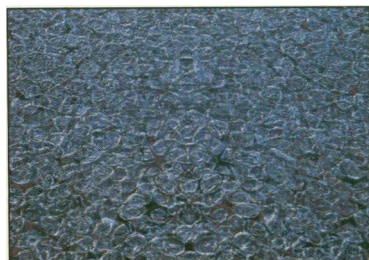


**733**

Maya superpowers



**782**

Autumnal Antarctic algae



**789**

Disease resistance in tomato

## NEWS & COMMENT

- Genetic Diversity Project Tries Again **720**  
An African-American Diversity Project **721**
- Roche Institute Moves West **723**
- PCAST Plunges Into Its Work **723**
- Vaccine Shows Promise in Tanzania Test **724**
- New Missions Focus on Sun, Galaxies **724**
- Is the Fix in on Fermat's Last Theorem? **725**
- Britain Takes First Step in Ph.D. Reform **725**
- Liability Concerns Threaten Medical Implant Research **726**
- Early Budget Proposals for NIH Draw Fire **727**

## RESEARCH NEWS

- DNA Repair Comes Into Its Own **728**
- Dino Embryo Recasts Parents' Image **731**
- Playing Hide-and-Seek With a Pulsar **731**
- Putting X-ray Lasers on the Table **732**
- Archaeology: Clashing Maya Superpowers Emerge From a New Analysis **733**

## POLICY FORUMS

- Producing the Finest Scientists and Engineers for the 21st Century **741**  
M. Lowe Good and N. F. Lane

- European Union: Fresh Tracks for Academic Exchanges **743**  
B. Frost-Smith

## PERSPECTIVE

- Ecological Character Displacement **746**  
P. R. Grant

## ARTICLES

- Nature of Stress on the Atomic Level in Dense Polymer Systems **748**  
J. Gao and J. H. Weiner
- Fragmentation and Flow Regulation of River Systems in the Northern Third of the World **753**  
M. Dynesius and C. Nilsson

## RESEARCH ARTICLE

- Crystal Structure of LacI Member, PurR, Bound to DNA: Minor Groove Binding by  $\alpha$  Helices **763**  
M. A. Schumacher, K. Y. Choi, H. Zalkin, R. G. Brennan

## REPORTS

- Direct Measurement of the Forces Between Complementary Strands of DNA **771**  
G. U Lee, L. A. Chrisey, R. J. Colton
- Use of Taylor-Aris Dispersion for Measurement of a Solute Diffusion Coefficient in Thin Capillaries **773**  
M. S. Bello, R. Rezzonico, P. G. Righetti

## DEPARTMENTS

- THIS WEEK IN SCIENCE** **709**
- EDITORIAL** **711**  
Educating the Best and Employing Them
- LETTERS** **713**  
Conservation Research and the Legal Status of PCR Products: B. W. Bowen and J. C. Avise • Free Electron Lasers Fettered?: G. Margaritondo and N. Tolk • Treating Brain Cancers: Y. Maruyama, J. Fontanesi, A. T. Porter, J. G. Wierzbicki, L.
- DEPARTMENTS**
- Gaspar • Ordering Systems: E. Mayr; S. Renner
- SCIENCESCOPE** **719**
- RANDOM SAMPLES** **735**
- BOOK REVIEWS** **837**  
*Minds for the Making*, reviewed by C. W. Anderson  
• *Becoming a Scientist in Mexico*, B. Ortiz de Montellano • Vignettes • Books Received
- PRODUCTS & MATERIALS** **841**

## Board of Reviewing Editors

Frederick W. Alt  
Don L. Anderson  
Michael Ashburner  
Stephen J. Benkovic  
David E. Bloom  
Floyd E. Bloom  
Piet Borst  
Henry R. Bourne  
Michael S. Brown  
James J. Bull

Kathryn Calame  
C. Thomas Caskey  
Dennis W. Choi  
John M. Coffin  
F. Fleming Crim  
Paul J. Crutzen  
James E. Dahlberg  
Robert Desimone  
Bruce F. Eldridge  
Paul T. Englund

