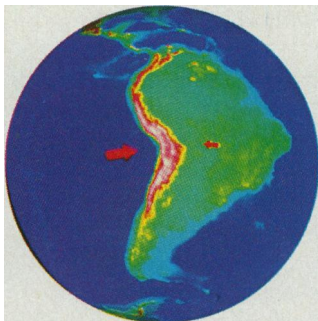




1087 & 1118

Java fossil redates
human history



1105

Mapping mantle flow

NEWS & COMMENT

Measuring What Works in Health Care 1080
Academic Medicine's Stake in Health Care Reform

Russia Seen Poised to Drop Prosecution of 1083
Chemist

AAAS Meeting: Losing Friends and 1084
Influencing Policy

Science Editor to Resign 1084

Lane Holds to the Middle in Debate Over 1085
NSF's Future

Phosphorus Fingered as Coral Killer 1086

RESEARCH NEWS

Rewriting—and Redating—Prehistory 1087

A Glimmer of Hope for Coastal Migration 1088

Iron Fertilization: A Tonic, but No Cure 1089
for the Greenhouse

Theoretical Ecology: Winning Its Spurs in 1090
the Real World

Atom Beams Split by Gentle Persuasion 1092

Researchers Find New Role for Cell 1093
Cycle Proteins

PERSPECTIVES

Thinking About Prozac 1102
S. H. Barondes

Duality of TBP, the Universal 1103
Transcription Factor
K. Struhl

ARTICLE

Trench-Parallel Flow Beneath the 1105
Nazca Plate from Seismic Anisotropy
R. M. Russo and P. G. Silver

DEPARTMENTS

THIS WEEK IN SCIENCE 1069

EDITORIAL 1071
Strategic Goals on an NIH Model

LETTERS 1073
Animal Rights and Radical Politics: A. R. Morrison; H. Herzog • Pork Barrel Funding an Embarrassment: G. E. Laramore; C. Anderson • Safety in Quarks?: A. Kramish

SCIENCESCOPE 1079

RANDOM SAMPLES 1094
Buffering Japan's Science From Recession • Antioxidants and Longevity • Alcohol Tolerance: Danger Sign • Biotech Foils a Deadly Grape Virus • Microscopic Breakthrough, etc.

AAAS MEETINGS 1100

19th Annual AAAS Colloquium on Science and Technology Policy, 6–8 April 1994, Washington, DC • Preliminary Program • Advance Registration Form • Hotel Registration Form

BOOK REVIEWS 1161

The Biophilia Hypothesis, reviewed by C. S. Fischer • *Critical Assembly*, R. Peierls • *Biotechnology in Plant Disease Control*, N. K. Van Alfen • *The Cell Cycle*, F. R. Cross and K. Levine • Vignettes • Books Received

INSIDE AAAS 1168

PRODUCTS & MATERIALS 1172

Board of Reviewing Editors

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

Kathryn Calame
C. Thomas Caskey
Dennis W. Choi
John M. Coffin
Paul J. Crutzen
Robert Desimone
Nicole Le Douarin
Bruce F. Eldridge
Paul T. Englund
Richard G. Fairbanks
Douglas T. Fearon

Harry A. Fozzard
K. Friedrich
Theodore H. Geballe
Margaret J. Geller
John C. Gerhart
Roger I. M. Glass
Stephen P. Goff
Peter N. Goodfellow
Corey S. Goodman
Stephen J. Gould
Ira Herskowitz

Eric F. Johnson
Stephen M. Kosslyn
Michael LaBarbera
Charles S. Levings III
Alexander Levitzki
Harvey F. Lodish
Richard Losick
Diane Mathis
Anthony R. Means
Shigetada Nakanishi
Roger A. Nicoll

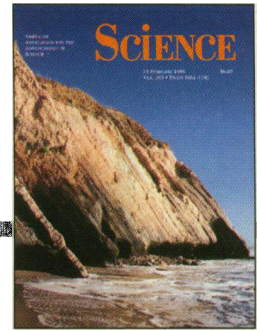
William H. Orme-
Johnson III
Stuart L. Pimm
Yeshayau Pocker
Dennis A. Powers
Ralph S. Quatrano
V. Ramanathan
Douglas C. Rees
T. M. Rice
Erkki Ruoslahti
David C. Rubie

Gottfried Schatz
Jozef Schell
Ronald H. Schwartz
Terrence J. Sejnowski
Ellen Solomon
Thomas A. Steitz
Michael P. Stryker
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
William A. Wulf
Keith Yamamoto

