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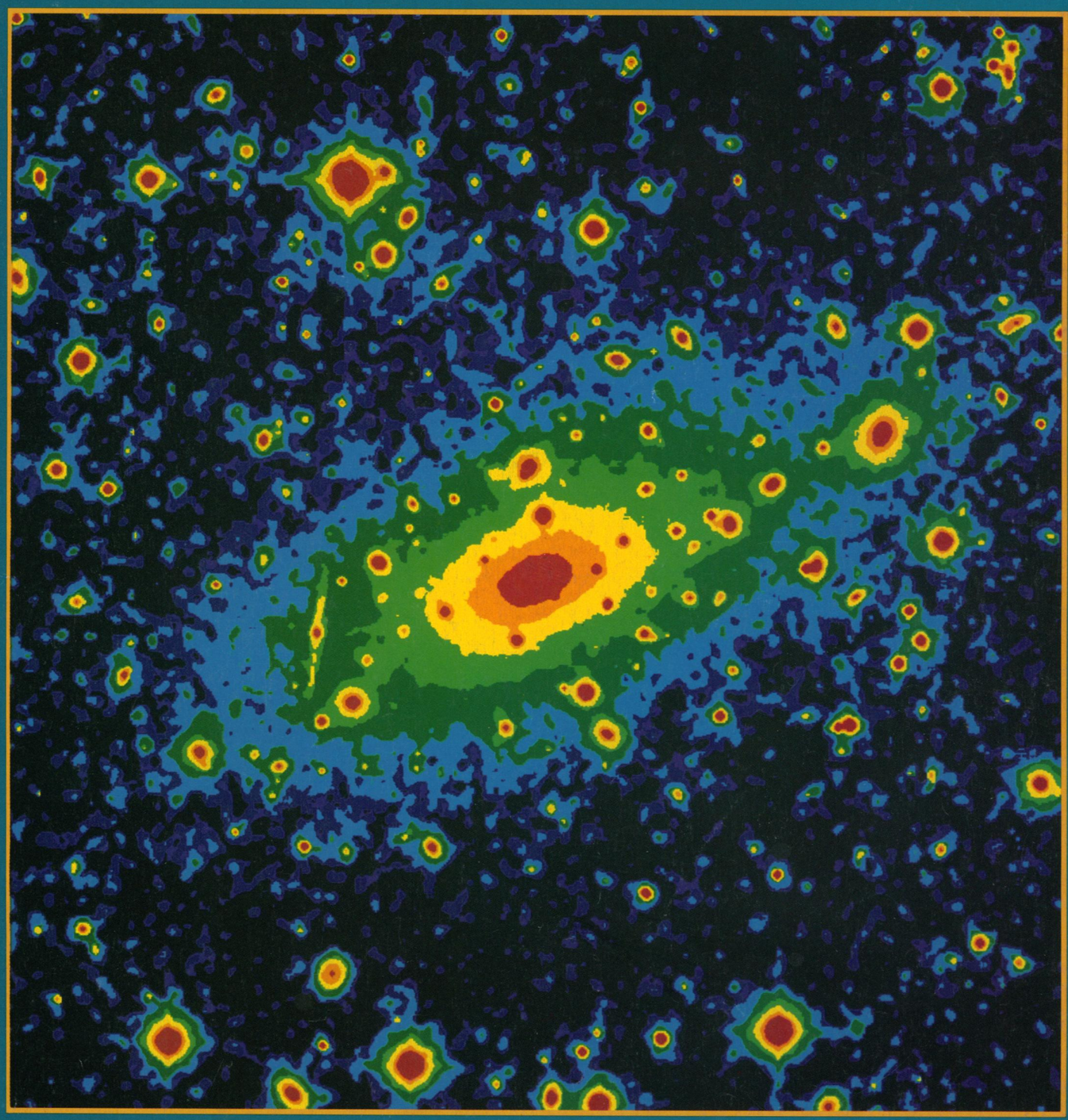

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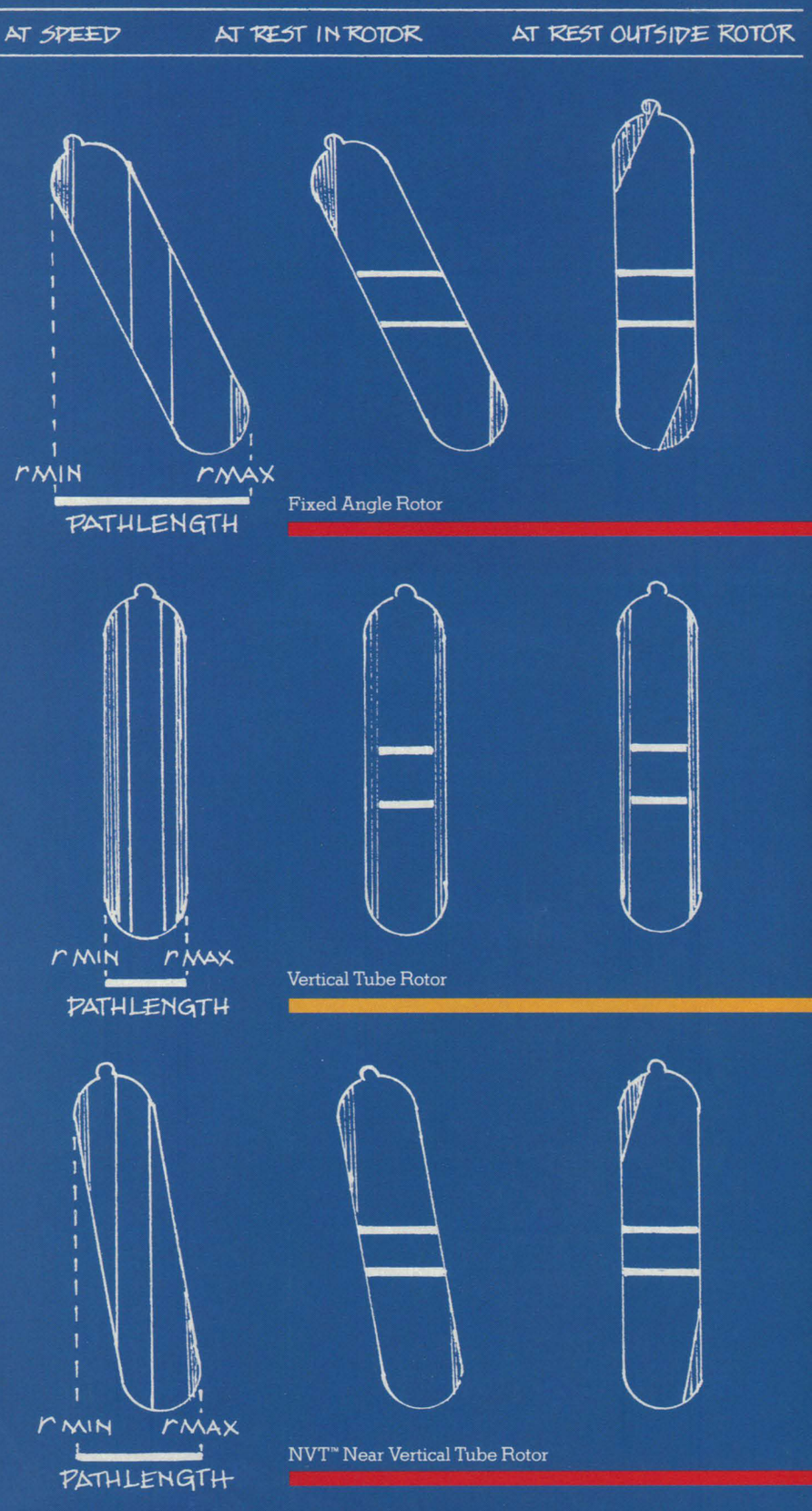

