American Association for the Advancement of Science

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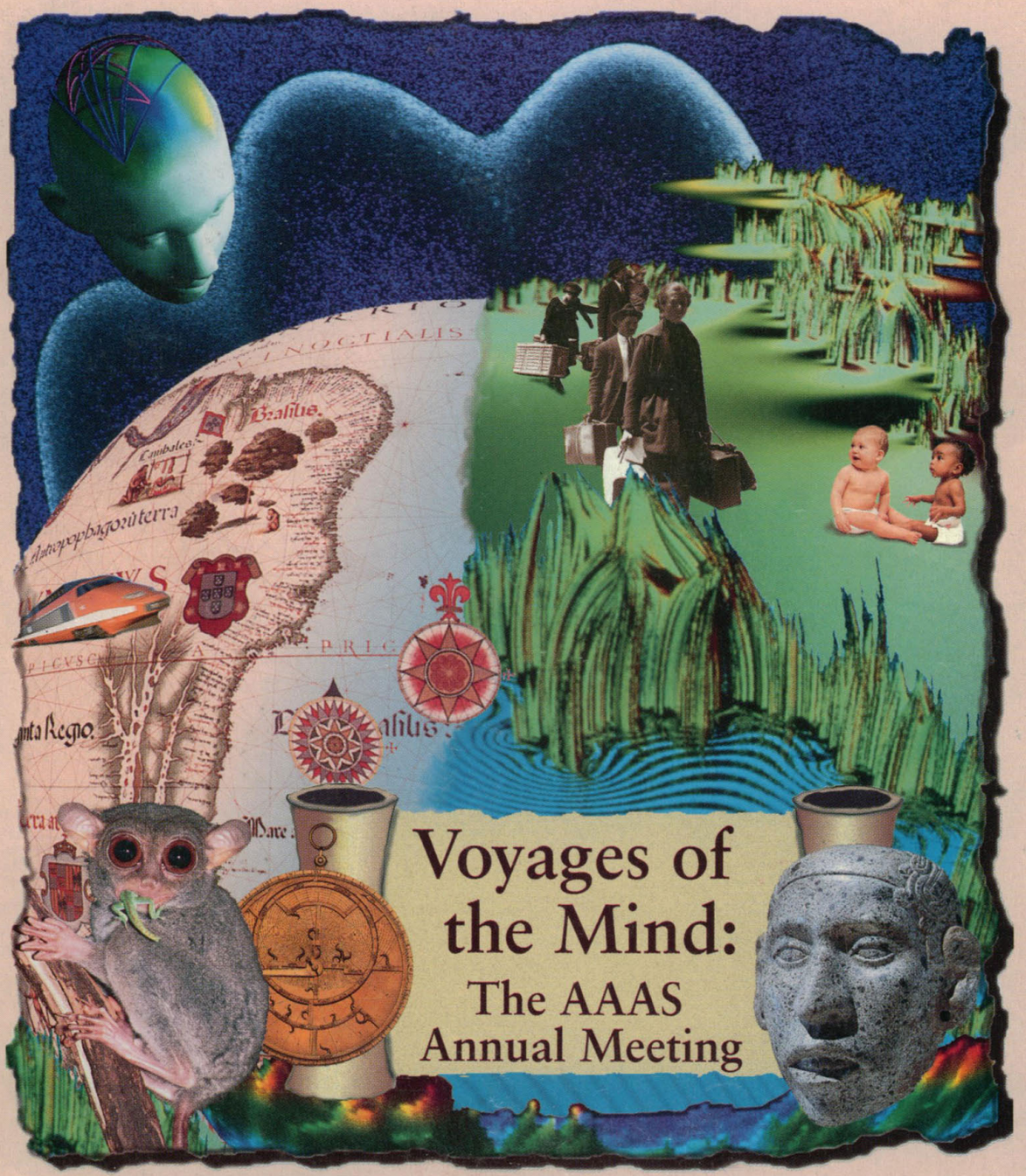
15 November 1991 $6.00
Vol. 254 ■ Pages 909–1080



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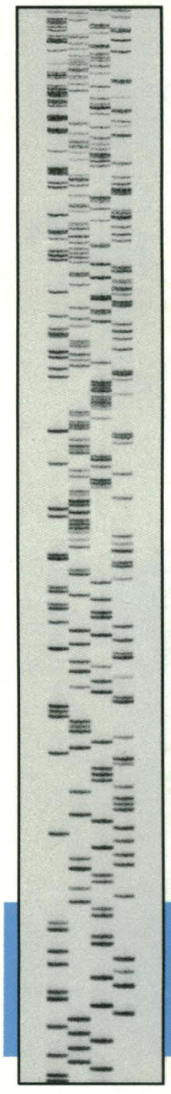

The Stratagene FeatherVolt™ 2000 power supply is a compact, lightweight power supply designed specifically for high voltage vertical electrophoresis of sequencing gels. The power supply may be operated in any of three modes: constant power, constant voltage, or constant current, with automatic crossover among all three.

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FeatherVolt™ 500 (220V)	# 400622
BaseAce™ Sequencer	# 400120

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Figure Legend : Autoradiograph of sequencing gel using the BaseAce Sequencer and the FeatherVolt 2000 power supply. 1.0 µg M13 ssDNA was labeled with S-35 ATP and run for 3 hrs at 65 watts on a 6% acrylamide (7M Urea, 1X TBE) gel.

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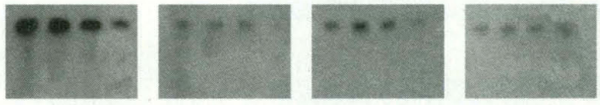
Stratagene's Prime-It random primer labeling kit and QuikHyb hybridization solution products are optimized for combined use, to maximize your efficiencies in the lab.

Figure 1: Comparability Study



Stratagene QuikHyb™ Hybridization Solution 1 Hour 68°C	Competition 2 Hours 65°C	Competition 12 hours 42°C	Maniatis, Molecular Cloning* 12 hours 42°C

Figure 1: met-H probe, which hybridizes to a single-copy sequence in human genomic DNA near the cystic fibrosis locus. Probe was 1 x 10^9 dpm/µg made with Prime-It random primer labeling kit. Lanes: 1) 10µg, 2) 5µg, 3) 2.5µg, 4) 1.25µg human genomic DNA digested with EcoR I.

* Maniatis, T., Fritsch, E.F., and Sambrook, J. (1982) *Molecular Cloning, A Laboratory Manual*, Cold Spring Harbor Laboratory, p.387

For improved signal strength and safety Stratagene also offers the Hybridizer™ 600 hybridization oven. The Hybridizer 600 hybridization oven has a temperature range of 30°C to 70°C and can hold up to 6 rotating hybridization chambers. Each chamber can hold up to five 20 x 20cm membranes and acts as a shield against radioactivity.

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Product	Catalog#
QuikHyb™ hybridization solution sold separately	201220
Prime-It™ random primer labeling kit sold separately	300387
Prime-It™ Gold Kit (201220 and 300387 combined)	300397
FLASH™ Prime-It™ Gold Kit	300398
Hybridizer™ 600 Oven	400520

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SCIENCE

ISSN 0036-8075
15 NOVEMBER 1991
VOLUME 254
NUMBER 5034

■ **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. Domestic individual membership and subscription (51 issues): $82 ($47 allocated to subscription). Domestic institutional subscription (51 issues): $150. 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 43305–2003. **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 0036-8075/83 $1 + .10. *Science* is indexed in the *Reader's Guide to Periodical Literature* and in several specialized indexes.

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COVER The AAAS Annual Meeting is a unique collage of science—each year scientists from every discipline attend sessions to expand the scope of their research, extend their funding and collaborative networks, and let their minds travel to the far reaches of science. The cover illustrates the breadth of the scientific voyage offered at AAAS☆92 in Chicago from 6 to 11 February 1992. See page 1029 for a complete program and page 1046 for a key to the cover. [Collage by Diana DeFrancesco]

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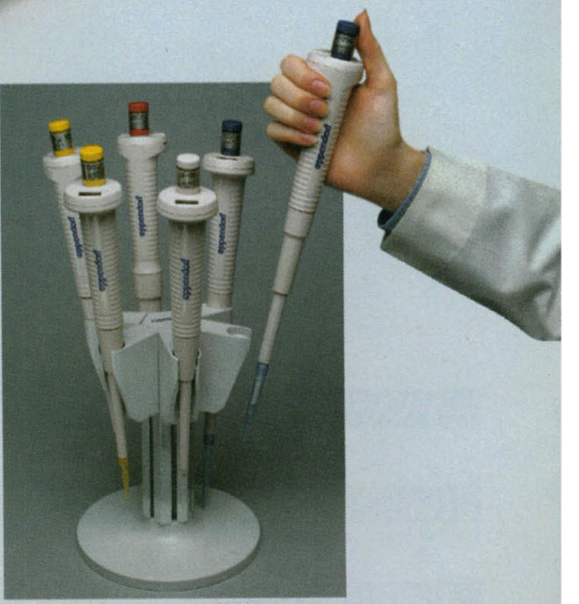

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This Week in

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Ice futures

Polar ice sheets can respond to global climate change, but processes internal to the ice sheet play a major role in determining their movement in the future. Alley and Whillans (p. 959) review the recent history of the movements of the West Antarctic Ice Sheet (WAIS). The WAIS differs from other ice sheets in that the base of the ice sheet is well below sea level and thus may respond more rapidly to climatic change. In fact, the WAIS still appears to be responding to the rise in global sea level 15,000 to 5,000 years ago. The WAIS is also unusual in that it contains several ice streams that move faster than the rest of the ice sheet, which indicates the presence of internal instabilities. The behavior of the WAIS is so complex that future changes will be difficult to predict until more of the ice sheet is surveyed.

Antigens and AIDS

The progression from HIV-1 infection to the development of AIDS in an individual may be linked to increases in viral diversity over time. Nowak *et al.* (p. 963) have used data from a small number of patients to test a mathematical model of the dynamic interaction between different HIV-1 strains and the human immune system. The reverse transcriptase of HIV-1 has a relatively high error rate of about 10^{-4} per base. Thus, in general the virus continues to increase in diversity after the initial infection. The model suggests the existence of a threshold in viral antigen diversity, which when passed leads to the collapse of the ability of the immune system to regulate the virus. Virologists seem both intrigued and skeptical (see Palca, p. 941).

C_{60} theory

Despite much experimental work on superconducting C_{60}, the microscopic mechanism for the free flow of electric current remains elusive. Chakravarty *et al.* (p. 970) propose a theory in which electrons interacting with other electrons within a single C_{60} molecule give rise to a strong attraction between electron pairs. The authors outline specific predictions that can be used to test the theory. Varma *et al.* (p. 989), on the other hand, consider the consequences of electrons interacting with lattice vibrations, as in conventional metallic superconductors. Their calculations predict that high frequency bond-stretching modes exhibit the strongest coupling.

Protein hydration

Water molecules that hydrate the surfaces of proteins in solution appear to have residence times in the subnanosecond range, compared with interior water molecules that have residence times from about 10^{-2} to 10^{-8} second. Otting *et al.* (p. 974) used proton nuclear magnetic resonance to study residence times of water for bovine pancreatic trypsin inhibitor (BPTI) and oxytocin. Although many x-ray diffraction studies have revealed well-ordered water molecules in the interior and at the surfaces of proteins, water molecules at ordered sites do not seem to have much longer residence times than other surface waters. Improved resolution and novel solvent suppression schemes allowed both interior and surface waters to be detected.

Lead and gold

The growth of small islands of gold on oxidizing surfaces of galena (lead sulfide) has been studied with the scanning tunneling microscope. Eggelston and Hochella (p. 983) are using this system as a model for reactions that occur at sulfide-water interfaces in the formation of certain heavy metal ore deposits where sulfide minerals host the metal. Growth of gold islands appears to be coupled to the oxidation of the surface, as both processes occur along the [110] direction on the (100) surface.

Hydrogen-helium mix

Planetary models suggest that Jupiter and Saturn both have a central rock core that is surrounded by a hydrogen-helium fluid; Klepeis *et al.* (p. 986) have performed calculations that suggest that this mix is at least partially phase separated on Saturn and has just begun to phase separate on Jupiter. Previous models had assumed phase separation for Saturn but not for Jupiter; phase separation affects the time course of the cooling of these planets. State-of-the-art total energy calculations were required, as the electronic energy makes a large contribution to the phase separation temperature.

Auxin origins

Tryptophan has long been thought to be the precursor to the plant hormone auxin (indole-3-acetic acid); work by Wright *et al.* (p. 998) shows that this need not be so. In aseptically grown seedlings of the maize mutant *orange pericarp*, a Trp auxotroph, 50 times more auxin is synthesized than Trp, and no isotopically labeled Trp was incorporated into auxin. Auxin synthesis is greater in the mutant than in the wild type, indicating that auxin and Trp may share a precursor.

Clearing the signal

Anchored cell-surface proteins that lack intracellular domains can use protein tyrosine kinases to transmit their signals. Štefanová *et al.* (p. 1016) studied a number of cell-surface proteins that are anchored to the membrane by glycophosphatidylinositol (GPI) and that are known to activate leukocytes. In particular, CD59, CD55, and CD48 in human T cells and Thy-1 and Ly-6 in mouse T cells are associated with $p56^{lck}$, a tyrosine kinase related to Src. The tyrosine kinases may interact directly with the glycolipid tail or through the mediation of other proteins.

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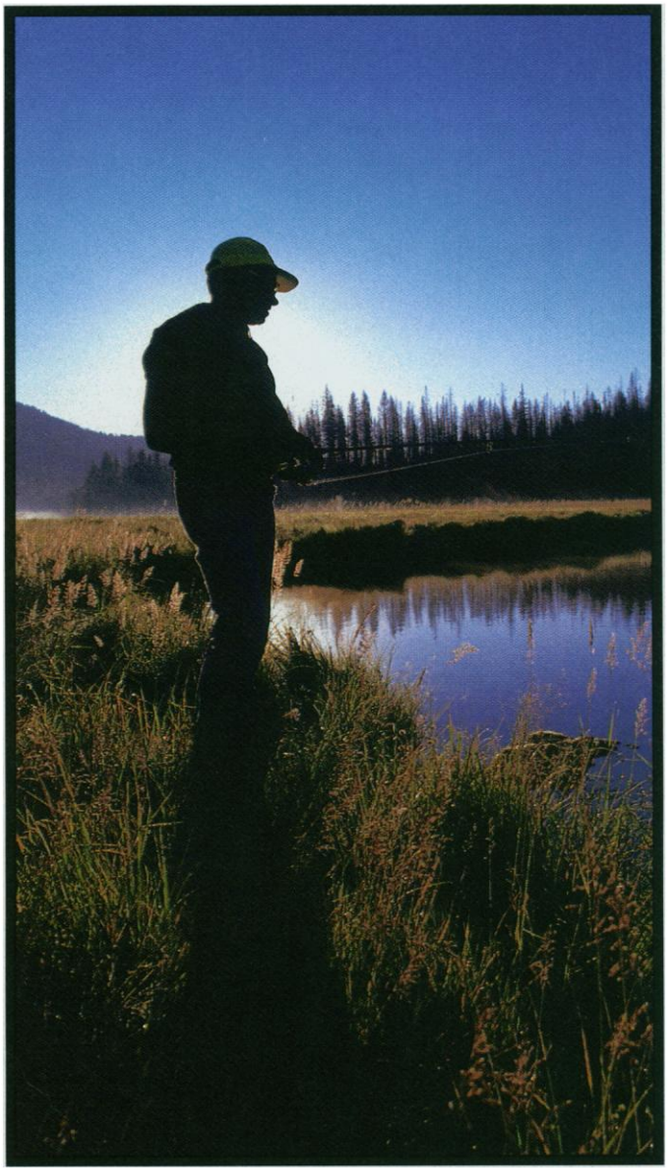
Enzyme	Site	Cat. #
Asc I	GG/CGCGCC CCGCGC/GG (internal *Bss*H II site)	558
Pme I	GTTT/AAAC CAAA/TTTG (internal *Dra* I site)	560



20 New Restriction Enzymes

Enzyme	Site	Cat. #
*Acc*65 I (*Asp* 718)*	G/GTACC CCATG/G	ER0901
Aci I	C/CGC GGC/G	551
Age I	A/CCGGT TGGCC/A	552
Bpm I (*Gsu* I)	CTGGAG (16/14) GACCTC	565
*Bpu*1102 I (*Esp* I)	GC/TNAGC CGANT/CG	ER0091
*Bsa*H I (*Aha* II)	GPu/CGPyC CPyGC/PuG	556
Bsg I	GTGCAG (16/14) CACGTC	559
Bsi E I (*Mcr* I)	CGPuPy/CG GC/PyPuGC	554
Bsi W I (*Spl* I)	C/GTACG GCATG/C	553
Bsl I (*Bsi*Y I)	CCN_5/NNGG GGNN/N_5CC	555
*Bsp*D I (*Cla* I)	AT/CGAT TAGC/TA	557
Bsr F I (*Cfr*10 I)	Pu/CCGGPy PyGGCC/Pu	562
Bst 1107 I (*Sna* I)	GTA/TAC CAT/ATG	ER0701
*Eam*1105 I	GACNNN/NNGTC CTGNN/NNNCAG	ER0241
*Ecl*136 II (*Sac* I)**	GAG/CTC CTC/GAG	ER0251
*Eco*47 III	AGC/GCT TCG/CGA	ER0321
*Eco*57 I	CTGAAG (16/14) GACTTC	ER0341
*Esp*3 I	CGTCTC (1/5) GCAGAG	ER0451
Mun I (*Mfe* I)	C/AATTG GTTAA/C	ER0751
Sfc I (*Sfe* I)	C/TPuPyAG GAPyPuT/C	561

*Kpn isochizomer generating a 4-base 5' overhang
** Sac I isoschizomer generating blunt ends

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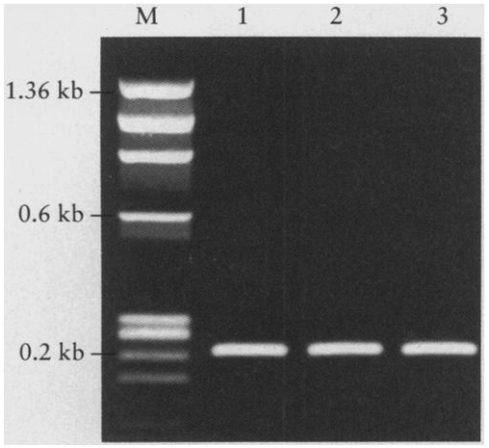
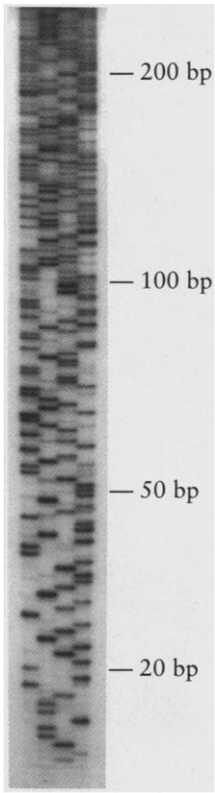


PCR† testing of stability of DNA Polymerization Mix. A target sequence in human genomic DNA was amplified using DNA Polymerization Mix which had been stored under various conditions. Lane 1, storage at -20°C for three months; lane 2, after 50 freeze/thaw cycles (-20°C to 37°C); and lane 3, stored at 37°C for three months. The marker (M) is φX-174 RF DNA-*Hae* III (27-4044-01).



Sequencing results obtained with column-purified PCR† products. A Miniprep Spun Column (27-5101-01, -02) was used to remove primers and unincorporated nucleotides from the amplified DNA prior to sequencing. The figures in the margin denote distance from the 5'-end of the sequencing primer.

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Labelling Mix-dC	**27-2097-01**
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1 solution with 3 dNTPs (no dGTP); 10 µmol of each at 20 mM	
Labelling Mix-dT	**27-2099-01**
1 solution with 3 dNTPs (no dTTP); 10 µmol of each at 20 mM	

†PCR (polymerase chain reaction) is covered by U.S. Patents issued to Cetus Corporation. A license for the use of PCR for research and testing purposes may be obtained by purchase of Perkin-Elmer Cetus GeneAmp™ PCR Reagent Kits. Nothing in this advertisement should be construed as an authorization or implicit license to practice PCR under any patents held by Cetus Corporation.

