

263 This Week in *Science*

Editorial	265 The Attractiveness of Gloom
Letters	267 Indirect Costs at Universities: J. H. MARBURGER; G. CASPER ■ Nanotechnology: The Past and the Future: N. R. WERTHAMER; K. E. DREXLER; S. G. HADDEN AND J. CHAPA ■ Gene Mappers at Cold Spring Harbor: D. J. Porteous
ScienceScope	275 Marveling at the neem tree; investigating a nuclear reactor for space; etc.
News & Comment	276 Poles Apart: Science Thrives on Ice ■ Hot Research in a Cold Climate ■ Sitting on Top of the World 279 Japan's Answer on the SSC: Maybe Thrust and Parry over Indirect Costs 280 French Agency Exonerates Zagury NSF Under the Magnifying Glass 281 1991: Warmth, Chill May Follow 282 <i>Briefings</i> : Failure Interrupts Venus Mapping ■ Could Creationism Be Evolving? ■ Raking the Gulf War's Muck ■ Building a Better Beta Cell ■ Cold Confusion ■ MacArthur Fellows Director Resigns ■ UC to Standardize DOE Contracts ■ The World's Most Prolific Scientists
Research News	284 Animating the Material World ■ What It Takes to Smarten a Material 287 Chimps: More Diverse Than a Barrel of Monkeys 289 Getting an Eyeful of Biomolecules Gene Therapy for CF Advances 290 Have Astronomers Bagged A Pair of Pulsar Planets? 291 Putting the Moves on Plant Viruses
Perspective	292 The Ability of Certain SIV Vaccines to Provoke Reactions Against Normal Cells: A. J. LANGLOIS, K. J. WEINHOLD, T. J. MATTHEWS, M. L. GREENBERG, D. P. BOLOGNESI
Articles	294 U.S.–Japanese Space Relations at a Crossroads: J. M. LOGSDON 301 Toward the Realization of a Josephson Computer: S. HASUO
Research Article	306 Human Growth Hormone and Extracellular Domain of Its Receptor: Crystal Structure of the Complex: A. M. DE VOS, M. ULTSCH, A. A. KOSSIAKOFF

- 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 © 1992 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): \$87 (\$47 allocated to subscription). Domestic institutional subscription (51 issues): \$195. 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. **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, Massachusetts 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.
- 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 Model of the complex of human growth hormone and the extracellular domain of its receptor. One hormone molecule (red) is bound to two receptor molecules (blue and green); the pebbled yellow surface represents the cell membrane. The dimerization of the extracellular domains by the hormone is likely to aggregate the intracellular domains of the receptor as well, thereby producing signals leading to cell growth differentiation. See page 306. [Graphics by T. Hynes and A. M. de Vos with MIDAS-plus software]

Reports

- 313 Observation of Single-Electron Charging in Double-Barrier Heterostructures: B. SU, V. J. GOLDMAN, J. E. CUNNINGHAM
- 315 Gas-Phase Rates of Alkane C-H Oxidative Addition to a Transient CpRh(CO) Complex: E. P. WASSERMAN, C. B. MOORE, R. G. BERGMAN
- 318 Oxygen Supersaturation in Ice-Covered Antarctic Lakes: Biological Versus Physical Contributions: H. CRAIG, R. A. WHARTON, JR., C. P. MCKAY
- 321 The Earth's Angular Momentum Budget on Subseasonal Time Scales: J. O. DICKEY, S. L. MARCUS, J. A. STEPPE, R. HIDE
- 325 Actin-Binding Protein Requirement for Cortical Stability and Efficient Locomotion: C. C. CUNNINGHAM, J. B. GORLIN, D. J. KWIATKOWSKI, J. H. HARTWIG, P. A. JANMEY, H. R. BYERS, T. P. STOSSEL
- 327 Cyclic 2',3'-Phosphates and Nontemplated Nucleotides at the 3' End of Spliceosomal U6 Small Nuclear RNA's: E. LUND AND J. E. DAHLBERG
- 330 Sibling Species in *Montastraea annularis*, Coral Bleaching, and the Coral Climate Record: N. KNOWLTON, E. WEIL, L. A. WEIGT, H. M. GUZMÁN
- 333 Induction of Broadly Cross-Reactive Cytotoxic T Cells Recognizing an HIV-1 Envelope Determinant: H. TAKAHASHI, Y. NAKAGAWA, C. D. PENDLETON, R. A. HOUGHTEN, K. YOKOMURO, R. N. GERMAIN, J. A. BERZOFSKY
- 336 Evidence of a Pre-Angiosperm Origin of Endosperm: Implications for the Evolution of Flowering Plants: W. E. FRIEDMAN
- 339 G₂-Mediated Hormonal Inhibition of Cyclic AMP Accumulation: Y. H. WONG, B. R. CONKLIN, H. R. BOURNE
- 342 Quantum Conversion and Image Detection by a Bacteriorhodopsin-Based Artificial Photoreceptor: T. MIYASAKA, K. KOYAMA, I. ITOH

