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SCIENCE

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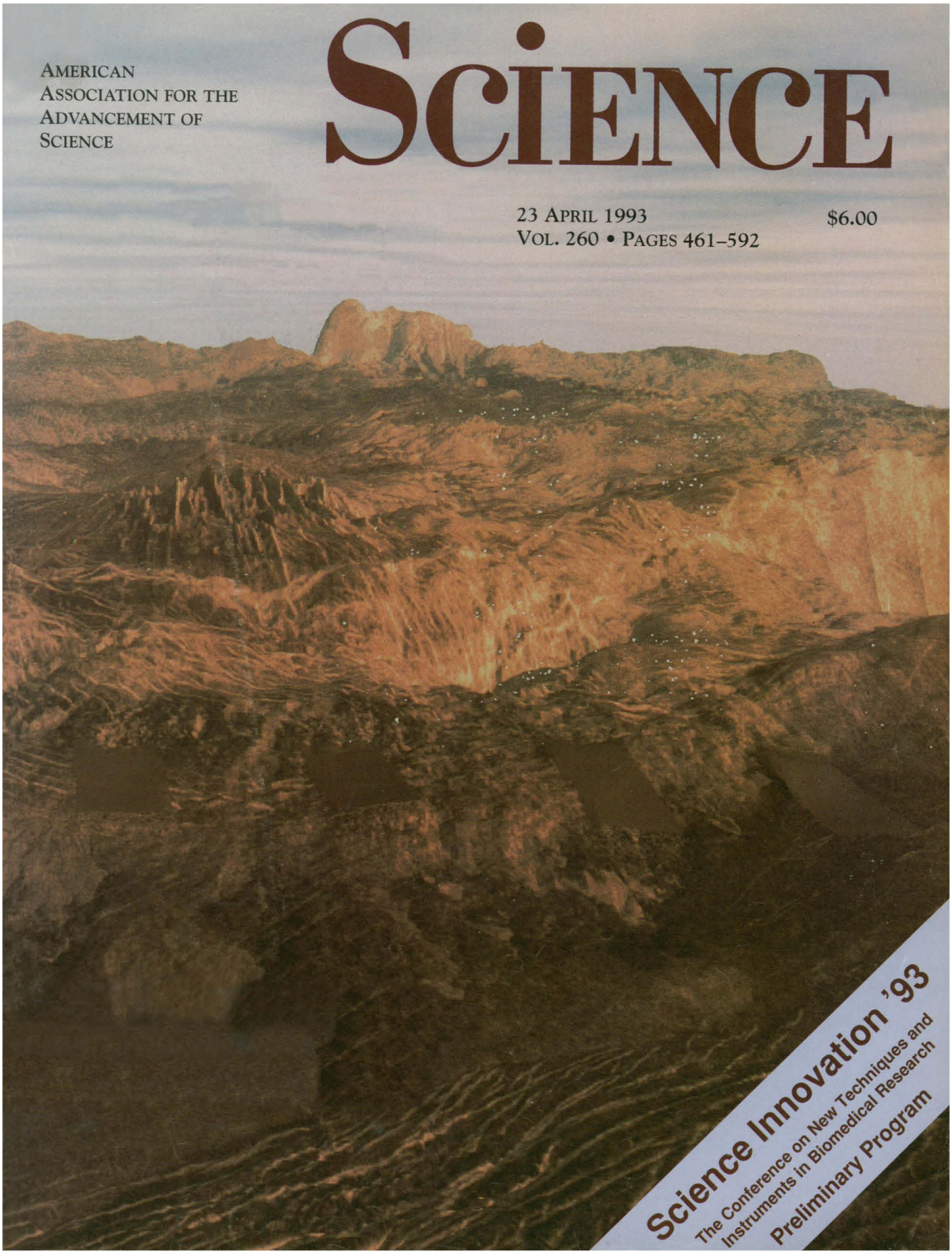

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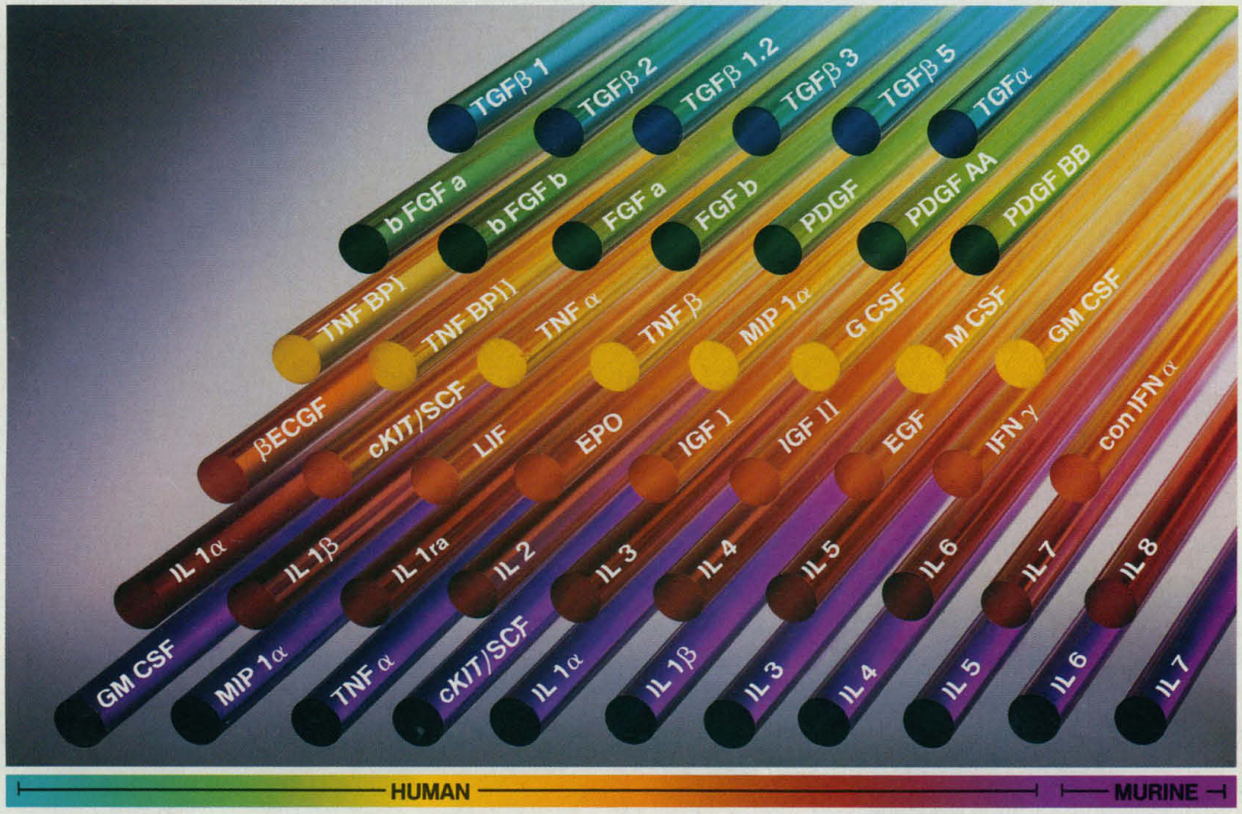

