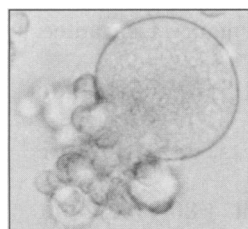


**1416**  
The selling of space science



**1513**  
Evolution of syncytia-inducing HIV variants

## NEWS & COMMENT

- NASA PR: Hype or Public Education? 1416  
Calculator Adds Up the Dollars 1418  
The Biggest Shake-Up for British Science in 30 Years 1419  
Immunologist to Head Aging Institute 1420  
SSC Deathwatch Starts Again 1421  
Good to Take Top Commerce Post 1421

## RESEARCH NEWS

- The Puzzle of the Triple Repeats 1422  
Materials Science: Between a Rock and a Liquid Place 1424  
Mathematics: One Climber Got There First 1424  
Galaxies in Collision—Up Close 1425  
At Rockefeller, Wiesel Is the Calm After the Storm 1426  
Rockefeller: The Next Generation

## PERSPECTIVES

- Dark Matter and the Equivalence Principle 1441  
J. A. Frieman and B.-A. Gradwohl  
Splice-Site Selection and Decoding: Are They Related? 1443  
R. Schroeder, B. Streicher, H. Wank  
The Parallel  $\beta$  Helix of Pectate Lyase C: Something to Sneeze At 1444  
F. E. Cohen

## ARTICLES

### INSTRUMENTATION

- Gas-Phase Ion Chromatography: Transition Metal State Selection and Carbon Cluster Formation 1446  
M. T. Bowers, P. R. Kemper, G. von Helden, P. A. M. van Koppen  
True Atomic Resolution by Atomic Force Microscopy Through Repulsive and Attractive Forces 1451  
F. Ohnesorge and G. Binnig

## DEPARTMENTS

- |   |      |   |      |
|---|------|---|------|
| THIS WEEK IN SCIENCE  | 1405 | SCIENCESCOPE  | 1415 |
| EDITORIAL   | 1407 | RANDOM SAMPLES  | 1429 |
| Instrumentation   |      | Biotech Firm Holes Up at MBL • Congress Passes Broad NIH Bill • Zoologist Found Guilty on Smuggling Count • Comeback for Karisoke                             |      |
| LETTERS   | 1409 | BOOK REVIEWS  | 1531 |
| Pesticides and the Delaney Amendment: P. Shubik; D. Pimentel and M. Pimentel; P. H. Abelson • Experimental Biology '93: M. Frank • Citation Corrections: D. Raynaud, J. Jouzel, J. M. Barnola, J. Chappellaz, R. J. Delmas, C. Lorius |      | <i>The Origins of Order</i> , reviewed by G. P. Wagner • <i>Flow Cytometry</i> , H. M. Shapiro • <i>Elements and the Cosmos</i> , V. Trimble • Books Received |      |
|   |      | PRODUCTS & MATERIALS  | 1536 |

### AAAS Board of Directors

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

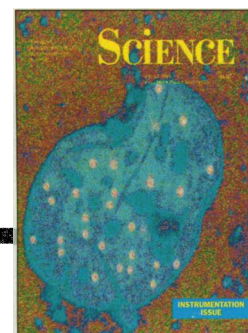
John Abelson  
Frederick W. Alt  
Don L. Anderson  
Stephen J. Benkovic  
David E. Bloom  
Floyd E. Bloom  
Henry R. Bourne  
James J. Bull  
Kathryn Calame  
C. Thomas Caskey  
Dennis W. Choi  
  
John M. Coffin  
Bruce F. Eldridge  
Paul T. Englund  
Richard G. Fairbanks  
Douglas T. Fearon  
Harry A. Fozzard  
Victor R. Fuchs  
Theodore H. Geballe  
Margaret J. Geller  
John C. Gerhart  
Roger I. M. Glass

### Board of Reviewing Editors

Stephen P. Goff  
Corey S. Goodman  
Stephen J. Gould  
Ira Herskowitz  
Eric F. Johnson  
Stephen M. Kosslyn  
Michael LaBarbera  
Charles S. Levings III  
Harvey F. Lodish  
Richard Losick  
Anthony R. Means  
  
Mortimer Mishkin  
Roger A. Nicoll  
William H. Orme-Johnson III  
Stuart L. Pimm  
Yeshayau Pocker  
Dennis A. Powers  
Ralph S. Quatrano  
V. Ramanathan  
Douglas C. Rees  
Erkki Ruoslahti  
Ronald H. Schwartz  
  
Terrence J. Sejnowski  
Thomas A. Steitz  
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  
Keith Yamamoto

Lipofectin-mediated delivery of oligonucleotides containing C-5 propyne to the nucleus of a human ovarian carcinoma cell, detected by fluorescence confocal microscopy. High concentrations (blue, red, and white) of oligonucleotides are mostly localized in the nucleus;

low concentrations (green, yellow, and orange) are found in the cytoplasm. Such nuclear localization of oligonucleotides appears to be critical for potent antisense gene inhibition. See page 1510. [Image: Richard W. Wagner]