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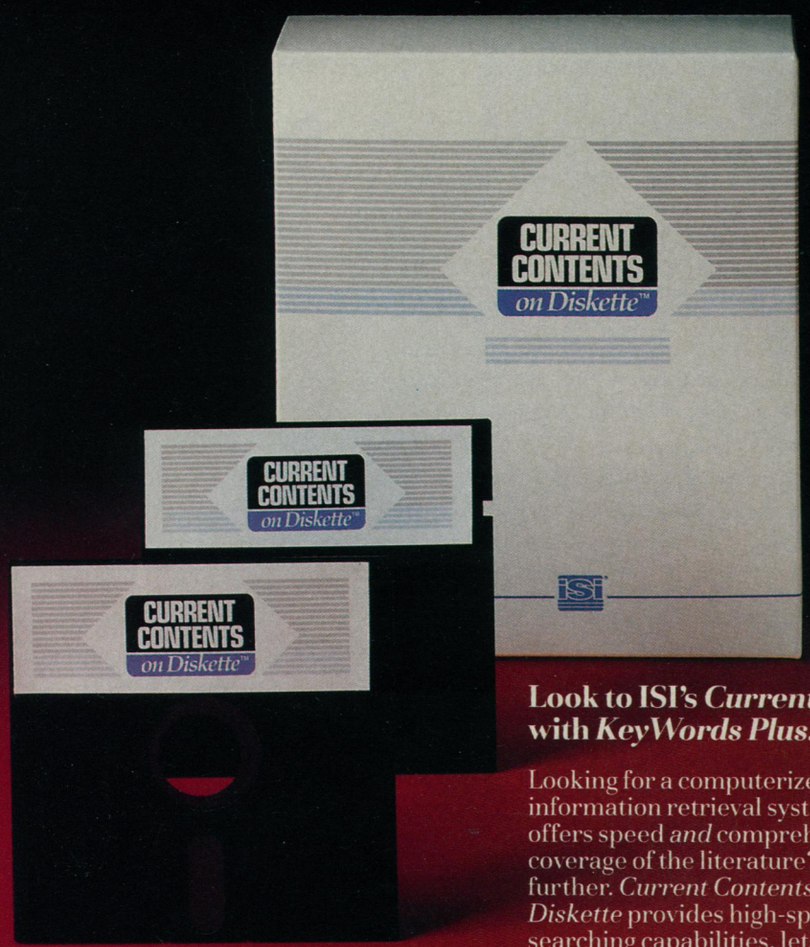

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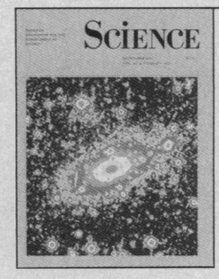

COVER A false-color image of the core of the cluster of galaxies Abell 2029. Most of the objects are galaxies which reside within the halo of the massive giant that dominates the cluster. This galaxy is one of the largest and most luminous in the universe, 100 times brighter than our own Milky Way. See page 539. [Photograph by Juan M. Uson, Stephen P. Boughn, and Jeffrey R. Kuhn]

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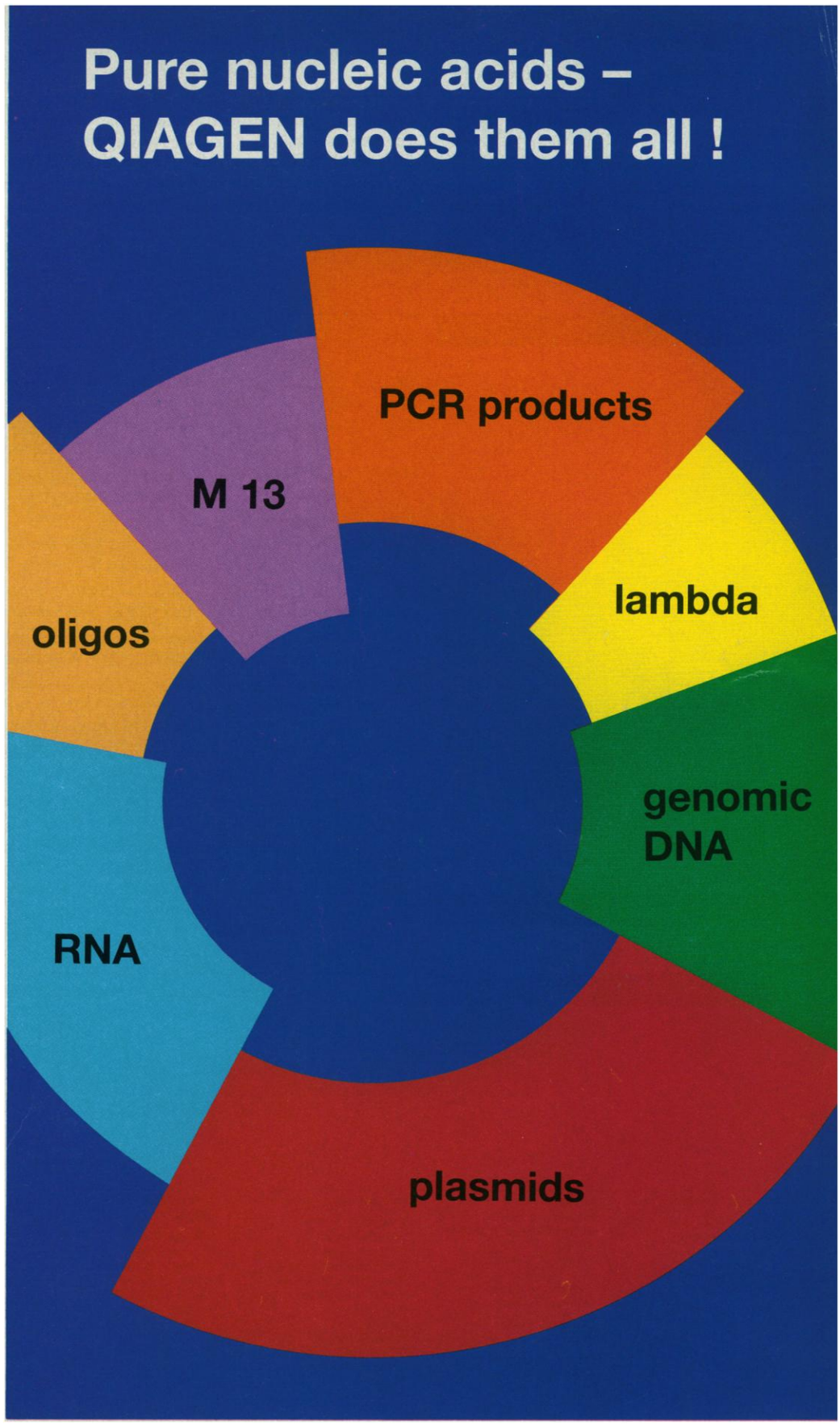

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This Week in
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Cold Spring Harbor centennial

COLD Spring Harbor Laboratory is 100 years old. Roberts describes the evolution of the laboratory in the Watson years (page 496) and Gibbons reports on the evolution of everything else—molecules to cultures—which was the theme of a recent CSHL meeting (page 504).

On the surface

HOW far apart are atoms on the surface of a crystal? What elements are found at the surface? And how are charges redistributed when surface atoms are bombarded by an incident ion beam? These are some of the questions that can be answered with time-of-flight scattering and recoiling spectrometry (TOF-SARS) (page 521). Rabalais explains the physical principles behind reactions that occur when surface atoms and those of the beam collide. Each chemical element is distinguishable by TOF-SARS because atomic mass determines how much energy will go into the recoiling of incident ions. Neutral and ionic species give distinctive spectra, so charge transfer between ions can be tracked. Perhaps most importantly, TOF-SARS provides information on the relative positions of all atoms at the surface, with accuracy ≤0.1 Å. TOF-SARS has applications in engineering, materials science, and physical chemistry for addressing structure and function relations at interfaces and surfaces.

Galaxy glow

THE structural hierarchy of the cosmos goes from stars to galaxies to clusters to superclusters. The evolutionary sequence is uncertain: many galaxies might merge into clusters and superclusters, or galaxies might form concurrently with the formation of larger clusters. One unusual cluster of galaxies is Abell 2029. Its central dominant galaxy emits 26% of all the light emitted by the cluster. Uson *et al.* have developed methods for recording the diffuse light around Abell 2029's center and find that the central galaxy and the diffuse light around it are indistinguishable (page 539). The smoothness of the halo argues for central galaxy formation early in the cluster's formation: the halo should have had a clumpy appearance had recent galaxy collisions been involved in the formation of the central galaxy. The central galaxy stacks up as one of the most luminous galaxies in the universe. Abell 2029 is also known to be one of the densest clusters, including apparently vast amounts of the elusive cosmic "dark matter."

