5581);

Damascus, MD 20872; Rick Sommer, 11318 Kings Valley Dr.

(301-972-9270); U.K., Europe: Nick Jones, +44(0647)52918;

Telex 42513; FAX (0647) 52053.

---

**Information for contributors** appears on page XI of the 31 March 1989 issue. Editorial correspondence, including requests for permission to reprint and reprint orders, should be sent to 1333 H Street, NW, Washington, DC 20005. Telephone: 202-326-6500.

Advertising correspondence should be sent to Tenth Floor, 1515 Broadway, New York, NY 10036. Telephone 212-730-1050 or WU Telex 968082 SCHERAGO, or FAX 212-382-3725.

## Congressional Fellowships for Science

Representative Doug Walgren (D-PA) has teamed with Senator John Glenn (D-OH) to push for passage of legislation that could be a significant step toward ameliorating this country's deteriorating position and future prospects. Under terms of the legislation, every year one female and one male high school graduate in each congressional district would receive a scholarship paying a maximum of \$5000 a year for 4 years to study science, mathematics, or engineering. The proposed legislation calls for an initial appropriation of only \$5.5 million, and in terms of needs, the number of students who will be helped is small. However, as a symbolic gesture with possible follow-on consequences, enactment of the legislation could make a large difference.

Walgren has stated, "Because of their broad geographical distribution [the] fellowships would serve as a highly visible stimulus and source of role models for high school students.... The awarding of these fellowships—perhaps during National Science and Technology Week—would remind members of Congress and the public of the importance of science to our national goals."

The legislation would place responsibility on the National Science Foundation to administer the program. Some of the mechanisms to be employed would give the program great visibility. For example, "The Director shall notify all public and private secondary schools and all institutions of higher education in the United States annually of the availability of scholarships under this Act."

The legislation further specifies that the National Science Foundation "shall establish for each congressional district, or, to the extent a contiguous group of congressional districts reflects a geographic region similar in demographics, geography, and economic status and activity, for each such group of congressional districts, a broad-based committee of educators, scientists, mathematicians, and engineers who shall submit to the Director [NSF] nominations of one male and one female from each congressional district for scholarships under this Act." Such committees would identify a host of excellent candidates worthy of support. The attendant activity and publicity would be likely to stimulate substantial additional financial support from industry, foundations, alumni, local communities, and the states. Were the program to be markedly successful, it might serve the function of a pilot plant for later expanded federal support.

Another provision of the legislation could lead to improvement of relations between the Congress and scientists, mathematicians, and engineers. The Act includes: "The Director shall notify each Member of Congress in writing of selections made from such Member's district at least one week before public announcement of such selections is made." Given adequate notice, the various congressmen would have highly valued photo opportunities and a chance to share in a happy public event. They and their staffs would become better acquainted with the scientists, mathematicians, and engineers of their districts, who in turn would become better informed about some of the concerns of congressmen.

In pushing for the legislation, Walgren has been joined by a bipartisan group of 27 members of the House Science, Space and Technology Committee, including Chairman Robert A. Roe (D-NJ). He has received strong support from the scientific community in testimony presented 9 March by Richard C. Atkinson, president of AAAS, Thomas F. Malone, president of Sigma Xi, and Lynn Arthur Steen, chairman of the Council of Scientific Society Presidents.

In his testimony, Atkinson implicitly reminded the Congress that the problems we face in education for science and technology are broader than those addressed in the Walgren proposal. He pointed to a "leaky pipeline" which conveys to the doctorate only a tiny fraction of students with the potential for it when in the tenth grade. In addition, he noted that by 1995 about 30% of the engineering faculties will have retired and have to be replaced. But in 1987, only 42% of U.S.-granted Ph.D.'s in engineering were awarded to U.S. citizens.

Obviously, the new legislation addresses only part of the educational problems, but it is an imaginative proposal that should enjoy broad support. Critics should exercise self-restraint in seeking this or that modification. That would only lead to delays or outright failure of enactment.—PHILIP H. ABELSON