### Field-Flow Fractionation: Analysis of Macromolecular, Colloidal, and Particulate Materials

J. C. Giddings

1456

### High-Resolution and Analytical Transmission Electron Microscopy of Mineral Disorder and Reactions

D. R. Veblen, J. F. Banfield, G. D. Guthrie, Jr., P. J. Heaney, E. S. Ilton, K. J. T. Livi, E. A. Smelik

1465

### Atmosphere-Surface Exchange Measurements

W. F. Dabberdt, D. H. Lenschow, T. W. Horst, P. R. Zimmerman, S. P. Oncley, A. C. Delany

1472

## RESEARCH ARTICLE

### The Three-Dimensional Structure of an Arachidonic Acid 15-Lipoxygenase

J. C. Boyington, B. J. Gaffney, L. M. Amzel

1482

## REPORTS

### Sound Velocities in Olivine at Earth Mantle Pressures

J. M. Zaug, E. H. Abramson, J. M. Brown, L. J. Slutsky

1487

### Direct Imaging of the Diacetylene Solid-State Monomer-Polymer Phase Transformation

J. Liao and D. C. Martin

1489

### Secondary and Tertiary Structural Effects on Protein NMR Chemical Shifts: An ab Initio Approach

A. C. de Dios, J. G. Pearson, E. Oldfield

1491

### Poly(phenylcarbyne): A Polymer Precursor to Diamond-Like Carbon

G. T. Visscher, D. C. Nesting, J. V. Badding, P. A. Bianconi

1496

### Footprinting the Sites of Interaction of Antibiotics with Catalytic Group I Intron RNA

U. von Ahsen and H. F. Noller

1500

### New Domain Motif: The Structure of Pectate Lyase C, a Secreted Plant Virulence Factor

M. D. Yoder, N. T. Keen, F. Journak

1503

### Feedback Regulation Mechanisms for the Control of GTP Cyclohydrolase I Activity

T. Harada, H. Kagamiyama, K. Hatakeyama

1507

### Antisense Gene Inhibition by Oligonucleotides Containing C-5 Propyne Pyrimidines

R. W. Wagner, M. D. Matteucci, J. G. Lewis, A. J. Gutierrez, C. Moulds, B. C. Froehler

1510

### Relation of Phenotype Evolution of HIV-1 to Envelope V2 Configuration

M. Groenink, R. A. M. Fouchier, S. Broersen, C. H. Baker, M. Koot, A. B. van't Wout, H. G. Huisman, F. Miedema, M. Tersmette, H. Schuitemaker

1513

### Neuroprotective Effects of Glutamate Antagonists and Extracellular Acidity

D. A. Kaku, R. G. Giffard, D. W. Choi

1516

### Common Forms of Synaptic Plasticity in the Hippocampus and Neocortex in Vitro

A. Kirkwood, S. M. Dudek, J. T. Gold, C. D. Aizenman, M. F. Bear

1518

### Presence of Mitochondrial Large Ribosomal RNA Outside Mitochondria in Germ Plasm of *Drosophila melanogaster*

S. Kobayashi, R. Amikura, M. Okada

1521

### Predisposition to Neoplastic Transformation Caused by Gene Replacement of H-ras1

R. E. Finney and J. M. Bishop

1524

## TECHNICAL COMMENTS

### Metal-Metal Bonds in Bimetallic Surfaces

G. K. Wertheim and J. E. Rowe; J. A. Rodriguez and D. W. Goodman

1527

■ Indicates accompanying feature

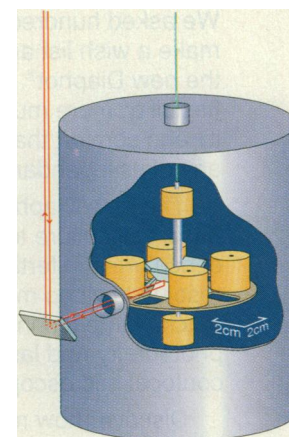


1518

Look and learn ... synaptic plasticity in the brain

1441

Dark gravitation



■ 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 © 1993 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): \$87 (\$47 allocated to subscription). Domestic institutional subscription (51 issues): \$205. 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 #1254 88122. 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.

■ The American Association for the Advancement of Science was founded in 1848 and incorporated in 1874. Its objectives 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, to advance education in science, and to increase public understanding and appreciation of the importance and promise of the methods of science in human progress.

# Science

**260 (5113)**

*Science* **260** (5113), 1405-1536.

**ARTICLE TOOLS**

<http://science.sciencemag.org/content/260/5113>

**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 © 1993 The Authors, some rights reserved; exclusive licensee American Association for the Advancement of Science. No claim to original U.S. Government Works.