NEWS & COMMENT
Can Meta-Analysis Make Policy?  960
Is the Vote Count Biased?  961
The Power of Positive Thinking  962
White House Ponders Increase for DOE Labs  963
Neutron Source Fights for Its Life  963
Plant Biotechnology: Lay U.K. Panel Savors Debate  964
Italian Universities: Corruption Scandal Reaches Academe  965
First Biotech Safety Rules Don't Deter Chinese Efforts  966
Peer Review in Cyberspace  967

RESEARCH NEWS
Glia: The Brain’s Other Cells  970
High-Energy Physics: Making the Stuff of the Early Universe  972
Possible New Test Found for Alzheimer's Disease  973
Finding the Most Distant Galaxies  974
Mapping Our Galactic Neighborhood  974
Second Thoughts About Shoemaker-Levy Impact  975

PERSPECTIVES
On the Path to Computation with DNA  993
D. K. Gifford

DEPARTMENTS
THIS WEEK IN SCIENCE  949
EDITORIAL
Multidisciplinary Research
LETTERS  953
Fostering Young Investigators: L. J. Fochtman; R. M. Caude; B. J. Hardy and S. Orack; J. S. Pratt; Steven Lehrer • Peer Review Study: K. S. Warren; J. Katz • NIH Research Collaboration: B. M. McGarey • Water Purification in Mexico: H. Brust-Carmona • Italy’s Environment: P. Vineis,

NEWS & COMMENT
Neuroscience on the Net  994
P. T. Fox and J. L. Lancaster

ARTICLES
Simulations of Gas-Phase Chemical Reactions: 998
Applications to S_n2 Nucleophilic Substitution  1003
W. L. Hase

REPORTS
Conducting Carbon Wires in Ordered, Nanometer-Sized Channels  1013
C.-G. Wu and T. Bein

RESEARCH ARTICLE
Precipitation Hardening in the First  1015
Aerospace Aluminum Alloy: The Wright Flyer Crankcase  F. W. Gayle and M. Goodway

PROFILES
Probing Individual Molecules with Confocal Fluorescence Microscopy  1018
S. Nie, D. T. Chiu, R. N. Zare

DEPARTMENTS
B. Terracini, E. Paci, C. Perucci, L. Tomatis

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A male long-tailed manakin. In this species alpha and beta males cooperate in dual-mate courtship displays, but only the alpha partner mates during the partnership, which may last for several years. Long-term field data and genetic analysis of relatedness were used to exclude the two leading explanations for such cooperation—kin selection and reciprocity. Instead, the cooperation is a form of mutualism, with direct but long-delayed benefits to the nonmating beta males. See page 1030. [Photo: Richard LaVal]

Molecular Computation of Solutions to Combinatorial Problems
L. M. Adleman

Efficient Neutralization of Primary Isolates of HIV-1 by a Recombinant Human Monoclonal Antibody

Crystal Structure of b-2-Cellobextrase Hemihydrate with Implications for the Structure of Cellulose II

Cooperative Display and Relatedness Among Males in a Lek-Mating Bird
D. B. McDonald and W. K. Potts

Molecular Maps of Red Cell Deformation: Functional Identification of Proteins in the Chloroplast Protein Import Machinery
F. Kessler, G. Blobel, H. A. Patel, D. J. Schnell

Prevention of T Cell Anergy by Signal Designing
Through the γ, Chain of the IL-2 Receptor

Interaction of IL-2β and γ, Chains with Jak1 and Jak3: Implications for XSCID and XCID


Role of TCR γ Chain in T Cell Development and Selection
E. W. Shores, K. Huang, T. Tran, E. Lee, A. Grinberg, P. E. Love

A Potential Noninvasive Neurobiological Test for Alzheimer’s Disease
L. F. M. Scinto, K. R. Daffner, D. Dressler, B. I. Ransil, D. Rentz, S. Weintraub, M. Mesulam, H. Potter

Coding of Visual Space by Premotor Neurons
M. S. A. Graziano, G. S. Yap, C. G. Gross

Horizontal Propagation of Excitatory Rat Visual Cortical Slices Revealed by Optical Imaging
M. Tanifuji, T. Sugiyama, K. Murase

A Molecular Determinant for Submillisecond Desensitization in Glutamate Receptors
J. Mosbacher, R. Schoepfer, H. Monyer, N. Burnashev, P. H. Seeburg, J. P. Ruppersberg

GDNF: A Potent Survival Factor for Motoneurons Present in Peripheral Nerve and Muscle

Functional Consequences of Posttranslational Isomerization of Ser46 in a Calcium Channel Toxin

Spermine and Spermidine as Gating Molecules for Inward Rectifier K+ Channels
E. Ficker, M. Taglialetela, B. A. Wible, C. M. Henley, A. M. Brown

TECHNICAL COMMENTS
Stellar Variability and Global Warming
R. R. Radick; P. Foukal

Toxic configurations

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