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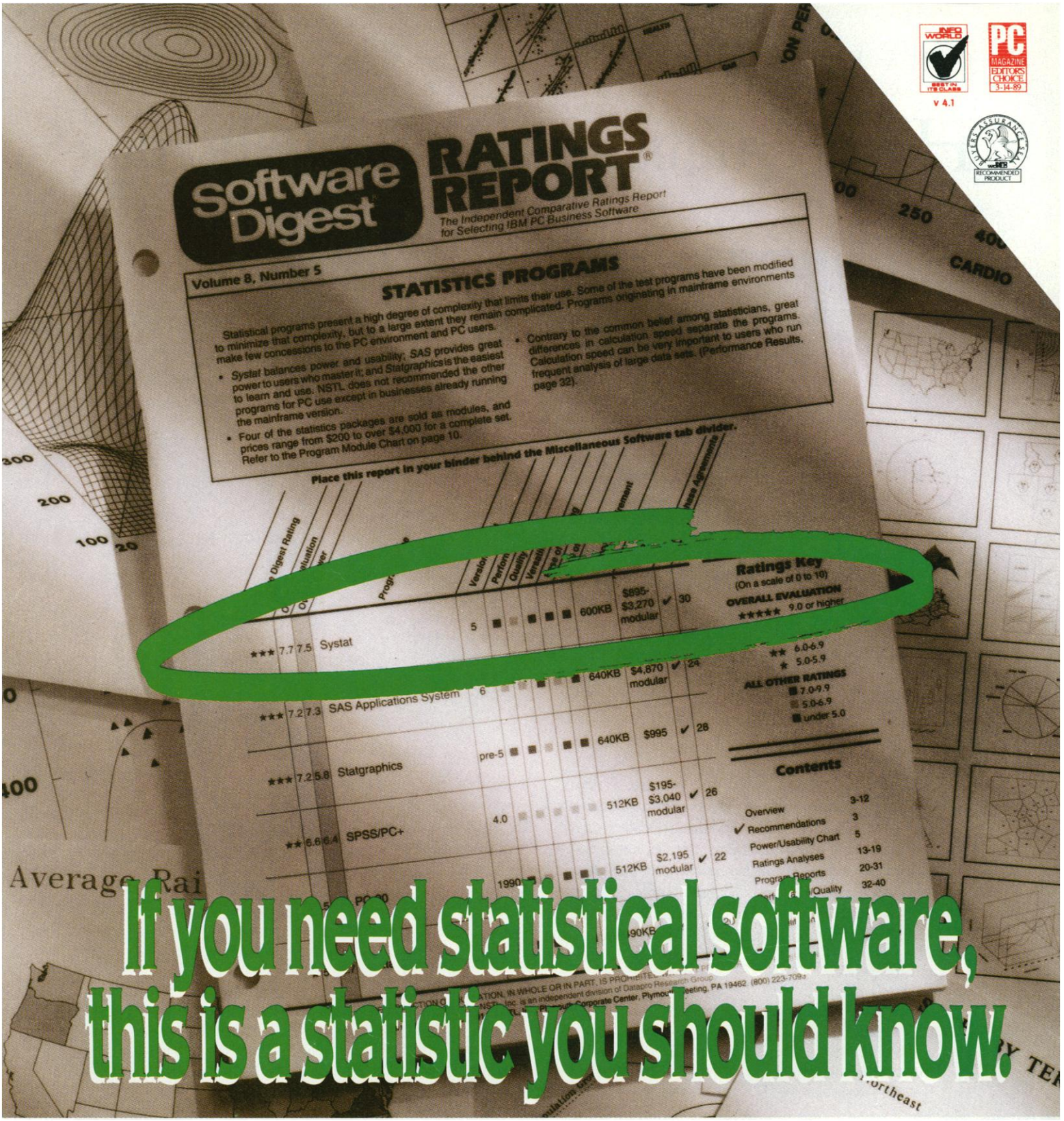

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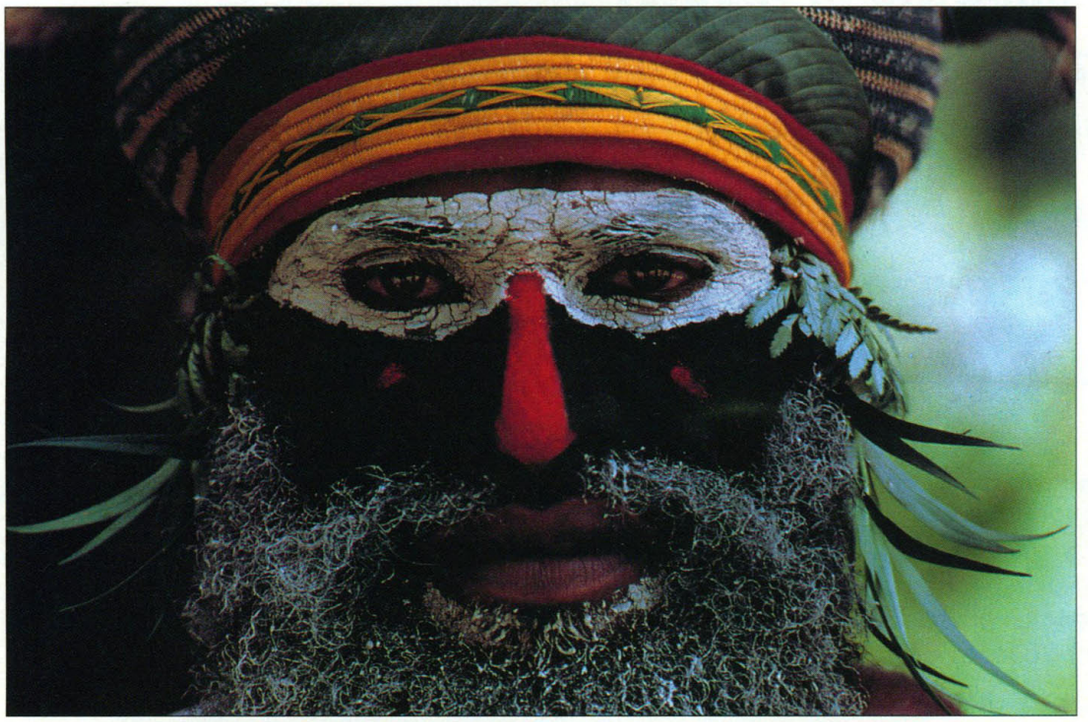

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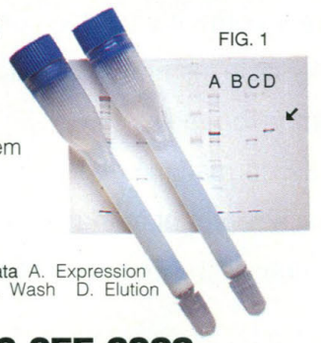

Figure 1: Expression Data A. Expression B. Flow Through C. Wash D. Elution

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APPLICATIONS FOR SCIENTIFIC VISITS TO THE USSR & EASTERN EUROPE

The NAS invites applications from American scientists who wish to visit the USSR, Bulgaria, Czechoslovakia, Hungary, Poland, Romania, and Yugoslavia. Applicants must be U.S. citizens and must possess doctoral degrees or their equivalent six months prior to the requested beginning date of their visits in physics; chemistry; mathematics and computer sciences; earth, atmospheric, and oceanographic sciences; agricultural, forestry, fishery, and plant sciences; biological sciences; environmental sciences; engineering; archeology and anthropology; geography; psychology; science and technology policy; and the history and philosophy of science. Projects in the economic and social sciences that involve development of new analytical methodologies will be considered on a case-by-case basis. The program has a special emphasis for young investigators.

Applicants for the project development visits need to demonstrate that joint proposals for collaborative research will be prepared during their visits for submission to the National Science Foundation for funding.

Project Development Visits in 1992

The program of two-week project development visits will support two rounds of visits: April through August 1992 and August through December 1992. **Applications for this program must be postmarked no later than November 30, 1991, for the first round and February 29, 1992 for the second round.**

New Approach in 1993

American scientists interested in visiting the USSR or Eastern Europe in 1993 may apply to the NAS for travel grants to help defray the costs of the visits. Also, American scientists interested in receiving scientific colleagues from the USSR or Eastern Europe may apply for travel grants to help support the visitors. Applicants are expected to make all logistical and administrative arrangements for the visits since NAS will no longer organize exchange programs through counterpart academies of sciences.

Application deadlines for these programs are February 29, 1992, for long-term research (one to six months) visits in 1993; September 30, 1992 for project development visits to take place between January and June 1993; and February 28, 1993 for project development visits to take place between July and December 1993.

Address application requests to:
Soviet and East European Affairs
National Academy of Sciences
2101 Constitution Avenue, NW (FO 2014)
Washington, DC 20418
Telephone: (202) 334-3680

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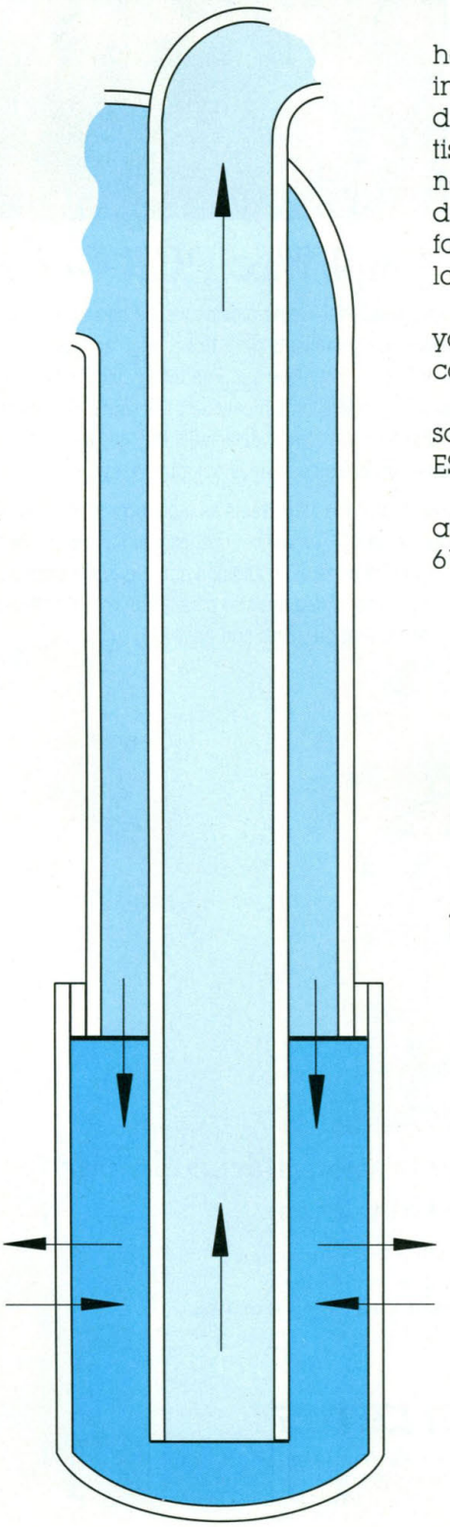

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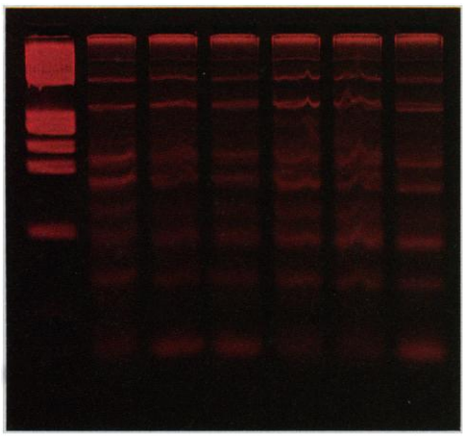

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When standard PCR conditions are used, including mineral oil overlay, the 115-bp specific PCR product generated from a 10-copy HIV-1 target (in 1 μg human DNA) cannot be distinguished from nonspecific amplification products without probing.

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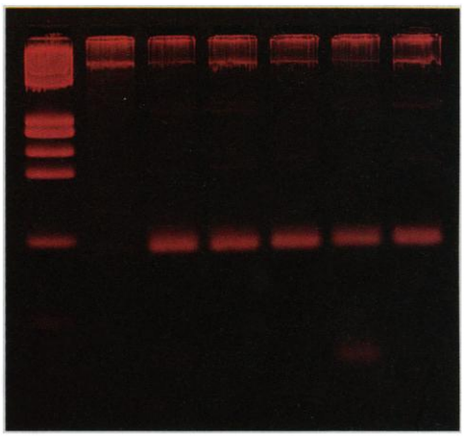

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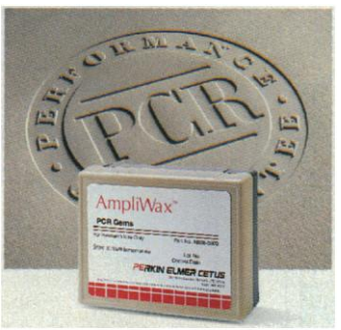

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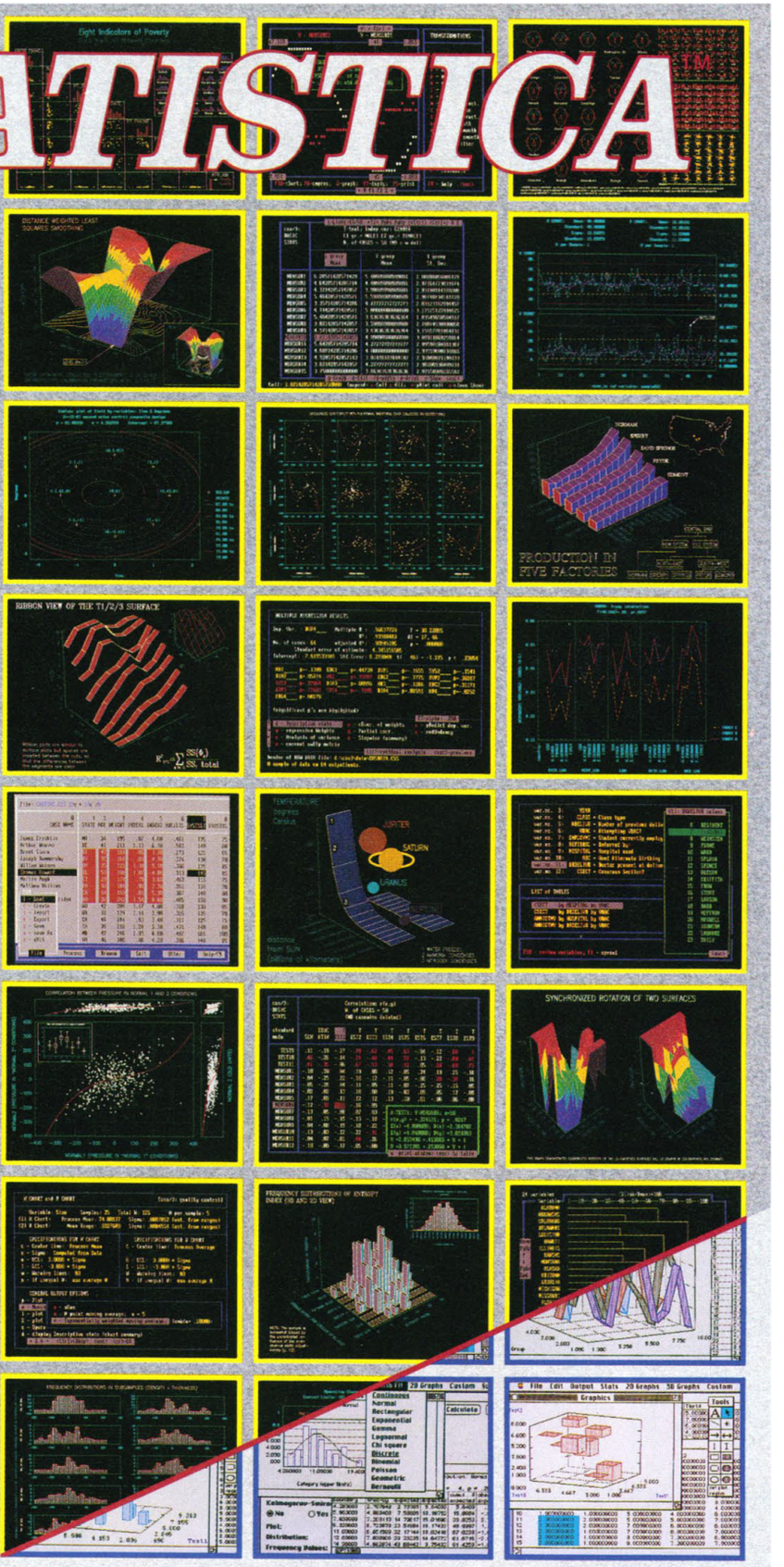

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THE CARE TO MEET, TO KNOW, TO UNDERSTAND

Ares-Serono Symposia is an independent foundation, created in 1971, to promote scientific research in all disciplines which contribute towards improving human health. This aim is pursued by means of congresses, courses, seminars and scientific publications.

Some of the international meetings scheduled for 1992 are:

2nd Int. Congress on Cytokines : Basic Principles and Clinical Applications
March 23-25 / Florence (I)
Scientific Organization: A.K. Abbas (USA), T.R. Mosmann (CDN) and S. Romagnani (I)

4th Int. Symposium on Hypoglycemia
March 23-24 / Rome (I)
Scientific Organization: D. Andreani (I) and V. Marks (UK)

3rd Int. Symposium on Reproductive Medicine
April 13-15 / Malta
Scientific Organization: E. Steinberger (USA) and G. Frajese (I)

Implantation in Mammals
April 23-24 / Geneva (CH)
Scientific Organization: A. Campana (I)

9th Workshop on Development and Function of the Reproductive Organs
May 25-27 / Peebles (UK)
Scientific Organization: S.G. Hillier (UK)

Heterogeneity of Cancer Cells
June 16-17 / Milan (I)
Scientific Organization: S. Garattini (I)

"Redo" Vascular Surgery
Renal, Aorto-Iliac and Infrainguinal Areas
June 25-27 / L' Aquila (I)
Scientific Organization: R. Courbier (F), A.M. Imparato (USA) and C. Spartera (I)

Local Systems in Reproduction
July 6-7 / Paris (F)
Scientific Organization: R.R. Magness (USA) and F. Naftolin (USA)

5th Int. Congress on Reproductive Immunology
August 31- September 3 / Rome (I)
Scientific Organization: F. Dondero (I) and S. Isojima (J)

5th Conference on Differentiation Therapy
September 2-5 / Villasimius, Sardinia (I)
Scientific Organization: M. Hozumi (J), G.B. Rossi (I) and S. Waxman (USA)

3rd Int. Symposium on Endocrinology Under 35
September 7-9 / Rapallo (I)
Scientific Organization: A. De Bellis (I),E. Cordella-Miele (USA) and K.B. Marschke (USA)

G-Protein Associated Membrane Receptors, Molecular Biology, Signal Transduction and Physiology
September 21-23 / Geneva (CH)
Scientific Organization: M. Ascoli (USA) and D.L. Segaloff (USA)

Growth '92: Two Decades of Experience in Growth
October 8-9 / Santiago de Compostela (E)
Scientific Organization: J. C. Job (F) and M. Pombo (E)

The proceedings of Ares-Serono Symposia conferences are published by Raven Press, NY (USA).

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ARES SERONO SYMPOSIA

1992–93
AAAS Fellowships for Scientists and Engineers

Congressional

AAAS Congressional Science & Engineering Fellows Program

Fellows spend one year on Capitol Hill working with Members of Congress or congressional committees as special assistants in legislative and policy areas requiring scientific and technical input. Two fellowships will be offered, with annual stipends of $38,000.

Executive Branch

AAAS-Sloan Executive Branch Science & Engineering Fellows Program

Fellows work in the White House Office of Science and Technology Policy, for one or two years, providing expertise in industrial R&D, technology transfer, international competitiveness, and related issues. One or two Fellows will be selected. Applications are invited from candidates with a minimum of five years industrial experience, through mid-level and senior executives. Stipends are negotiable, depending on qualifications and experience. Applicants must be U.S. citizens.

Diplomacy

AAAS Science, Engineering, & Diplomacy Fellows Program

Fellows work in international affairs on scientific and technical subjects for one year, either in foreign policy at the U.S. Department of State or in international development for the U.S. Agency for International Development. Approximately 12 Fellows will be selected. The annual stipend varies with experience, starting at approximately $38,000. Applicants must be U.S. citizens.

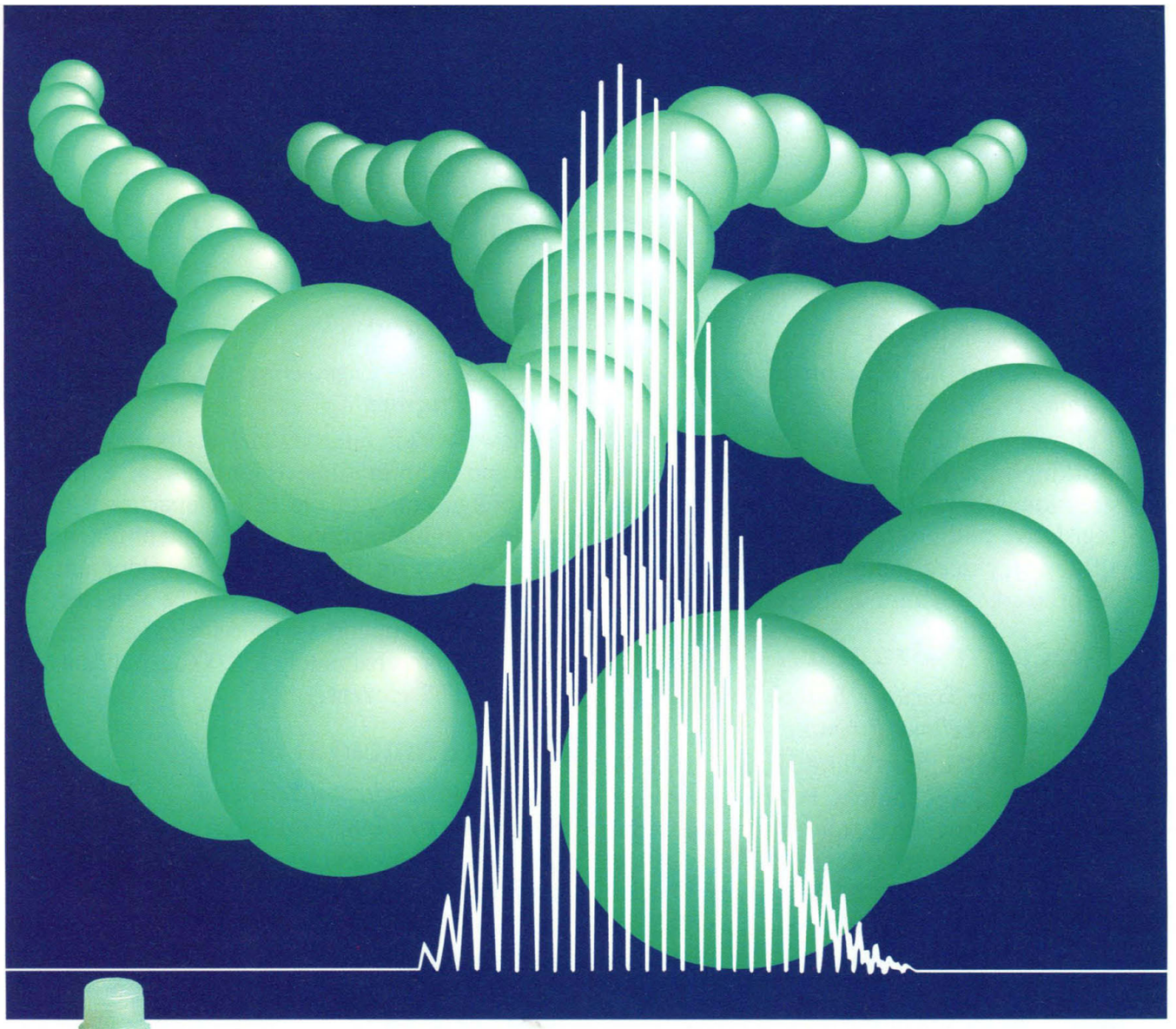
Environmental

AAAS Environmental Science & Engineering Fellows Program

Fellows work as special research consultants with the Office of Research and Development of the U.S. Environmental Protection Agency for 10 weeks in the summer. The detailed, future-oriented research assists ORD in assessing the significance of long-range environmental problems. The stipend is $900 a week. Applicants must be permanent residents of the U.S. Ten Fellows will be selected.