Flipping channels

ION channels: what turns them off? Two papers by Aldrich, Hoshi, and Zagotta (pages 533 and 568) provide a definitive answer to this question, and Barinaga assesses the mutagenesis technique that made the studies possible (page 506).

Diabetes defect

PANCREATIC islet β cells of rats that develop a disease much like human noninsulin-dependent diabetes have been found by Johnson *et al.* to have markedly reduced levels of the glucose transporter GLUT-2 and the messenger RNA molecules that encode it (page 546). The outcome of a GLUT-2 deficiency is that β cells are insensitive to high levels of glucose in the bloodstream, insulin (which is produced in response to the sensed excess) is not secreted above unstimulated levels, and the glucose excess is therefore not corrected. What is not yet understood is what factor triggers the underproduction of GLUT-2 messenger in the first place. Even without an explanation for the expression defect, however, it may still be feasible to boost GLUT-2 expression (assuming that human β cells are also low in GLUT-2) and thereby intervene in and perhaps correct the pathologic sequence.

Lyme vaccine candidate?

MICE that are infected with the spirochete *Borrelia burgdorferi* develop some disease signs and symptoms that resemble those of human Lyme disease. At 5 days after the infection, spirochetes are prominent in the bloodstreams of mice and at 14 days inflammations of the heart and joints are most intense. Two different forms of a vaccine made from the outer surface protein (OspA) of the spirochete were found by Fikrig *et al.* to induce antibodies in the mice; these antibodies provided protection from subsequent challenge with live spirochetes of three different *Borrelia burgdorferi* strains (page 553). Will a similar OspA vaccine be protective in humans? That remains to be seen.

Suppressing immunity

IMMUNOSUPPRESSIVE agents bind to target molecules (called immunophilins) inside cells and then go on to inhibit the actions of specific intracellular biochemical pathways. Different domains of the immunosuppressants appear to be involved in these binding and "effector" functions. Bierer *et al.* prepared a synthetic molecule with geometry like that of the common structural element of two immunosuppressants—FK506 and rapamycin (page 556). These agents are known to bind to and inactivate the same immunophilin; subsequently, FK506 and rapamycin diverge functionally and inhibit different components of the T cell's normal immune response cascade. The synthetic compound bound to the immunophilin with high affinity and inhibited its rotamase enzyme activity; it did not however go on to inhibit cellular pathways that are typically blocked by FK506 or rapamycin. When the effector domains of these molecules are identified, it should be possible to design some new and potent immunosuppressants in which unique combinations of binding and effector domains are juxtaposed.

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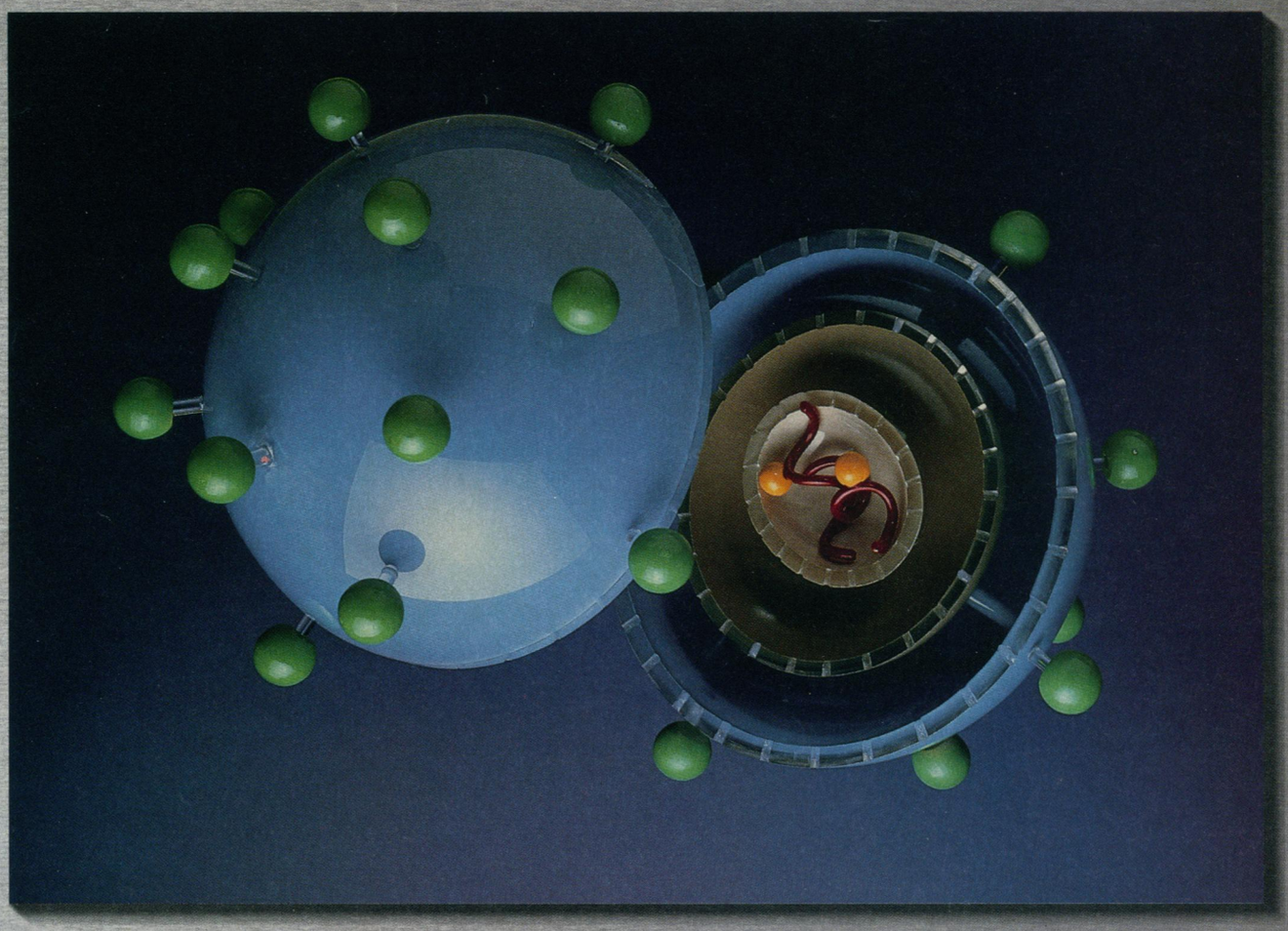