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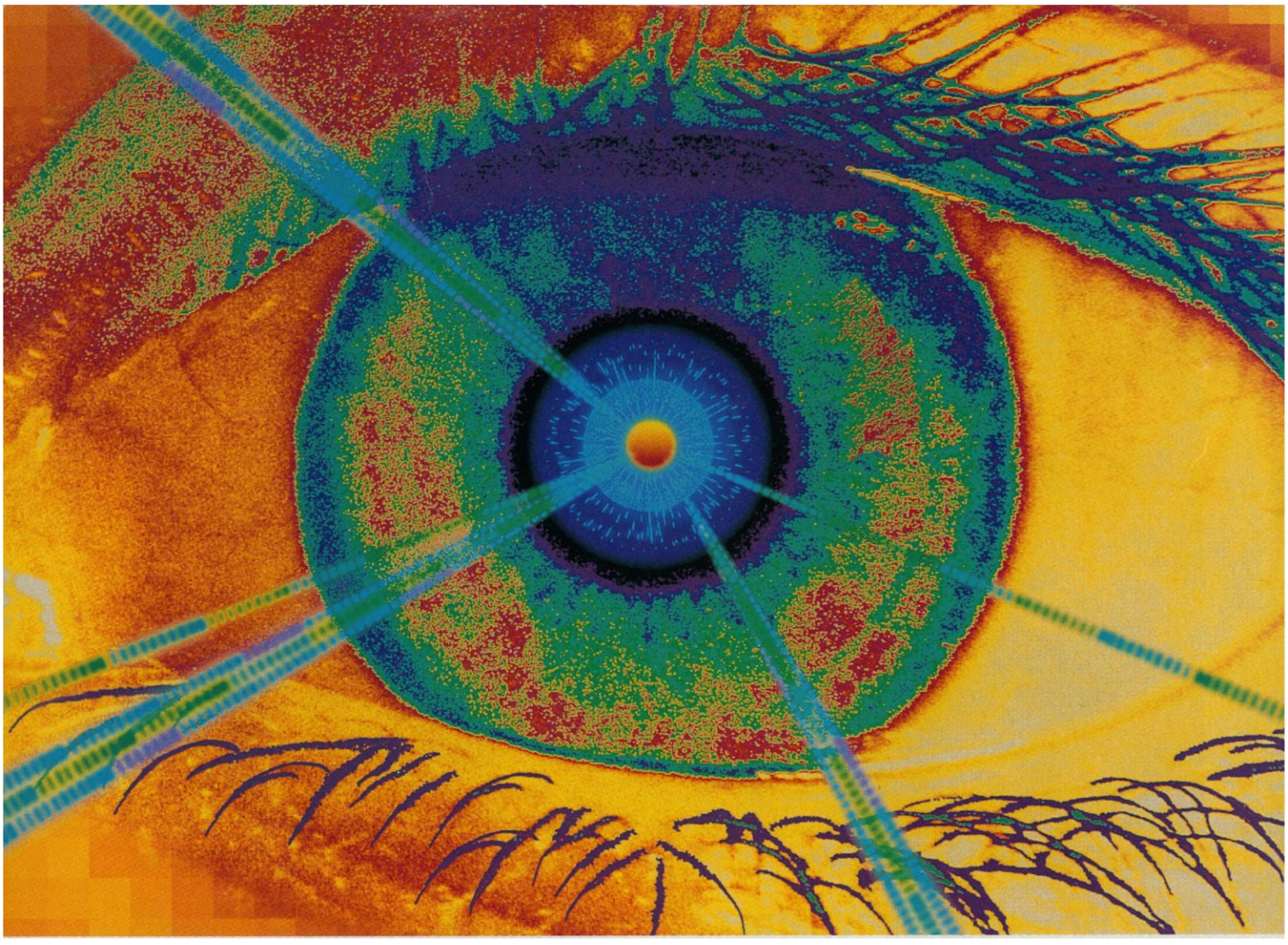

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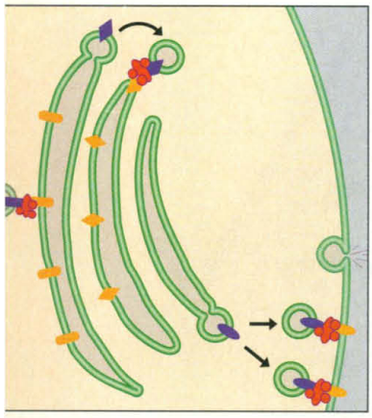

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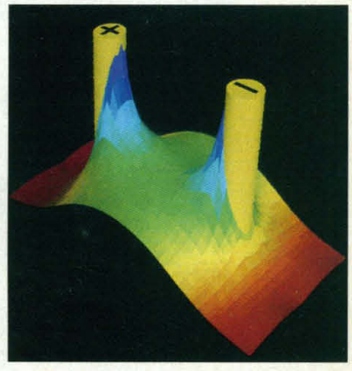
Eastern Aphrodite Terra, Venus, looking south across Miralaidji corona (image, ~300 kilometers across). Foreground lineaments represent crustal fractures; rectangles indicate missing data. The blistering of eastern Aphrodite Terra by magma diapirs indicates that it is neither a divergent nor a convergent plate boundary as previously interpreted. See page 526. [Image: David P. Anderson, Southern Methodist University, using NASA Magellan SAR and altimetry data; vertical exaggeration, 20 times]

TECHNICAL COMMENTS



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◩ Indicates accompanying feature

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Science is indexed in the *Reader's Guide to Periodical Literature* and in several specialized indexes.