Cliffs of the Miocene Monterey Formation, Naples Beach, California. These finely laminated sedimentary rocks rich in organic matter were deposited during a period of worldwide cooling about 14 million years ago. A record of this climate change is revealed by the

carbon isotopic signatures of certain molecules synthesized by organisms, such as marine algae and bacteria, and subsequently fossilized after the sediments were deposited. See page 1122. [Photo: Kevin Irwin, Chevron Petroleum Technology Company]



REPORTS

Spatially Resolved Observation of Static Magnetic Flux States in $YBa_2Cu_3O_{7-\delta}$ Grain Boundary Josephson Junctions 1112

G. M. Fischer, B. Mayer, R. Gross, T. Nissel, K.-D. Husemann, R. P. Huebener, T. Freltoft, Y. Shen, P. Vase

Making Ceramics "Ductile" 1114

B. R. Lawn, N. P. Padture, H. Cai, F. Guiberteau

Double Seismic Zone for Deep Earthquakes in the Izu-Bonin Subduction Zone 1116

T. Iidaka and Y. Furukawa

Age of the Earliest Known Hominids in Java, Indonesia 1118

C. C. Swisher III, G. H. Curtis, T. Jacob, A. G. Getty, A. Suprijo, Widiastomo

A Molecular Organic Carbon Isotope Record of Miocene Climate Changes 1122

M. Schoell, S. Schouten, J. S. Sinninghe Damsté, J. W. de Leeuw, R. E. Summons

Deep, Zonal Subequatorial Currents 1125

L. D. Talley and G. C. Johnson

Extension of Life-Span by Overexpression of Superoxide Dismutase and Catalase in *Drosophila melanogaster* 1128

W. C. Orr and R. S. Sohal

Requirement for CD8 β Chain in Positive Selection of CD8-Lineage T Cells 1131

K.-i. Nakayama, K. Nakayama, I. Negishi, K. Kuida, M. C. Louie, O. Kanagawa, H. Nakauchi, D. Y. Loh

Persistence of Transients in Spatially Structured Ecological Models 1133

A. Hastings and K. Higgins

Sequential Interactions of the TCR with Two Distinct Cytoplasmic Tyrosine Kinases 1136

M. Iwashima, B. A. Irving, N. S. C. van Oers, A. C. Chan, A. Weiss

T Cell Deletion in High Antigen Dose Therapy of Autoimmune Encephalomyelitis 1139

J. M. Critchfield, M. K. Racke, J. C. Zúñiga-Pflücker, B. Cannella, C. S. Raine, J. Goverman, M. J. Lenardo

Premature p34^{cdc2} Activation Required for Apoptosis 1143

L. Shi, W. K. Nishioka, J. Th'ng, E. M. Bradbury, D. W. Litchfield, A. H. Greenberg

Protein-Protein Interactions Contributing to the Specificity of Intracellular Vesicular Trafficking 1146

N. Calakos, M. K. Bennet, K. E. Peterson, R. H. Scheller

Replacement of Diseased Mouse Liver by Hepatic Cell Transplantation 1149

J. A. Rhim, E. P. Sandgren, J. L. Degen, R. D. Palmiter, R. L. Brinster

Phosphorylation of the Transcription Factor PHO4 by a Cyclin-CDK Complex, PHO80-PHO85 1153

A. Kaffman, I. Herskowitz, R. Tjian, E. K. O'Shea

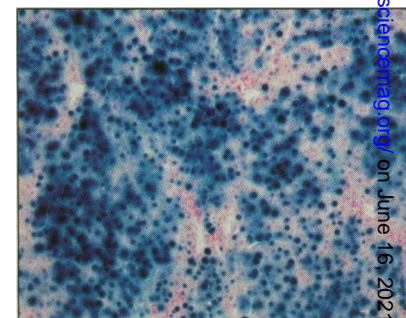
TECHNICAL COMMENTS

Gene Flow or Heterozygote Advantage? 1157

D. Berrigan, J. Evans, D. Holway, L. Jacobs, M. Richards, J. Seger; L. Keller and K. G. Ross

Examining Langmuir-Blodgett Films with Atomic Force Microscopy 1158

D. K. Schwartz, R. Viswanathan, J. A. Zasadzinski; L. Bourdieu, O. Ronsin, D. Chatenay



1149

Replacing diseased liver

AAAS Board of Directors

Eloise 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 #125488122. **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.

Science

263 (5150)

Science **263** (5150), 1069-1172.

ARTICLE TOOLS

<http://science.sciencemag.org/content/263/5150>

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.