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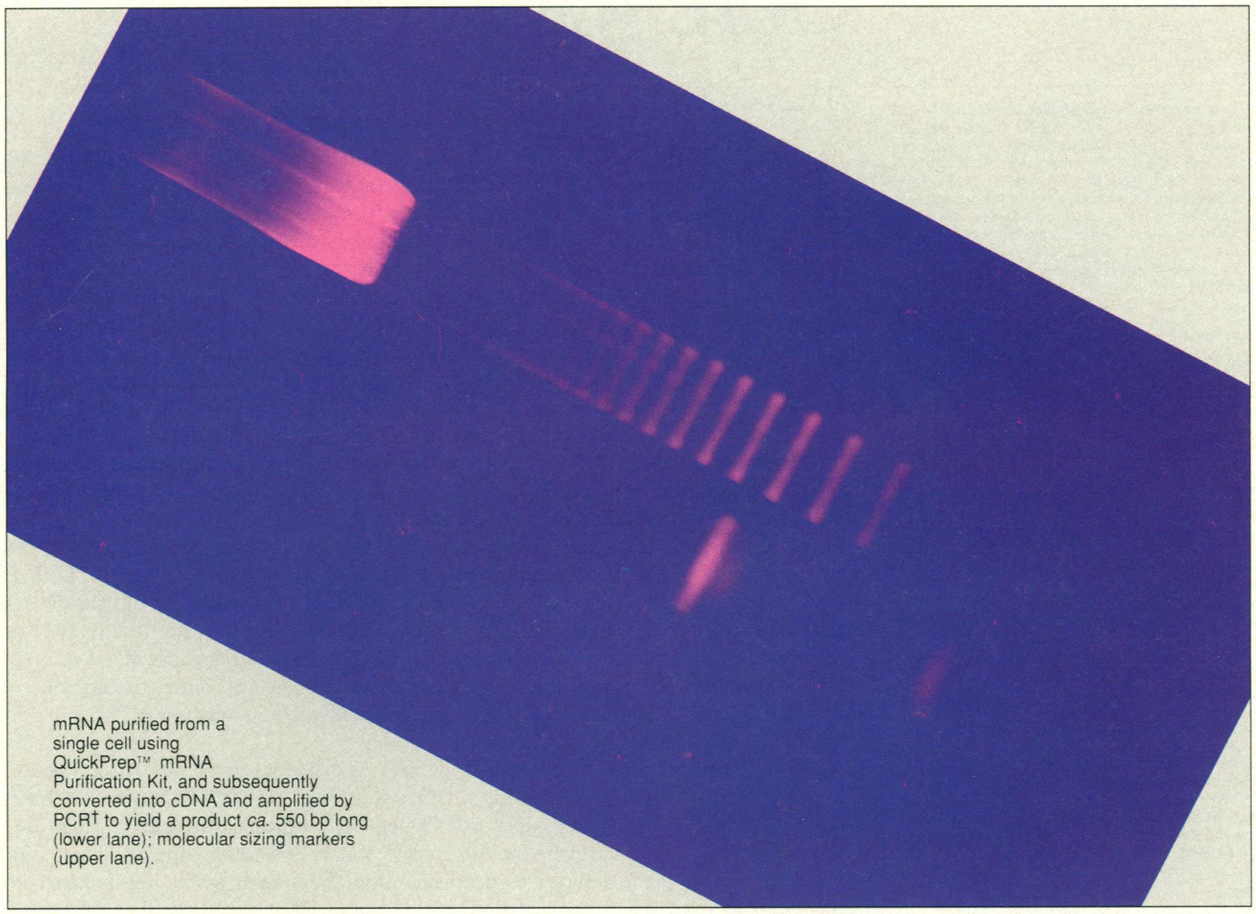

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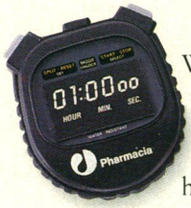

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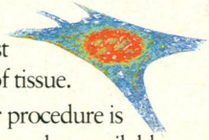

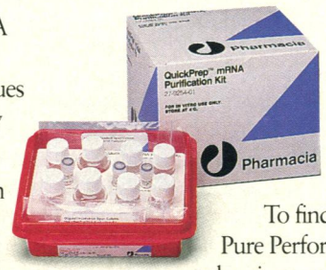

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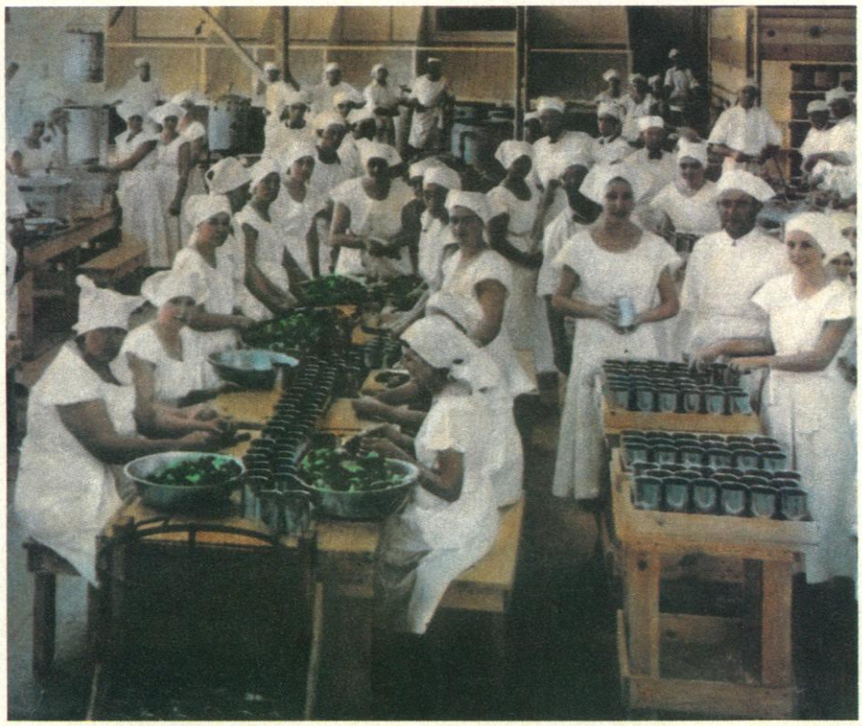

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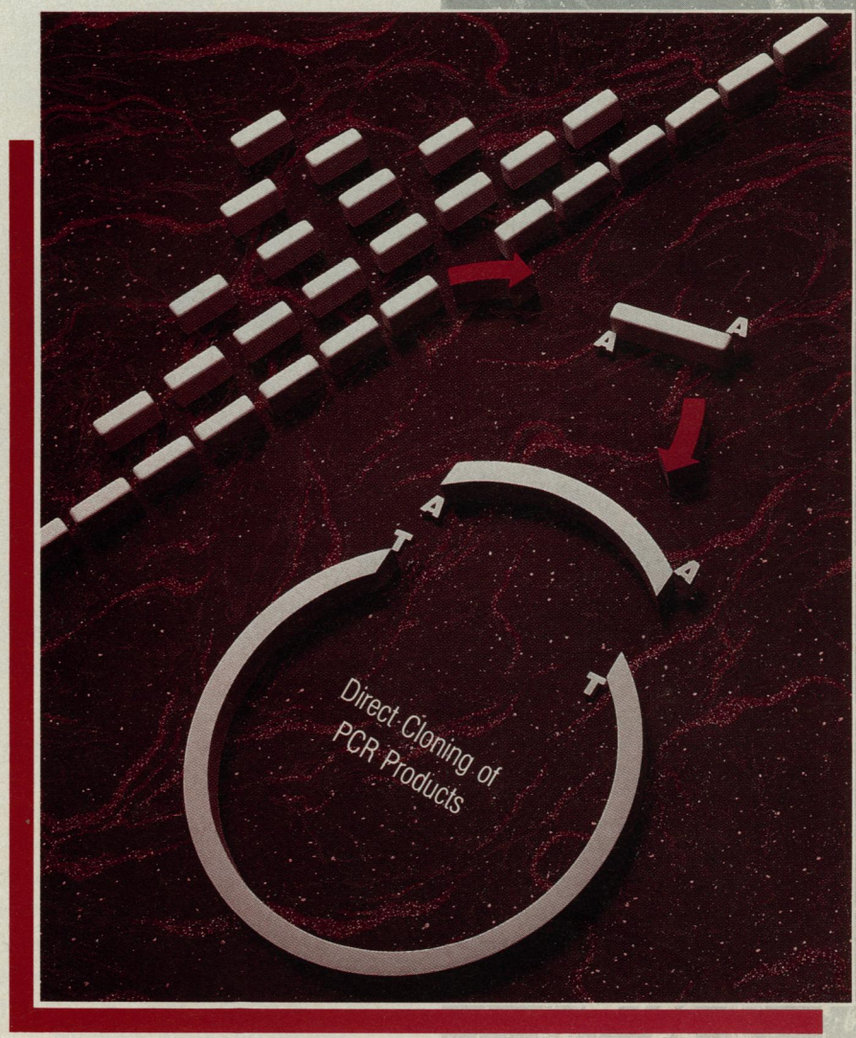