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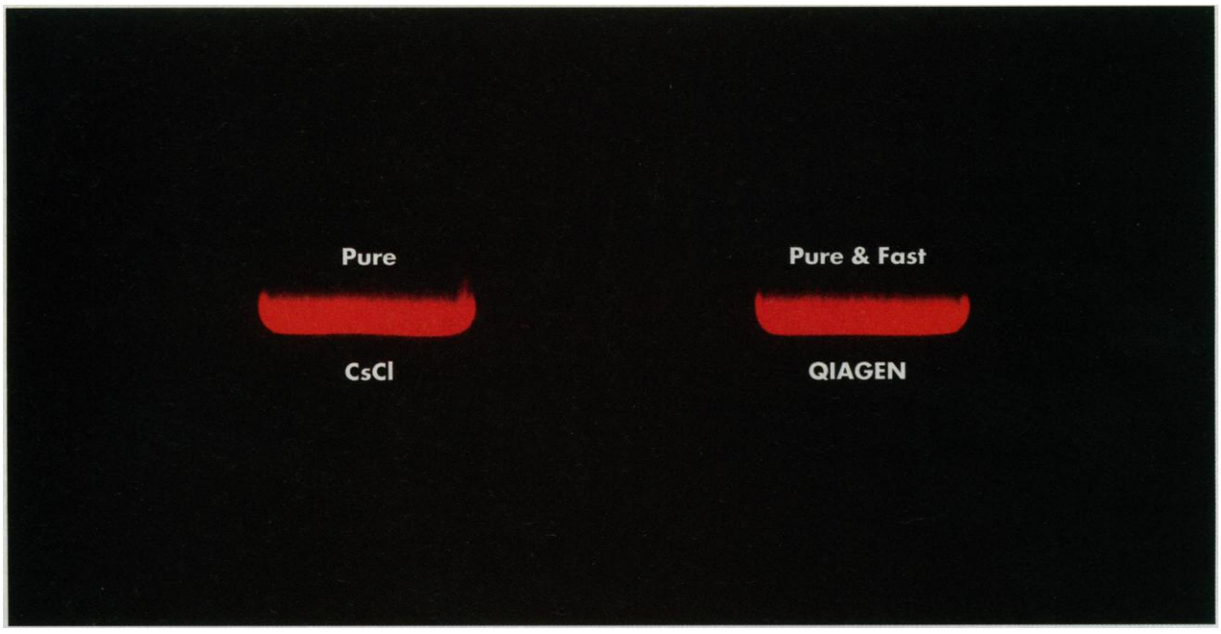

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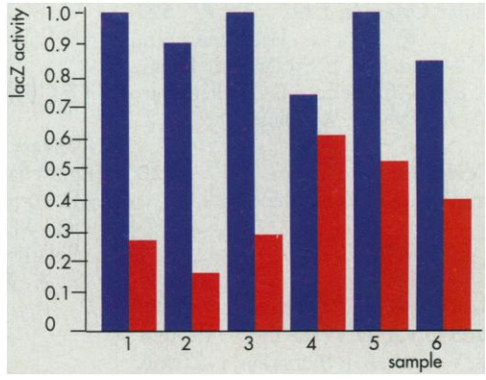

QIAGEN purified DNA for transfection: *NIH 3T3 cells were transfected with 1, 2 and 3 µg of the plasmid pRSVlacZ according to the standard calcium phosphate method. Plasmid DNAs used for transfection were prepared with QIAGEN Plasmid Mega Kit (blue bar) or by CsCl gradient centrifugation (red bar). The transfection efficiencies were determined by measurement of ß-galactosidase activity. Samples 1 and 2: 1 µg DNA: samples 3 and 4: 2 µg DNA; samples 5 and 6: 3 µg DNA. Data kindly provided by Frauke Ehlert, Institute for Molecular Biology and Tumor Research, Marburg, Germany.*

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edited by PHIL SZUROMI

Fields that clean

Removing chemical contaminants from soils can be a daunting task, especially in that toxic substances are often distributed over a wide area at low concentrations. Probstein and Hicks (p. 498) review the use of electric fields generated by buried electrodes to transport contaminants so that they can be removed more efficiently. Organic compounds respond to electroosmotic effects, whereas metal ions are transported by electromigration effects.

Following the guide

A ribozyme derived from the self-splicing group I intron of *Tetrahymena* makes use of an internal guide sequence (IGS) to direct its endonuclease activity. Cross-linking studies by Wang *et al.* (p. 504) show that base-pairing of the RNA or DNA substrate to the IGS to form the P1 helix is accompanied by a large-scale conformational rearrangement. These studies locate the P1 helix near helices P4 and P5, in agreement with the structural model of Michel and Westhof. The reorganization helps move the substrate from its solution-binding site into the catalytic core of the ribozyme.

Brighter than the average moon

When the moon becomes full (what astronomers call opposition), its brightness abruptly increases. The century-old explanation for this opposition effect, which is seen for other solar system bodies, has been that only when sunlight is reflected from a rough, particulate surface at 180° does the entire surface reflect; at other angles, some fraction is obscured by shadows cast by large particles. Hapke *et al.* (p. 509) propose that the opposition effect has a different origin—coherent backscattering. From a surface made of subwavelength-sized particles, light reflects by multiple scattering, and for 180° reflection, the tortuous path of a reflected photon adds coherently to that of a photon traveling in the opposite direction, leading to a peak in reflection efficiency. Measurements on Apollo lunar soil confirms that coherent backscatter occurs. This finding means that properties of the surfaces of solar system bodies deduced from reflection characteristics will have to be rethought.

Loss in the ozone

The Total Ozone Mapping Spectrometer on board the Nimbus-7 satellite has been measuring the global distribution of ozone, essentially stratospheric ozone, since 1979. Gleason *et al.* (p. 523; see news story by Kerr, p. 490) report that daily global average ozone amounts for 1992 and into early 1993 were continuously lower than for any of the earlier 13 years of observations and 1.5 percent lower than expected based on the inferred linear decrease in the last several years. The long-term effects from the eruption of Mount Pinatubo may be the culprit.

Manganese oxide molecular sieves

Todorokite, a naturally occurring manganese oxide that has an open, molecular sieve structure, is usually found in a poorly crystalline form that is contaminated with other minerals. Shen *et al.* (p. 511) report the synthesis of stable todorokite by reacting $Mg(MnO_4)_2$ with $MnCl_2$ under strongly alkaline conditions. The tunnels in this material are formed by three MnO_6 octahedral units in each direction to produce a 6.9 angstrom cavity. Acidic sites within the tunnels may be useful for catalyzing reactions such as isomerizations, and the mixed valency and temperature-dependent conductivity of this material may find application in electrochemical devices.