Applicants should be postdoctoral to midcareer scientists and engineers, from any physical, biological, or social science or any field of engineering. The programs are designed to provide each Fellow with a unique public policy learning experience; to make practical contributions to the more effective use of scientific and technical knowledge in the U.S. government; and to demonstrate the value of science and technology in solving important societal problems. All Fellows participate in a rigorous orientation on the relevant congressional and executive branch operations and foreign affairs plus a year-long seminar series on issues involving science, technology, and public policy. The Congressional, Diplomacy, and Executive Branch programs begin in September 1992 (application deadline January 15), and the Environmental program begins in June (application deadline February 15). For additional program information and application instructions, write:

Fellowship Programs/Directorate for Science and Policy Programs
American Association for the Advancement of Science
1333 H Street, NW, Washington, DC 20005 202/326-6600



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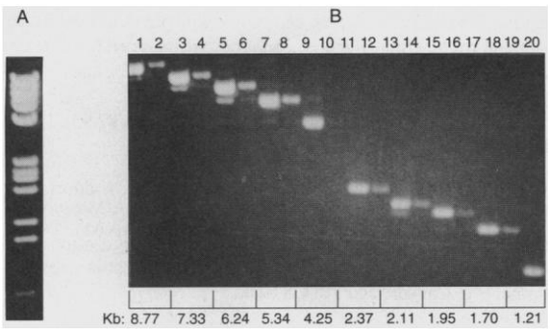
NaI/glass bead kits give about 50% recovery for 2–15 Kb DNA (see figure) and much less outside of that size range.



Recoveries of 1.2 to 8.8 Kb DNA fragments excised from a 1% LMP-agarose gel (Figure A) were consistently much greater using GELase (Figure B, odd numbered lanes) than using a commercial kt containing sodium iodide and silica matrix (Figure B, even numbered lanes).

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4. GELase is inexpensive.

One unit of GELase digests 600 mg of a 1% LMP-agarose gel in 1 hour in GELase Buffer. With a 10-hour incubation instead of 1 hour, the 200-unit size of GELase is enough to digest more than a KILOGRAM of a 1% gel.

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Some companies recommend two rounds of purification with a NaI/glass bead kit to obtain DNA for cloning. That's not necessary with GELase. DNA recovered using GELase is ready for use in restriction mapping, cloning, labeling, sequencing or other molecular biological experiments.

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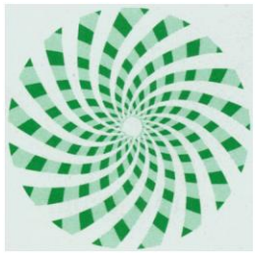

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AAAS ☆92

The AAAS Annual Meeting

Join your colleagues from across the country and around the world as they converge on Chicago next February for AAAS ☆92 — the 158th national meeting of the American Association for the Advancement of Science.

We've given the meeting a facelift this year by streamlining the symposia into 22 "tracks," most of which run for the duration of the meeting. You can select a single track to follow throughout or choose sessions from different tracks to suit your particular interests.

The tracks cover such hot topics as molecular evolution and genetics, climate and global change, ethics in science, and Native American origins, as well as subjects of perennial interest such as science education, energy research, environmental policy, and mathematics and computer science.

In addition to nearly 200 symposia sessions and 40 topical lectures, you can hear from leading researchers in one of our three-day seminars (*Cognitive Neuroscience* or *Molecular Modeling and Computational Chemistry*); discover new publications, products, and services at the exhibition; talk one-on-one with researchers at a series of poster sessions; and explore career opportunities at the AAAS ☆92 Employment Exchange.

And, in your spare moments, enjoy all that Chicago has to offer. Explore the Field Museum of Natural History, the Shedd Aquarium, and the Art Institute of Chicago. Take a tour of Fermi National Accelerator Lab, Adler Planetarium, or Argonne National Laboratory (see "AAAS ☆92 Special Tours" on page 1043). And savor the many and varied ethnic foods for which Chicago is so famous.

At AAAS ☆92, you'll find a cross-disciplinary exchange of unmatched caliber — no other meeting attracts professionals from such a wide variety of disciplines. This is the consummate synergy of the sciences, where you'll explore ways in which the sciences interconnect and learn how advances in other fields impact upon your own. So use the form on page 1045 and register today!

— Robin Yeaton Woo, AAAS Meetings Director

Plenary Lectures

Hanna Holborn Gray, President, The University of Chicago *(Keynote Lecture; Thursday, 6 February, 8:00pm)*

Susan Solomon, Research Chemist, National Oceanic and Atmospheric Administration Aeronomy Laboratory *(Friday, 7 February, 8:00pm)*

Walter E. Massey, Director, National Science Foundation *(Saturday, 8 February, 7:00pm)*

Leon M. Lederman, Frank L. Sulzberger Professor of Physics, Enrico Fermi Institute, University of Chicago, and Director-Emeritus, Fermi National Accelerator Laboratory *(AAAS President's Lecture; Sunday, 9 February, 7:00pm)*

Federico Mayor, Director-General, United Nations Educational, Scientific, and Cultural Organization *(Monday, 10 February, 7:00pm)*

Contents

Seminars

(Separate registration and fee required. See registration form.)

Cognitive Neuroscience

Organized by: *Michael Gazzaniga*

Information Processing in the Nervous System: Molecular Basis *(Sat/8:30am)*
Experience, impulse activity, and gene expression, *Ira Black;* Signal transduction in the nucleus of neurons: Role of inducible proto-oncogene transcription factors, *Thomas Curran;* Signal transduction in the brain: Role of phosphoproteins, *Paul Greengard;* Molecular basis of neuronal function, *Charles Stevens.*

Topical Lecture *(Sat/1:15pm)*
Functional imaging of cognitive activity in the human brain, *Steven Hillyard*

Conscious and Unconscious Processing of Sensory Information *(Sat/2:30pm)*
Unconscious synthesis of different sensory information, *Barry Stein;* Blindsight, *Larry Weiskrantz;* Dynamic aspects of visual-cortical function, *Torsten Wiesel, C.D. Gilbert;* Conscious and unconscious processes following brain lesions, *Michael Gazzaniga.*

Selective Attention *(Sun/8:30am)*
Organization and development of attentional computations, *Michael Posner;* Cognitive neuroscience view of selective attention in object identification, *David LaBerge;* Cellular studies of the circuitry of visual selective attention in primates, *Robert Desimone;* Effects of visual spatial attention measured with performance and positron emission tomography, *Steven Petersen;* Separating mechanisms of awareness and attention: A cognitive neuropsychological approach, *Mary Jo Nissen.*

Topical Lecture *(Sun/1:15pm)*
Finding our way: Neuronal processing for 3-D motion, *Robert Wurtz*

Memory *(Sun/2:30pm)*
High-level representations in the cerebral hemispheres, *Stephen Kosslyn;* Priming and the organization of visual object memory, *Daniel Schacter;* Object recognition in mind and brain, *Irving Biederman;* Probing the nature of the mental representation of visual objects, *Lynn Cooper;* Visual memory circuits, *Mortimer Mishkin.*

Computational Models *(Mon/8:30am)*
Roles for computational models in cognitive neuroscience, *James McClelland;* Mechanisms of visual development: Ocular dominance and orientation selectivity, *Kenneth Miller;* Sparse coding, orthogonalization, and pattern completion in theoretical and real hippocampal networks, *Bruce McNaughton;* Computational model of semantic memory impairment: Modality specificity and emergent category specificity, *Martha Farah.*

Topical Lecture *(Mon/1:15pm)*
Computations underlying the execution of movement: A biological perspective, *Emilio Bizzi*

Biology of Language *(Mon/2:30pm)*
Rules of grammar: Linguistic, psycholinguistic, and neurolinguistic evidence, *Steven Pinker;* Genetic disorders, *Myrna Gopnik;* Genetic variation and the differentiation of cognitive processes, *Thomas Bever;* Brain damage and aphasia, *Alfonso Caramazza;* Studies of language comprehension with the PET scan: Processing of French and Tamil stories by monolingual French subjects, *Jacques Mehler*.*

Molecular Modeling and Computational Chemistry

Organized by: *J. Phillip Bowen*

Computational Chemistry *(Fri/8:30am)*
Introduction to computer-assisted molecular modeling, *J. Phillip Bowen;* Macromolecular modeling, *Peter Kollman;* Quantum methods, *Ernest Davidson.*

Drug Design *(Fri/2:30pm)*
Active analog approach: Playing "20 Questions" with the receptor, *Garland Marshall;* CoMFA analysis, *Richard Cramer;* SYBYL demonstration.

Rational Molecular Design *(Sat/8:30am)*
Drug lead design, *James Snyder;* Polymer modeling, *Willis Hammond;* Molecular modeling of DNA minor groove-binding agents, *Michael Cory.*

Molecular Simulations *(Sat/2:30pm)*
Monte Carlo simulations in bio-organic chemistry, *William Jorgensen;* Molecular dynamics: A tool for understanding biophysical processes, *Charles Brooks;* Polygen demonstration of Quanta.

Three-Dimensional Databases *(Sun/8:30am)*
Overview of 3-D searching: A new technique for computer-assisted molecular design, *Robert Pearlman;* Automated compound design based on CoMFA and 3-D searching, *Yvonne Connolly Martin.*

Symposia and Topical Lectures

Molecular Genetics and Evolution

Evolution of Temperature Adaptation *(Fri/8:30am)*

Introduction, *Albert Bennett;* Experimental evolutionary studies of thermal adaptation in bacteria, *Richard Lenski;* Response to thermal selection in fruit flies (genus *Drosophila*), *Raymond Huey;* Comparative studies of evolution of billfish brain heater tissue, *Barbara Block;* Adaptation of birds to cold: Convergence of thermoregulatory characters in the colonization of Antarctica, *Zoe Eppley.* Organized by: *Albert Bennett*

Genetics and Evolution of Aging *(Fri/2:30pm)*

Evolutionary genetics of aging in *Drosophila, Michael Rose;* Molecular genetics of aging in *Drosophila, James Fleming;* Molecular genetics of aging in yeast, *S. Michal Jazwinski;* Identification and cloning of "gerontogenes" in *Caenorhabditis elegans, Thomas Johnson;* The evolution of aging in mammals, *Steven Austad.* Organized by: *Michael Rose*

Molecular Biogeography *(Sat/8:30am)*

Contemporary and historical gene flow, *Montgomery Slatkin;* Geographical differentiation in plants, *Barbara Schaal;* Molecular zoogeography of human populations, *Douglas Wallace*;* Demography and genetic population structure, *Joseph Neigel;* Phylogeography, gene pool diversity, and conservation genetics, *John Avise.* Organized by: *John Avise*

Speciation *(Sat/2:30pm)*

Introduction, *Jerry Coyne;* The genetics of speciation, *H. Allen Orr;* Phylogenetic patterns in mate recognition systems, *Michael Ryan;* Clinal speciation, *David Wake;* The geography of speciation, *William Rice.* Organized by: *Jerry Coyne*

Primate Evolution *(Sun/8:30am)*

Introduction, *Morris Goodman;* Paleontological evidence on the origin and early evolution of primates, *Kenneth Rose;* Morphological analysis and primate evolution, *Frederick Szalay;* Higher primate evolution: A paleontological perspective, *Eric Delson;* What the involucrin gene tells us about primate evolution, *Howard Green;* T-cell receptor evolution in higher primates, *Ben Koop;* Reconstructing the primate evolutionary record from mitochondrial DNA sequences, *Maryellen Ruvolo.* Organized by: *Morris Goodman*

Molecular Evolutionary Rates: Patterns and Processes *(Sun/2:30pm)*

Molecular clocks in mammals, *Wen-Hsiung Li;* Molecular evolution: Alternatives to the neutral model, *John Gillespie;* How bad are molecular clocks? *Walter Fitch;* Is protein evolution mostly neutral? *Martin Kreitman;* Sequence homology in the T-cell receptors of mice and men, *Ben Koop.* Organized by: *Richard Hudson*

Population Genetics of Microorganisms *(Mon/8:30am)*

Evolutionary biology of unicellular eukaryotes, *Francisco Ayala;* The clonal theory of parasitic protozoa, *Michel Tibayrenc;* The population biology of microparasites and the evolution of virulence, *Bruce Levin;* The biological species concept applied to bacterial plasmids, *Margaret Riley;* Molecular evolution of the *E. coli* chromosome, *Roger Milkman.* Organized by: *Francisco Ayala*

Genetic Information *(Mon/2:30pm)*

Life in an RNA world, *Gerald Joyce;* Involvement of guide RNAs in editing of messenger RNAs in Trypanosome mitochondria, *Larry Simpson;* The prokaryotic ancestors of eukaryotes, *James Lake;* Cryptomonads show evidence of endosymbiosis by a eukaryotic alga, *Michael Gray.* Organized by: *Larry Simpson*

Evolutionary Genetics of Transposable Elements *(Tues/8:30am)*

Evolution of retrotransposable elements, *Thomas Eickbush;* Hybrid dysgenesis in *Drosophila,Margaret Kidwell;* Evolution of LINE elements in mice, *Stephen Hardies;* Population genetics of *Drosophila* transposable elements, *Charles Langley.* Organized by: *Brian Charlesworth*

DNA Repair in Higher Plants and Ozone Depletion *(Tues/2:30pm)*

DNA repair in higher plants, *Valery Soyfer;* Resistance of higher plants to increased levels of UV-B irradiation, *Eckard Wellmann;* Potential consequences of ozone depletion for higher plants: An ecological perspective, *Paul Barnes;* UV-C, solar UV-induced DNA damages, and repair in higher plants, *Karolis Cieminis;* Concluding remarks, *Valery Soyfer.* Organized by: *Valery Soyfer*

Native American Origins

Biomolecular Archaeology *(Fri/2:30pm)*

The archaeological significance of organic residue identification, *David Hyland;* Identification of blood protein residues via radioimmunoassay, *Jerold Lowenstein;* Identification of blood protein residues via crystallography and isoelectric focusing, *Thomas Loy;* Identification of blood protein residues via cross-over electrophoresis, *Margaret Newman;* Corroborative use of various blood protein residue identification techniques, *Elinor Downs;* Recovery and characterization of immunoglobin G from ancient bone, *Noreen Tuross.* Organized by: *David Hyland, Thomas Anderson*

Native American Remains: Ethical Issues *(Sat/8:30am)*

Anthropology and responses to the reburial issue, *Larry Zimmerman;* Conflict of rights between different groups, *Roger Batz;* Collective identity, ethics, and bare bones, *Larry May;* Activism to protect burial sites, *Kathy Baird;* Tribal perspectives, *Edmund Ladd.* Organized by: *John Ladd, Amy Crumpton*

Fate of the European "Cavepeople" *(Sat/2:30pm)*

The last Neandertal in France, *Bernard Vandermeersch;* Cranial evolution in the Upper Pleistocene of Europe: Neandertals and their successors, *David Frayer, Rachel Caspari;* The Neandertals: A postcranial perspective, *Fred Smith;* Neandertal children: A new source for critical information, *Anne-Marie Tillier;* Perspectives on Neandertal behavior, *Alan Mann;* The place of the Neandertal in human evolution, *Milford Wolpoff, Jakov Radovcic.* Organized by: *Milford Wolpoff, Alan Mann*

The Newest World: Original Peopling of North America *(Sun/8:30am)*

Genetic evidence for Asiatic origins, *Emoke Szathmary;* Beringian paleobiology and the earliest people in Beringia, *Richard Morlan;* North American climates and deglaciation, *John Kutzbach*;* Dynamic fluctuations of late Pleistocene biota: Implications for human populations, *Russell Graham;* Western founding populations, *Jack Hofman;* Eastern founding populations, *David Anderson.* Organized by: *Dena Dincauze*

Topical Lecture *(Sun/1:15pm)*

The earliest North Americans, *Richard MacNeish*

South American Paleoindians *(Sun/2:30pm)*

Andean Paleoindians and their descendants, *John Rick;* Paleoindians of South Chile, *John Hysslop*;* Paleoindians in the temperate rainforest, *Tom Dillehay*;* Coastal Peruvian Paleoindians, *Claude Chauchat*;* Early foragers in the Amazon, *Anna Roosevelt;* Earliest Indians of East Brazil, *Wesley Hurt;* Late Pleistocene and early Holocene archaeological sites in interior Brazil, *Ruth Gruhn;* Early occupations of northwestern South America, *Alan Lyle Bryan.* Organized by: *Anna Roosevelt*

Ethnogenesis in the Americas I *(Mon/8:30am)*

1492-1992: Nationalism, ethnic-bloc formation, and ideologies of racial cultures, *Norman Whitten, Jr.;* Ethnogenesis in the Guianas and Jamaica: Two maroon cases, *Kenneth Bilby;* Jumano to Kiowa? Ethnogenesis in the South Plains, *Nancy Parrott Hickerson;* Nationalism, colonialism, and the masculinization of Puerto Rico, *Arlene Torres;* Naming patterns as an indicator of Black Seminole ethnogenesis, *Rebecca Bateman.* Organized by: *John Moore, Norman Whitten, Jr.*

Topical Lecture *(Mon/1:15pm)*

Native American ethnogenesis, *William Sturtevant*

Ethnogenesis in the Americas II *(Mon/2:30pm)*

An ethnogenetic critique of cladistic theory, *John Moore;* Transformations of voodoo and power in Haiti, *Michel Laguerre*;* Metis ethnicity, *Jacqueline Peterson*;* The changing context of continuity: Canelos Quichua artists, *Dorothea Scott Whitten;* Linguistic evidence for prehistoric ethnogenesis, *David Shaul;* The Mandan-Hidatsa-Arikara amalgamation, *Gregory Campbell.* Organized by: *John Moore, Norman Whitten, Jr.*

Ethnogenesis in the Americas III *(Tues/8:30am)*

Changing configurations of ethnicity in the Northern Plains, *Patricia Albers;* Opening the jaguar's mouth: Northern Arawakan ethnogenesis and historical transformations, *Jonathan Hill;* Other Andean ethnic contours: Afro-Bolivians, *Monica McManus;* Ethnic transformations among Gulf Coast Indians, *Richard Sattler;* A "history of the future": Musical ethnogenesis in Ecuadorian indigenous culture, *Nan Leigh Volinsky;* Language mixture, pidginization, and ethnogenesis: Correlations both likely and unlikely, *Terrence Kaufman*.* Organized by: *John Moore, Norman Whitten, Jr.*

* = invited but not confirmed

Climate and Global Change

Sun, Earth, and Society (Fri/8:30am)
The sun's changing radiation: A terrestrial perspective, *Judith Lean;* Possible solar influences on future climate change, *David Rind;* Solar ultraviolet radiation and life on earth, *Janice Longstretch;* Impacts of solar terrestrial activity on technological systems, *Louis Lanzerotti.* Organized by: *Judith Lean*

Uncertainties of Global Change Forecasts I (Sat/8:30am)
Regional patterns of surface air temperature changes since 1854, *Philip Jones;* Global warming: Evidence for asymmetric diurnal changes, *Thomas Karl;* Changes in circulation and temperature-salinity structure of the North Atlantic, *Sydney Levitus;* Climate variability in preindustrial versus industrial eras, *Gordon Jacoby;* Tropospheric aerosols: Current trends and climatic impacts, *Robert Charlson.* Organized by: *George Kukla, Michael Riches*

Topical Lecture (Sat/1:15pm)
Uncertainties of global change predictions with coupled climate models, *Warren Washington*

Uncertainties of Global Change Forecasts II (Sat/2:30pm)
Past and present oceanic circulation, *Richard Fairbanks*;* Changing trends in radiatively important trace species, *Donald Blake;* Orbital perturbations and climate, *Julian Adem;* Simulation of glacial onset and termination with general circulation models, *Michael Schlesinger;* Water vapor and clouds in climate models, *Richard Lindzen;* Sources of uncertainty in climate predictions, *Francis Bretherton.* Organized by: *George Kukla, Michael Riches*

Mitigation and Adaptation Response to Our Changing Planet I (Sun/8:30am)
Introduction to mitigation and adaptation research strategies, *Gary Evans;* Biotic systems: Biodiversity and reforestation, *Thomas Lovejoy;* Education, *Lynne Carter Hanson;* Human adaptation in the face of change, *Katy Moran;* Private sector interaction, *William Busch;* Evolving mitigation strategies to limit global climate change, *Dwain Spencer.* Organized by: *Gary Evans, William Busch*

Topical Lecture (Sun/1:15pm)
Sarton Lecture: Out of the nuclear fire into the global frying pan: Changing images of science and catastrophe, *Spencer Weart*