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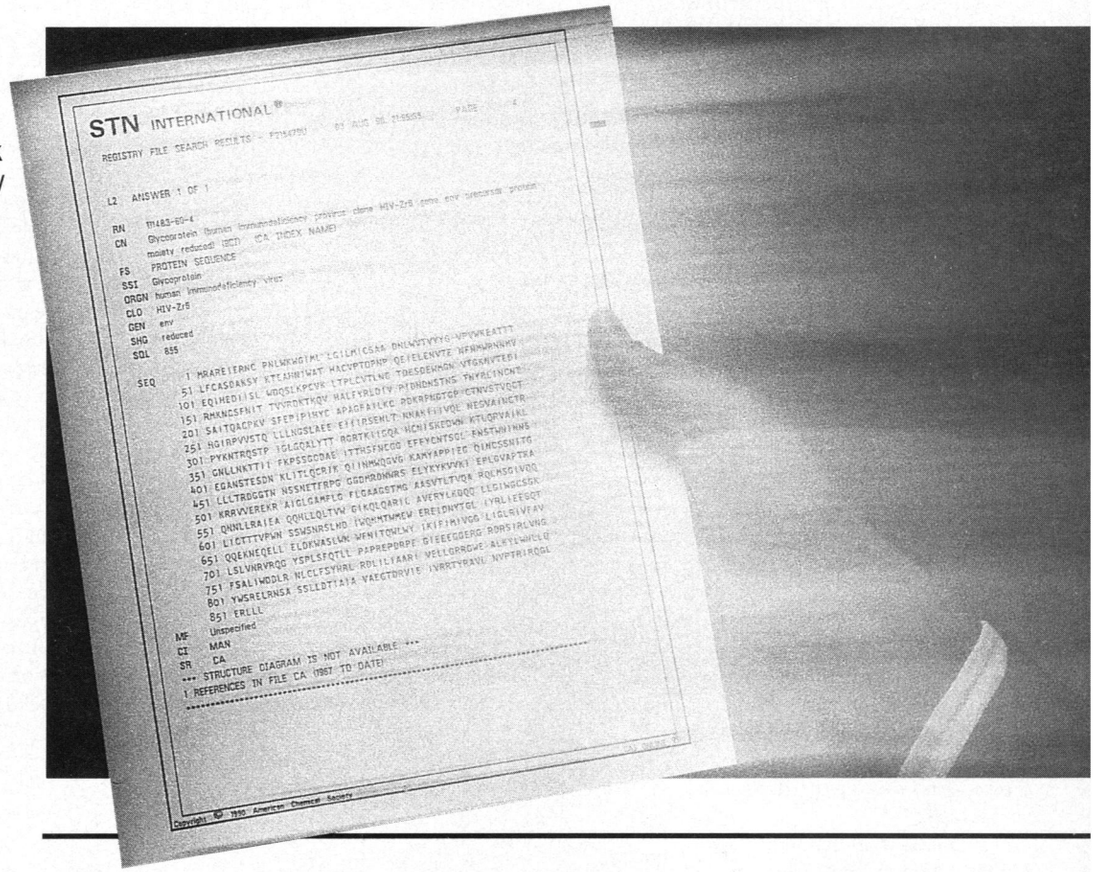

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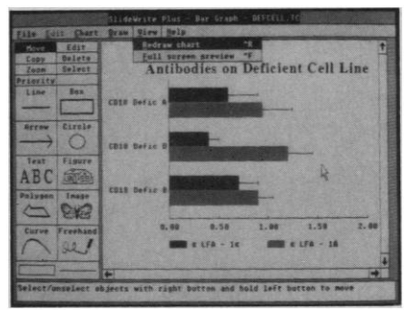
If you're a scientist, engineer, or technical professional, you need SlideWrite Plus Version 4.0.

It's a powerful graphics tool specially designed *by* technical people *for* technical people. A tool that combines the ease-of-use you get with mainstream, "vanilla" graphics programs like Harvard Graphics®, and the advanced scientific features you've been looking for.

The result? You can use your IBM PC or compatible to turn your data into powerful, persuasive reports, charts, graphs, and slide presentations that get noticed and remembered. Many thousands of satisfied users already put SlideWrite Plus to work. Now we'd like to go to work for *you!*

You get advanced features like these:

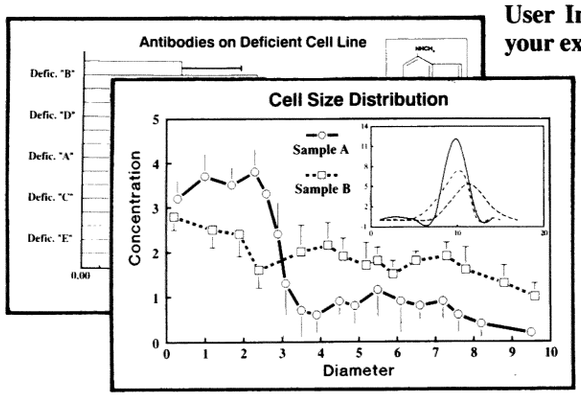
♦ **New scalable font technology makes us the leader in publication quality output.** Near camera-ready output is yours thanks to the latest technology and Nimbus Q fonts that work *with every device supported*. You also get characters like bullets, math symbols, and a full Greek upper and lower case alphabet.



♦ **A wide range of other advanced technical features.** SlideWrite Plus meets all your charting needs with graphs, text, *and* drawing. Features include data transformations, break axes, curve fitting, equation plotting, error bars, superscripts and subscripts. Full drawing capability includes curves, freehand and polygons, 16-color PCX files, and a new drawing tool box. Customize charts with scanned artwork, logos, and photographs. Export charts to Ventura™ and WordPerfect®. Complete support for printers, plotters, and 35mm film recorders. Easiest and fastest presentation program to install and learn.

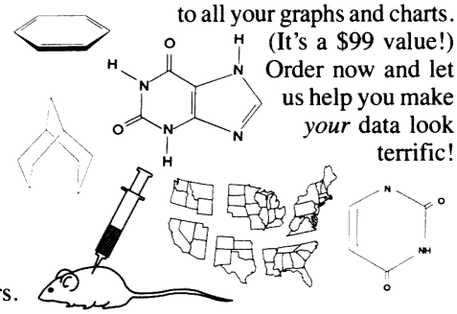
♦ **An industry-standard Graphical User Interface that works with your existing DOS machine.** Use a mouse (or keyboard), standard menus, dialogue boxes, and more, with this incredibly easy-to-use interface.

♦ **A family of handy, optional Figure Packs.** They're collections of pre-drawn symbols, objects, and figures that are ready to use with SlideWrite Plus 4.0. They include the Scientific Figure Pack, the Anatomy Figure Pack, the Drug Figure Pack, and the Map Figure Pack.



Order now and get a free gift!

To order, just give us a call or get in touch by fax. For just $445, we'll rush you Slide-Write Plus Version 4.0 *and* a free copy of our handy Scientific Figure Pack – a comprehensive library of scientific symbols, maps and markers that can add *tremendous* visual impact to all your graphs and charts. (It's a $99 value!) Order now and let us help you make *your* data look terrific!



MONEYBACK GUARANTEE

Order SlideWrite Plus Version 4.0, and if you're not delighted with it, return the complete package within 30 days of original shipment and get your money back, promptly, in full.

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System Requirements: An IBM PC or compatible, a hard disk with at least 1MB of free disk space, at least 390KB of free RAM memory, and a supported graphics card. A 286 class (or faster) computer, a mouse, and an EGA (with 256K memory) or VGA graphics card is recommended.

Nimbus Q fonts are designed by URW, Hamburg, Germany.

We make your data look terrific.

Circle No. 307 on Readers' Service Card

Fig. 1. *2-D electrophoresis separation of proteins from Escherichia Coli.*

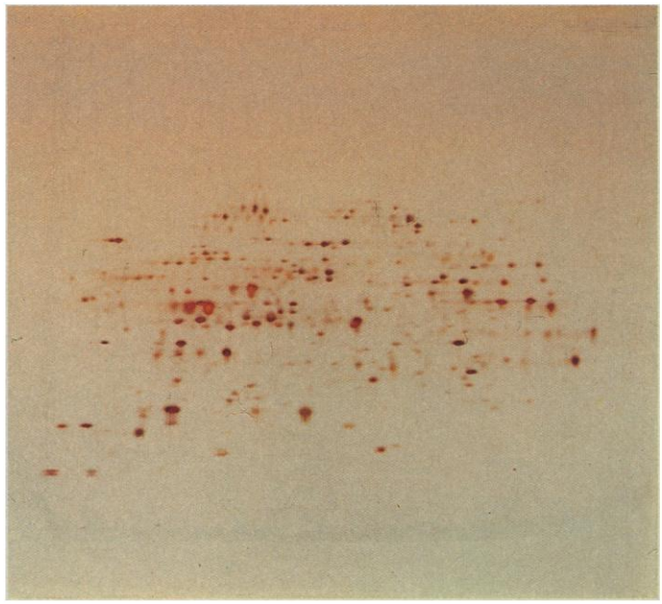

Fig. 2. *Same as fig. 1.*

Which run was done on a sunny day?