Quasi-free growth of buckytubes

Carbon nanotubes that exhibit extremely small diameters can be grown from carbon vapor under ultrahigh vacuum conditions. Ge and Sattler (p. 515) generated vapor-phase carbon by resistively heating a carbon foil in vacuum and condensed it on a cold graphite substrate. Scanning tunneling microscope images revealed the presence of buckytubes in a variety of orientations that ranged in diameter from 10 to 70 angstroms.

Mantle conductivity

The conductivity of the mantle, particularly near the core-mantle boundary, affects the nature of the geomagnetic field seen at the Earth's surface. Gautason and Muehlenbachs (p. 518) suggest that conductivity in the lower mantle might be dominated by the diffusion of oxygen. They studied oxygen self-diffusion in $CaTiO_3$ perovskite, an analog of $MgSiO_3$ perovskite, which is thought to be the dominant mineral in the lower mantle. The data imply that oxygen diffusion in perovskites is related to anion porosity; for the mantle, anion porosity and oxygen diffusion are predicted to increase markedly and be sufficient to account for inferred values of conductivity near the core-mantle boundary.

Uncomplexed kinase

Normal progression of a cell through the cell cycle requires the activation of cyclin-dependent protein kinases (CDKs). Cdk2 is activated by association with cyclin E and appears to participate in controlling the progression through the G1 phase of the cell cycle. Koff *et al.* (p. 536) report that transforming growth factor-β, which caused cells to arrest in G1, inhibited the formation of active complexes of cyclin E and Cdk2 even though normal amounts of both proteins were present. Their results suggest that, like mating pheromones in yeast, agents that inhibit proliferation of mammalian cells may do so by inhibiting activation of CDKs during G1.

CD45, inside and out

A transmembrane tyrosine phosphatase, CD45, is necessary for efficient signaling by the T cell receptor (TCR) in normal T cells. Two reports, by Volarević *et al.* (p. 541) and by Hovis *et al.* (p. 544), show that functional TCR signaling can be restored in CD45-deficient T cells by the expression of chimeric molecules that contained only the cytoplasmic domain of the CD45 protein and that were localized to the cell membrane. The extracellular domain may act as a receptor protein that helps regulate phosphatase activity through ligand binding.

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For Research Grants and Long-Term Fellowships, the awards will be announced in April 1994. Applications for Short-Term Fellowships and Workshops can be submitted throughout the year. Guidebooks and Application forms may be obtained upon written request by using the address form below. Previous years' forms are not accepted.

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KUWAIT FOUNDATION FOR THE ADVANCEMENT OF SCIENCES (KFAS) INVITATION OF NOMINATIONS FOR THE KUWAIT PRIZE 1993

The Kuwait Prize was institutionalized to recognize distinguished accomplishments in the arts, humanities and sciences.

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C. Population Policies and Human Resources in the Arab World
D. Arabic Grammar
E. Book Production

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1. Two prizes are awarded in each field: A prize to recognize the scientific research of a distinguished Kuwaiti and a prize to recognize the scientific research of a distinguished citizen of an Arab country.
2. The candidate should not have been awarded a prize for the submitted work by any other institution.
3. Nominations for these prizes are accepted from academic and scientific centres, learned societies, past recipients of the prizes, and peers of the nominees. No nominations are accepted from political entities.
4. The scientific research submitted must have been published during the last ten years.
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6. Nominators must clearly state the distinguished work that qualifies their candidate for consideration.
7. The results of KFAS findings regarding the selection of the winners are final.
8. The papers submitted for nominations will not be returned regardless of the outcome of the selection.
9. Each winner is expected to deliver a lecture concerning the contribution for which he was awarded the prize.

Inquiries concerning the Kuwait prize and nominations, including complete curriculum vitae and updated lists of publications by the candidates and four copies of each of their published papers, should be addressed before October 31, 1993 to:

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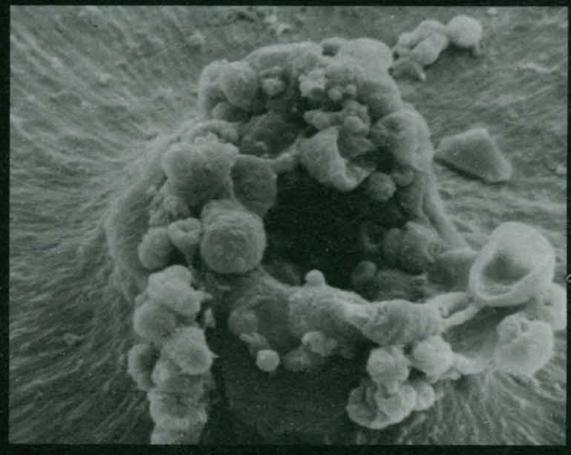

Scanning electron micrographs of primary rat mammary epithelial cells at 24 hours (inset) and 36 hours (background) on MATRIGEL® Basement Membrane Matrix. Photo courtesy of Dr. Margaret Neville.

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Here is the preliminary program for SCIENCE INNOVATION '93, a refreshingly different presentation of new technologies and instruments in biomedical research and developments.

As we all know, novel technology developments have played a pivotal role to propel research and generate new knowledge. A most vivid example is the recent discovery of PCR, which has revolutionized the concept and practice of molecular biology and genetics.

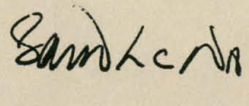
Thus, this meeting uniquely focuses on the process of research rather than on its findings. It showcases new technologies and instruments that scientists can use to conduct their own research more effectively. It also enables investigators to learn not only about new technologies but also about new applications of existing technologies.

The meeting program is constantly being expanded and refined to ensure that the presentation will represent the very cutting edge of biotechnology. It has been carefully structured to provide both a broad understanding of available new technologies and the detailed information you need to adapt specific techniques and applications to solve problems in your own area of research.

The organization of the conference is such that overviews of new technologies will be presented as plenary lectures in the mornings and evenings. In the afternoons, there will be multiple workshops running concurrently and you can participate in specific ones of your choice. Furthermore, you can exchange ideas with your colleagues at the poster sessions and experience the new technologies up close in daily exhibits, as well as in the industry workshops.

Finally, you will also have the opportunity to preview the emerging technologies at a unique, last-day session highlighting the next frontiers of science.

