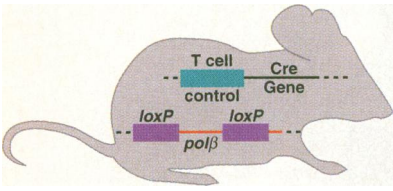


# SCIENCE



## 26 & 103

Tissue-specific gene knockout created

### NEWS & COMMENT

- Does NIH Shortchange Clinicians? 20
- Chemistry: Underhanded 'Breakthrough' Revealed 21
- CERN Puts LHC Approval on Hold 22
- Defense Bill Targets Universities 22
- AIDS Research: U.S.-French Patent Dispute Heads for a Showdown 23  
A Parting Shot From a Closed Case

### RESEARCH NEWS

- Knockout Mice: Round Two 26  
Researchers Devise a Master Gene Control Switch
- New Proof Makes Light Work of Partial Latin Squares 29
- UV-B Effects: Bad for Insect Larvae Means Good for Algae 30

- Bets Range From Boom to Bust for Jovian Impacts 31

- Finding Molecular Needles-in-a-Haystack 32

### PERSPECTIVES

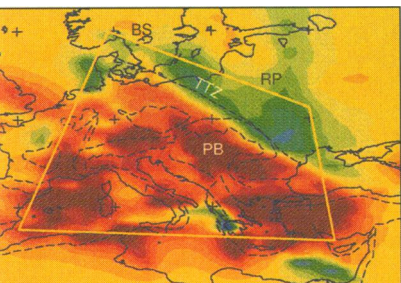
- The Structure of Nature's Solvent: Water 43  
S. D. Colson and T. H. Dunning Jr.
- Genes on the Wing 44  
H. F. Nijhout

### ARTICLE

- Examining Nanoenvironments in Solids on the Scale of a Single, Isolated Impurity Molecule 46  
W. E. Moerner

### RESEARCH ARTICLE

- Stimulation of GAL4 Derivative Binding to Nucleosomal DNA by the Yeast SWI/SNF Complex 53  
J. Côté, J. Quinn, J. L. Workman, C. L. Peterson



## 79

The underside of Europe

### DEPARTMENTS

- THIS WEEK IN SCIENCE** 9  
Ph.D. Trends • New Chief Named for Canadian Federal Labs • Kyoto Prizes in Math and Medical Imaging
- EDITORIAL** 11  
Minimizing Wastes
- LETTERS** 13  
Science in the Former Soviet Union: T. H. Ilves; M. S. Y. Lee • Institute of Human Origins: Separation Issues: D. C. Johanson, W. H. Kimbel, S. C. Shea; A. Gibbons; J. E. Smith
- SCIENCESCOPE** 19
- RANDOM SAMPLES** 33  
Viral Clues Add to the ALS Puzzle • Tracking
- QUARTERLY AUTHOR INDEX** 61
- BOOK REVIEWS** 124  
*Surviving the Swastika and Science, Technology and National Socialism*, reviewed by R. G. Stokes • *Paleomagnetism of the Atlantic, Tethys and Iapetus Oceans*, M. McWilliams • *Biology of Fibrous Composites*, J. F. V. Vincent • Other Books of Interest • Vignettes • Books Received
- PRODUCTS & MATERIALS** 137

### 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  
Paul J. Crutzen  
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  
Diane Mathis  
Anthony R. Means  
Shigetada Nakanishi

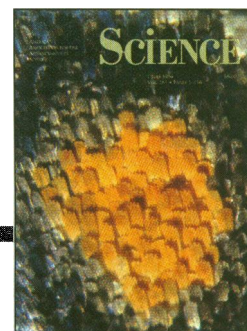
Roger A. Nicoll  
Stuart L. Pimm  
Yeshayau Pocker  
Dennis A. Powers  
Ralph S. Quatrano  
V. Ramanathan  
Douglas C. Rees  
T. M. Rice  
David C. Rubie  
Erkki Ruoslahti

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  
Keith Yamamoto

An eyespot (2 mm across) on a *Precis coenia* (buckeye) butterfly wing. The size, color, and number of eyespots and other patterns are determined in the developing wing imaginal disc (a field of undifferentiated cells in the caterpillar) several days before the adult pattern

appears. Genes involved in insect wing formation are expressed in various patterns in butterflies to create detailed patterns within the butterfly wings. See page 109 and the Perspective on page 44. [Photo: Steve Paddock]