Richard G. Fairbanks  
Douglas T. Fearon  
Harry A. Fozzard  
Klaus Friedrich  
Theodore H. Geballe  
John C. Gerhart  
Roger I. M. Glass  
Stephen P. Goff  
Peter N. Goodfellow  
Corey S. Goodman

Ira Herskowitz  
Eric F. Johnson  
Stephen M. Kosslyn  
Michael LaBarbera  
Nicole Le Douarin  
Charles S. Levings III  
Alexander Levitzki  
Harvey F. Lodish  
Richard Losick  
Reinhard Lührmann

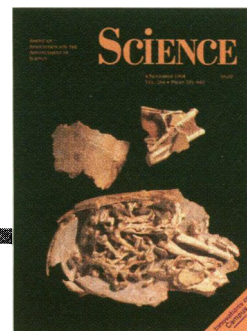
Diane Mathis  
Anthony R. Means  
Shigetada Nakanishi  
Roger A. Nicoll  
Stuart L. Pimm  
Yeshayahu Pocker  
Dennis A. Powers  
Ralph S. Quatrano  
V. Ramanathan  
Douglas C. Rees

T. M. Rice  
David C. Rubie  
Erkki Ruoslahti  
Gottfried Schatz  
Jozef Schell  
Ronald H. Schwartz  
Terrence J. Sejnowski  
Ellen Solomon  
Thomas A. Steitz  
Michael P. Stryker

Robert T. N. Tjian  
Emil R. Unanue  
Geerat J. Vermeij  
Bert Vogelstein  
Harold Weintraub  
Arthur Weiss  
Zena Werb  
George M. Whitesides  
Owen N. Witte  
William A. Wulf

This oviraptorid embryo from Ukhaa Tolgod, Mongolia, in the Gobi Desert is the first definitive embryo of a nonavian theropod dinosaur. It is a near-hatchling, curled in a fetal position. In the upper left is an eggshell fragment showing the outer surface of the egg, and in

the upper right is a skull of a juvenile dromaeosaur that was found associated with the oviraptorid nest. See page 779 and the News story on page 731. [Photo: Michael Ellison, Department of Vertebrate Paleontology, American Museum of Natural History]



**Synthesis of Proteins by Native Chemical Ligation** 776

P. E. Dawson, T. W. Muir, I. Clark-Lewis, S. B. H. Kent

**A Theropod Dinosaur Embryo and the Affinities of the Flaming Cliffs Dinosaur Eggs** 779

M. A. Norell, J. M. Clark, D. Demberelyin, B. Rhinchen, L. M. Chiappe, A. R. Davidson, M. C. McKenna, P. Altangerel, M. J. Novacek