Register now by completing and returning the registration form on the inside back cover. I look forward to seeing you in Boston.



Savio L.C. Woo, Ph.D.
Science Innovation '93 Program Chair

Science Innovation '93 Preliminary Program

Boston
6-10 August 1993

Assignment of plenary speakers and concurrent sessions to specific days will be based on the availability of the speakers.

** Confirmed speaker*

Friday, 8/6

12:00–7:00pm
Registration

12:00pm–6:00pm
Employment Exchange

5:00–7:00pm
Exhibition Opening and Reception

7:00pm

INTRODUCTION
Savio L.C. Woo*
Baylor Coll of Med

7:15pm

THOMAS ALVA EDISON LECTURE
DNA AMPLIFICATION
Kary Mullis*
Atomic Tags

8:15pm

KEYNOTE ADDRESS—SCIENCE AND TECHNOLOGY IN AMERICA
A View from the New Administration
Speaker TBA

Saturday-Monday, 8/7-9

7:30am–6:00pm
Employment Exchange

8:00am–12:30pm
Plenary

8:30am–12:45pm/5:00pm–6:00pm
Career Development Seminars

10:00–10:30am
Coffee Break

10:00am–3:00pm
Exhibits

12:30–2:30pm
Lunch

1:00–2:15pm
Exhibitor Workshops

2:30–5:00pm
Concurrent Discussions

5:00–7:00pm
Poster Session/Exhibits

8:00–10:30pm
Evening Concurrent Plenaries

Tuesday, 8/10

8:00am–12:30pm
Plenary

9:00am–1:00pm
Employment Exchange

10:00–10:30am
Coffee Break

12:30–2:00pm
Lunch

12:30–2:00pm
Program Committee Meeting

2:00–5:00pm
Emerging Technologies

Plenary Lectures
(Saturday-Tuesday)

RNA CATALYSIS
Sidney Altman
Yale Univ

HUMAN GENOME
Francis Collins*
National Ctr for Human Genome Rsch

GENE MAPPING
Eric Lander*
Whitehead Inst

GENE THERAPY AND TRANSFER
Kenneth Culver*
NIH

ONCOGENES AND CANCER
David Housman*
MIT

PLANT MOLECULAR BIOLOGY
Robert Goldberg*
Univ of California-Los Angeles

PROTEIN CRYSTALLOGRAPHIC STRUCTURE
Doug Rees
California Inst of Technology

PROTEIN-DNA INTERACTIONS
Tom Steitz
Yale Univ

PREDICTING FUNCTION BASED ON SEQUENCE
Russell F. Doolittle*
Univ of California-San Diego

CATALYTIC ANTIBODIES
Peter Schultz
Univ of California-Berkeley

ANTIBIOTIC RESISTANCE
Barry Bloom
Albert Einstein Coll of Med

DRUG DELIVERY AND TISSUE ENGINEERING
Robert Langer*
MIT

NEUROIMAGING
Jack Belliveau*
Harvard Univ

NANOTECHNOLOGY
Stephen Fodor
Affymax

NOVEL CHEMISTRY
George Whitesides
Harvard Univ

Exhibitor Workshops
(Saturday-Monday)

AMERSHAM CORP

AMICON, INC

IMMUNOCHEMICAL STAINING TECHNIQUES
Dako Corp

RAPID DNA SEQUENCING WITH THE GENESPRINTER SYSTEM
Fotodyne

PREPARATIVE ELECTROPHORESIS TECHNIQUES
Hoefer Scientific Instruments

PRINCIPLES OF FLUORESCENCE POLARIZATION AND THE FPM-1 SYSTEM
Jolley Consulting & Research, Inc

AUTOMATED INFRARED DNA SEQUENCING
Li-Cor

NASA ACCESS MECHANISM-GRAPHICAL INTERFACE INFO RETRIEVAL SYSTEM
NASA Scientific and Technical Information Program

CENTRIFUGAL PROTEIN CONCENTRATION WITH CENTRICELL
Polysciences, Inc

INTRODUCTION TO *MATHEMATICA*
Wolfram Research, Inc

Concurrent Discussions
(Saturday-Monday)

DNA AMPLIFICATION
Julian Gordon*, *Abbott Labs*
Francois Ferre, *Immune Response*

GENE SEQUENCING TOOLS
Lloyd Smith, *Univ of Wisconsin*
R. Graham Cooks*, *Purdue Univ*

FLUORESCENT IN SITU HYBRIDIZATION AND NONISOTOPIC DETECTION
Irena Bronstein, *Tropix*
Barbara Trask, *Lawrence Livermore Natl Lab*

SCREENING
Michael Wigler, *Cold Spring Harbor Lab*
Joseph Gray*, *Univ of California-San Francisco*

PEPTIDES AND COMBINATORIAL LIBRARIES
William DeGrado*, *Du Pont Merck Pharmaceutical*
George Smith, *Univ of Missouri*

NMR DETERMINATION OF PROTEIN STRUCTURE
Ad Bax, *NIH*

ANTIBODY CATALYSIS
Steve Benkovic, *Pennsylvania State Univ*
Donald Landry, *Columbia Univ*

NON-INVASIVE DIAGNOSTICS
Christopher Green*, *General Motors*

IMAGING
Paul Bottomley*, *General Electric*
Thomas Brady, *Massachusetts Genl Hosp*

DNA DIAGNOSTICS
Thomas Caskey*, *Baylor Coll of Med*
Janet Rowley*, *Univ of Chicago*

OLIGONUCLEOTIDE SYNTHESIS AND ANTISENSE PHARMACEUTICALS
Paul Zamecnik*, *Worcester Fndn Exptl Biology*

DRUG DESIGN
Ray Salemme*, *3-D Pharmaceuticals*
Joan Brugge*, *Ariad Pharmaceuticals*

DRUG TARGETING AND LIPOSOMES
Phillip L. Felgner*, *Vical Inc*
W. Mark Saltzman*, *Johns Hopkins Univ*

CLINICAL IMMUNOLOGY/ IMMUNOSUPPRESSION/VACCINES
Gene Shearer, *NIH*
Margaret A. Liu*, *Merck Rsch Labs*

GROWTH FACTORS, CYTOKINES AND THEIR RECEPTORS: STRUCTURE AND FUNCTION
Joost J. Oppenheim*, *NCI/Frederick Cancer Rsch Facility*
Michael Klagsbrun*, *Children's Hosp-Boston*

