

1539 This Week in *Science*

Editorial

1541 The Molecule of the Year

Perspective

1543 The Molecule of the Year: RUTH L. GUYER AND D. E. KOSHLAND, JR.

Letters

1547 U.S. Scientists and China: J. C. WANG ■ AIDS Drug Trials: R. SMITH ■ Leopard Habitat: D. P. ROSENBERG ■ Neuroscience at Washington University: C. C. HUNT ■ Information Policy: D. A. B. LINDBERG ■ Ethics and USGS: H. WILSHIRE; K. SCHAMBACH; E. MARSHALL

News & Comment

1551 Hubble: Great Telescope, Bad Service Plan
1553 Plea to Bromley: Save Our Neutrons
1554 Britain's Lords Debate Embryo Research
1555 Science and PR North of the Border
1556 Maine Case Deals Blow to DNA Fingerprinting

Research News

1559 New AIDS Drugs Take Careful Aim
1560 Is the AIDS Epidemic Slowing?
1561 Key Piece Found for Immunology Puzzle?
1562 Geophysics from Triton to the Deep Blue Sea: New Quake Forecast: North by Northwest ■ Loma Prieta Quake Unsettles Geophysicists ■ A Geologically Young Triton After All? ■ Bringing Down the Sea Level Rise
1564 *Briefings*: R&D Lobby Spends NSF's '91 Budget ■ AIDS Tests Fail ■ Study Puts Admiral Peary at North Pole ■ Global Change Encyclopedia on Disc ■ A Faster Parallel Computer for 1992 ■ Academy Recognizes Koop ■ Canadian Kludge? ■ Bromley OSTP Team at Full Strength? ■ George Mason U. Snares NSF's Moore ■ HUGO: Genome Data Open to Scientists

Articles

1566 Origins of Agriculture in Eastern North America: B. D. SMITH
1571 Quantifying the Information Content of Lattice Images: A. OURMAZD, D. W. TAYLOR, M. BODE, Y. KIM

Research Articles

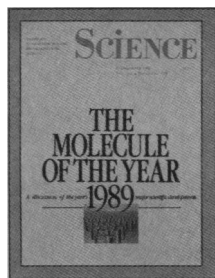
1578 Specific Interactions in RNA Enzyme-Substrate Complexes: C. GUERRIER-TAKADA, N. LUMELSKY, S. ALTMAN

Reports

1585 Volatilization of High Molecular Weight DNA by Pulsed Laser Ablation of Frozen Aqueous Solutions: R. W. NELSON, M. J. RAINBOW *et al.*
1587 Growth of Greenland Ice Sheet: Measurement: H. J. ZWALLY, A. C. BRENNER, J. A. MAJOR, R. A. BINDSCHADLER, J. G. MARSH
1589 Growth of Greenland Ice Sheet: Interpretation: H. J. ZWALLY
1591 Thermomolecular Pressure in Surface Melting: Motivation for Frost Heave: J. G. DASH
1593 Air Ventilation by Recoil Aspiration in Polypterid Fishes: E. L. BRAINERD, K. F. LIEM, C. T. SAMPER
1595 The Anticodon Contains a Major Element of the Identity of Arginine Transfer RNAs: L. H. SCHULMAN AND H. PELKA

■ **SCIENCE** is published weekly on Friday, except the last week in December, and with an extra issue in March 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): \$75. Domestic institutional subscription (51 issues): \$120. Foreign postage extra: Canada \$46, other (surface mail) \$46, air mail 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. **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, Massachusetts 01970. The identification code for *Science* is 0036-8075/83 \$1 + .10. **Change of address:** allow 6 weeks, giving old and new addresses and 11-digit account number. **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 Eighteen of 1989's top scientific achievements are discussed in a year-end wrap-up, and from this group the "Molecule of the Year" was chosen. The winner—an enzyme that drives a cyclic amplification reaction that produces millions of copies of interesting genes and gene segments. See pages 1541 and 1543. [Image by Lewis E. Calver, courtesy of Cetus Corporation, Emeryville, CA 94608]

