

1271 This Week in *Science*

## Editorial

1273 Recognizing Self from Nonself

## Letters

1280 Health Care and the Law: M. D. GREEN ■ Full Disclosure at the University of Florida: D. R. PRICE AND D. R. CHALLONER; E. MARSHALL ■ Neural Interfacing: G. T. A. KOVACS ■ Engineering Design: J. R. DIXON ■ Global Warming Questions: W. M. KAULA ■ Unscrambling an Egg: L. HAYFLICK

## News & Comment

1299 Cold Fusion Conundrum at Texas A&M ■ Wolf: My Tritium Was an Impurity  
1304 North Carolina Protests Chinese Pig Cartel  
1305 Amazonian Biodiversity  
1306 New Head for the WHO Global Program on AIDS  
1307 Peer Review Under Review  
1308 *Briefings*: Voyager's Last Light ■ Damage to Animal Research Mounts ■ Third World Pollution ■ Soviet Missile on Display ■ INS Puts Limits on Togetherness ■ U. of Maryland Gains from Glasnost ■ Turtle Navigation

## Research News

1310 The Worm Project  
1313 No Pain, No Gain?  
1314 From One Coral Many Findings Blossom ■ Coral Pushes Back the Past

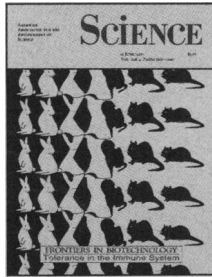
## Articles

### *Tolerance in the Immune System*

- 1335 The Role of the T Cell Receptor in Positive and Negative Selection of Developing T Cells: M. BLACKMAN, J. KAPPLER, P. MARRACK  
1342 Clonal Deletion Versus Clonal Anergy: The Role of the Thymus in Inducing Self Tolerance: F. RAMSDELL AND B. J. FOWLKES  
1349 A Cell Culture Model for T Lymphocyte Clonal Anergy: R. H. SCHWARTZ  
1357 T Cell Reactivity to MHC Molecules: Immunity Versus Tolerance: J. SPRENT, E.-K. GAO, S. R. WEBB  
1364 Tolerance in Transgenic Mice Expressing Major Histocompatibility Molecules Extrathymically on Pancreatic Cells: L. C. BURKLY, D. LO, R. A. FLAVELL  
1369 Self-Nonself Discrimination by T Cells: H. VON BOEHMER AND P. KISIELOW  
1373 The Need for Central and Peripheral Tolerance in the B Cell Repertoire: C. C. GOODNOW, S. ADELSTEIN, A. BASTEIN  
1380 Autoimmune Diseases: The Failure of Self Tolerance: A. A. SINHA, M. T. LOPEZ, H. O. McDEVITT

■ SCIENCE is published weekly on Friday, except the last week in December, and with a supplement in March by the American Association for the Advancement of Science, 1333 H Street, NW, Washington, DC 20005. Second-class Non-profit postage (publication No. 484460) paid at Washington, DC, and at an additional entry. Copyright © 1990 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): \$80. Domestic institutional subscription (51 issues): \$150. 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, \$20 (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 1723, 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 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.



**COVER** An allegory of immune tolerance, inspired by M. C. Escher. Immune function depends on distinguishing between self and nonself. When the immune system cannot determine whether an antigen is self or foreign, self tolerance may break down and autoimmune disease ensues. The articles on tolerance in the immune system begin on page 1335. [Concept by Linda J. Miller, illustration by Julie Cherry]