TUMOR IMMUNOGENICITY AND MARKERS
Bert Vogelstein, *Johns Hopkins Univ*
Jim Allison, *Univ of California-Berkeley*

BLOOD SUBSTITUTES
David Anderson, *Somatogen*
Thomas H. Schmitz*, *Baxter Healthcare Corp*

AIDS RESEARCH AND ANIMAL MODELS
Ronald C. Desrosiers*, *Harvard Med Sch*
Flossie Wong-Staal, *Univ of California-San Diego*

CHEMICAL COMMUNICATION
Ian Baldwin, *SUNY Buffalo*
May Berenbaum, *Univ of Illinois-Urbana*

PLANT DEVELOPMENT
Robert Fraley
Monsanto

NEW MICROSCOPY
Paul Hansma, *Univ of California-Santa Barbara*
Watt Webb, *Cornell Univ*

SENSORS
Raoul Kopelman*, *Univ of Michigan*
David Walt*, *Tufts Univ*

THINKING MACHINES AND NEURAL NETWORKS
W. Daniel Hillis, *Thinking Machines Inc*
Dan Levine*, *Univ of Texas-Arlington*

Evening Concurrent Plenaries

GENOMIC LIBRARIES
David Page, *Whitehead Inst*
YAC
Nat Sternberg, *Du Pont Merck Pharmaceutical*
P1
Jean-Michel H. Vos*, *Univ of North Carolina-Chapel Hill*
EBV
Melvin Simon and Hiroaki Shizuya*, *California Inst of Technology*
Mapping Chromosomes with BACs and Fosmids

F. William Studier, *Brookhaven Natl Lab*
Primer Walking

RNA AND IN VITRO GENETIC SELECTION
Harry Noller, *Univ of California-Santa Cruz*
Jack Szostak, *Massachusetts General Hosp*
Julius Rebek, *MIT*

ENGINEERING PROTEINS
David Tirrell, *Univ of Massachusetts*
Self-assembly
Charles Craik*, *UC San Francisco*
Redesigning Proteases
Cori Gorman, *Genentech*
Dibasic Site Cleavage
Jim Wells, *Genentech*
Improving Protein Function

SOLID PHASE SYNTHESIS
Marvin Caruthers, *Univ of Colorado*
RNA and DNA
Stephen Kent*, *Scripps Clinic & Rsch Inst*
Total Chemical Synthesis of Enzymes
Samuel Danishefsky, *Yale Univ*
Polysaccharides

VECTOR DEVELOPMENT FOR GENE THERAPY
Richard Samulski, *Univ of Pittsburgh*
Adenovirus
Joseph Glorioso, *Univ of Pittsburgh*
HSV
Ron Crystal, *NIH*
John Mekalanos, *Harvard Univ Med Sch*
In Vivo Induction

GENE TRANSFER
Oliver Smithies, *Univ of North Carolina*
Knockout Mice
Alan Colman, *Pharmaceutical Proteins, Ltd*
Transgenic Animals

PATENT LAW
Lynn Pasahow*
McCutchen, Doyle, Brown and Enersen
Kevin Kaster
Affymax

Emerging Technologies

THE FUTURE OF BIOREMEDIATION: BIODEGRATION OF CHLORINATED ORGANICS
Daniel Abramowicz*
General Electric

PREIMPLANTATION GENETIC DIAGNOSIS: MOLECULAR ANALYSIS OF SINGLE HUMAN BLASTOMERES
Mark R. Hughes*
Baylor Coll of Med

CHAOS AND CARDIAC ARRHYTHMIA
Alan Garfinkel*
Univ of California-Los Angeles

3-D AND VIRTUAL REALITY IN MEDICINE
Julian Rosenman, *Univ of North Carolina Med Sch*

NO AND BRAIN MESSENGERS
David Bredt*
Johns Hopkins Univ

COMPUTATIONAL ANALYSIS OF GENOME DATABASES
David States
Washington Univ

Call for Papers

See inside back cover or call 202-326-6450 or fax 202-289-4021 for more information.

Boston Area Tours

AAAS is exploring the possibility of conducting field trips to areas of scientific interest (Woods Hole institutions, MIT robot labs, among others) as well as guest tours (Boston, Salem, art tours are possibilities). Most trips would range from $20-30.

Fax your interests to Jackie Wester by 1 June 1993. Fax: 202-289-4021.

SCIENCE INNOVATION '93 EXHIBITORS *(at press time)*

- ACADEMIC PRESS, INC.
- ADVANCED MAGNETICS, INC.
- ALZA
- AMERSHAM CORP
- AMICON, INC
- BBN
- AUTODESK
- BECKMAN INSTRUMENTS
- BRINKMANN INSTRUMENTS
- CELL PRESS
- COHERENT
- CPG
- CRUACHEM
- DAKO CORP.
- DAVID KOPF INSTRUMENTS
- DIGENE DIAGNOSTICS, INC.
- DYNATECH LABORATORIES
- EATON PUBLISHING
- FINNIGAN MAT
- FMC BIOPRODUCTS
- FORMA SCIENTIFIC, INC.
- FOTODYNE
- GENERAL VALVE
- HAMAMATSU
- HAMILTON
- HITACHI SOFTWARE ENGINEERING AMERICA
- HOEFER SCIENTIFIC INSTRUMENTS
- INTELLIGENETICS/BETAGEN
- INTERNATIONAL BIOTECHNOLOGY SUPPLIERS ASSOCIATION
- J.T. BAKER, INC.
- JOLLEY CONSULTING & RESEARCH, INC.
- LI-COR
- MICROCAL SOFTWARE, INC.
- MICROPATENT
- MILLIPORE
- MJ RESEARCH
- MOLECULAR DYNAMICS
- NASA STI PROGRAM
- NATIONAL BIOSCIENCES
- NATIONAL INSTRUMENTS
- NEW ENGLAND BIOLABS
- OLYMPUS
- OWL SCIENTIFIC, INC.
- PACKARD INSTRUMENTS
- PERKIN ELMER
- PERSEPTIVE BIOSYSTEMS
- PHARMACIA BIOTECH, INC.
- PROTEIN & DNA IMAGEWARE SYSTEMS
- RESEARCH INFORMATION SYSTEMS
- SCIENCE MAGAZINE
- SEIKAGAKU AMERICA
- STOVALL LIFE SCIENCE
- TECAN/SLT LAB INSTRUMENTS
- TROPIX
- WOLFRAM RESEARCH
- WALLAC
- YAMATO SCIENTIFIC AMERICA

General Meeting Information

LOCATION

Sessions and exhibits will be in the Hynes Convention Center, 900 Boylston Street, Boston, MA.