Mitigation and Adaptation Response to Our Changing Planet II (Sun/2:30pm)
Mitigation options, *Ruth Reck;* Adaptation and climate change, *Indur Goklany;* Economic issues in global change, *Howard Gruenspecht;* Social dynamics, *Priscilla Reining;* International aspects, *Robert Corell;* Assessments: Lessons learned from the NAPAP experience, *James Mahoney.* Organized by: *Gary Evans, William Busch*

Polar Climate I (Mon/8:30am)
Automated ocean/ice measurements, *James Morison;* Observations of polar ice from spaceborne instruments, *Kenneth Jezek;* Deep oceanic circulation, *Bruce Warren;* Arctic climate history from the ocean sediment record, *David Clark;* Modeling the polar atmospheres: Interactions with global climate, *John Walsh.* Organized by: *Charles Bentley, Norbert Untersteiner*

Polar Climate II (Mon/2:30pm)
Ice-sheet dynamics and sea level from satellite observations, *Robert Bindschadler;* Observations and models of the Antarctic ice sheet, *Peter Webb*;* The Antarctic lithosphere: Modern geophysical techniques come to Antarctica, *Uri ten Brink;* Ultraviolet radiation effects on Antarctic marine life, *Deneb Karentz;* Marine record of ice sheet advance and retreat on the Antarctic continental shelf, *John Anderson.* Organized by: *Charles Bentley, Norbert Untersteiner*

Climate Change on the Great Lakes Basin (Tues/8:30am)
The effects of climate change on the water resources of the Great Lakes, *Frank Quinn;* The socioeconomic implications of climate change in the Basin, *Ian Burton;* The responses and policy issues related to climate changes in the Basin, *Michael Donahue*;* A research program to assess climate change in the Great Lakes Basin, *Stanley Changnon, Steven Sonka;* Great Lakes 20th-century climate variability: Implications for future scenarios, *Richard Heim, Jr., Thomas Karl.* Organized by: *Stanley Changnon*

Violent Storms in the Sky over the Midwest (Tues/2:30pm)
Illinois tornado history since 1800, *Wayne Wendland;* Public comprehension of warnings, *Herbert Hoffman;* Flood forecasting in Illinois, *William Morris;* Specific area message decoder, *Larry Krudwig*;* Data collection on the Great Lakes, *Robert Collins;* Unique forecasting near the Great Lakes, *Robert Somrek.* Organized by: *Herbert Hoffman*

Medicines and Technologies of the Future

Zoopharmacognosy: Medicinal Plant Use by Wild Apes and Monkeys (Fri/8:30am)
Evolution of medicinal plant selection by chimpanzees, *Richard Wrangham;* Food and medicinal plant selection by Brazilian monkeys, *Karen Strier;* Medicinal plant use by wild chimpanzees: A behavioral adaptation for parasite control? *Michael Huffman;* Plant selection and gender bias in howling monkey births, *Kenneth Glander;* Ape and monkey plant pharmacognosy, *Eloy Rodriguez.* Organized by: *Eloy Rodriguez, Richard Wrangham*

Topical Lecture (Fri/1:15pm)
Taxol: Mechanism of action and resistance, *Susan Horwitz*

Drug Development and Industrial Use of Natural Products (Fri/2:30pm)
Medicinal plant explorations and drug development, *Djaya Soejarto, Norman Farnsworth;* Marine microorganisms: A new biomedical resource, *William Fenical;* Utilizing CO_2: Complex molecules from simple waste, *Edward Lipinsky;* New bioactive structures from higher plants, *Jerry McLaughlin;* Stimulating indigenous exploitation of plant products, *Jack Plimmer.* Organized by: *Barbara Timmermann, James Rowe*

Drugs: From Laboratory to Patient (Sat/8:30 am)
Speakers and topics to be announced. Organized by: *Gregory Baird*

The Ethics and Ethos of Clinical Trials (Sat/2:30pm)
Changing views on the ethics of trials, *Norman Fost*;* The role of the federal regulator, *Charles McCarthy*;* Legal problems, *William Curran*;* A doctor's dilemma: Randomized trials and the doctor/patient relationship, *Samuel Hellman;* Neglected ethical issues in trials, *Marvin Zelen.* Organized by: *Marvin Zelen*

Augmented Tissue Regeneration (Sun/8:30am)
Growth of human epithelial cells in culture for skin grafting and reconstructive surgery, *James Rheinwald;* In vitro production of compound skin and mucosa for grafting, *Ian Mackenzie;* Guided tissue regeneration of the human periodontium, *Erwin Barrington;* Production of bioactive substances by genetically engineered tissue grafts, *Elizabeth Fenjves.* Organized by: *Ian Mackenzie*

Topical Lecture (Sun/1:15pm)
Replacement parts for the damaged brain: Fetal neurons for Parkinson's Disease? *D. Eugene Redmond, Jr.*

Critical Materials (Sun/2:30pm)
Production and properties of biomolecular materials, *David Tirrell;* New developments in ceramic and metal processing, *Bill Appleton;* The quest for microminiaturization, *James Merz.* Organized by: *Henry McGee, Jr., George Hammond*

Revolution in Microscopy I: Seeing Atoms and Molecules (Mon/8:30am)
Seeing the invisible, *Jean Paul Revel;* Visualizing atoms, *David Smith;* New ways to see atoms and molecules, *Paul Hansma;* Visualizing molecules, *F. Peter Ottensmeyer;* Visualizing cellular structures, *Hans Ris.* Organized by: *Jean Paul Revel*

Topical Lecture (Mon/1:15pm)
The future of microscopy, *Albert Crewe*

Revolution in Microscopy II: Analyzing on the Pauciatomic Scale (Mon/2:30pm)
Compositional imaging with scanning ion microprobes, *Riccardo Levi-Setti;* Electron probe analysis and electron energy loss spectroscopy in biology, *Andrew Somlyo;* Elemental analysis of macromolecules, *Richard Leapman, S.B. Andrews;* Imaging biochemical signals inside individual living cells, *Roger Tsien;* Photoelectron imaging and low-energy electron microscopy, *O. Hayes Griffith.* Organized by: *Jean Paul Revel*

Revolution in Microscopy III: Advances in Light (and Other) Microscopies (Tues/8:30am)
Fluorescence digital imaging microscopy of the cytoskeleton, *Gary Borisy;* Optical slicing with the confocal microscope, *Jonathan James Art;* Membrane dynamics in the light microscope, *Watt Webb,* Beating the diffraction limit: Optical microscopy at nanometer scale resolution, *Michael Isaacson;* Microscopy in the living by NMR, *Paul Lauterbur.* Organized by: *Jean Paul Revel*

New Technology for Persons with Disabilities (Tues/2:30pm)
Developing age-appropriate products and devices for older Americans, *Jan Galvin;* Design of scientific instrumentation and environments to ensure access, *Gregg Vanderheiden;* New applications of rural assistive technology, *Theresa Willkomm;* Development of stair-climbing wheelchairs and issues of safety and effectiveness, *Tony Castagna;* Community-based computer learning by people with disabilities and their families, *Tom Schworles, Margaret Pfrommer;* Telecommunications technologies for people with disabilities, *Clint Gibler.* Organized by: *Jan Galvin, Virginia Stern*

Make the most of your meeting time. Plan ahead!
Use the chart on pages1036–1037

Ethics and Research Policies

Computers and Ethics in Medicine (Fri/8:30am)

Human values in computing and medicine, *Terrell Ward Bynum;* Patient confidentiality, *Don Conway;* Extending confidentiality and proper review for computer databases containing medical information, *James Murphy;* Ethical issues and diagnostic expert systems, *Randolph Miller;* Computer accountability in medicine, *John Snapper;* Ethical issues in computational meta-analysis, *Kenneth Goodman.* Organized by: *Kenneth Goodman*

Confidentiality, Security, and Cryptography (Fri/2:30pm)

Database systems and data disclosure limitation: An interdisciplinary approach, *Sallie Keller-McNulty, Elizabeth Unger;* Disclosure limitation methods in statistical databases, *Sumitra Mukherjee, George Duncan;* Survey, cryptography, digital signal processing, *Mark Manasse*;* Applications of cryptography in telecommunications, *Yacov Yacobi.* Organized by: *Kathryn Chaloner, George Duncan, Arjen Lenstra*

Contrasting Cultures of Law and Science (Sat/8:30am)

Legal and scientific reasoning, *David Kaye;* The differing procedures of science and law, *William Thomas;* Standards of proof in science and law, *Lee Loevinger;* What judges should know about the sociology of science, *Sheila Jasanoff;* The differing personalities of scientists and lawyers, *J.D. Fleming, Jr.* Organized by: *Lee Loevinger, Deborah Runkle*

Topical Lecture (Sat/1:15pm)

Cold fusion unmasking, *John Huizenga*

International Law and Environmental Ethics (Sat/2:30pm)

International law and the question of "integrity", *Laura Westra;* International ethics, sustainability, and natural resource development, *John Carroll;* Overlapping consensus in international regime formation, *Mark Sagoff;* A Great Lakes dilemma: Lake trout restoration leads to contamination of humans, *Henry Regier;* Conflicting ethics in environmental policy, *Lynton Caldwell;* International law and environmental ethics, *Edith Brown-Weiss*.* Organized by: *John Carroll, Laura Westra*

Responsibilities of Research Management (Sun/8:30am)

Stultifying the research environment, *Nicholas Samios*;* Growth of regulation of university research, *Milton Goldberg*;* The European model, *Volker Soergel.* Organized by: *Dennis Barnes*

Too Many Researchers? Too Little Funding? (Sun/2:30pm)

Federal peer review systems: Too conservative to support high-risk research? *Jim McCullough;* Topics to be announced, *Norine Noonan; Jay Moscowitz; Roland Schmitt;* Discussion, *Edward Hackett, Daniel Sarewitz.* Organized by: *Daryl Chubin, Jim McCullough*

Integrity and Misconduct in Science (Mon/8:30am)

Public Health Service, *Clyde Watkins;* How NSF deals with misconduct, *Donald Buzzelli;* Misconduct and scholarly publishing: The view from the private sector, *Marcel LaFollette;* Dealing with misconduct at the university, *C.K. Gunsalus;* Congress: The Sword of Damocles in misconduct, *James Paul.* Organized by: *Donald Buzzelli*

Responsible Research Practices: The Use of Guidelines (Mon/2:30pm)

Fostering responsible conduct in science and engineering research: Current university policies and actions, *Nicholas Steneck;* The role of research institutions in fostering scientific integrity, *Sheila Widnall;* The role of scientific societies in encouraging responsible research practices: The American Physical Society guidelines, *Henry Ehrenreich;* The pro's and con's of research conduct guidelines, *Arthur Rubenstein.* Organized by: *Rosemary Chalk*

The Future of the Research University (Tues/8:30am)

Speakers and topics to be announced.

The Future of the National Laboratories (Tues/1:00 pm)

Topics to be announced, *Albert Narath; John Peoples, Jr., Alvin Trivelpiece.* Organized by: *Edward Frieman*

The Future of Research in American Industry (Tues/3:00 pm)

Corporate R&D and strategic planning, *Graham Mitchell;* Globalization and cultural change trends, *Debajyoti Chatterji;* Joint technological development: From consortia to strategic partnering, *Lance Felker.* Organized by: *Robert Frosch*

Crisis in Health Care

The Right to Health Care I: Obstacles to Achieving the Right to Health Care (Fri/8:30am)

Health care as a basic human right, *Virginia Leary;* The medical profession, health care, and human rights, *David Rothman, Sheila Rothman;* Beyond universal health insurance to effective health care, *Miriam Ostow;* Equity and rationing: Major foms and alternatives, *Kenneth Schaffner;* American attitudes and views toward national health reform, *Robert Blendon.* Organized by: *Robert Kirschner, Audrey Chapman, John Lantos, Kenneth Schaffner*

Topical Lecture (Fri/1:15pm)

A national health insurance plan, *Marty Russo**

The Right to Health Care II: Improving Access to the U.S. Health Care System (Fri/2:30pm)

Introduction, *Deborah Chollet;* AMA proposal: Health Access America, *John Ring;* Pepper Commission proposals for health care reform, *Judy Feder;* Proposal of the Physicians for a National Health Program, *Quentin Young;* Proposal of the Heritage Foundation, *Edmund Haislmaier*;* Proposal of the Health Insurance Association of America, *Richard Curtis.* Organized by: *Robert Kirschner, Audrey Chapman, John Lantos, Kenneth Schaffner*

Disparities in Minority Health (Sat/8:30am)

"Crisis" of African-American men: A public health perspective, *Robert Mayberry;* Lessons from the Hispanic Health and Nutrition Examination Survey, *Olivia Carter-Pokras;* Research issues in Native American health status, *Timothy Taylor;* The underclass and health: What current data can and cannot show, *Gregory Pappas;* Topic to be announced, *Claudette Bennett*;* Defining the disparities: Old and new measures, *Pennifer Erickson, Patricia Golden.* Organized by: *Patricia Golden, Gladys Reynolds, Pennifer Erickson*

Topical Lecture (Sat/1:15pm)

Medicine and the social matrix, *Attallah Kappas*

Infant Mortality (Sat/2:30pm)

Overview, *Mary Ellen Avery;* Racial disparities in infant mortality, *Paul Wise;* Neonatal intensive care: From chicken hatching to electronic monitoring, *Dharmapuri Vidyasagar;* Very low birthweight infants: Survival, morbidity, and early neurodevelopmental outcome, *Maureen Hack;* Longer-term outcomes of very low birthweight infants, *Marie McCormick;* Association of fertility rates and infant mortality, *Mary Ellen Avery.* Organized by: *Mary Ellen Avery*

Human Error in Medicine I (Sun/8:30am)

Fatigue and human performance, *Gerald Krueger;* Medical disasters and latent system errors: Blame, guilt, and causality, *Richard Cook;* Misinterpreting cognitive decline in the elderly: Blaming the patient, *Georgine Vroman;* People versus computers in medical treatment, *Thomas Sheridan;* In and out, quick and sick ... then what? *Margaret Applegate.* Organized by: *Marilyn Sue Bogner*

Topical Lecture (Sun/1:15pm)

Drug-impaired physicians, *Robert Coombs*

Human Error in Medicine II (Sun/2:30pm)

Preventability of injury by physicians, *Lucian Leape;* Human error in anesthesiology: A dynamic medical specialty, *David Gaba;* Human errors: Their causes and reduction, *Harold Van Cott;* Misadministration of radiopharmaceuticals ... What's wrong? *Dennis Serig;* The profile of therapeutic misadventure as the cause of death, *Joshua Perper.* Organized by: *Marilyn Sue Bogner*

AIDS and Conflicts in Rights and Responsibilities in Health Professional-Patient Relationships (Mon/8:30am)

HIV transmission in health care settings: Risk and prevention, *David Bell;* AMA recommendations: Physicians' responsibility and the patients' right to information, *M. Roy Schwarz;* Mandatory testing and privacy: Science versus fear and prejudice? *George Annas;* Toward a more adequate framework for assessing rights and responsibilities, *Amitai Etzioni;* Oral health care and the HIV-positive dental student, *Thomas Dirksen;* The issue from a health care worker's perspective, *Jordan Barab.* Organized by: *Audrey Chapman, Deborah Runkle*

Topical Lecture (Mon/1:15pm)

An AIDS intervention that works, *Kevin O'Reilly*

AIDS and Human Rights (Mon/2:30pm)

Violations of human rights of persons with HIV/AIDS, *Aart Hendriks;* International and national responses to AIDS-related human rights violations, *Katarina Tomasevski;* Women and AIDS, *Marie-Lucie Brutus*;* AIDS and U.S. immigration policies, *Ronald St. John;* International and national responses to travelers with HIV, *Fernando Chang-Muy.* Organized by: *Katarina Tomasevski, Kari Hannibal*

Aging: Coping with Nonfatal Conditions (Tues/8:30am)

Population aging, declining mortality, and the expansion of morbidity hypothesis, *S. Jay Olshansky;* Acute hospital care and the concept of reactivation, *Alvar Svanborg;* Aging bones: Osteoporosis, osteoarthritis, and physical disability, *Toni Miles;* Mortality postponed and the unmasking of age-dependent nonfatal conditions, *Jacob Brody;* The public health impact of Alzheimer's disease, *Denis Evans.* Organized by: *Jacob Brody*

Topical Lecture (Tues/1:15pm)

Preventative dietary measures for heart disease and cancer, *Maureen Henderson*

Measurement Issues in Alzheimer's Disease *(Tues/2:30pm)*
Defining familiality using incomplete information, *James Hughes;* Problems in estimating incidence and prevalence, *Leonard Kurland;* The coming clinical trials: Problems and solutions, *Paul Meier;* The neuropathological diagnosis of Alzheimer's disease: A gray matter, *Suzanne Mirra;* Standardizing the diagnosis: The CERAD experience, *John Morris;* Quantification and measurement of change in cognitive status, *Gerald van Belle.* Organized by: *Gerald van Belle*

Fantastic Voyages: From Columbus to the Cosmos

Natural Philosophy and Cosmology in the Fifteenth and Sixteenth Centuries *(Fri/8:30am)*
The Copernican connection, *Owen Gingerich;* Evolution of the ray concept during the later Middle Ages and Renaissance, *A. Mark Smith;* Clocks and instruments at the time of Columbus, *W.J.H. Andrewes;* Natural philosophy in the late Middle Ages, *Michael Shank.* Organized by: *M. Eugene Rudd, Raymond White*

Topical Lecture *(Fri/1:30pm)*
Henry the Navigator and the early days of exploration, *Hans Mark*

Geography and Navigation *(Fri/2:30pm)*
Mythical geography: What Columbus thought he'd found, *Louis De Vorsey;* Cosmographers in the age of European discoveries, *Ursula Lamb;* Navigation in the period of the early European discoveries, *Clinton Edwards;* Map projections of Columbus's discoveries, *Norman J.W. Thrower.* Organized by: *Norman J.W. Thrower*

Natural History Discoveries and Impacts on Human Populations *(Sat/8:30am)*
Standards of proof in estimating contact population and subsequent decline, *David Henige;* Faunal discoveries, *Marcos Iglesias;* Materia medica discoveries of Christopher Columbus, *George Griffenhagen;* Syphilis and other diseases in the New World: An historical overview, *Ramunas Kondratas;* Enigmatic encounters, confused conquests, *Samuel Wilson.* Organized by: *George Griffenhagen*

Topical Lecture *(Sat/1:15pm)*
Global impact of foods discovered in the New World, *Solomon Katz*

Archaeology in Columbus's First Settlements *(Sat/2:30pm)*
New insights from the first Euro-American town: La Isabela, Dominican Republic, *Jose F.M. Cruxent, Kathleen Deagan;* The material world of Columbus in America, *Kathleen Deagan, Jose F.M. Cruxent;* Archaeometric analysis of the first European ceramics made in America, *Jacqueline Olin, J. Emlen Myers;* Identifying the origin of Columbus's artifacts, *Robert Brill*;* Isotopic characterization of the first European Fauna in the Americas, *Jonathon Ericson;* Introduction and impacts of European fauna in Hispaniola, *Elizabeth Reitz.* Organized by: *Kathleen Deagan*

Evolutionary Change of American Indian Societies Following European Contact *(Sun/8:30am)*
Change where change was least: The Amazon periphery, *Francis Black;* Sixteenth-century historical demography of American Indians, *Henry Dobyns;* Disease and demographic change in early colonial Latin America, *Linda Newson;* Disease loads and demography of contemporary North American Indians, *Jeffery Long;* Adoption and loss: Artifact change in post-contact Native America, *Ann Ramenofsky.* Organized by: *Ann Ramenofsky*

International Space Year Activities *(Sun/2:30pm)*
World Space Congress: A major event in the ISY, *Burton Edelson;* American Astronautical Society's international program and contributions to ISY, *Gayle May;* Overview of the U.S. ISY Association's activities, *Harvey Meyerson*;* IAF/ISY: Space and disaster mitigation, *Burton Edelson;* "Space: The Human Dimension", *Connie Van Praet.* Organized by: *Peter Bainum*

Astronomical Exploration from Antarctica I *(Mon/8:30am)*
History of astronomy in Antarctica, *Martin Pomerantz;* National Science Foundation center in Antarctica, *D.A. Harper;* South Pole solar astronomy, *John Harvey;* Meteorites in Antarctica, *William Cassidy.* Organized by: *Julie Lutz, John Lynch*

Astronomical Exploration from Antarctica II *(Mon/2:30pm)*
Cosmic microwave background anisotropy, *Mark Dragovan;* Cosmic ray composition, spectra, and interactions above 10^{12} electron volts, *Thomas Parnell;* Gamma ray astronomy from the South Pole, *Robert Morse;* Antarctic ice as a detector of high-energy neutrinos from astrophysical sources, *P. Buford Price.* Organized by: *Julie Lutz, John Lynch*

New Worlds Close Up *(Tues/8:30am)*
Introduction, *Clark Chapman;* Antarctic meteorites: Pieces of the Moon, Mars, and planetesimals, *Michael Lipschutz;* Magellan's mapping of Venus, *Steven Squyres;* The hazard of near-Earth asteroids, *David Morrison;* Spacecraft exploration of small bodies in the solar system, *Joseph Veverka;* A retrospective of the Voyager missions to the outer solar system, *Torrence Johnson.* Organized by: *Clark Chapman*

Setting Priorities in Space Research *(Tues/2:30pm)*
Speakers and topics to be announced. Organized by: *Joyce Purcell, John Dutton*

Energy for the 21st Century

Magnetic Levitation Transport I *(Sat/8:30am)*
Maglev technology: Present status and projected advances, *Gordon Danby;* Large-scale Maglev implementation in the United States, *James Powell;* Japanese Maglev development and future plans, *Yoshihiro Kyotani;* Energy and environmental benefits of Maglev systems, *Richard Gibbs*;* Financing Maglev systems in the United States, *Tim Lynch.* Organized by: *Gordon Danby, John Hull, Donald Rote, Thomas Rossing, James Powell*