Book Reviews

- 345 Niels Bohr's Times, reviewed by F. Wilczek ■ Women in Science, S. G. KOHLSTEDT ■ Vignettes: Installment in a Debate ■ Books Received

Products & Materials

- 349 UV Light Detectors ■ Balance Enclosure ■ In Situ Sensor ■ Antibody and Antibody Subclass Testing ■ Pocket-Sized Temperature Recorder ■ Filtering Material for Cell Isolation ■ DNA and Protein Sequence Software for the Macintosh ■ Literature

Board of Directors

Donald N. Langenberg
*Retiring President,
Chairman*

Leon M. Lederman
President

F. Sherwood Rowland
President-elect

Mary Ellen Avery
Francisco J. Ayala
Eugene H. Cota-Robles
Robert A. Froesch
Joseph G. Gavin, Jr.
Florence P. Haseltine
Jean'ne M. Shreeve
Warren M. Washington

William T. Golden
Treasurer

Richard S. Nicholson
Executive Officer

Editorial Board

Charles J. Arntzen
Elizabeth E. Bailey
David Baltimore
William F. Brinkman
E. Margaret Burbidge
Pierre-Gilles de Gennes
Joseph L. Goldstein
Mary L. Good
Harry B. Gray
John J. Hopfield
F. Clark Howell
Paul A. Marks
Yasutomi Nishizuka
Helen M. Ranney
Robert M. Solow
Edward C. Stone
James D. Watson

Board of Reviewing Editors

John Abelson
Frederick W. Alt
Don L. Anderson
Stephen J. Bankovic
David E. Bloom
Floyd E. Bloom
Henry R. Bourne
James J. Bull
Kathryn Calame
Charles R. Cantor
C. Thomas Caskey
Dennis W. Choi
John M. Coffin
Bruce F. Eldridge
Paul T. Englund
Fredric S. Fay
Douglas T. Fearon

Harry A. Fozzard
Victor R. Fuchs
Theodore H. Geballe
Margaret J. Geller
John C. Gerhart
Roger I. M. Glass
Stephen P. Goff
Corey S. Goodman
Stephen J. Gould
Ira Herskowitz
Eric F. Johnson
Stephen M. Kosslyn
Konrad B. Krauskopf
Michael LaBarbera
Charles S. Levings III
Harvey F. Lodish
Richard Losick
Anthony R. Means
Mortimer Mishkin
Roger A. Nicoll

William H. Orme-Johnson III
Stuart L. Pimm
Yeshayau Pocker
Dennis A. Powers
Ralph S. Quatranio
Erkki Ruoslahti
Ronald H. Schwartz
Terrence J. Sejnowski
Thomas A. Steitz
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 B. Wood
Keith Yamamoto

Science

255 (5042)

Science **255** (5042), 263-349.

ARTICLE TOOLS

<http://science.sciencemag.org/content/255/5042>

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.