Both. But since the method is so reproducible, it doesn't really matter who did them or when they were done. They were produced by a new procedure that enables 2-D electrophoresis to be performed reproducibly and without any special expertise.

To eliminate one of the major sources of problems with 2-D, we developed Immobiline® DryStrip precast gel for high resolution isoelectric focusing for the first dimension. With DryStrip™ gels, samples are easy to apply, pH gradients are extremely stable and overlay reproducibility is ensured. You don't need to worry about breaking, shrinking or swelling tube gels.

To eliminate messy gel casting for the second dimension, the procedure uses ExcelGel™SDS precast gels for highly reproducible SDS-PAGE electrophoresis. The gel is convenient, time-saving and easy to handle. Because it's thin it gives rapid run times and is easy to blot. It's also perfect for scanning and storage.

Innovative, ready-to-use buffer strips add to the convenience in the second dimension.

Both dimensions are run on Multiphor®II horizontal electrophoresis unit. No clamps, no glass plates, no leaking buffer. And with the versatile Multiphor there's no end to what you can do conveniently and reproducibly.

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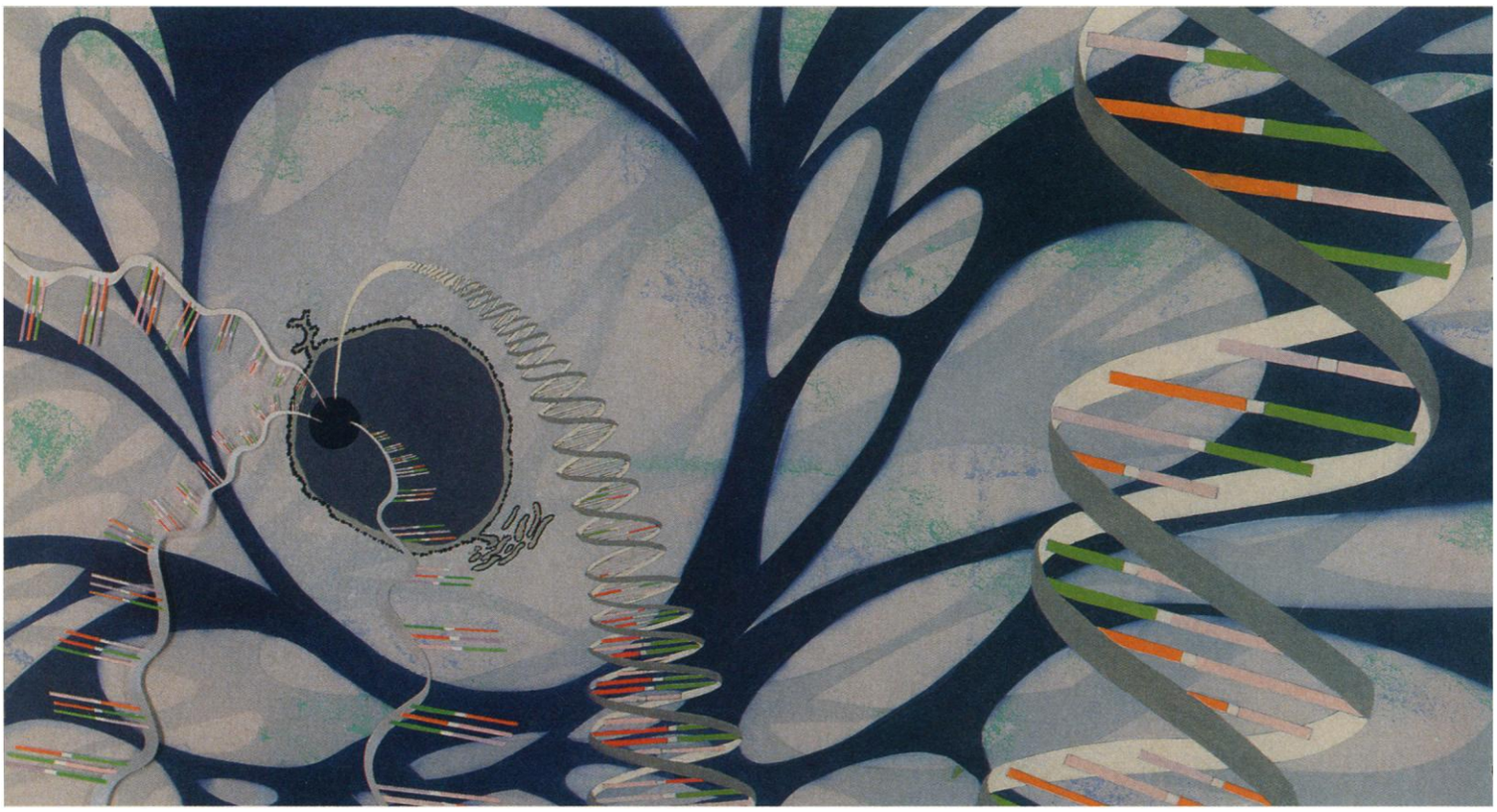
A Major Breakthrough in mRNA and DNA Extraction



Announcing Extract-A-Gene™

Simultaneous mRNA and DNA Extraction Kit from Oncor

☐ **Features include the Oncor® original non-organic extraction chemistry**
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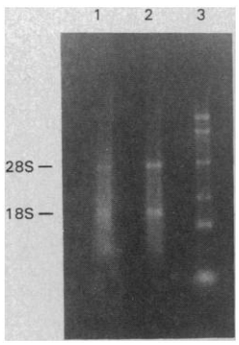
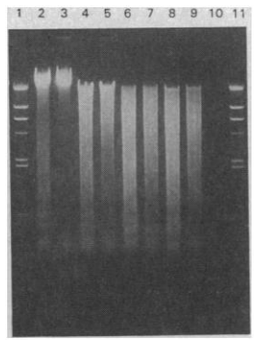
mRNA Northern Gel

Lane 1	6ug HL-60 mRNA
Lane 2	3ug B-cell mRNA
Lane 3	5ug Marker





DNA Southern Gel

Lanes 1, 11	λ Hind III Marker
Lanes 2, 3	Uncut DNA
Lanes 4-9	Cleaved DNA

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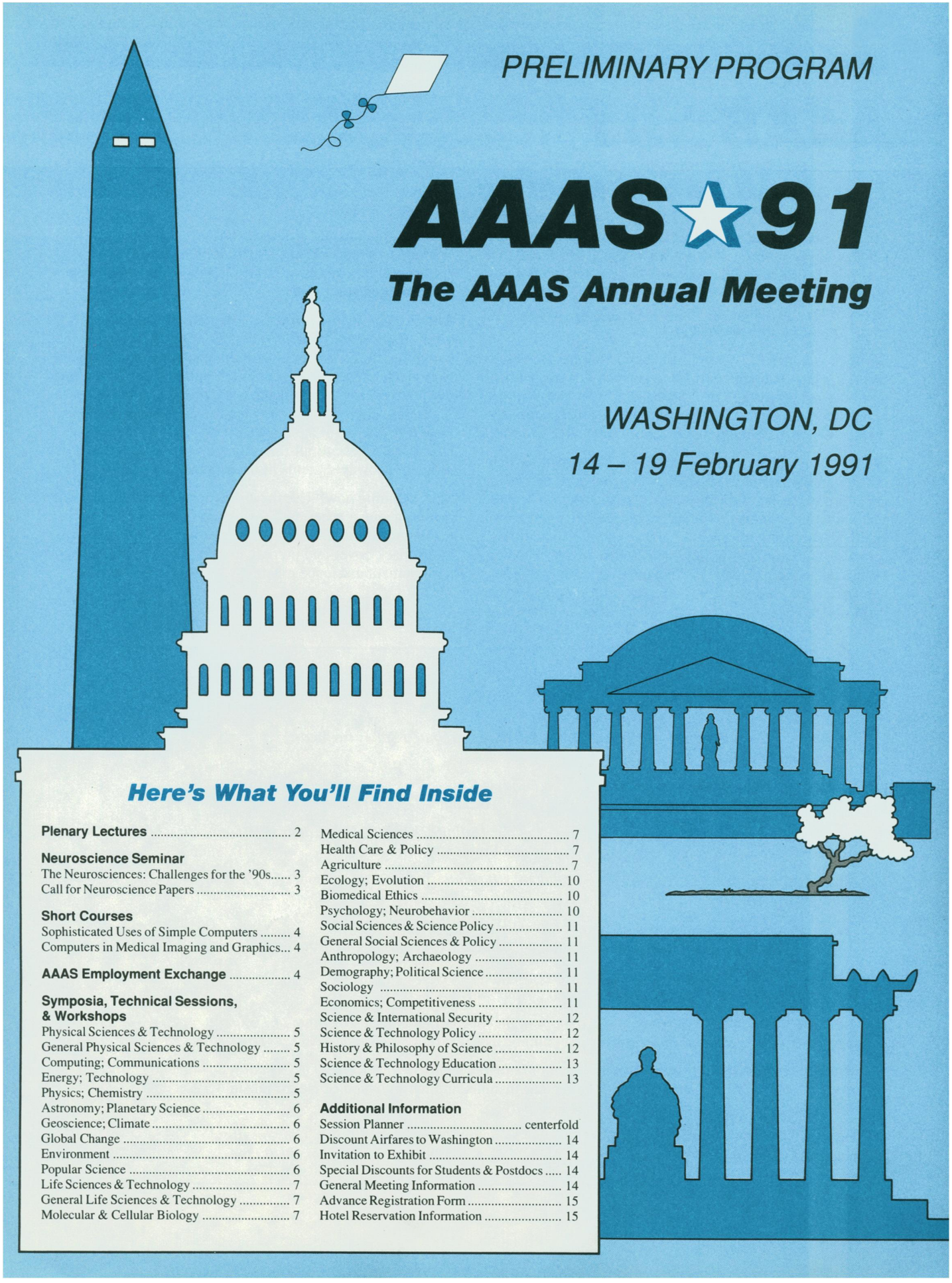