Magnetic Levitation Transport II *(Sat/2:30pm)*
Maglev: Magnetic suspension design studies, *John Reitz;* Magneplane: Beyond faster railroads, *Henry Kolm;* Maglev: Is it needed and can it be justified in North America? *Tony Eastham;* Experimental studies of Maglev forces and fields, *Thomas Mulcahy, John Hull, Thomas Rossing;* Maglev: The first system, *William Dickhart;* Topic to be announced, *Donald Rote*, Howard Coffey*, Jianling He*.* Organized by: *Gordon Danby, John Hull, Donald Rote, James Powell, Thomas Rossing*

Toward Cleaner, More Efficient Energy I *(Sun/8:30am)*
Addressing the nation's energy needs: Three perspectives on the problem, *R. Stephen Berry, Margaret Fels, Barbara Farhar;* Natural limits to efficient energy use and how to reach them, *R. Stephen Berry;* Survey of new energy-efficient technologies, *Marc Ross;* Technology for efficient energy use, *Robert Williams;* Measurement of energy efficiency and what it means, *Margaret Fels.* Organized by: *R. Stephen Berry, Margaret Fels, Barbara Farhar*

Topical Lecture *(Sun/1:15pm)*
A decade of progress for renewable energy and energy efficiency technologies, *Michael Davis*

Toward Cleaner, More Efficient Energy II *(Sun/2:30pm)*
Solar energy, *Roland Winston;* Electrochemistry and hydrogen generation, *Nathan Lewis;* Energy-efficient windows, *Roy Gordon;* Role of advanced materials in the auto industry, *Norman Gjostein;* Encouraging high-efficiency refrigerator manufacturing, *Michael L'Ecuyer.* Organized by: *R. Stephen Berry, Margaret Fels, Barbara Farhar*

Toward Cleaner, More Efficient Energy III *(Mon/8:30am)*
Policy choices for increasing the efficient use of energy, *John Millhone;* Utility decision processes and integrated resource planning, *John Reed*;* Energy-efficient lighting, windows, and buildings for developing countries, *Arthur Rosenfeld, Mark Levine;* Regulatory constraints and opportunities for renewable electricity production, *Lynn Coles;* Socially acceptable use of renewable energy technology, *William Freudenburg.* Organized by: *R. Stephen Berry, Margaret Fels, Barbara Farhar*

Biofuels *(Mon/2:30pm)*
Electricity and transportation fuels from biomass, *Robert Williams;* The potential of woody and herbaceous energy crops, *Lynn Wright;* Bioenergy in developing countries, *Frank Tugwell;* Managing for biodiversity and production, *Thomas Crow;* Biofuels: Answer to global warming or growing threat to biodiversity? *James Cook.* Organized by: *James Cook*

Nuclear Energy: A Half Century and Beyond I *(Tues/8:30am)*
Chicago Pile I and beyond, *Albert Wattenberg;* Does fission energy have a future? *Alvin Weinberg;* Women of the Manhattan Project, *Caroline Herzenberg, Ruth Howes;* Role of advanced reactors in public utilities, *Cordell Reed.* Organized by: *Michael Crisp, William Hannum*

Topical Lecture *(Tues/1:15pm)*
The role of nuclear power and alternatives in the greenhouse problem, *Chauncey Starr*

Nuclear Energy: A Half Century and Beyond II *(Tues/2:30pm)*
Nuclear as an enduring energy resource, *Richard Wilson;* Next-generation nuclear reactors, *Jerry Griffith;* The integral fast reactor: A next-generation nuclear fuel cycle, *Charles Till;* Fusion energy: Status and prospects, *Robert Conn.* Organized by: *Michael Crisp, William Hannum*

Feeding the World

Animal and Plant Genomic Research I (Fri/8:30am)

Molecular biology processes and techniques used for genome research, *Gary Kochert;* Genetic mapping and analysis of trait loci, *Tom Osborn;* Genetic mapping in conifers, *Ron Sederoff;* Genetic and physical mapping of cereals, *J. Perry Gustafson.* Organized by: *Jerome Miksche, Roger Gerrits, Robert Zimbelman*

Topical Lecture (Fri/1:15pm)

Population, ecosystems services, and the human food supply, *Paul Ehrlich*

Animal and Plant Genomic Research II (Fri/2:30pm)

Genomic research to advance plant production, *Mark Sorrels;* Genomic research to advance animal production, *James Womack;* New approaches to animal disease protection using genome research, *Joan Lunney;* Development of novel, transposon-based genetic tools for plant research, *Barbara Baker;* Development of plant and animal genome databases, *Stephen Heller.* Organized by: *Jerome Miksche, Roger Gerrits, Robert Zimbelman*

Managing Genetic Resources I (Sat/8:30am)

Managing global genetic resources: Agricultural imperatives, *Peter Day;* Crop vulnerability and in situ conservation, *Garrison Wilkes;* Plant genetic resources and in situ conservation of biological diversity, *Calvin Sperling;* Ethnoecology and crop conservation, *Stephen Brush.* Organized by: *Lawrence Busch, Michael Strauss, William Lacy, J. Trevor Williams*

Topical Lecture (Sat/1:15pm)

Commercialization of genetically modified plants, *Robert Fraley*

Managing Genetic Resources II (Sat/2:30pm)

Security and long-term prospects for conservation of plant genetic resources, *Don Duvick;* Perspectives on property rights and germplasm, *John Barton;* Germplasm conservation in four nations: Brazil, Chile, France, and the United States, *Lawrence Busch, William Lacy;* New dimensions of crop plant genetic resources policy: Social and ethnical issues, *Frederick Buttel;* Genetic resources as an issue for community mediation, *Michael Lesnick.* Organized by: *Lawrence Busch, Michael Strauss, William Lacy, J. Trevor Williams*

Microbial Ecology and Soil Nitrogen (Sun/8:30am)

Nitrogen in tropical agroecosystems, *G. Philip Robertson;* Soil organic matter and nitrogen in low-tillage systems, *David Coleman;* Nitrogen management on large commercial farms, *Thomas Mueller;* Ecological economics of nitrogen, *C. Ronald Carroll.* Organized by: *C. Ronald Carroll, David Coleman*

Agricultural Use of Residuals (Sun/2:30pm)

Introduction and historical perspective, *James Parr;* Avoiding excessive levels of trace metals in soils, plants, and animals, *Rufus Chaney;* Implementable but adequately protective rules governing the agricultural use of municipal residuals, *John Walker;* From the generator to the land: A unique selling experience, *Marta Kulik;* Economics of the agricultural use of residuals, *Dan Colacico.* Organized by: *John Hodsdon, Doral Kemper*

Low-Fat Meat: Human Implications (Mon/8:30am)

Human nutrition and health implications of meat with more muscle and less fat, *David Klurfeld;* Carcass composition and sensory characteristics of meat from animals administered partitioning agents, *Donald Beermann;* Growth, nutritional requirements, and welfare of animals given partitioning agents, *Norman Steele, Stanley Curtis;* Reactions of producers and purveyors to partitioning agents, *David Meeker, David Meisinger;* Socioeconomic impacts of partitioning agents, *Marvin Hayenga, Gordon Bultena.* Organized by: *Harold Hafs, Robert Zimbelman*

Featured Debate (Mon/1:15pm)

Biotechnology to improve meat quality, *Margaret Mellon; other speaker to be announced.*

Avoiding Meat Shortages (Mon/2:30pm)

Declines in feed and food production, *Clair Terrill;* Increasing the efficiency of ruminant meat production, *Lyle McNeal;* Management and breeding for increased meat production from grasslands, *K.P. Vogel;* Wildlife and animal rights barriers to meat production from forage, *Walter Howard;* Shifting meat production from grain to forage, *Charles Parker.* Organized by: *Clair Terrill, Robert Zimbelman, Robert Barnes*

Biotic Crises of Exotics Introduced in the Great Lakes (Tues/8:30am)

Exotic Species in the Great Lakes: A history of biotic crises and anthropogenic introductions, *Edward Mills;* Zebra mussels in the Great Lakes: Was the fanfare justified? *Joseph Leach;* Bythotrephes: Beast or benign? *W. Gary Sprules, Howard Riessen;* The ruffe: Impacts in Lake Superior and predicted fate of the lower Great Lakes, *Dennis Pratt;* Introduced fishes to the Great Lakes: Harvest and havoc, *Edwin Crossman*;* What's next on the ballast menu? Predicting biological invasions, *James Carlton.* Organized by: *Joseph Leach, Edward Mills, James Carlton*

Topical Lecture (Tues/1:15pm)

Aquaculture: An ecosystems perspective, *E.W. Shell*

Generic Advertising of Food Products (Tues/2:30pm)

Brief history of generic food advertising, *Olan Forker;* Implications of generic advertising for human nutrition, *Helen Jensen;* Generic advertising of meats when supply is uncontrolled and consumption limited, *Dermot Hayes;* Impacts of generic advertising on consumer demand, *Tom Cox;* Industry needs/benefits of generic advertising, *Archie MacDonald.* Organized by: *Henry Kinnucan, Olan Forker*

Waging War Against Pollution

Catalysts: Keys to Protecting the Environment (Fri/8:30am)

Catalysis: The key to environmentally compatible technologies, *James Cusumano;* Protecting the ozone layer: The search for CFC alternatives, *Leo Manzer;* The auto/oil air quality improvement research program, *Leo McCabe;* Catalytic control of automobile and stationary source emissions, *L. Louis Hegedus.* Organized by: *Alexis Bell, L. Louis Hegedus*

Topical Lecture (Fri/1:15pm)

"Garbageology", *William Rathje**

Environmentally Benign Manufacturing (Fri/2:30pm)

Basic research in support of environmentally benign manufacturing, *Henry McGee, Jr.;* Toward the goal of zero emissions from fossil fuel-fired electric generating plants, *Fritz Kalhammer*;* Separation from highly dilute streams, *Norman Li.* Organized by: *Henry McGee, Jr., J. Ivan Legg*

Biotechnology Against Environmental Pollution (Sat/8:30am)

Environmental biotechnology: Current status and future directions, *Oscar Zaborsky;* Environmental biotechnology in Europe, *Ioannis Economidis;* Biotechnology to combat soil and water pollution, *Alexander J.B. Zehnder;* Defense environmental biotechnology research, *Daphne Kamely;* Bioremediation for the fossil fuel industry, *Roger Prince.* Organized by: *Daphne Kamely, Ananda Chakrabarty*

Topical Lecture (Sat/1:15pm)

Cleaning up the Persian Gulf oil spill, *Donald Jensen*

New Physical-Chemical Approaches to Pollution Control (Sat/2:30pm)

Chemical sensors based on semiconductor photoluminescence, *Arthur Ellis;* Ceramic thin films for environmental remediation, *Marc Anderson;* Microencapsulation in environmental cleanup, *Joseph Robinson;* Robots in remediation of hazardous waste, *David Ginley*;* Plasma-based treatment processes for hazardous waste, *Laurel Staley;* Subsurface contamination problems, *Jacob Baer;* Radiolytic destruction of chlorinated hydrocarbons using electron accelerators, *Stephen Matthews.* Organized by: *Steven Kornguth*

Turning Swords into Superfund Sites: Weapons Destruction (Sun/8:30am)

Environmental regulation of weapons destruction, *Barry Kellman;* Scenarios for nuclear warhead disposal, *Alexander DeVolpi;* Environmental effects of nuclear warhead disposal, *David Albright*;* Chemical weapons incineration technology, *Charles Baronian;* Adverse environmental effects of incinerating chemical weapons, *Sebia Hawkins, Pat Costner;* Health effects of chemical weapons incineration, *Sanford Leffingwell;* Status of alternatives to incinerating chemical weapons, *Carl Peterson.* Organized by: *Edward Tanzman*

Topical Lecture (Sun/1:15pm)

Control/prevention of trace gas equilibrium, *F. Sherwood Rowland*

Minorities and Environmental Hazards (Sun/2:30pm)

Minority population concentrations and noxious facility sites, *Leslie Nieves;* Special water resources outreach programs, *H. Watt*, J. Hannaham*;* Environmental contaminants: Impact on Alabama's rural, "Black Belt" families, *Ramble Ankumah;* Who is downwind? Minorities and air pollution, *Dee Wernette;* Adverse health effects of soil-lead reservoirs to minority/inner-city children, *Howard Mielke;* Minority children in the Midwest exposed to environmental sources of lead, *William Sanders III.* Organized by: *Dee Wernette*

Recycling (Mon/8:30am)

Speakers and topics to be announced. Organized by: *Sharon McIntosh*

Future Research Directions in Hazardous Waste Remediation (Mon/2:30pm)

Overview: Future research directions for hazardous waste research, *Gilbert Omenn;* Role of the Science Advisory Board, *Donald Barnes;* Current EPA research: The interrelationship of risk and remedy, *Dorothy Canter;* Industry research in hazardous waste remediation, *Michael Heitkamp;* State needs, *William Child**. Organized by: *Douglas Sarno*

(continued on page 1038)

AAAS ☆ 92 MEETING AT A GLANCE

	Friday, 7 February	Saturday, 8 February	Sunday, 9 February	Monday, 10 February	Tuesday, 11 February
Molecular Genetics and Evolution	**AM:** Evolution of Temperature Adaptation. **PM:** Genetics and Evolution of Aging.	**AM:** Molecular Biogeography. **PM:** Speciation.	**AM:** Primate Evolution. **PM:** Molecular Evolutionary Rates: Patterns and Processes.	**AM:** Population Genetics of Microorganisms. **PM:** Genetic Information.	**AM:** Evolutionary Genetics of Transposable Elements. **PM:** DNA Repair in Higher Plants and Ozone Depletion.
Native American Origins	**PM:** Biomolecular Archaeology.	**AM:** Native American Remains: Ethical Issues. **PM:** Fate of the European "Cavepeople".	**AM:** The Newest World: Original Peopling of North America. **TL:** The earliest North Americans. **PM:** South American Paleoindians.	**AM/PM:** Ethnogenesis in the Americas. **TL:** Ethnogenesis reconsidered.	**AM:** Ethnogenesis in the Americas.
Climate and Global Change	**AM:** Sun, Earth, and Society.	**AM/PM:** Uncertainties of Global Change Forecasts. **TL:** Uncertainties of global-change predictions with coupled climate models.	**AM/PM:** Mitigation and Adaptation Response to Our Changing Planet. **TL:** Out of the nuclear fire into the global frying pan: Catastrophe.	**AM/PM:** Polar Climate.	**AM:** Climate Change on the Great Lakes Basin. **PM:** Violent Storms in the Sky over the Midwest.
Medicines and Technologies of the Future	**AM:** Zoopharmacognosy. **TL:** Taxol: Mechanism of action and resistance. **PM:** Drug Development and Industrial Use of Natural Products.	**AM:** Drugs: From Laboratory to Patient. **PM:** The Ethics and Ethos of Clinical Trials.	**AM:** Augmented Tissue Regeneration. **TL:** Replacement parts for the damaged brain. **PM:** Critical Materials.	**AM/PM:** Revolution in Microscopy. **TL:** The future of microscopy.	**AM:** Revolution in Microscopy. **PM:** New Technology for Persons with Disabilities.
Ethics and Research Policies	**AM:** Computers and Ethics in Medicine. **PM:** Confidentiality, Security, and Cryptography.	**AM:** Contrasting Cultures of Law and Science. **TL:** Cold fusion unmasking. **PM:** International Law and Environmental Ethics.	**AM:** Responsibilities of Research Management. **PM:** Too Many Researchers? Too Little Funding?	**AM:** Integrity and Misconduct in Science. **PM:** Responsible Research Practices: The Use of Guidelines.	**AM:** The Future of the Research University. **1:00pm:** The Future of the National Laboratories. **3:00pm:** The Future of Industrial Research.
Crisis in Health Care	**AM/PM:** The Right to Health Care. **TL:** A national health insurance plan.	**AM:** Disparities in Minority Health. **TL:** Medicine and the social matrix. **PM:** Infant Mortality.	**AM/PM:** Human Error in Medicine. **TL:** Drug-impaired physicians.	**AM:** AIDS and Conflicts in Health Professional-Patient Relationships. **TL:** An AIDS intervention that works. **PM:** AIDS and Human Rights.	**AM:** Aging: Nonfatal Conditions. **TL:** Preventative diet for heart disease/cancer. **PM:** Measurement Issues in Alzheimer's Disease.
Fantastic Voyages: From Columbus to the Cosmos	**AM:** Natural Philosophy and Cosmology: 15th and 16th Centuries. **TL:** Henry the Navigator. **PM:** Geography and Navigation.	**AM:** Natural History Discoveries and Impacts. **TL:** Global impact of New World foods. **PM:** Archaeology in Columbus's First Settlements.	**AM:** Evolutionary Change of American Indian Societies Following European Contact. **PM:** International Space Year Activities.	**AM/PM:** Astronomical Exploration from Antarctica.	**AM:** New Worlds Close Up. **PM:** Setting Priorities in Space Research.
Energy for the 21st Century		**AM/PM:** Magnetic Levitation Transport.	**AM/PM:** Toward Cleaner, More Efficient Energy. **TL:** A decade of progress for renewable energy and energy efficiency technologies.	**AM:** Toward Cleaner, More Efficient Energy. **PM:** Biofuels.	**AM/PM:** Nuclear Energy: A Half Century and Beyond. **TL:** The role of nuclear power and alternatives in the greenhouse problem.
Feeding the World	**AM/PM:** Animal and Plant Genomic Research. **TL:** Population, ecosystem services, and the human food supply.	**AM/PM:** Managing Genetic Resources. **TL:** Commercialization of genetically modified plants.	**AM:** Microbial Ecology and Soil Nitrogen. **PM:** Agricultural Use of Residuals.	**AM:** Low-Fat Meat: Human Implications. **TL:** Biotechnology to improve meat quality (Debate). **PM:** Avoiding Meat Shortages.	**AM:** Biotic Crises of Exotics Introduced in Great Lakes. **TL:** Aquaculture: An ecosystems perspective. **PM:** Generic Advertising of Food.
Waging War Against Pollution	**AM:** Catalysts: Keys to Protecting the Environment. **TL:** "Garbageology". **PM:** Environmentally Benign Manufacturing.	**AM:** Biotechnology Against Environmental Pollution. **TL:** The Persian Gulf oil spill. **PM:** Physical-Chemical Approaches to Pollution Control.	**AM:** Turning Swords into Superfund Sites. **TL:** Control/prevention of trace gas equilibrium. **PM:** Minorities and Environmental Hazards.	**AM:** Recycling. **PM:** Future Research Directions in Hazardous Waste Remediation.	
Mathematics, Communication, and Information Processing	**AM:** Patterns and Order. **PM:** Wavelets and Their Applications.	**AM:** Electronic Networking and the Research Process. **TL:** Science in the "Information Age". **PM:** Digital Library for Scientific Research.	**AM:** Statistics Don't Lie, but.... **PM:** Parallel Computing: Mathematics and Science.	**AM:** Parallel Computing: Mathematics and Science. **TL:** Artificial intelligence. **PM:** Statistical Modeling and Analysis Using Personal Computers.	**AM:** Mathematics and Computers. **PM:** Visualization of Supercomputer Applications.
Psychology and Child Development	**AM:** The Science of Psychoanalysis. **PM:** Electrophysiology of Language Comprehension.	**AM:** Cognition and Communication in Infants. **TL:** Pan to man: The language link. **PM:** Human Growth Patterns.	**TL:** McGovern Award Lecture in the Behavioral Sciences. **PM:** Advances in Developmental Theory.	**AM/PM:** The Neurobiology of Communication. **TL:** Gesture and narrative: The importance of the right hemisphere.	**AM:** The Psychobiology of Emotion.
Patterns of Life in Urban and Rural America	**PM:** Assessing Urban Infrastructure for the Future.	**AM:** Assessing Urban Infrastructure for the Future. **TL:** Urbanization: The megacities. **PM:** Spatial Patterns in the Modern Metropolis.	**AM:** Race, Class, and the Urban Environment. **PM:** Urban Violence.	**AM:** Urban Violence. **TL:** Urban problems. **PM:** The Future of Rural America.	**AM/PM:** The Future of Rural America.

