

459 This Week in *Science*

## Editorial

461 Climate and Water

## Letters

462 Good Science Advice: G. E. BROWN, JR. ■ Evolution and Family Homicide: S. A. GEORGE; A. H. HARCOURT; M. DALY AND M. WILSON

## News & Comment

469 Accelerator Eyed for Warhead Tritium

470 If It's Tuesday, This Must Be . . . Heraklion?

471 Britain Reveals Astronomy Plan  
Chauvinism in Nobel Nominations

472 Space Cameras and Security Risks

473 Human Gene Transfer Test Approved  
Leakey Leaves Kenya Museums

474 AAAS Meeting Draws a Crowd: Science's Public Persona ■ "Oh, I Thought You Were a Man." ■ A World of Megacities ■ Space Reactors and Arms Control

## Research News

477 Sources and Sinks Complicate Ecology

478 Feeding the Monster in the Middle

479 Take Your Choice: Ice Ages, Quakes, or Impacts: A Combination of Impact and Volcano Is Dismissed ■ Taking the Pulse of the San Andreas Fault ■ New Way to Switch Earth Between Hot and Cold

481 Are Neural Nets Like the Human Brain?

482 Inbreeding Costs Swamp Benefits

## Articles

489 A Specialization for Speech Perception: A. M. LIBERMAN AND I. G. MATTINGLY

494 Nonlinear Mixing of Electromagnetic Waves in Plasmas: V. STEFAN, B. I. COHEN, C. JOSHI

500 Functions of Sphingolipids and Sphingolipid Breakdown Products in Cellular Regulation: Y. A. HANNUN AND R. M. BELL

## Research Articles

507 Chromosomal Rearrangement Generating a Composite Gene for a Developmental Transcription Factor: P. STRAGIER, B. KUNKEL, L. KROOS, R. LOSICK

## Reports

517 Evidence for Sediment Eruption on Deep Sea Floor, Gulf of Mexico: D. B. PRIOR, E. H. DOYLE, M. J. KALUZA

- **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 seven-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** Darkfield micrograph of the normal Timm-stained rat hippocampus counterstained with cresyl violet. The granule cells, axons of which form the dark bands in the photograph, are the hippocampal neurons selectively lost after adrenalectomy. See page 535. [Photo by Robert S. Sloviter, Helen Hayes Hospital, New York State Department of Health, West Haverstraw, NY 10993]

- 519 Rhenium-Osmium Isotope Systematics of Carbonaceous Chondrites: R. J. WALKER AND J. W. MORGAN
- 522 The Effect of GTPase Activating Protein upon Ras Is Inhibited by Mitogenically Responsive Lipids: M.-H. TSAI, C.-L. YU, F.-S. WEI, D. W. STACEY
- 526 Switch Protein Alters Specificity of RNA Polymerase Containing a Compartment-Specific Sigma Factor: L. KROOS, B. KUNKEL, R. LOSICK
- 529 Amplification and Molecular Cloning of HTLV-I Sequences from DNA of Multiple Sclerosis Patients: E. P. REDDY, M. SANDBERG-WOLLHEIM, R. V. METTUS, P. E. RAY, E. DEFREITAS, H. KOPROWSKI
- 533 Germline Transmission of Exogenous Genes in the Chicken: R. A. BOSSELMAN, R.-Y. HSU, T. BOGGS, S. HU, J. BRUSZEWSKI, S. OU, L. KOZAR, F. MARTIN, C. GREEN, F. JACOBSEN, M. NICOLSON, J. A. SCHULTZ, K. M. SEMON *et al.*
- 535 Selective Loss of Hippocampal Granule Cells in the Mature Rat Brain after Adrenalectomy: R. S. SLOVITER, G. VALQUETTE, G. M. ABRAMS, E. C. RONK, A. L. SOLLAS, L. A. PAUL, S. NEUBORT
- 538 Evidence That the Leucine Zipper Is a Coiled Coil: E. K. O'SHEA, R. RUTKOWSKI, P. S. KIM
- 542 A Genetic Polymorphism in the Renin Gene of Dahl Rats Cosegregates with Blood Pressure: J. P. RAPP, S.-M. WANG, H. DENE
- 544 Repression of the IgH Enhancer in Teratocarcinoma Cells Associated with a Novel Octamer Factor: M. J. LENARDO, L. STAUDT, P. ROBBINS, A. KUANG, R. C. MULLIGAN, D. BALTIMORE

## Technical Comments

- 547 Magnon-Exchange Pairing and Superconductivity: M. L. COHEN AND L. M. FALICOV; G. CHEN, J.-M. LANGLOIS, Y. GUO, W. A. GODDARD III ■ Phylogeny and Molecular Data: C. NIELSEN; W. F. WALKER; H. R. BODE AND R. E. STEELE; K. G. FIELD, G. J. OLSEN, S. J. GIOVANNONI, E. C. RAFF, N. R. PACE, R. A. RAFF

## Book Reviews

- 552 *America the Vulnerable; Gene Wars; Clouds of Secrecy*, reviewed by R. FALK ■ *Biodiversity*, D. B. WAKE ■ **Books Received**

## Products & Materials

- 556 **LC System for Methods Development** ■ **System to Profile pH** ■ **Text and Graphic Overlay for Microscopy** ■ **Temperature Controller for Microbiology** ■ **Magnetic Particles for Immunoassays** ■ **Micro HPLC Pump** ■ **Mathematical Functions Software** ■ **Literature**

### 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  
Gordon H. Orians  
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

**243 (4890)**

*Science* **243** (4890), 459-556.

ARTICLE TOOLS <http://science.sciencemag.org/content/243/4890>

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.