PRELIMINARY PROGRAM

AAAS★91

The AAAS Annual Meeting

WASHINGTON, DC

14 – 19 February 1991

Here's What You'll Find Inside

AAAS☆91

The AAAS Annual Meeting

This February, avoid midwinter tedium by joining your colleagues for a cerebral jolt at **AAAS★91,** the 157th national meeting of AAAS. Held in the nation's capital, the meeting promises to be charged with the intellectual energy that results when more than 5,000 scientific scholars gather for a single, multidisciplinary event.

Come to **AAAS★91,** not only to learn about new developments in your own field, but also to hear experts speak about advances across disciplines. You'll gain new perspectives on the interrelations between various fields and examine the ways in which these relationships can affect your own work.

We have developed a multifaceted program of more than 200 symposia, technical sessions, and workshops that cover the entire spectrum of the physical, life, and social sciences. Learn about the latest in scientific computing, medical and health research, environmental science and global warming, science education and policy, and a host of other topics. Hear from leading researchers in a three-day seminar on the neurosciences. Acquire new skills in a one-day course on sophisticated uses of simple computers or on computers in medical imaging and graphics. Discover new publications, products, and services at the exhibition, talk one on one with researchers at a series of poster sessions, and explore new opportunities at the AAAS Employment Exchange.

And in your spare moments, enjoy all that the city has to offer. Explore the museums of the Smithsonian Institution, including the National Air and Space Museum and the National Gallery of Art. Tour the Capitol and see your representatives in action. Visit the city's memorials to Lincoln, Jefferson, and the Vietnam veterans. Savor the spectacular view from the top of the Washington Monument. And you'll have easy access to all this and more via one of the most efficient subway systems in the world.

Start planning now! Use the chart in the centerfold to begin mapping out a meeting agenda tailored to your specific needs and interests. Then fill out the registration form on the inside back cover and prepare to join us in Washington for a monumental science meeting.

— Arthur Herschman

Plenary Lectures

Keynote Address: **George H. W. Bush,** *President of the United States* (invited).
(Thursday, 14 February, 8:30 pm)

Walter Bodmer, *Imperial Cancer Research Fund, U.K.*
Topic: "The Human Genome Project" *(Friday, 15 February, 1:00 pm)*

Fang Li Zhi, *Royal Society Guest Research Fellow, Institute of Astronomy, Cambridge University, U.K.*
Topic: "Cosmology: Some New Developments and Problems" *(Monday, 18 February, 1:00 pm)*

Riccardo Giacconi, *Director, Space Technology Institute.* Topic to be announced.
(Friday, 15 February, 8:30 pm)

José Goldemberg, *Secretary of State for Science and Technology, Brazil.*
Topic: "Science and Technology in Developing Countries" *(Tuesday, 19 February, 1:00 pm)*

Donald N. Langenberg, *Chancellor, University of Maryland, and President, AAAS.*
Topic to be announced. *(Sunday, 17 February, 8:30 pm)*

Kenneth Manning, *Professor of the History of Science, Massachusetts Institute of Technology.*
Topic: "The Complexion of Scientific Communities" *(Sunday, 17 February, 1:00 pm)*

Shosaku Numa, *Professor, Departments of Medical Chemistry and Molecular Genetics, Kyoto University Faculty of Medicine, Japan.* Topic: "Molecular Insights into the Function of Neurotransmitter Receptors and Ionic Channels" *(Saturday, 16 February, 1:00 pm)*

Larry L. Smarr, *Director, National Center for Supercomputing Applications, Univ. of Illinois.*
Topic: "The Grand Challenges of Computational Science" *(Sunday, 17 February, 1:00 pm)*

The Neurosciences
Challenges for the '90s

3-Day Seminar, Saturday–Monday, 16–18 February
(Separate fee required; see registration form)

Organized by Katrina L. Kelner *(Science magazine)*

Stimulus-Transcription Coupling in Neuronal Cells
(Saturday, 8:30 am). Presiding: James I. Morgan *(Roche Institute of Molecular Biology)*

Inducible Proto-Oncogenes in the Nervous System —James I. Morgan; Regulation of Neuronal Gene Expression by Depolarization —Michael Greenberg *(Harvard Medical School);* Pleasure, Pain, and Proto-Oncogenes —Michael J. Iadarola *(NIDR, NIH);* NGF Induces Transcription of Genes Encoding Zinc-Finger Proteins —Jeffrey Milbrandt *(Washington Univ. School of Medicine, St. Louis)*

Plenary Lecture *(Saturday, 1:00 pm)*
Molecular Insights into the Function of Neurotransmitter Receptors and Ionic Channels —Shosaku Numa *(Kyoto Univ. Faculty of Medicine, Japan)*

Structure and Function of Potassium Channels
(Saturday, 2:30 pm). Presiding: Arthur M. Brown *(Baylor College of Medicine)*

A Minimalist Potassium Channel —Arthur M. Brown; Molecular Studies of Voltage-gated Potassium Channels —Lily Y. Jan *(Univ. of California at San Francisco);* Structure-Function Correlations in a Family of Rat Brain Potassium Channels —Walter Stuhmer *(Max Planck Inst., Gottingen, Germany);* Biophysical & Molecular Mechanisms of Potassium Channel Gating —Richard W. Aldrich *(Stanford Univ. School of Medicine)*

Olfaction and Taste
(Sunday, 8:30 am). Presiding: Gordon M. Shepherd *(Yale Univ. School of Medicine)*

From Ions and Molecules to Perception and Cognition —Gordon M. Shepherd; Molecular Mechanisms of Transduction in Olfaction: A Model for Receptor-Ligand Signaling Systems —Stuart Firestein *(Yale Univ. School of Medicine);* Long-Term Potentiation and Serial Memory Processing in the Olfactory Hippocampal Circuit —Gary S. Lynch *(Center for Neurobiology of Learning, Univ. of California, Irvine);* The Initial Events in Taste Transduction —Stephen D. Roper *(Colorado State Univ.);* Sensory Coding of Gustatory Information —David V. Smith *(Univ. of Cincinnati)*

Activity-dependent Plasticity in Development and Learning *(Sunday, 2:30 pm).* Presiding: Carla J. Shatz *(Stanford Univ. School of Medicine)*