Industry and the Changing Workforce	**AM:** Immigration to the United States. **PM:** Managing Diversity in the Technical Workforce.	**AM:** Changing Work and Family Roles in an Aging Society. **PM:** Gray Labor: A Mature Work Force.	**AM/PM:** Human Factors in the Automation Age. **TL:** Human factors of telerobots and teleoperation.	**AM/PM:** Transnational R&D Cooperation. **TL:** Nurturing and stimulating international scientific cooperation.	**AM:** Transnational R&D Cooperation. **PM:** Future of the Midwest Economy: Forecasting Models of Chicago and Michigan.
Environmental Modeling and Policy	**AM:** Evaluating Critical Choices on Energy and Environment. **PM:** Mathematical Modeling and Environmental Concerns.	**AM:** Long-Range Externalities: Nuclear Waste Disposal. **TL:** Global warming: Free prevention? **PM:** Long-Range Externalities: Global Warming.	**AM:** Field Work: The Short and the Long of It. **PM:** Economics, Environment, and Trade.	**AM:** Research and Environmental Quality. **PM:** Federal Support for Environmental Research.	**AM/PM:** How Well Does Environmental Policy Track Science?
Science and Math Education: Striving for Excellence	**AM:** Scientific Research in Science Education. **TL:** Math and science: The language of the future. **PM:** Project 2061.	**AM:** Science and Mathematics Education in Central Cities. **PM:** Innovation in Precollege Science and Mathematics Delivery.	**AM:** Presidential Awardees Make Science and Mathematics Live! **PM:** Revolution in Undergraduate Science and Math Education?	**AM/PM:** NSF State Systemic Initiatives.	**AM:** The Access to Algebra Initiative. **TL:** Discussion: Partnerships with the PHS. **PM:** Scientist-Teacher Partnerships in Middle Schools.
Preserving World Peace	**AM:** Arms Control in a Changing World. **PM:** Post-Cold War Arms Trade.	**AM:** The Future of Smart Weapons. **PM:** Tactical and Ballistic Missile Defenses.	**AM:** Environmental Dimensions of Security. **PM:** Understanding and Preventing International Terrorism.	**AM:** Security in Latin America. **TL:** The changing face of arms control. **PM:** Security on the Pacific Rim.	**AM:** Nuclear Deterrence in the Developing World.
Physics: From Fermi to the Future	**TL:** Enrico Fermi: A unique person. **PM:** Particle Physics on the Prairie.	**AM:** High-Energy Physics. **PM:** Nuclear Risk Perception.	**AM:** Nanostructures. **PM:** Atomic Physics.	**AM:** State-of-the-Art Introductory Physics Lab. **PM:** Teaching Discovery-Based Physics.	
Long-Term Research in U.S. National Parks	**AM/PM:** Efficacy of Long-Term Research in U.S. National Parks.	**AM/PM:** Efficacy of Long-Term Research in U.S. National Parks.			
International Issues	**PM:** Environment and Development: Directions for the 21st Century.	**AM/PM:** Environment and Development: Directions for the 21st Century.		**AM:** Science in Africa: Setting Research Priorities.	
Scientists and Journalists	**AM:** Science, Labs, and Videotape: Video News Releases in TV Science Coverage. **PM:** Scientist and Journalists: Antagonists or Symbionts?				
Science for Everyone	**AM/PM:** Pre-Columbian Science: A Modern Perspective.	**AM/PM:** The Science of Beauty.	**AM:** Astrology and Other Pseudoscience. **PM:** Science Is Fun! **PM:** Science and Al Capone.	**AM:** Frontiers of the Social Sciences. **AM/PM:** Communicating Science to the Public. **TL:** Irreproducible research. **PM:** Science for Naked Eye.	**AM/PM:** Frontiers of the Physical Sciences: 1992. **AM:** Sex Research. **PM:** Whose Science and Math Is It Anyway? Multicultural Perspectives.
Cognitive Neuroscience *(separate registration required)*		**AM:** Info Processing in Nervous System. **TL:** Functional imaging of cognitive activity. **PM:** Conscious/Unconscious Sensory Info Processing.	**AM:** Selective Attention. **TL:** Finding our way: Neuronal processing for 3-D motion. **PM:** Memory.	**AM:** Computational Models. **TL:** Computations underlying the execution of movement: A biological perspective. **PM:** Biology of Language.	
Molecular Modeling and Computational Chemistry *(separate registration required)*	**AM:** Computational Chemistry. **PM:** Drug Design.	**AM:** Rational Molecular Design. **PM:** Molecular Simulations.	**AM:** Three-Dimensional Databases.		

Key to Session Times

AM = Morning Session, 8:30am–11:30am

PM = Afternoon Session, 2:30pm–5:30pm

TL = Topical Lecture, 1:15pm–2:15pm

AM/PM = Two-part symposium: 8:30am–11:30pm *and* 2:30pm–5:30pm

AAAS☆92 Exhibit Hours

Friday, 7 February.....5:30pm–8:00pm
(Grand opening and welcoming reception)

Saturday, 8 February.....9:00am–3:00pm

Sunday, 9 February.....9:00am–3:00pm

Monday, 10 February.....9:00am–2:00pm

Exhibits will be in the Wacker Exhibition Hall, East Tower, Hyatt Regency Chicago.

Thursday, 6 February

10:00am: Science Encounters '92 Youth Symposium (see General Information)

3:00pm: AJAS Lectures (see General Information)

8:00pm: Keynote Address: Hanna Holborn Gray (see Plenary Lectures)

9:00pm: Opening Reception

Plenary Lectures

Thursday, 6 February, 8:00pm: **Hanna Holborn Gray,** President, University of Chicago

Friday, 7 February, 8:00pm: **Susan Solomon,** Research Chemist, National Oceanic and Atmospheric Administration Aeronomy Laboratory

Saturday, 8 February, 7:00pm: **Walter Massey,** Director, National Science Foundation

Sunday, 9 February, 7:00pm: **Leon M. Lederman,** Sulzberger Professor of Physics, Fermi Institute; Director-Emeritus, Fermi National Accelerator Lab; President, AAAS

Monday, 10 February, 7:00pm: **Federico Mayor,** Director-General, United Nations Educational, Scientific, and Cultural Organization (UNESCO)

Mathematics, Communication, and Information Processing

Patterns and Order *(Fri/8:30am)*
Chaotic dynamics of fluids, *Leo Kadanoff;* Modeling aperiodic solids, *Marjorie Senechal;* The crystal problem, *Charles Radin;* Recent results on the asymptotic shape of growth models, *David Griffeath.* Organized by: *Marjorie Senechal, Charles Radin*

Wavelets and Their Applications *(Fri/2:30pm)*
Wavelet and wavelet-packet analysis, *R. Coifman;* Orthonormal bases of wavelets, *Ingrid Daubechies;* Singularity and information processing with wavelets, *Stephane Mallat;* Wavelets and signal analysis, *Howard Resnikoff;* Wavelets and signal processing, *Martin Vetterli.* Organized by: *Martin Vetterli, Ingrid Daubechies, Stephane Mallat*

Electronic Networking and the Research Process *(Sat/8:30am)*
The role of libraries in supporting researchers' use of Internet/NREN information resources, *Charles McClure;* Factors affecting use of scientific and technical information in the research process, *Thomas Pinelli;* Informal electronic communication in research and development, *Ann Bishop;* Information policy issues affecting the Internet/NREN research and development environment, *Frederick Weingarten;* Electronic networks, the normative structure of science, and the research process, *Philip Doty.* Organized by: *Charles McClure, Ann Bishop, Philip Doty*

Topical Lecture *(Sat/1:15pm)*
Science in the "Information Age", *Robert Lucky*

Digital Library for Scientific Research *(Sat/2:30pm)*
Network impact and requirements of digital libraries, *Michael Condry;* What digital libraries can do for scientific research, *Barbara Mihalas;* A digital library for a biological community: An operational prototype, *Bruce Schatz;* User feedback for creating digital libraries, *Ann Bishop;* Wide area information servers: A supercomputer on every desk, *Brewster Kahle.* Organized by: *Katherine Baum, Barbara Mihalas*

Statistics Don't Lie, but ... *(Sun/8:30am)*
Ethical issues in private industry statistics, *Robbin Derry;* Statistics and risk, *John Ahearne;* Statistics and education, *F. Karl Willenbrock;* How to help reporters tell the truth (sometimes), *Victor Cohn.* Organized by: *F. Karl Willenbrock, Deborah Runkle*

Parallel Computing: Mathematics and Science I *(Sun/2:30pm)*
An overview of parallel architectures and algorithms, *Tom Leighton*;* Parallel processing and fluid dynamics, *James Sethian*;* Evolution and learning, *W. Daniel Hillis;* Environmental chemistry and parallel computing, *Greg McRae*.* Organized by: *Jill Mesirov, Richard Schoen, Jeff Graham*

Parallel Computing: Mathematics and Science II *(Mon/8:30am)*
Computational neural science: Reception, presentation, cognition, and response in vision, *Klaus Schulten;* Massively parallel computing in structural biology, *Robert Martino;* Global climate modeling on massively parallel computers, *Rick Stevens;* 3-D semiconductor device simulation, *Robert Dutton;* Summary talk on parallel processing, *Ralph Roskies.* Organized by: *Jill Mesirov, Richard Schoen, Jeff Graham*

Topical Lecture *(Mon/1:15pm)*
Computers and common sense, *Marvin Minsky*

Statistical Modeling and Analysis Using Personal Computers *(Mon/2:30pm)*
Regression diagnostics using computer graphics, *Paul Tukey*;* Multivariate presentation graphics on microprocessors, *Leland Wilkinson;* User-interface schemes for experimental design and data analysis, *William DuMouchel;* Decision-support systems for choice of statistical tests, *Edward Brent, Edward Mirielli, Jr.;* Discrete time-series methods for monitoring data, *Turkan Gardenier.* Organized by: *Turkan Gardenier, William Eddy*

Mathematics and Computers *(Tues/8:30am)*
Visualizing dimensions: Geometry via computer graphics, *Thomas Banchoff;* "Mathematica", *Stephen Wolfram;* Computers and geometry, *Albert Marden;* Scientific visualization, mathematics, and beauty, *Clifford Pickover;* Doing mathematics on a computer, *Dana Scott.* Organized by: *Keith Devlin, Jon Barwise*

Visualization of Supercomputer Applications *(Tues/2:30pm)*
Computer simulation of astrophysical plasmas, *Claire Max;* Astrophysical fluid dynamics, *Michael Norman;* Metacomputing applications in physics, *Larry Smarr;* Simulation of geologic history, *Christine Koltermann;* Visualization of 3-D fractals, *John Hart;* Visualization for mathematics and science education, *Sylvie Rueff.* Organized by: *Katherine Baum, John Hart*

Psychology and Child Development

The Science of Psychoanalysis *(Fri/8:30am)*
What kind of a science is psychoanalysis? *Bertram Cohler, Robert Galatzer-Levy;* Efficacy and outcome in psychoanalysis, *Henry Bachrach;* Freud's dual perspective on the analytic relationship: Implications for contemporary psychoanalysis, *James McLaughlin;* Psychoanalysis and war: A study of psychoanalysis applied to social science research, *Stephen Sonnenberg;* Psychoanalysis: An evolving discipline, *Aaron Esman.* Organized by: *Stephen Sonnenberg*

McGovern Award Lecture in the Behavioral Sciences *(Fri/1:15pm)*
Topic to be announced, *Eric Kandel*

Electrophysiology of Language Comprehension *(Fri/2:30pm)*
The use of verb-based knowledge in sentence comprehension, *Susan Garnsey;* Electrophysiological evidence for the flexibility of lexical processing, *Cyma Van Petten;* Syntactic processes in language comprehension, *Lee Osterhout;* Differences in comprehension processes in reading and listening, *Phillip Holcomb;* Introduction and discussion, *Marta Kutas*.* Organized by: *Phillip Holcomb*

Cognition and Communication in Infants *(Sat/8:30am)*
Infants' understanding of the physical world, *Renee Baillargeon;* Perception of objects and the physical world by infants, *Albert Yonas;* Delayed imitation of event sequence by infants, *Patricia Bauer;* Cross-cultural studies of infant-adult communication, *Anne Fernald;* The ontogeny of language: Evidence from children's early language and gesture, *Laura Ann Petitto.* Organized by: *Thomas Tighe, Bert Moore*

Topical Lecture *(Sat/1:15pm)*
Pan to man: The language link, *Sue Savage-Rumbaugh*

Human Growth Patterns *(Sat/2:30pm)*
Evaluation of pulsatile patterns of growth hormone release in man, *Mark Hartman;* Children do not grow continuously but in spurts, *Michael Hermanussen;* Clinical use of short-term growth to detect growth abnormalities, *Christine Cronk, Virginia Stallings;* A new definition of human growth: Leaps and bounds, *Michelle Lampl;* Analysis of serial growth data, *Michael Johnson.* Organized by: *Michelle Lampl*

Advances in Developmental Theory *(Sun/2:30pm)*
Baby see, baby do: The power of imitative learning in infancy, *Andrew Meltzoff;* The genetics of environment, *Sandra Scarr;* What babies know and what they can learn, *T.G.R. Bower;* How infants perceive speech: What is given by nature, what is gained by experience, *Patricia Kuhl.* Organized by: *Bert Moore, Thomas Tighe, T.G.R. Bower*

The Neurobiology of Communication I *(Mon/8:30am)*
Coordinated interpersonal timing, *Cynthia Crown;* Articulatory organization, *Osamu Fujimura;* Transcription problems, *Daniel O'Connell;* Comparison of real-time analytic methods, *Sabine Kowal.* Organized by: *Ernest Friedman*

Topical Lecture *(Mon/1:15pm)*
Gesture and narrative: The importance of the right hemisphere, *David McNeill*

The Neurobiology of Communication II *(Mon/2:30pm)*
Substance abuse, *Marcelline Burns;* Data acquisition, *Gary Sanders;* Speech timing: Patterns and prognosis in mood disorders, *Samuel Anderson;* Speech chronemics: The hidden dimension of speech, *Hans-Peter Krueger;* Micropauses in speech, *Mark Vollrath.* Organized by: *Ernest Friedman*

The Psychobiology of Emotion *(Tues/8:30am)*
In search of the emotional brain, *Joseph LeDoux;* Cerebral asymmetry, emotion, and affective style, *Richard Davidson;* Autonomic differentiation among emotions, *Robert Levenson;* Covert facial expression and emotion, *John Cacioppo;* Discussion, *Edward Katkin.* Organized by: *Richard Davidson*

Patterns of Life in Urban and Rural America

Assessing Urban Infrastructure for the Future I *(Fri/2:30pm)*
Urban population shifts, 1970-1990, *John Long;* Social science experts and community participation, *Noel Cazenave;* Robust planning: A new frontier for systems analysis, *John Mulvey, Julian Wolpert;* Urban infrastructure: Does anybody care about food? *Kate Clancy;* Building sustainable local economies, *Scott Bernstein.* Organized by: *Donald Browne, Rachelle Hollander*

Assessing Urban Infrastructure for the Future II *(Sat/8:30am)*
Climate and virtual climate: Infrastructure as political entitlement, *Charles Herrick;* The effect of climate change on urban water supplies, *John Dracup;* Ecological exchanges in a bi-national metropolis: San Diego and Tijuana, *Charles Cooper;* Lifeline reliability in natural disasters, *Rutherford Platt;*

Electrical efficiency and the metropolis of the future, *Amory Lovins.* Organized by: *Donald Browne, Rachelle Hollander*

Topical Lecture *(Sat/1:15pm)*
Urbanization: The megacities, *Ellen Brennan*

Spatial Patterns in the Modern Metropolis *(Sat/2:30pm)*
A dynamic model of the urban housing market, *Alex Anas*;* Employment subcenters in metropolitan Chicago, *John McDonald;* Patterns of Chicago office rents, *Edwin Mills;* A structural model of land values and zoning, *Daniel McMillen;* Land values in Cook County, *Peter Colwell.* Organized by: *John McDonald, Edwin Mills*

Race, Class, and the Urban Environment *(Sun/8:30am)*
Environmental racism and the toxic threat, *Robert Bullard;* Race and environment in the Detroit area, *Paul Mohai;* Lead screening as a legal right of the poor, *Joel Reynolds;* Race and toxic waste in U.S. cities,*Charles Lee;* Topic to be announced, *Mike Belliveau.* Organized by: *Robert Bullard, Susan Cozzens*

Urban Violence I *(Sun/2:30pm)*
Individual and gang violence, *Terence Thornberry;* Twenty-five years of youth gangs and violence, *Malcolm Klein;* Community structure and changes in urban violence, *Robert Sampson;* Ethnographic studies of the gendered nature of drug-related violence, *Eleanor Miller;* Discussion, *Barry Krisberg*.* Organized by: *Roland Chilton, Lewis Lipsitt, Elena Nightingale*

Urban Violence II *(Mon/8:30am)*
Urban violence and the urban poor, *Elijah Anderson;* Race and crime in postwar America: Determinants of African-American and white rates, 1958-1988, *Gary Lafree;* Intergenerational violence, *Cathy Spatz Widom;* Alcohol, drug abuse, and violence, *David Lewis;* Discussion, *Carl Bell, Alex Kotlowitz.* Organized by: *Roland Chilton, Lewis Lipsitt, Elena Nightingale*

Topical Lecture *(Mon/1:15pm)*
Urban problems, *Richard Daley**

The Future of Rural America I *(Mon/2:30pm)*
Population trends in rural America, *Glenn Fuguitt;* Rural sociology, *Fred Buttel*;* The ghettoization of rural America, *Osha Gray Davidson;* Looking toward the future of rural America, *David Forkenbrock*;* Topic to be announced, *Harland Nelson.* Organized by: *Joseph Molnar, Carol Seyfrit, Donald Browne, Thomas McKone*

The Future of Rural America II *(Tues/8:30am)*
The economics of rural America, *Stanley Johnson;* The changing economics of agribusiness, *Roger Ginder;* Small-town economics (The Wal-Mart phenomena), *Kenneth Stone;* Effects of technological change on rural society, *Joseph Molnar;* Modeling environmental/economic tradeoffs in rural America, *Jason Shogren.* Organized by: *Joseph Molnar, Carol Seyfrit, Donald Browne, Thomas McKone*

The Future of Rural America III *(Tues/2:30pm)*
Preventing and adapting to global change, *Jerald Schnoor;* Exposures to environmental pollution: A multimedia approach for rural landscapes, *Thomas McKone;* Water-quality issues in rural America, *George Hallberg;* Boom and bust in resource-dependent rural places: Consequences for the community field, *Rick Krannich;* Industrializing American agriculture, *Steve Murdock.* Organized by: *Joseph Molnar, Carol Seyfrit, Donald Browne, Thomas McKone*

Industry and the Changing Workforce

Immigration to the United States *(Fri/8:30am)*
Are U.S. immigrants selected positively or negatively? *George Borjas;* Immigration-induced changes in U.S. demography, *Leon Bouvier;* Asian immigrant entrepreneurs and non-entrepreneurs, *James Fawcett, Robert Gardner;* Impact of U.S. immigration upon internal migration, *Michael White;* Comparing immigration in Japan, Europe, and North America, *Hania Zlotnick*.* Organized by: *Michael Teitelbaum*

Managing Diversity in the Technical Workforce *(Fri/2:30pm)*
Introduction to managing diversity in the technical workforce, *Theodore Schlie;* Future scarcities of scientists and engineers, *Myles Boylan*;* Results from a large-scale survey of diversity in the industrial R&D workforce, *Nancy DiTomaso, George Farris, Rene Cordero;* Case studies of diversity in high-performing, high-tech project teams, *Robert Davis*;* Diversity and managing the globalization of industrial R&D, *Theodore Schlie.* Organized by: *Theodore Schlie*

Changing Work and Family Roles in an Aging Society *(Sat/8:30am)*
Women, work, and family: A sociological perspective on changing roles, *Phyllis Moen;* Work after retirement: Changing work patterns in an aging society, *Richard Burkhauser;* Productive activities of older people: Patterns, causes, and consequences, *Robert Kahn;* Anthropological approach, *Jennie Keith;* Managing social change to promote human wellbeing, *Margaret Mooney Marini.* Organized by: *Matilda White Riley, Phyllis Moen*

Gray Labor: A Mature Work Force *(Sat/2:30pm)*
The employment of older workers: Current experiences and future prospects, *William McNaught;* Labor force requirements and opportunities, *Barry Friedman;* Plans and preferences of older American workers, *Joseph Quinn;* Implications of current trends in employment benefits policy for older workers, *Martin Sicker;* Role of higher education in middle-and late-career relearning, *Francis Caro, Scott Bass;* Capabilities of older people to work: Physical and psychological issues, *Harvey Sterns.* Organized by: *Robert Morris, Scott Bass*

Human Factors in the Automation Age I *(Sun/8:30am)*
Human interaction with computers and robots, *Raymond Nickerson;* Automation and the organization of work, *Michael Smith;* Human factors in office automation, *Marilyn Joyce;* Human factors and cognitive issues in design for manufacturability, *Martin Helander;* Human factors of automated manufacturing, *Waldemar Karwowski;* Sources of performance variability in human operation of complex systems, *Thomas Smith.* Organized by: *Thomas Smith, Harold Booher*

Topical Lecture *(Sun/1:15pm)*
Human factors of telerobots and teleoperation, *Thomas Sheridan*

Human Factors in the Automation Age II *(Sun/2:30pm)*
Error-tolerant interfaces for complex systems, *William Rouse;* Dynamic ergonomic models in the design process, *Mark Hofmann;* Integrating manpower, personnel, and training factors into technology selection and design, *Susan Dahl;* Cognitive workload assessment and prediction, *Christopher Wickens;* MANPRINT: A human-centered approach to systems integration, *Harold Booher.* Organized by: *Thomas Smith, Harold Booher*

Transnational R&D Cooperation I *(Mon/8:30am)*
US-EC strategies for using science and technology to stimulate regional economic growth, *Tom Higgins;* Transnational cooperation in telecommunications R&D, *Alan Chynoweth;* Topics to be announed, *Giorgio Boggio; David Mowery.* Organized by: *Irwin Feller, Alan Engel, Christopher Hill, Robert Morgan*

Topical Lecture *(Mon/1:15pm)*
Nurturing and stimulating international scientific cooperation, *Roald Sagdeev*

Transnational R&D Cooperation II *(Mon/2:30pm)*
Foreign industrial participation in MITI-sponsored R&D, *Speaker to be announced;* Japanese industrial participation in government-sponsored R&D, *Speaker to be announced;* U.S. industrial participation in R&D sponsored by foreign governments, *Robert White;* Participation in government-sponsored R&D by U.S. multinational corporations, *Speaker to be announced.* Organized by: *Irwin Feller, Alan Engel, Christopher Hill, Robert Morgan*

Transnational R&D Cooperation III *(Tues/8:30am)*
S&T cooperation under free trade: A Canadian view, *Janet Halliwell;* Mexican views on S&T cooperation under free trade, *Jaime Martuscelli;* Scientific cooperation in North America: Barriers, challenges, and opportunities, *William Blanpied;* Trends in Mexican R&D policies and institutions, *Fausto Alzati Araiza*;* The future of North American S&T cooperation, *Mitchel Wallerstein.* Organized by: *Irwin Feller, Alan Engel, Christopher Hill, Robert Morgan*