HOUSING

Reduced rate guest rooms are available at a number of Boston hotels if you make your reservations using the AAAS housing form on the following page. Reservations must be made through the housing bureau and must be postmarked by 9 July 1993.

ON-SITE REGISTRATION HOURS

Friday 6 August, noon-8:00pm
Saturday-Monday 7-9 August, 7:00am-9:00pm
Tuesday 10 August, 7:00am-3:00pm

FOR MORE INFORMATION CONTACT

AAAS Meetings
1333 H Street, NW
Washington, DC 20005
Tel: 202-326-6450
Fax: 202-289-4021

Airline Ticket

Get discounted airfare to Science Innovation '93 and your next flight may be free!

Make your reservations through Gil Travel to save money on discounted air fares for travel to and from Boston on selected major airlines from 30 July– 13 August 1993.

- Save 10% on most unrestricted coach fares. No minimum stay required. 7-day advance reservation and ticketing required. No one-way discounts.
- Save 5% off the lowest applicable roundtrip fare, subject to availability.

Plus, you may win a free ticket: All Science Innovation '93 registrants who make their reservations through Gil Travel will be entered into a drawing for a round trip ticket to and from any location in the continental United States.

This promotional offer is available only through the Gil Travel convention reservation desk. Certain standard restrictions apply.

For details and reservations, call or fax Gil Travel at the number below. Be sure to tell them that you are attending Science Innovation '93.

Toll-free number: 1-800-223-3855
Outside the U.S.: 1-215-568-6655
Fax number: 1-215-568-0696

Advance Registration Form

Science Innovation '93
Boston
6-10 August 1993

REGISTRANT INFORMATION (Please type or print, or peel off label from cover and place here)

First Name (as you would like it to appear on your badge)

Family Name (as you would like it to appear on your badge)

Institution/Company (will appear on badge, subject to abbreviation)

Mailing Address

City

State

Zip Code

Country

Daytime Phone Number

AAAS membership number (if member) _____ **(appears on AAAS membership card and above your name on *Science* subscription label)**

☐ If registering at the student rate, check here and attach a copy of your student ID card.

Concurrent session preferences (check three): Indicate the three sessions you're most interested in attending:

- ☐ DNA Amplification
- ☐ Gene Sequencing Tools
- ☐ Fluorescent In Situ Hybridization and Nonisotopic Detection
- ☐ Screening
- ☐ Peptides and Combinatorial Libraries
- ☐ NMR Determination of Protein Structure
- ☐ Antibody Catalysis
- ☐ Non-invasive Diagnostics
- ☐ Imaging
- ☐ DNA Diagnostics
- ☐ Oligonucleotide Synthesis and Antisense Pharmaceuticals
- ☐ Drug Design
- ☐ Drug Targeting and Liposomes
- ☐ Clinical Immunology, Immunosuppression and Vaccines
- ☐ Cytokines Growth Factors and their Receptors
- ☐ Tumor Immunogenicity and Markers
- ☐ Blood Substitutes
- ☐ AIDS Research and Animal Models
- ☐ Chemical Communication
- ☐ Plant Development
- ☐ New Microscopy
- ☐ Sensors
- ☐ Thinking Machines and Neural Networks

MEETING REGISTRATION FEES[1]

(Check one box only) Category	*Advance by 16 July '93*	*On Site*
☐ Regular AAAS member	$295	$395
☐ Regular nonmember	$395	$495
☐ Student[2] AAAS member	$125	$200
☐ Student[2] nonmember	$175	$250

Luncheon Fees (Check all that apply)

☐ Lunch, Saturday 7 August	$21
☐ Lunch, Sunday 8 August	$21
☐ Lunch, Monday 9 August	$21
☐ Lunch, Tuesday 10 August	$21

Membership Dues[3] (Optional)

If you're not a AAAS member, you can join now by checking the appropriate box below—and take advantage of the discounted *member* registration fees above. You'll also get a year's subscription (51 weekly issues) to the journal SCIENCE[3].

	USA	Canada	International
Regular	$87	$146.59	$182
Student	$47	$103.79	$142
Postdoctoral	$62	$119.84	$157
Retired	$47	$103.79	$142

PAYMENT

Meeting registration fee[5] ..... $ _____

Luncheon fee total ..... $ _____

Membership dues (if joining now) ..... $ _____

Total amount ..... $ _____

☐ Check enclosed[5] ☐ VISA ☐ MasterCard
(no other cards accepted)

☐ Original institutional purchase order attached

Credit card number

Expiration date Signature

MAILING INSTRUCTIONS (16 JULY DEADLINE[1])

Mail to: Science Innovation '93, P.O. Box 630285, Baltimore, MD 21263. Or fax (credit card payments only) to 202-289-4021.

IMPORTANT FOOTNOTES

[1] Deadline for advance registration is 16 July! Registrations received after this date will not be processed, however, you may register on site at the Hynes Convention Center beginning at noon on 6 August. One-day registration is available on site only at the following rates: Regular member-$195, regular nonmember-$245, student member-$95, student nonmember-$125.

[2] To qualify for student rate, you must be a graduate or undergraduate student and must attach a copy of your student ID card. Registrations received without appropriate verification will be charged at the Regular rates.

[3] Membership: $47 of dues plus international postage fees are allocated to Science. Canadian dues include GST. Please allow 6-8 weeks for receipt of first issue of Science.

[4] Cancellations must be received in writing by 23 July 1993. No refunds will be made for cancellations received after this date. Refunds are subject to a $50 cancellation charge and will be processed after the meeting.

[5] Checks must be in United States currency and must be payable on a U.S. bank. Please make checks payable to Science Innovation '93.