**Autumn Bloom of Antarctic Pack-Ice Algae** 782

C. H. Fritsen, V. I. Lytle, S. F. Ackley, C. W. Sullivan

**A Three-Dimensional Model for the Hammerhead Ribozyme Based on Fluorescence Measurements** 785

T. Tuschl, C. Gohlke, T. M. Jovin, E. Westhof, F. Eckstein

**Isolation of the Tomato Cf-9 Gene for Resistance to *Cladosporium fulvum* by Transposon Tagging** 789

D. A. Jones, C. M. Thomas, K. E. Hammond-Kosack, P. J. Balint-Kurti, J. D. G. Jones

**Interaction of a Protein Phosphatase with an *Arabidopsis* Serine-Threonine Receptor Kinase** 793

J. M. Stone, M. A. Collinge, R. D. Smith, M. A. Horn, J. C. Walker

**SecA Homolog in Protein Transport Within Chloroplasts: Evidence for Endosymbiont-Derived Sorting** 796

J. Yuan, R. Henry, M. McCaffery, K. Cline

**Experimental Evidence That Competition Promotes Divergence in Adaptive Radiation** 798

D. Schluter

**Hydroxyurea as an Inhibitor of Human Immunodeficiency Virus-Type 1 Replication** 801

F. Lori, A. Malykh, A. Cara, D. Sun, J. N. Weinstein, J. Lisiewicz, R. C. Gallo

**Isolation of Virus Capable of Lysing the Brown Tide Microalga, *Aureococcus anophagefferens*** 805

K. L. D. Milligan and E. M. Cosper

**p53 Status and the Efficacy of Cancer Therapy in Vivo** 807

S. W. Lowe, S. Bodis, A. McClatchey, L. Remington, H. E. Ruley, D. E. Fisher, D. E. Housman, T. Jacks

**Transformation of Lupus-Inducing Drugs to Cytotoxic Products by Activated Neutrophils** 810

X. Jiang, G. Khursigara, R. L. Rubin

**DNA Loop Repair by Human Cell Extracts** 814

A. Umar, J. C. Boyer, T. A. Kunkel

**Ligands for EPH-Related Receptor Tyrosine Kinases That Require Membrane Attachment or Clustering for Activity** 816

S. Davis, N. W. Gale, T. H. Aldrich, P. C. Maisonpierre, V. Lhotak, T. Pawson, M. Goldfarb, G. D. Yancopoulos

**The Function of KGF in Morphogenesis of Epithelium and Reepithelialization of Wounds** 819

S. Werner, H. Smola, X. Liao, M. T. Longaker, T. Krieg, P. H. Hofschneider, L. T. Williams

**Determination of Intrinsic Transcription Termination Efficiency by RNA Polymerase Elongation Rate** 822

J. C. McDowell, J. W. Roberts, D. J. Jin, C. Gross

**TECHNICAL COMMENTS**

**Rates of Mortality in Populations of *Caenorhabditis elegans*** 826

J. W. Vaupel, T. E. Johnson, G. J. Lithgow, J. W. Curtsinger, H. H. Fukui, L. Xiu, A. Khazaeli, S. Pletcher, J.-L. Wang, H.-G. Müller, W. B. Capra, J. R. Carey, T. E. Johnson

**Identification of Calcium Channels That Control Neurosecretion** 828

K. Dunlap, J. I. Luebke, T. J. Turner, D. B. Wheeler, R. W. Tsien, A. Randall

**SPECIAL SECTION**

**Innovations on Campus** 843

**Innovations on Campus**

843

**Overview**

A Time of Trials and Tribulations • Coping With the Underprepared Undergraduate • Coping With Today's Ph.D. Glut and Funding Cuts • Some Small Schools Are Big On Manufacturing Scientists ... But Caveat Emptor for Small Grad Schools

**Curricula**

Assault on the Lesson Plan • Curricula Reform Hits the Web • Novel Program I: Advanced Research in Biotechnology • Novel Program II: Environmental Management • Novel Program III: Undergraduate Nanotechnology • Novel Program IV: Commercializing Research • Novel Course I: Digital Neuroscience • Novel Course II: 21st-Century Chemistry • Novel Course III: Undergrad Labs "Get Real" • Novel Course IV: Survival Skills 101 • Reader Feedback

**Teaching**

New Modes for Making Scientists • Harvard Succeeds in the Teaching of Teachers • Rewards—at Last—for Top Teachers • John Jungck: Godfather of Virtual Bio and Genetics Labs • Stephen Thompson: Call Him Czar of Small-Scale Chemistry • Ocean Engineering? New Wave in Teaching Marine Biology • Why Eric Mazur Brings Chaos—Not Chaos Theory—to Physics • Turning Students On by Simulating the Arcane

**AAAS Board of Directors**

Elaine E. Clark  
Retiring President,  
Chairman  
Francisco J. Ayala  
President  
Rita R. Colwell  
President-elect

William A. Lester Jr.  
Simon A. Levin  
Anna C. Roosevelt

Alan Schriesheim  
Jean'ne M. Shreeve  
Chang-Lin Tien  
Warren M. Washington  
Nancy S. Wexler

William T. Golden  
Treasurer  
Richard S. Nicholson  
Executive Officer

■ **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 © 1994 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): \$92 (\$50 allocated to subscription). Domestic institutional subscription (51 issues): \$215. 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 8812. Printed in the U.S.A.

**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 0036-8075/93 \$1 + .10. *Science* is indexed in the *Reader's Guide to Periodical Literature* and in several specialized indexes.



# Science

**266 (5186)**

*Science* **266** (5186), 709-893.

**ARTICLE TOOLS**

<http://science.sciencemag.org/content/266/5186>

**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 © 1994 The Authors, some rights reserved; exclusive licensee American Association for the Advancement of Science. No claim to original U.S. Government Works.