Future of the Midwest Economy: Forecasting Models of Chicago and Michigan *(Tues/2:30pm)*
Occupational-industrial structure of the Chicago economy, *Geoff Hewings*;* Structural change in the Chicago economy, *Ram Mahidhara;* Occupational-industrial structural changes and their policy implications, *David Allardice;* Regional economic forecasting system for Michigan, *George Fulton*.* Organized by: *Philip Israilevich*

Environmental Modeling and Policy

Evaluating Critical Choices on Energy and Environment *(Fri/8:30am)*
New evaluations of EMERGY alternatives for Texas, *Robert King*;* Re-evaluation of U.S. nuclear power net EMERGY yield ratio, *Chris Lapp;* A review of evaluations affecting recent national policy on energy and resources, *Robert Herendeen, Bruce Hannon;* Net contribution of forest and range management alternatives, *Steven Doherty;* Net benefits of ecotourism and its environmental basis, *Mark Brown, Richard Murphy;* Hydrogen and electric power alternatives, *Frano Barbir, Harold Plass;* Global EMERGY evaluations and new priorities for a prosperous way down, *Howard Odum.* Organized by: *Howard Odum*

Mathematical Modeling and Environmental Concerns *(Fri/2:30pm)*
Extinction of local populations, *Charles Tier;* Conservation of biological diversity, *Robert McKelvey;* Transport of hydrocarbons and contaminants in porous media, *Richard Ewing;* Ground water contamination, *James Glimm.* Organized by: *B.A. Fusaro*

Long-Range Externalities I: Nuclear Waste Disposal *(Sat/8:30am)*
Risk and performance analysis for high-level nuclear waste, *D. Warner North;* Risk perception and economic impacts, *Howard Kunreuther;* Perception-based impact assessment: Issues and qualifiers, *Ross Hemphill;* Environmental representations as rhetorical resources, *Karl Dake;* Perceived risk, trust, and the politics of nuclear waste, *Paul Slovic.* Organized by: *Gilbert Bassett, Jr., George Tolley*

Topical Lecture *(Sat/1:15pm)*
Global warming: Can we prevent it for free? *Stephen Schneider*

Long-Range Externalities II: Global Warming *(Sat/2:30pm)*
Costs and benefits of emission reduction, *William Nordhaus;* Farms and water resources, *Paul Waggoner;* Long-run economic models for global warming, *Stephen Peck;* Equity and efficiency issues in global emissions policy, *Adam Rose, Brandt Stevens;* Macroeconomic effects of policies to control CO_2 emissions, *Donald Hanson.* Organized by: *Gilbert Bassett, Jr., George Tolley*

Field Work: The Short and the Long of It *(Sun/8:30am)*
Advantages and disadvantages of RAP in equatorial forest conservation, *Dan Martin*, Mike Jenkins*;* RAP: Development, uses, and drawbacks, *Susan Scrimshaw;* When is rapid assessment appropriate and what is its relationship to long-term field work? *Emilio Moran;* The advantages and disadvantages of long-term field research, *Brian Boom;* How slow should "rapid" be? Epistemological risks in RAPs, *Michael Cernea.* Organized by: *Priscilla Reining*

Economics, Environment, and Trade *(Sun/2:30pm)*
The environmental revolt in Papua New Guinea, *Robert Randall;* The Rainforest Marketing Program, *Jason Clay;* Sustainable food and fiber production, *Pierre Crosson;* International trade, development, and environment, *Keith Kozloff;* Markets, politics, and the environment, *Clifford Cobb.* Organized by: *Robert Randall*

Research and Environmental Quality *(Mon/8:30am)*
Plant collections and systematics as means of protecting genetic resources of the Sierra de Manantlan Reserve of Mexico, *Hugh Iltis;* The structure and dynamics of tropical forests: Implications for conservation, *Stephen Hubbell;* Restoring Great Lakes water quality and fisheries, *Orie Loucks;* Valuation of ecological components in natural resource maintenance, *Herman Daly*;* The Alaska North Slope Inupiat and resource development, *Jack Kruse;* Characteristics of successful projects, *John Perry.* Organized by: *Orie Loucks*

Federal Support for Environmental Research *(Mon/2:30pm)*
Federal spending on environmental research, *David Blockstein;* The research and regulatory policy interface, *Mark Schaefer;* Structuring scientific and policy research on major national problems: Lessons from NAPAP, *Edward Rubin;* Our Changing Planet Program, *Robert Corell;* The Sustainable Biosphere Initiative: A research agenda from the Ecological Society of America, *Jane Lubchenco;* National Institutes for the Environment, *Henry Howe.* Organized by: *Orie Loucks*

How Well Does Environmental Policy Track Science I? *(Tues/8:30am)*
Asbestos, *Brooke Mossman;* Natural versus synthetic carcinogens, *Thomas Orme;* Revising smog battle plans, *Kenneth Chilton;* Acid rain: Forests and fish, *Edward Krug;* Global change: Greenhouse warming and ozone trends, *S. Fred Singer.* Organized by: *S. Fred Singer*

How Well Does Environmental Policy Track Science II? *(Tues/2:30pm)*
Dioxin, *Michael Gough;* Radon in drinking water, *Robert Fensterheim;* Is radon dangerous in homes? *Philip Abelson;* No-dose-is-safe concept threatens important standards, *Gerhard Stohrer;* How well does environmental policy track science? The case of lead, *Sanford Weiner, Harvey Sapolsky.* Organized by: *S. Fred Singer*

Science and Math Education: Striving for Excellence

Scientific Research in Science Education *(Fri/8:30am)*
Rethinking the form and function of scientific research in science education, *Robert Donmoyer;* Action research as a solution to the problem of knowledge utilization, *Donna Berlin, Arthur White;* What are some implications of social studies of science for science education? *Carolyn Carter;* Coalition for a Science Education Research Agenda, *William Kyle, Jr.;* Discussion, *Frances Lawrenz, Kenneth Tobin.* Organized by: *Robert Donmoyer, Michael Klapper*

Topical Lecture *(Fri/1:15pm)*
Math and science: The language of the future, *Haim Harari*

Project 2061 *(Fri/2:30 pm)*
Speakers to be announced. Organized by: *Patricia Borexis*

Science and Mathematics Education in Central Cities *(Sat/8:30am)*
Introduction, *Luther Williams;* Impact of parental and home resources on student achievement and career choice, *Jon Miller, Herman Green;* The impact of tracking and school environment on student achievement and career choice, *Jeannie Oakes, Thomas Hoffer;* The influence of television on student achievement and career choice, *Karen Brown, Thomas Hilton, Keith Mielke;* Teacher and curricular expectations of students in central city schools, *Lynnette Danzl-Tauer, Elizabeth Fennema, Cora Bagley Marrett;* Discussion, *James Lewis, Lynne Haeffele.* Organized by: *Jon Miller*

Innovation in Precollege Science and Mathematics Delivery *(Sat/2:30pm)*
Innovation in precollege science and math delivery, *Peggy Ruth Cole;* Reaching teachers: The first step in teaching students, *Gordon Berry;* Classroom wizards: Big fix or big failure? *George Campbell, Jr.;* AAAS Black Church Project and the role of the Chicago Urban League, *Gwen LaRouche.* Organized by: *George Campbell, Jr.*

Presidential Awardees Make Science and Mathematics Live! *(Sun/8:30am)*
Program overview, *Madeleine Long;* Topics to be announced, *Lawrence Badar; Robert Burtch*; Carole Goshorn*; Mazie Jenkins*; Timothy Kanold*.* Organized by: *Lawrence Badar, Madeleine Long*

Revolution in Undergraduate Science and Mathematics Education? The Promise of Research and Innovative Practice *(Sun/2:30pm)*
Inquiry-based teaching in the classroom: Can it be done in large as well as small classes? *Charlene D'Avanzo;* Genuine inquiry on introductory geologic field trips: An enticement into the science, *Lauret Savoy John Reid;* Project AVID: Active video in learning science, mathematics, and technology, *Theodore Ducas;* Folk wisdom in mathematics education: Analogous to medicine before Pasteur? *James Kaput;* What we should not expect from research, *Thomas Dick;* Some promising examples: Functions, calculus, abstract algebra, discrete mathematics, *Ed Dubinsky, Steve Monk.* Organized by: *Merle Bruno, Charlene D'Avanzo, Ed Dubinsky, Warren Page*

NSF State Systemic Initiatives I *(Mon/8:30am)*
Connecticut, *Sigmund Abeles*;* Delaware, *William McIntosh;* Florida, *Dorothy Routh*;* Prospects and challenges of the Louisiana Systemic Initiatives Program (LaSIP), *Kerry Davidson;* SIMM: An integrated mathematics approach, *Johnny Lott.* Organized by: *Audrey Champagne, Jane Butler Kahle*

NSF State Systemic Initiatives II *(Mon/2:30pm)*
The Nebraska Systemic Initiative, *Jim Lewis, Donald Miller;* North Carolina, *Dennis DuBay*;* Project Discovery: The Ohio Statewide Systemic Initiative in mathematics and science, *Kenneth Wilson, Jane Butler Kahle;* Rhode Island, *Kenneth DiPietro*;* The South Dakota Statewide Systemic Initiative, *Katherine Pedersen.* Organized by: *Audrey Champagne, Jane Butler Kahle*

The Access to Algebra Initiative *(Tues/8:30am)*
Topic to be announced, Joan Coleman; The Chicago framework for algebra, *Dorothy Strong;* The Algebra Project, *Robert Moses;* The right to compete: The emerging equity issue, *C. Douglas Barker.* Organized by: *Joan Coleman, Arlene Maclin, Dorothy Strong*

Roundtable Discussion *(Tues/1:15pm)*
Science education partnerships with the U.S. Public Health Service, *Bonnie Kalberer, Nancy Ridenour, Victor Mayer, Patricia Hoben*

Scientist-Teacher Partnerships in Middle School Science and Technology Education *(Tues/2:30 pm)*
Speakers to be announced. Organized by: *Gerald Kulm*

Preserving World Peace

Arms Control in a Changing World *(Fri/8:30am)*
Future environment, *Lawrence Gershwin;* Military programs and policy, *Stephen Hadley*;* Arms control possibilities, *Michael Moodie;* Soviet views of future arms control, *Alexander Churilin*;* Verification and implementation, *Sidney Graybeal.* Organized by: *Sidney Graybeal, Patricia McFate*

Post-Cold War Arms Trade *(Fri/2:30pm)*
The political economy of the arms market, *Andrew Ross;* Topics to be announced, *Robert Shuey; G.D. Loescher*; Jo Husbands*; Alan Platt; Chris Smith.* Organized by: *Ravinderpal Singh*

The Future of Smart Weapons *(Sat/8:30am)*
Weapons for land warfare, *Steven Canby;* New trends in aerial warfare, *Benoit Morel;* Weapons for naval warfare, *Norman Friedman;* Space-based defenses against ballistic missiles, *Richard Garwin;* Long-range, conventionally armed cruise missiles, *Eric Arnett.* Organized by: *Eric Arnett*

Tactical and Ballistic Missile Defenses *(Sat/2:30pm)*
The Strategic Defense Initiative Organization Re-

search & Development Program: Technologies and goals, *Edward Gerry;* ABM and tactical missile defenses: Requirements and capabilities, *Theodore Postol;* ABM and tactical missile defenses: The arms control issues, *Jeremiah Sullivan;* Post-launch control: Protection against accidental and unauthorized ballistic missile launches, *Sherman Frankel;* Soviet air and missile defense programs, *John Lepingwell.* Organized by: *Jeremiah Sullivan*

Environmental Dimensions of Security *(Sun/8:30am)*
Population growth and conflict, *Thomas Homer-Dixon;* Energy and international security, *John Holdren;* Hydropolitics in the Middle East: Opportunities for fresh thinking about old situations, *Thomas Naff.* Organized by: *Elizabeth Kirk*

Understanding and Preventing International Terrorism *(Sun/2:30pm)*
What is terrorism? A semantic and structural analysis, *Edward Herman;* Technology and the prevention of terrorism, *Anthony Fainberg;* Technology and military responses to terrorism, *James Oberstar*;* Understanding the causes of terrorism: State-sponsored puppets or frustrated intellectuals? *Richard Rubenstein*;* Formulating policy on terror, *David Long.* Organized by: *Anthony Fainberg*

Security in Latin America *(Mon/8:30am)*
Latin American defense industries: A technological appraisal of capabilities and defense missions, *Domicio Proenca Junior*;* The role of the military in interdicting narcotics, *Cynthia Watson;* New roles for the military in Latin America, *Gabriel Marcella;* Declining budgets in Latin America: Implications for changing force structure and missions, *Patrice Franko-Jones;* Changing security concerns in Latin America, *Richard Millett.* Organized by: *Patrice Franko-Jones*

Topical Lecture *(Mon/1:15pm)*
The changing face of arms control, *Read Hanmer*

Security on the Pacific Rim *(Mon/2:30pm)*
Japan's evolving regional role, *Michael Nacht*;* The future of America's military presence in the Asian-Pacific region, *Daniel Chiu;* Strategic aspects of U.S. economic competition with Japan, *Martin Libicki;* Great-power political realignment in Northeast Asia, *Ralph Cossa;* Prospects for multilateral security cooperation, *Patrick Cronin.* Organized by: *Patrick Cronin*

Nuclear Deterrence in the Developing World *(Tue/8:30am)*
1973 and 1982: Israel's first wars under a nuclear deterrent, *Taysir Nashif;* 1991: Did the Israeli deterrent fail again? *Avner Cohen*;* 1990: The emergence of bilateral nuclear deterrence in the subcontinent, *Ashok Kapur;* 1987:The first nuclear crisis in South Asia, *Stephen Cohen;* The implications of nuclear proliferation after the Cold War, *John Mearsheimer.* Organized by: *Eric Arnett*

Physics: From Fermi to the Future

Topical Lecture *(Fri/1:15pm)*
Enrico Fermi: A unique person, *Albert Wattenberg*

Particle Physics on the Prairie *(Fri/2:30pm)*
Origins of the 200 Bev accelerator, *Norman Ramsey;* Science and technology of the Tevatron, *Leon Lederman;* The creation of Fermilab, *Robert Wilson;* Fermilab at the millennium, *John Peoples, Jr.* Organized by: *Chris Quigg*

High-Energy Physics *(Sat/8:30am)*
One million Z decays, *Sau Lan Wu;* CP violation, *Bruce Winstein;* The search for top, *John Huth;* Frontiers of particle physics, *Chris Quigg.* Organized by: *Chris Quigg*

Nuclear Risk Perception *(Sat/2:30pm)*
Scientists' perceptions of nuclear risks, *Richard Barke;* The role of gender in the perception of risk, *Jennifer Espey;* Changes in risk perception over time, *Leo Gomez;* Ideology, culture, and risk perception, *Hank Jenkins-Smith, Walter Smith;* The role of information, knowledge, and the media in fears of radiation, *Amelia Rouse, Deborah Pratt;* Comparing theories of risk perception, *Karl Dake.* Organized by: *Richard Barke, Hank Jenkins-Smith*

Nanostructures *(Sun/8:30am)*
Novel physics in nanostructures, *Steven Girvin;* Nanostructures: Tools for the quantum mechanic, *Richard Webb;* Electron dynamics in nanostructures: Pinball, billiards, commensurability, and chaos, *Michael Roukes;* Superconductivity in nanostructures, *James Garland.* Organized by: *James Langer, John Wilkins*

Atomic Physics *(Sun/2:30 pm)*
Speakers and topics to be announced.

State-of-the-Art Introductory Physics Lab *(Mon/8:30am)*
Workshop Physics: Replacing lectures with real experience and computer analysis, *Priscilla Laws, Ron Thornton;* Getting the apparatus to the student: The manufacturers' view, *Paul Stokstad;* V-scope: Real-time tracking of multibody motion in three dimensions, *Aharon Lipman;* Our laboratories: Similarities and differences, *Ulrich Kruse, Shulamith Eckstein.* Organized by: *Saul Krasner*

Teaching Discovery-Based Physics *(Mon/2:30pm)*
Discovery-based physics: Hands-on interactions, four experiments, *Edward Moyer, Jr.;* Description of academy programs, strategic plan, evolution of sophomore physics, *Marcelline Barron.* Organized by: *Edward Moyer, Jr., Marcelline Barron*

Long-Term Research in U.S. National Parks

Efficacy of Long-Term Research in U.S. National Parks I *(Fri/8:30am)*
Water rights and Devil's Hole pupfish at Death Valley National Monument, *Stanley Ponce;* Water diversions effects on water management of Everglades National Park, *Gary Hendrix;* Karst hydrogeologic research at Mammoth Cave National Park, *Elizabeth Estes;* Research, rationality, and regulation: Improving the view at Grand Canyon, *Christine Shaver.* Organized by: *Gary Davis, William Halvorson*

Efficacy of Long-Term Research in U.S. National Parks II *(Fri/2:30pm)*
Reintroduction of fire to the national parks of the Sierra Nevada, *David Parsons, Jan van Wagtendonk;* Urban encroachment at Saguaro National Monument, *William Shaw;* The long-term study of wolf and moose populations on Isle Royale National Park, *R. Gerald Wright.* Organized by: *Gary Davis, William Halvorson*

Efficacy of Long-Term Research in U.S. National Parks III *(Sat/8:30am)*
Everglades National Park fishery harvest management and regulation, *James Tilmant;* Yellowstone Lake and its cutthroat trout, *Paul Schullery*, John Varley*;* Alien species in Hawaiian national parks, *Charles Stone, Lloyd Loope;* Long-term wilderness research in the Sierra Nevada National Parks, *Jan van Wagtendonk, David Parsons.* Organized by: *Gary Davis, William Halvorson*

Efficacy of Long-Term Research in U.S. National Parks IV *(Sat/2:30pm)*
Rare plant monitoring at Indiana Dunes National Lakeshore, *Noel Pavlovic, Marlin Bowles;* River management at Ozark National Scenic Riverways, *Kenneth Chilman, David Foster, Tom Aley;* Commentary and discussion, *Speakers to be announced.* Organized by: *Gary Davis, William Halvorson*

International Issues

Environment and Development: Directions for the 21st Century I *(Fri/2:30pm)*
The driving human forces of global environmental change, *Rita Colwell;* Transformation of energy in a technology-driven economy, *John Ahearn;* Paths to global population stabilization, *Thomas Merrick.* Organized by: *Elizabeth Kirk, Thomas Malone*

Environment and Development: Directions for the 21st Century II *(Sat/8:30am)*
The science agenda for environment and development, *Speaker to be announced;* Prioritizing research needs, *Harold Jacobsen;* Data observation, monitoring, and interpretation, *Jeff Dozier;* Institutional arrangements for international coopertation, *John Perry;* Communication of results to decision-makers and the public, *Alan McGowan.* Organized by: *Elizabeth Kirk, Thomas Malone*

Environment and Development: Directions for the 21st Century III *(Sat/2:30pm)*
Climate, *Rob Coppock;* International politics of extinction, *Peter Raven;* Forests, *Charles Barber;* Where do we go from here? The post-Brazil agenda, *Thomas Malone.* Organized by: *Elizabeth Kirk, Thomas Malone*

Science in Africa: Setting Research Priorities *(Mon/8:30am)*
R&D in sub-Saharan Africa: Who funds what? *Paul Nkwi;* Biomedical research to meet African health needs: A balance sheet, *Benjamin Osuntokun;* African agricultural research: National priorities versus international goals, *Martin Kyomo;* Moderators, *D. Adzei Bekoe, Walter Rosenblith.* Organized by: *Amy Auerbacher Wilson*

Scientists and Journalists

Science, Labs, and Videotape: Video News Releases in TV Science Coverage *(Fri/8:30am)*
Video news releases in the PR portfolio, *Bruce Dan, Nancy Scribner, Ann Witt, Barry Kaufman;* Ethics, production, and distribution, *Nick Peters, Linda Currey Post, Steven Seekins, Earle Holland.* Organized by: *Rick Borchelt, Lynne Friedmann*

Scientists and Journalists: Antagonists or Symbionts? *(Fri/2:30pm)*
The science writer as critic, *David Baltimore;* Misconduct and scholarly publishing: The view from the private sector, *Marcel LaFollette;* Congress and the science press: Setting the public policy agenda, *George Brown, Jr.;* Covering science: Are

we writers or journalists? *Shannon Brownlee;* Tensions in science reporting, *John Maddox.* Organized by: *W. Peter Trower*

Science for Everyone

Pre-Columbian Science: A Modern Perspective I *(Fri/8:30am)*
Applied astronomy and surveying in the Pueblo world, *Rolf Sinclair;* Pre-Columbian metallurgy of the Central Andes, *Heather Lechtman;* Architecture and town planning of the Incas, *Jean-Pierre Protzen;* Native American mathematics, *Michael Closs.* Organized by: *Rolf Sinclair, Marshall Becker*

Featured Debate *(Fri/1:15pm)*
How old is the Sphinx? *Robert Schoch, other speakers to be announced.*

Pre-Columbian Science: A Modern Perspective II *(Fri/2:30pm)*
Maya dentistry: Painful ostentation, *Marshall Becker;* Plant uses in Central America, *Barbara Tedlock;* Groundwater control in raised field agriculture, Lake Titicaca, Bolivia, *Alan Kolata;* Peruvian mummies, *Marvin Allison.* Organized by: *Rolf Sinclair, Marshall Becker*

The Science of Beauty I *(Sat/8:30am)*
The history and philosophy of beauty, *Craig Adcock;* The sociology and anthropology of beauty, *Annette Weiner*;* Personal body image and diet, *Sarah Mailman.* Organized by: *Albert Kligman, Robin Yeaton Woo*

The Science of Beauty II *(Sat/2:30pm)*
Biochemistry of the beauty industry, *Ken Marenus;* Beauty product testing and associated health hazards and benefits, *Albert Kligman;* Hair and skin transplants, *Norman Orentreich;* Plastic surgery: New solutions for old problems, *B. Herold Griffith.* Organized by: *Albert Kligman, Robin Yeaton Woo*