Hotel Reservation Form

Science Innovation '93
Boston
6-10 August 1993

SEND CONFIRMATION TO (please type or print legibly)

First/Given Name _____ Last/Family Name _____

Institution/Company (if part of address) _____

Address _____

City _____ State _____ Zip _____ Country _____

Phone _____ FAX _____

Names of All Room Occupant(s) (name) _____ (name) _____

(name) _____ (name) _____

Hotel Choice **Hotel Name**

1st _____

2nd _____

3rd _____

4th _____

Most important (check one):

☐ *proximity to the meeting site* ☐ *comparable room rate*

Type of room desired (check one):

☐ *Single (1 person, 1 bed)* ☐ *Double (2 people, 1 bed)* ☐ *Double/Double (2 people, 2 beds)*

☐ *Triple (3 people, 2 beds)* ☐ *Quadruple (4 people, 2 beds)* ☐ *1-bedroom suite* ☐ *2-bedroom suite*

ARRIVAL DATE _____ TIME _____ DEPARTURE DATE _____ TIME _____

Special housing needs:

☐ *Wheelchair-accessible room* ☐ *Nonsmoking room*

☐ *Other* _____

All reservations must be guaranteed with a deposit or credit card guarantee 14 days prior to arrival.

☐ *VISA* ☐ *MasterCard*

Credit Card # _____

Exp. Date _____ Card User Name (please print) _____

Signature _____

If you do not wish to use a credit card guarantee, a deposit check for the first and last night's stay will be required by the assigned hotel at least 14 days prior to arrival. **Deposit checks should not be sent to the housing bureau; if received they will be returned.** The check should be sent directly to the hotel where you have been assigned after you receive the hotel confirmation. If credit card information is not provided or if a deposit check is not received 14 days prior to arrival, the hotels reserve the right to release your reservation. **AAAS has negotiated discounted room rates at the hotels listed. We strongly encourage you to stay at one of these official hotels.** You will get a chance to meet and network informally with fellow Science Innovation participants. In addition, for each participant's stay in one of these hotels, AAAS gets credit for our part in filling the hotel. This helps to defray speaker costs, which in turn helps to keep registration fees lower. **Thank you for your support.**

MAILING INSTRUCTIONS (9JULY DEADLINE)

Send your completed form via mail or fax (not both) to:

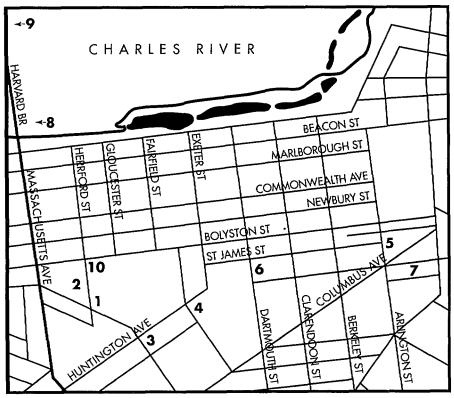
Science Innovation '93, AAAS Housing Bureau, Prudential Tower, Suite 400, P.O. Box 490, Boston, MA 02199
FAX 617-536-0813

Reservation forms must be received by 9 July 1993. Housing requests received after 9 July 1993 are conditional on room availability. Do not mail this form to AAAS; see the mailing address above. It is recommended that you keep a photocopy of this form for your records. The meeting will be located at the Hynes Convention Center #10 on map.

HOTEL ROOM RATES

	Hotel Name	*Single*	*Double*	*Extra Person*
1	Sheraton Boston*	$121	$133	$20
2	Back Bay Hilton	113	113	20
3	Colonnade Hotel	103	103	—
4	Marriott Copley Place	145	165	20
5	Boston Park Plaza	125	135	20
6	Copley Plaza	125	145	20
7	57 Park Plaza	100	110	15
8	Guest Quarters Suites	110	120	20
9	Hyatt Regency Cambridge	110	120	25

*Headquarters Hotel



RESERVATIONS

The AAAS Housing Bureau will make hotel reservations on a first-come, first served basis upon receipt of a properly completed Science Innovation '93 housing form. Reservations will be processed in order of receipt, based on choice and availability. Acknowledgments will be sent directly to the occupant by the Housing Bureau and will be followed by a confirmation from the assigned hotel. Telephone reservations cannot be accepted. To complete this form:

[1] Use a separate reservation form for each room requested, not for each individual. Send only one form if sharing with a colleague; duplicate forms cause delays in processing and may result in double charges.

[2] List at least four hotels, in order of preference, where you'd like to stay. Check whether rate or proximity is most important to you.

[3] Check the type of room you would like.

[4] Complete the remainder of the form, being sure to include your arrival and departure dates, credit card number and expiration date (if using credit card for your deposit), and any special requests you might have (nonsmoking room, wheelchair accessibility, etc.).

[5] Please be thorough; failure to include all pertinent information may delay processing of your reservation.

[6] Children: there is usually no charge for children under a particular age; check with the hotel to which you are assigned.

CANCELLATIONS/CHANGES

To cancel or make changes to reservations, contact the Housing Bureau at 617-536-9028 until 9 July. After that, please contact the hotel directly. No refunds will be given for cancellations made less than 72 hours prior to the opening of the conference.

SCIENCE
INNOVATION

What is Science Innovation?

Science Innovation is the annual conference on the latest techniques and instruments in biomedical research.

This is a conference by scientists for scientists that focuses on the process and methods for doing science rather than the findings.

The Innovation Meeting is sponsored by the American Association for the Advancement of Science and its renowned journal SCIENCE. Join us in Boston...don't miss Science Innovation '93.

Employment Exchange

The Employment Exchange is a career opportunities/career development service for job candidates and employers. Interview scheduling, position posting, a message center, job and resume referrals, career development seminars, and private interview booths are provided during the week of Science Innovation '93. If you have positions to be filled or are currently seeking employment, you should take advantage of this program.

EMPLOYER BENEFITS

An employer who enrolls with the Employment Exchange will receive several benefits including:

- Access to hundreds of top-notch candidate's resumes cross-referenced by discipline.
- On-site interview facilities and scheduling services at no extra charge.
- Unlimited position available postings.
- Copy of the "Pre-Meeting Bulletin", including a brief synopsis of each available candidate enrolled with the Exchange.
- Special rates for Science Innovation exhibitors, nonprofit organizations, and AAAS Corporate Members.

CANDIDATE BENEFITS

Candidates who enroll with the Employment Exchange receive the following benefits:

- FREE enrollment for AAAS member candidates. Nonmembers pay a modest $10 enrollment fee.
- Hundreds of current position openings in a variety of disciplines and experience levels.
- On-site interview facilities, including on-the-spot interviews.
- Access to full descriptions of all available positions.
- On-site career development seminars.
- Employment Exchange Only fee for non-conference attendees.

For more information and an enrollment form, contact: Jacquelyn Roberts, AAAS Employment Exchange, Suite 1163, 1333 H Street, NW, Washington, DC 20005 (Phone: 202-326-6737; FAX 202-842-1065)