1388 The Influence of Allogeneic Cells on the Human T and B Cell Repertoire: J. J. VAN ROOD AND F. H. J. CLAAS

## Reports

- 1394 Axial Oxygen-Centered Lattice Instabilities and High-Temperature Superconductivity: S. D. CONRADSON, I. D. RAISTRICK, A. R. BISHOP
- 1398 North-South Contraction of the Mojave Block and Strike-Slip Tectonics in Southern California: J. M. BARTLEY, A. F. GLAZNER, E. R. SCHERMER
- 1402 Partial Symmetrization of the Photosynthetic Reaction Center: S. J. ROBLES, J. BRETON, D. C. YOUVAN
- 1405 Correlated Evolution of Female Mating Preferences and Male Color Pattern in the Guppy *Poecilia reticulata*: A. E. HOUDE AND J. A. ENDLER
- 1408 Identification of an Inhibitor of Neovascularization from Cartilage: M. A. MOSES, J. SUDHALTER, R. LANGER
- 1410 Fibroblast Growth Factor Receptor Is a Portal of Cellular Entry for Herpes Simplex Virus Type 1: R. J. KANER, A. BAIRD, A. MANSUKHANI, C. BASILICO, B. D. SUMMERS, R. Z. FLORKIEWICZ, D. P. HAJJAR
- 1413 Correction of CD18-Deficient Lymphocytes by Retrovirus-Mediated Gene Transfer: J. M. WILSON, A. J. PING, J. C. KRAUSS, L. MAYO-BOND, C. E. ROGERS, D. C. ANDERSON, R. F. TODD III
- 1416 Cell Cycle Dependence of Chloride Permeability in Normal and Cystic Fibrosis Lymphocytes: J. K. BUBIEN, K. L. KIRK, T. A. RADO, R. A. FRIZZELL
- 1419 Flunarizine Protects Neurons from Death After Axotomy or NGF Deprivation: K. M. RICH AND J. P. HOLLOWELL
- 1421 Inhibition of Factor VIIa-Tissue Factor Coagulation Activity by a Hybrid Protein: T. J. GIRARD, L. A. MACPHAIL, K. M. LIKERT, W. F. NOVOTNY, J. P. MILETICH, G. J. BROZE, JR.

## Book Reviews

- 1428 Behind the Factory Walls, reviewed by P. R. GREGORY ■ The Invisible Work Force, K. CHRISTENSEN ■ Flight Strategies of Migrating Hawks, T. C. WILLIAMS ■ Rheology of Solids and of the Earth, J.-P. POIRIER ■ Books Received

## Products & Materials

- 1432 Biological Culture Collection Goes Online ■ Monoclonal Antibodies ■ Benchtop Cleanroom ■ DNA Sequence Computer Entry System ■ Scientific Information Managing Software ■ Transcription Translation System ■ Literature

### Board of Directors

Richard C. Atkinson  
Retiring President,  
Chairman

Donald N. Langenberg  
President

Leon M. Lederman  
President-elect

Mary Ellen Avery  
Francisco J. Ayala  
Eugene H. Cota-Robles  
Robert A. Froesch  
Joseph G. Gavin, Jr.  
John H. Gibbons  
Beatrix A. Hamburg  
Florence P. Haseltine  
William T. Golden  
Treasurer  
Richard S. Nicholson  
Executive Officer

### Editorial Board

Elizabeth E. Bailey  
David Baltimore  
William F. Brinkman  
E. Margaret Burbidge  
Pierre-Gilles de Gennes  
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  
Don L. Anderson  
Stephen J. Benkovic  
Gunter K-J Blobel  
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  
Harry A. Fozzard

Theodore H. Geballe  
Roger I. M. Glass  
Stephen P. Goff  
Corey S. Goodman  
Stephen J. Gould  
Eric F. Johnson  
Stephen M. Kosslyn  
Konrad B. Krauskopf  
Charles S. Levings III  
Richard Losick  
Joseph B. Martin  
John C. McGiff  
Anthony R. Means  
Mortimer Mishkin  
Roger A. Nicoll  
William H. Orme-Johnson III  
Carl O. Pabo  
Yeshayau Pocker

Dennis A. Powers  
Erkki Ruoslahti  
Thomas W. Schoener  
Ronald H. Schwartz  
Terrence J. Sejnowski  
Robert T. N. Tjian  
Virginia Trimble  
Emil R. Unanue  
Geerat J. Vermeij  
Bert Vogelstein  
Harold Weintraub  
Irving L. Weissman  
Zena Werb  
George M. Whitesides  
Owen N. Witte  
William B. Wood

# Science

248 (4961)

*Science* 248 (4961), 1271-1432.

ARTICLE TOOLS

<http://science.sciencemag.org/content/248/4961>

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 © 1990 The Authors, some rights reserved; exclusive licensee American Association for the Advancement of Science. No claim to original U.S. Government Works.