## REPORTS

**Chemical Signature of the Superconducting Phase in the Nd-Ce-Cu-O System** 73

A. Nath, N. S. Kopelev, V. Chechersky, J.-L. Peng, R. L. Greene, Beom-hoan O, M. I. Larkin, J. T. Markert

**Size-Specific Infrared Spectra of Benzene-(H<sub>2</sub>O)<sub>n</sub> Clusters (n = 1 through 7): Evidence for Noncyclic (H<sub>2</sub>O)<sub>n</sub> Structures** 75

R. N. Pribble and T. S. Zwier

**Deep Seismic Expression of an Ancient Plate Boundary in Europe** 79

A. Zielhuis and G. Nolet

**Pseudotachylytes Generated During Seismic Faulting and Eclogitization of the Deep Crust** 82

H. Austrheim and T. M. Boundy

**Magnetic Susceptibility of Molecular Carbon: Nanotubes and Fullerite** 84

A. P. Ramirez, R. C. Haddon, O. Zhou, R. M. Fleming, J. Zhang, S. M. McClure, R. E. Smalley

**Water on Mars: Clues from Deuterium/Hydrogen and Water Contents of Hydrous Phases in SNC Meteorites** 86

L. L. Watson, I. D. Hutcheon, S. Epstein, E. M. Stolper

**Identification of the Target of a Transcription Activator Protein by Protein-Protein Photocrosslinking** 90

Y. Chen, Y. W. Ebright, R. H. Ebright

**Mediation of Epstein-Barr Virus EBNA2 Transactivation by Recombination Signal-Binding Protein J<sub>κ</sub>** 92

T. Henkel, P. D. Ling, S. D. Hayward, M. G. Peterson

**Magnetoreception in Honeybees** 95

C.-Y. Hsu and C.-W. Li

**Ecosystem Response to Solar Ultraviolet-B Radiation: Influence of Trophic-Level Interactions** 97

M. L. Bothwell, D. M. J. Sherbot, C. M. Pollock

**Temperature and Water Viscosity: Physiological Versus Mechanical Effects on Suspension Feeding** 100

R. D. Podolsky

**Deletion of a DNA Polymerase β Gene Segment in T Cells Using Cell Type-Specific Gene Targeting** 103

H. Gu, J. D. Marth, P. C. Orban, H. Mossmann, K. Rajewsky

**Regulation of MHC Class II Expression by Interferon-γ Mediated by the Transactivator Gene CIITA** 106

V. Steimle, C.-A. Siegrist, A. Mottet, B. Lisowska-Grospierre, B. Mach

**Pattern Formation and Eyespot Determination in Butterfly Wings** 109

S. B. Carroll, J. Gates, D. N. Keys, S. W. Paddock, G. E. F. Panganiban, J. E. Selegue, J. A. Williams

**Changes of Induction and Competence During the Evolution of Vulva Development in Nematodes** 114

R. J. Sommer and P. W. Sternberg

**Suppression of Odorant Responses by Odorants in Olfactory Receptor Cells** 118

T. Kurahashi, G. Lowe, G. H. Gold

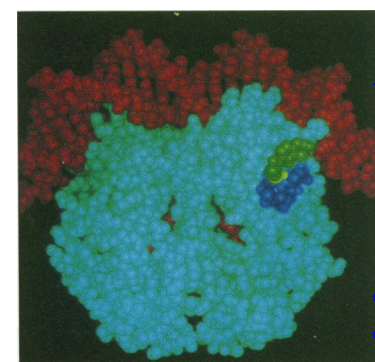
## TECHNICAL COMMENTS

**Viral Tracing of Innervation** 121

A. S. P. Jansen and A. D. Loewy; A. Standish, L. W. Enquist, J. S. Schwaber

**Hybrid Zones and Sexual Selection** 122

R. K. Butlin and R. M. Neems; T. J. Parsons, S. L. Olson, M. J. Braun



90

Shining a light on transcription

## 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 #1254 88122. 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

**265 (5168)**

*Science* **265** (5168), 9-137.

**ARTICLE TOOLS**

<http://science.sciencemag.org/content/265/5168>

**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. 2017 © The Authors, some rights reserved; exclusive licensee American Association for the Advancement of Science. No claim to original U.S. Government Works. The title *Science* is a registered trademark of AAAS.