- 1597 A Model of Human Acute Lymphoblastic Leukemia in Immune-Deficient SCID Mice: S. KAMEL-REID, M. LETARTE, C. SIRARD, M. DOEDENS *et al.*
- 1601 Endothelial Interleukin-8: A Novel Inhibitor of Leukocyte-Endothelial Interactions: M. A. GIMBRONE, JR., M. S. OBIN, A. F. BROCK *et al.*
- 1603 Conserved Repetitive Epitope Recognized by CD4⁺ Clones from a Malaria-Immunized Volunteer: E. H. NARDIN, D. A. HERRINGTON, J. DAVIS *et al.*
- 1606 Inhibition of Antigen-Induced Lymphocyte Proliferation by Tat Protein from HIV-1: R. P. VISCIDI, K. MAYUR, H. M. LEDERMAN, A. D. FRANKEL
- 1608 Mechanisms for Regulating Expression of Membrane Isoforms of Fcγ RIII (CD16): M. L. HIBBS, P. SELVARAJ, O. CARPÉN, T. A. SPRINGER *et al.*
- 1611 Membrane Anchoring of a Human IgG Fc Receptor (CD16) Determined by a Single Amino Acid: L. L. LANIER, S. CWIRLA, G. YU, R. TESTI, J. H. PHILLIPS
- 1614 Immunodeficiency and Clonal Growth of Target Cells Induced by Helper-Free Defective Retrovirus: M. HUANG, C. SIMARD, P. JOLICOEUR
- 1617 Cyclosporin A Specifically Inhibits Function of Nuclear Proteins Involved in T Cell Activation: E. A. EMMEL, C. L. VERWEIJ, D. B. DURAND *et al.*
- 1620 Molecular Cloning of the Thyrotropin Receptor: M. PARMENTIER, F. LIBERT, C. MAENHAUT, A. LEFORT, C. GÉRARD, J. PERRET, J. VAN SANDE *et al.*
- 1622 Regulation of Proenkephalin by Fos and Jun: J. L. SONNENBERG, F. J. RAUSCHER III, J. I. MORGAN, T. CURRAN
- 1625 Functional Analysis of CAR, the Target Sequence for the Rev Protein of HIV-1: E. T. DAYTON, D. M. POWELL, A. I. DAYTON
- 1629 Differential Effects of *nef* on HIV Replication: Implications for Viral Pathogenesis in the Host: C. CHENG-MAYER, P. IANNELLO, K. SHAW, P. A. LUCIW, J. A. LEVY
- 1632 RNA Editing in Plant Mitochondria: R. HIESEL, B. WISSINGER, W. SCHUSTER, A. BRENNICKE

Technical Comments

- 1635 Steroid Binding at σ -"Opioid" Receptors: S. SCHWARZ, P. POHL, G.-Z. ZHOU; T.-P. SU, E. D. LONDON, J. H. JAFFE ■ Hydrolysis of Carbon Tetrachloride: P. M. JEFFERS AND N. L. WOLFE; D. W. R. WALLACE AND M. KRYSSEL ■ Caterpillars and Polymorphisms: S. H. FAETH AND K. E. HAMMON; E. GREENE ■ Does Voltage Affect Excitation-Contraction Coupling in the Heart?: M. B. CANNELL, J. R. BERLIN, W. J. LEDERER; M. MORAD, L. CLEEMANN, G. CALLAWAERT

Book Reviews

- 1642 Made in America AND Working Papers of the MIT Commission on Industrial Productivity, reviewed by D. C. MOWERY ■ Beyond the Barricades, W. M. SULLIVAN ■ Ecology in the 20th Century, R. A. POIS ■ A Theory of Human and Primate Evolution, J. MARKS ■ Hypersaline Environments, W. D. GRANT ■ Treatise on Heavy-Ion Science, E. HAGBERG ■ Books Received

Products & Materials

- 1649 Program for Drawing Chemical Structures ■ Monoclonal Antibodies ■ Delivery System for Cell Injection ■ Plastic Slide Case ■ Data Acquisition and Analysis Software ■ Genome Qualified Restriction Enzymes ■ Literature

*Author Index to Volume 246 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
Richard S. Nicholson
Executive Officer

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
Yasutomi Nishizuka
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

Science

246 (4937)

Science **246** (4937), 1539-1649.

ARTICLE TOOLS

<http://science.sciencemag.org/content/246/4937>

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. The title *Science* is a registered trademark of AAAS.

Copyright © 1989 The Authors, some rights reserved; exclusive licensee American Association for the Advancement of Science. No claim to original U.S. Government Works.