Astrology and Other Pseudoscience *(Sun/8:30am)*
Introduction, *Neil Cossons;* The acceptance of astrology and other pseudoscience in France, *Daniel Boy;* The acceptance of astrology and other pseudoscience in Britain, *John Durant;* Acceptance of astrology and other pseudoscience in the United States, *Jon Miller;* Experience of paranormal phenomena in the United States, *Tom Smith;* Pragmatics of prayer, *Andrew Greeley;* Discusssion, *Paul Knappenberger, David Perlman.* Organized by: *Jon Miller*

Science and Al Capone *(Sun/2:30pm)*
Forensic science and the Capone era, *Robert Stein;* The "scientific" G-man: The gangster era and the FBI Technical Laboratory, *Susan Rosenfeld Falb;* Is liquor intoxicating? Physiologists confront Prohibition, *Philip Pauly;* The man and the legend: Al Capone as gangster or typical businessman? *Jay Albanese.* Organized by: *Albert Teich, Jill Pace*

Science Is Fun! *(Sun/2:30pm)*
Communicating science, *Bassam Shakhashiri;* Fast plants, film cans, and fun! *Paul Williams;* The wonders of physics, *J.C. Sprott;* Doing science with everyday materials, *Lois Nicholson.* Organized by: *Bassam Shakhashiri, Jean'ne Shreeve*

Frontiers of the Social Sciences: Comparing Apples, Oranges, & Orangutans — New Approaches for Considering the Incomparable *(Mon/8:30am)*
Preference and payment: Psychological issues in valuing environmental impacts, *Paul Slovic;* Romancing the commons, *Bonnie McCay;* Resolving economic and ecological perspectives on the future, *Richard Norgaard;* Valuation of environmental and technological impacts: Frames, personal values, and formal analysis, *Thomas Dietz.* Organized by: *William Freudenburg, William Dember, Anna Roosevelt*

Communicating Scientific Knowledge to the Public: Agendas and Messages I *(Mon/8:30am)*
Introduction, *Sheila Grinell, Peter Briggs;* How do agendas affect outcomes? *David Dickson;* What happens when scientists' agendas hit the newsroom? *S. Holly Stocking;* What if there are multiple intentions? *Anders Hansen;* The public's ability to thoughtfully assess issues related to science and technology, *John Doble;* Discussion, *Robert Semper, Daryl Chubin.* Organized by: *Sheila Grinell, Patricia Curlin, John Durant*

Topical Lecture *(Mon/1:15pm)*
Irreproducible research: The making of a scientist, *George Scherr*

Communicating Scientific Knowledge to the Public: Agendas and Messages II *(Mon/2:30pm)*
What are the values that shape science communication? *John Durant, Jane Gregory;* Public interpretation of scientists' messages, *Baruch Fischhoff;* Discussion, *Will Lupkowski, Paul Heltne;* The other estate: Scientists, journalists, and the public interest, *Marcel LaFollette;* Summary, *Tom Wilkie*.* Organized by: *Sheila Grinell, Patricia Curlin, John Durant*

Science for the Naked Eye, XIX *(Mon/2:30pm)*
The eruption of Vesuvius: AD 79, *Haraldur Sigurdsson;* How an ant finds its breakfast, *James Haefner;* Eyes that see, eyes that think, *Sandra Sinclair;* How Tom Swift invented practically everything, *John Dizer.* Organized by: *Rolf Sinclair*

Sex Research *(Tues/8:30am)*
The subject matter for sex research, *Marilyn Story;* The methodology of sex research, *Janet Shibley Hyde;* The politics of funding for sex research, *Howard Ruppel, Jr.;* The ethics of sex research, *William Hartman, Marilyn Fithian.* Organized by: *Bernard Goldstein, Terri Fisher, Suzanne Frayser, Robert Friar*

Frontiers of the Physical Sciences I: 1992 *(Tues/8:30am)*
The Earth Observing System, *W. Stanley Wilson;* Magellan mission to Venus: New perspectives on the inner planets, *Sean Solomon;* Computational astronomy: The next 10 years, *Larry Smarr.* Organized by: *Rolf Sinclair*

Frontiers of the Physical Sciences II: 1992 *(Tues/2:30pm)*
Art is long and time is fleeting: Time-resolved structural biology, *Gregory Petsko;* Self-organization of "excitable" 2-D cellular automata, *David Griffeath;* Two frontiers in science: Superstring theory and complex adaptive systems, *Murray Gell-Mann.* Organized by: *Rolf Sinclair*

Whose Science and Math Is It Anyway? Multicultural Perspectives *(Tues/2:30pm)*
Why multicultural science education? *Rayna Green;* Culturally relevant science for Hispanics, *Diana Marinez;* An American Indian science curriculum, *Norbert Hill, Jr.;* An Afro-American science curriculum, *Joycelyn Whiten;* Melanin, racism, and the paranormal, *Joseph Dunbar*;* A critique of the Portland Baseline Essay on Science, *Bernard Ortiz de Montellano.* Organized by: *Bernard Ortiz de Montellano*

Exhibition

AAAS☆92 Exhibitors

(Partial listing as of 31 October)

Academia Book Exhibits
Academic Press
Allen Press
American Society of Mechanical Engineers
American Society of Plant Physiologists
Arlington-Hews
Association of American Geographers
Association of American University Presses
Basic Books
Biosym Technologies
The College Board
Conference Book Service
Discovery Scope™
Dover Publications
Elsevier Science Publishing Company
Encyclopaedia Britannica, USA
Harvard University Press
Heldref Publications
Human Factors Society
The Johns Hopkins University, Welch Medical Library
Lahey Computer Systems
Mathematical Connections
Molecular Arts Corporation
Mountain Press Publishing Company
NASA/Goddard Space Flight Center
National Academy Press
National Agricultural Library, Animal Welfare Information Center
National Geographic *Research & Exploration*
National Institutes of Health, Center for Research Resources
National Institutes of Health, Office of AIDS Research and Office of Education
National Library of Medicine
National Marine Fisheries Service, NOAA
National Oceanic and Atmospheric Admin., Legislative Affairs Office, Education Division
National Science Foundation
National Science Teachers Association
Neil Patterson Publishers
Oak Ridge Associated Universities
Office of the Chief of Naval Research
Oxford University Press
The Planetary Society
Protestant Churches for Science
Publishers Book Exhibit
Regional Bell Company
Science By Mail, Boston Museum of Science
Science Service
Scientific, Medical Publications of France
The Scientist
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Space Telescope Science Institute
Speakeasy Computing Corporation
TRIPOS Associates
United Nations
U.S. Army Laboratory Command
U.S. Bureau of Mines
U.S. Department of Energy
U.S. Department of Energy, Office of Civilian Radioactive Waste Management
U.S. Department of Energy, Science and Engineering Research Semester
U.S. Environmental Protection Agency, Office of Research and Development
U.S. Geological Survey
Wolfram Research

Exhibit Hours

Friday, 7 February, 5:30pm–8:00pm
(Grand opening and welcoming reception)
Saturday, 8 February, 9:00am–3:00pm
Sunday, 9 February, 9:00am–3:00pm
Monday, 10 February, 9:00am–2:00pm

AAAS☆92 Special Tours

While in Chicago, take advantage of these AAAS-organized tours! Make your reservations now — space is limited.

Fermi National Accelerator Laboratory (Friday, 7 February, 8:00am–1:00pm) Coordinated with the track, "Physics: From Fermi to the Future" ..... _____ @ $15 ea. = $_____

Adler Planetarium (Friday, 7 February, 11:30am–1:30pm) Coordinated with the first two sessions in the track, "Fantastic Voyages: From Columbus to the Cosmos" ..... _____ @ $10 ea. = $_____

Argonne National Laboratory (Monday, 10 February, 1:30pm–6:00pm) Coordinated with the track, "Energy for the 21st Century" ..... _____ @ $15 ea. = $_____

"Untouchables" Tour (Monday, 10 February, 12:00noon–2:00pm) Visits the hot spots of Chicago's Prohibition Era. Coordinated with the symposium, "Science and Al Capone" ..... _____ @ $22 ea. = $_____

Saks Fifth Avenue Cosmetic Seminar (Saturday, 8 February, 12:00noon–2:00pm) Seminar on skin care/makeup. Coordinated with the symposium "The Science of Beauty" ..... _____ @ $ 5 ea. = $_____

Total amount enclosed (make check payable to AAAS) ..... $_____

Name _____ Phone _____

Address _____

City/state/zip _____

Mail to: AAAS '92, P.O. Box 630285, Baltimore, MD 21263. *Reservation deadline:* 10 January 1992.

AAAS ☆92 Hotel Reservation Form ✦ *AAAS Annual Meeting, 6–11 February 1992, Chicago*

Send confirmation to:

Name _____ (last name) (first name)

Institution/company _____ (if part of address)

Address _____

City/state/zip/country _____

Phone _____ Fax _____

Other occupant(s) of room _____ (name)

_____ (name) / _____ (name)

Special housing needs due to a disability: ❑ Wheelchair-accessible room

❑ Nonsmoking room Other _____

Late Arrivals (after 6 pm) must be guaranteed with a deposit for the first night plus 12.4% occupancy tax, either by a major credit card or check (payable to the appropriate hotel).

❑ Check enclosed ❑ Credit card _____ (credit card company)

Credit card # _____

Exp. date _____ Signature _____

- ✦ **Reservations must be received at the appropriate hotel by 6 January 1992.** (Housing requests received after this date are conditional on room availability.)
- ✦ The hotels will not refund deposits for cancellations received after 31 January 1992.
- ✦ Reservation changes and cancellations must be made directly with the hotel.
- ✦ Children stay free in same room with parents if no extra bed is required. (Age limit: Hyatt, up to 18 years; Fairmont, up to 12 years.) ✦ Check-in time is 3 pm; check-out time is 12 noon.

Room Rates:

Check appropriate box for your choice of hotel and room. Add 12.4% occupancy tax to rates shown.

Hyatt Regency Chicago, Attn: Reservations, 151 East Wacker Drive, Chicago, IL 60601

- ❑ Single (1 person, 1 bed)..... $110
- ❑ Double (2 persons, 1 bed)..... $130
- ❑ Twin (2 persons, 2 beds)..... $130
- ❑ Triple (3 persons, 2 beds)..... $140
- ❑ Quadruple (4 persons, 2 beds)..... $150
- ❑ Suite..... $365 & up

Fairmont Hotel, Attn: Reservations, 200 North Columbus Drive, Chicago, IL 60601

- ❑ Single (1 person, 1 bed)..... $110
- ❑ Double (2 persons, 1 bed)..... $130
- ❑ Twin (2 persons, 2 beds)..... $130
- ❑ Suite..... $250 & up

Arrival & Departure:

List definite arrival/departure dates & times. Reservations are held until 6 pm. *Arrivals after 6 pm must be guaranteed with a deposit for one night plus tax.*

Arrive _____ (date) ❑ Before 6 pm ❑ After 6 pm

Depart _____ (date) ❑ Before noon ❑ After noon

Mailing Instructions:

Mail this form to the hotel of your choice (addresses above), together with any necessary deposit.

Discount Air Fares to AAAS☆92 in Chicago!

With O'Hare Airport as its hub, United Airlines offers extensive service between Chicago and most major U.S. cities. Fly United to AAAS☆92 and you can save with low, discount air fares available for travel between 3 February and 14 February 1992.

- ✦ **45% off regular coach fares** published at time of ticket purchase. (In Canada, discounts up to 35%.) No minimum stay needed; 7 days advance purchase required.
- ✦ **5% off lowest promotional round-trip fares,** subject to availability and qualifying conditions; and 5% off first-class fares. (Not available in Canada.)

These special fares are available only through United Airlines' convention reservation desk. Certain restrictions may apply and seats are limited.

To take advantage of this offer, you or your travel agent should call the toll-free number and give the agent the AAAS meeting I.D. number shown below. Also, be sure to inquire about discounted Hertz rental car rates.

Toll-free number: 1-800-521-4041 ✦ **AAAS meeting I.D. number:** 5090W

Call 7 days a week, 7:00am – 1:00am Eastern Time for the USA (including Hawaii and Alaska) and Canada.

UNITED AIRLINES

AAAS☆92: The AAAS Annual Meeting

Hyatt Regency Chicago, 6–11 February 1992, Chicago

Advance Registration Form

Deadline: 10 January

REGISTRANT INFORMATION (Please type or print)

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

Last 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

❑ Check here if you need special services due to a disability. (We'll call you before the meeting.)

Primary area of interest (check *one* box only):

- ❑ Agriculture
- ❑ Anthropology
- ❑ Astronomy
- ❑ Atmospheric & Hydrospheric Sciences
- ❑ Biological Sciences
- ❑ Chemistry
- ❑ Dentistry
- ❑ Education
- ❑ Engineering
- ❑ General Interest
- ❑ Geology & Geography
- ❑ History & Philosophy of Science
- ❑ Industrial Science
- ❑ Information, Computing, & Communication
- ❑ Mathematics
- ❑ Medical Sciences
- ❑ Pharmaceutical Sciences
- ❑ Physics
- ❑ Political, Economic, & Social Sciences
- ❑ Psychology
- ❑ Societal Impacts of Science
- ❑ Statistics

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

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

If registering at postdoctoral or K-12 teacher rate, indicate the name and number of your chairperson or principal:

Chairperson/principal's name

Chairperson/principal's phone number

IMPORTANT FOOTNOTES

[1] **10 January deadline:** Registrations received after this date will not be processed, but you may register on site beginning 6 February. On-site rates are $25 higher than advance rates for Regular members/nonmembers and $10 higher for all others. **One-day registration** (for all sessions *except* seminars) will be available to Regular members ($70) and Regular nonmembers ($100) on site only.
[2] **Special rates:** To qualify for the student rate, you must attach a copy of your student ID card. To qualify for the postdoctoral or K-12 teacher rate, you must provide the name and phone number of your department chairperson or principal in the space above. *Registrations received without appropriate verification will be charged at the Regular rates.*
[3] **Membership dues** indicated herein are at 1991 rates, which are guaranteed through 11 February 1992 for registrants of AAAS☆92; $47 of dues are allocated to *Science.* Please allow 6-8 weeks for receipt of first issue of *Science.*
[4] **Cancellations** must be received in writing by 10 January 1992. *No refunds will be made for cancellations received after this date.* Refunds are subject to a $20 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.

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MEETING REGISTRATION FEES[1] (Check one fee only)

	AAAS☆92 (without seminar)	Seminar (includes AAAS☆92)
Regular member	❑ $125	❑ $265
Regular nonmember	❑ $175	❑ $315
Student[2] member	❑ $ 20	❑ $125
Student[2] nonmember	❑ $ 45	❑ $150
Postdoctoral[2] member	❑ $ 50	❑ $155
Postdoctoral[2] nonmember	❑ $ 75	❑ $180
K-12 teacher[2]	❑ $ 50	❑ $155
Retired	❑ $ 50	❑ $155

Seminar registrants, please select *one* seminar:

❑ Cognitive Neuroscience ❑ Molecular Modeling

MEMBERSHIP DUES (Optional)

If you're not a AAAS member, you can join right now and take advantage of the member registration fees above. You'll also get a year's subscription (51 issues) to the journal *Science.*[3] Just check the appropriate dues below:

❑ Regular—$82 ❑ Student[2]—$47 ❑ Postdoctoral[2]—$57
❑ Retired—$47 ❑ K-12 teacher[2]—$57

PAYMENT

Meeting registration fee[4] ..... $_____

Membership dues[3] (if joining now) ..... $_____

Total amount ..... **$**_____

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

❑ Original institutional purchase order attached

Credit card number

Exp. date _____ Signature_____

MAILING INSTRUCTIONS (10 January deadline[1])

Mail to: AAAS '92, P.O. Box 630285, Baltimore, MD 21263.
Or fax (credit card payments only) to 202-289-4021.

Post-Meeting Workshop

Responding to Allegations of Research Misconduct in the University: A Practicum

Wednesday, 12 February, 8:30am–5:00pm
Hyatt Regency Chicago

A one-day, *hands-on* workshop for faculty, department chairs, university administrators, and others who might have to deal with allegations of research misconduct in their institutions. The workshop, which will focus on the inquiry stage of the process, will be led by an experienced university research administrator and will feature several other speakers.

Topics covered will include: what to do if someone brings you an allegation; what is an inquiry and how does it differ from an investigation; how to constitute an inquiry; keeping records; anonymity and whistleblower protection; working with internal offices; and dealing with the federal government. Ample time for discussion will be provided. Participants will receive a short handbook, including checklists, sample guidelines and procedures.

Registration is limited; a nominal registration fee will be charged. For information and registration materials, contact: Misconduct Practicum, Directorate for Science & Policy Programs, AAAS, 1333 H Street, NW, Washington, DC 20005; Phone: 202-326-6600; Fax: 202-289-4950.

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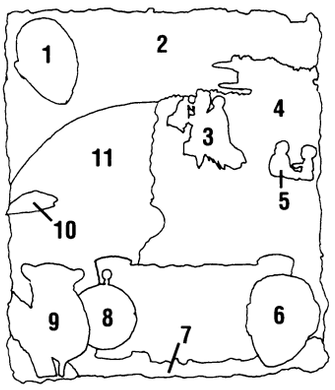
Key to the Cover



1 • Computer rendering of a "preparatory neural network"; Alan Gevins, EEG Systems Laboratory.

2 • Limb of a 14 day mouse embryo photographed in a confocal microscope; Jean Paul Revel, Cal Tech.

3 • Immigrants at Ellis Island; Bettman Archives.

4 • Composite of two 3-D fractal visualizations; John Hart, Softech Research Center.

5 • Babies; © Mark Kozlowski, FPG International Corp.

6 • Mask of the Aztec god Tezcatlipoca; Dumbarton Oaks Research Library and Collections, Washington, D.C.

7 • Computer visualization of charged particle velocities in a magnetic field; Claire E. Max, Lawrence Livermore National Laboratories.

8 • Astrolabe made by Johnne Fusoris, c. 1400; courtesy of The Adler Planetarium, History of Astronomy Collection.

9 • Phillipine tarsier; © David Haring, Duke University Primate Center.

10 • Magnetic Levitation Train; © Rapho-Beaune, Photo Researchers, Inc.

11 • Chart by Diogo Homem, 1568; from the G. Kish collection.

Collage illustration by Diana DeFrancesco

AAAS ☆92 General Information

Location: All sessions and the exhibits will be in the Hyatt Regency Chicago, 151 East Wacker Drive.

Housing: Reduced-rate guest rooms are available at the Hyatt Regency and the Fairmont Hotel (200 North Columbus Drive, right across the street from the Hyatt) if you make your reservations using the AAAS housing form at the lower right. Reservations must be made by 15 January 1992 to receive the special rate.

Transportation: The Chicago Transit Authority (CTA) provides convenient transportation around the city; most buses run every 10–15 minutes. Most major tourist attractions can be reached easily by bus or train from the downtown area. CTA trains operate between O'Hare Airport and downtown (approximate time: 40 minutes). Continental Air Transport provides bus service from O'Hare to the Hyatt Regency and the Fairmont departing from baggage claim areas every half hour between 6:00am and 10:00pm and every 15 minutes during peak hours. Fares are $9 one way, $16 round trip. (A coupon for $1 discount will be included with the confirmation for those who register before 10 January.) Taxis are located on the lower level of each terminal at O'Hare (approximate time to hotels: 1–2 hours, depending on time of day). Fares are $18–$22; share a cab with two friends and the fare is $12 per person from O'Hare to either hotel.

General meeting schedule: The meeting begins on Thursday, 6 February, and ends on Tuesday, 11 February. **Keynote address:** Thursday, 8:00pm–9:00pm. **General sessions:** Friday–Tuesday, 8:30am–11:30am and 2:30pm–5:30pm. **Topical lectures:** Friday–Tuesday, 1:15pm–2:15pm. **Exhibits:** Friday, 5:30pm–8:00pm; Saturday–Sunday, 9:00am–3:00pm; Monday, 9:00am–2:00pm. **Plenary lectures:** Friday, 8:00pm–9:00pm; Saturday–Monday, 7:00pm–8:00pm.

On-site registration: **Location:** Hyatt Regency Chicago, East Tower, Ballroom Level, Grand Foyer. **Hours:** Thursday, 6 February, 2:00pm–8:00pm; Friday–Monday, 7–10 February, 7:30am–3:00pm; Tuesday, 11 February, 7:30am–12:00noon.

Employment Exchange: The Employment Exchange at AAAS ☆92 provides a forum in which employers and job candidates can meet for one-on-one interviews. For more information and an application form, see the 25 October 1991 issue of *Science* or contact: Jacquelyn Roberts, AAAS Employment Exchange, Suite 1163, 1333 H Street, NW, Washington, DC 20005 (Phone: 202-326-6737).

Youth activities: **The Science Encounters '92 Youth Symposium** (Thursday, 6 February, 10:00am-1:30pm) will give selected local high school students an opportunity to explore the most exciting advances in physics, biology, computer and space science, and medicine. Prominent scientists will share their enthusiasm with the students, who will be selected from among Chicago's high schools by a local AAAS committee. Limited space may be available for high-school age children of AAAS ☆92 registrants. If you're interested in enrolling your child, call Judy Kass at 202-326-6667. **The American Junior Academy of Science Lectures** (Thursday, 6 February, 3:00pm-5:30pm) will feature presentations of award-winning research by AJAS student members. All AAAS ☆92 registrants are invited to attend the lectures, which will be in the Hyatt, Columbus Hall. Also, the students will present their award-winning posters during the reception that follows the keynote address on Thursday night.

Services for the disabled: Resources for the disabled will be available in the Hyatt (Skyway Suite 268). If you require special services due to a disability, indicate your needs on your advance meeting registration form and in your communications with the hotel. TDD is available in your room if requested in advance and signing is available upon request for any AAAS session. For additional information, contact the AAAS Project on Science, Technology, and Disability (202-326-6630; TDD available).

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