Long-Term Potentiation: A Cellular Model for Learning —Roger A. Nicoll *(Univ. of California School of Medicine, San Francisco);* Mechanisms for Use-dependent Synaptic Plasticity in the Developing and Mature Visual Cortex —Wolf Singer *(Max Planck Inst., Frankfort, Germany);* Regulation of Synapse Stabilization by Regulation of a Receptor System —Martha Constantine-Paton *(Yale Univ.);* Spontaneous Activity and the Patterning of Connections in Fetal Development —Carla J. Shatz

Cognitive Processes
(Monday, 8:30 am). Presiding: Larry Squire *(Veterans Administration Medical Center, San Diego)*

Memory: Brain Systems and Cognition —Larry Squire; Attentional Control of Visual Perception: Cortical and Subcortical Mechanisms —Robert Desimone *(Laboratory of Neuropsychology, NIMH, NIH);* Components of High-Level Vision: A Cognitive Neuroscience Analysis —Stephen Kosslyn *(Harvard Univ.);* Neural Circuits That Mediate Perceptual Judgments of Motion Direction —William T. Newsome III *(Stanford Univ. School of Medicine)*

Molecular Basis of Neurological Disease
(Monday, 2:30 pm). Presiding: Joseph B. Martin *(Univ. of California School of Medicine, San Francisco)*

Molecular Genetic Approaches to Identification of Mutant Genes in Neurological Disorders —Joseph B. Martin; Molecular Genetics of Hereditary Retinal Disease: Retinoblastoma —Thaddeus P. Dryja *(Massachusetts Eye and Ear Infirmary);* Role of the Amyloid Precursor Protein in the Molecular Pathogenesis of Alzheimer's Disease —Dennis J. Selkoe *(Center for Neurologic Diseases, Brigham and Women's Hospital, Boston);* Molecular Biology and Genetics of Prions Causing Neurodegeneration —Stanley B. Prusiner *(Univ. of California School of Medicine, San Francisco)*

Poster Session *(Date and time to be announced)*

Adjournment *(Monday, 5:30 pm)*

Call for Neuroscience Papers

As a registrant of the neurosciences seminar, you are invited to submit an abstract for a poster session presentation to be delivered as a part of the seminar. If your abstract is accepted, you will be provided with a bulletin board on which to display graphics and large, easy-to-read text for 90 minutes. Accepted abstracts will also be published and distributed to all seminar registrants.

Deadline for abstracts is 16 December 1990, and submissions must adhere to a specific format.

For complete instructions, see the 19 October issue of *Science* magazine or write: AAAS Meetings Promotion Dept., 1333 H Street, NW, Room 815, Washington, DC 20005.

Short Courses

One-Day; Thursday, 14 February

(Separate fee required; see registration form)

Sophisticated Uses of Simple Computers

Organized by Jack M. Wilson *(Rensselaer Polytechnic Inst.)* and Rolf Sinclair *(NSF)*

This course will focus on how microcomputers can be used to solve sophisticated problems in physics and chemistry research.

Session I *(8:30 am)*

New Minds for Old —Jerry Pournelle *(Jerry Pournelle Associates);* The Comprehensive Unified Physics Learning Environment —Edward F. Redish *(Univ. of Maryland);* Catalyst: Computers in Chemistry Education —Joe Lagowski, (Journal of Chemical Education *and Univ. of Texas, Austin);* The Power of the Visual Image —Donna Cox *(Natl. Ctr. for Supercomputing Applications);* Using Mathematics in Scientific Research —Kevin McIssac *(Wolfram Research)*

Session II *(2:30 pm)*

Individualized hands-on instruction for all participants, moderated by Jack M. Wilson, Rolf Sinclair, and others.

Computers in Medical Imaging and Graphics

Organized by Robert S. Ledley *(Georgetown Univ. Med. Ctr.)*

This course will focus on new imaging modalities, including imaging components of interventional procedures as used by cardiologists and pulmonary and other specialists.

Session I *(8:30 am)*

Digital Fluoroscopy Update —Klemens H. Barth *(Georgetown Univ. Med. Ctr.);* Stereo 3-D Imaging —Robert S. Ledley *(Georgetown Univ. Med. Ctr.);* Use of Cross-sectional Imaging in the Performance of Interventional Procedures in the Abdomen —Peter R. Mueller *(Massachusetts General Hospital);* Advances in Computerized Imaging Techniques in the Practice of Invasive and Interventional Cardiology —Gary S. Ledley *(Albert Einstein Med. Ctr);* Multimodality Imaging: Challenges for Resource Allocation and Health Care Delivery —David J. Goodenough *(George Washington Univ.)*

Session II *(2:30 pm)*

Bioimaging at the Microscopic Level —Edmund M. Glaser *(Univ. of Maryland School of Med.);* Real-Time Imaging and ECG Gating with MR —Robert J. Herfkens *(Stanford Univ. School of Med.);* International Image Compression Standards and Medical Applications —Gregory K. Wallace *(Digital Equipment Corp.);* Recent Advances in Diagnostic Medical Image Storage —Robert Hindel *(Philips Medical Systems);* Endoluminal Ultrasound —Barry B. Goldberg *(Thomas Jefferson Univ.)*

AAAS Employment Exchange

The Employment Exchange at **AAAS★91** provides a forum in which employers and job candidates can meet face to face for one-on-one interviews.

AAAS is inviting corporate, government, and academic recruiters representing a wide spectrum of scientific disciplines to participate by reviewing resumes and interviewing qualified candidates on site.

If you are a scientist seeking to make a career move, a student expecting to graduate by June 1991, or an employer with positions to be filled, you should take advantage of this program.

Benefits to candidates:

- ✦Hundreds of current openings
- ✦On-the-spot interviews
- ✦Access to full descriptions of all available positions
- ✦No application fee for AAAS members who apply by 15 January 1991
- ✦Low $10 application fee for nonmembers and on-site applicants

Benefits to employers:

- ✦Over 1,000 candidates
- ✦Access to all available resumes
- ✦On-site interview facilities
- ✦Basic fee includes unlimited position postings
- ✦Special rate for nonprofit organizations
- ✦20% discount on your next classified line ad in *Science* magazine (if you sign up for the Employment Exchange by 1 January 1991)

For more information and an application form, see the insert in the 14 September 1990 issue of *Science* magazine, or contact: Jacquelyn Roberts, AAAS Employment Exchange, Suite 1152, 1333 H Street, NW, Washington, DC 20005 (Phone: 202-326-6737).

Physical Sciences & Technology

General Physical Sciences & Technology

The Frontiers of the Physical Sciences: 1991 *(Fri/am-pm).* Large telescopes, enzyme mimics, gravity waves, volcanoes, spherical points, storms. *Org.:* Rolf M. Sinclair *(NSF)*

Computing; Communications

Global Initiatives in High-Performance Computing and Networking *(Fri/pm; Sat/am-pm).* Supercomputing, networking, innovations, applications. *Org.:* Gligor A. Tashkovich *(Cornell Univ.);* Lawrence A. Lee *(North Carolina Supercomputing Ctr.);* Bonnie C. Carroll *(CENDI)*

Computer Virus Legislation: Problems and Pitfalls *(Fri/am).* State/federal legislation, industry's concerns, prosecution. *Org.:* Mark Frankel *(AAAS);* Anne Wells Branscomb *(Harvard Univ.)*

Information Technology in Support of Research: What Your National Libraries Are Doing *(Mon/am).* Outreach, laserdiscs, database access, innovations. *Org.:* Linda C. Smith *(Univ. of Illinois);* Elliot R. Siegel *(Natl. Library of Medicine)*

Can Electronic Publishing Solve the Science Library Crisis? *(Mon/am).* Economics, information technology, publisher's viewpoint. *Org.:* H.H. Barschall *(Univ. of Wisconsin)*

Scientific Communications in a Changing World *(Sun/am-pm).* Intellectual property, competitiveness, information management. *Org.:* Bonnie C. Carroll *(CENDI)*

Mathematics in the Public Policy Arena *(Mon/pm).* Statistics, wavelets, fractals, invariant measures, convergence analysis. *Org.:* Mary Beth Ruskai *(Univ. of Lowell);* Mary W. Gray *(American Univ.);* Jill P. Mesirov *(Thinking Machines Corp.)*

Technical Sessions:

Robotics and Mathematics *(Tue/pm).* Motion planning, dexterous manipulation, nonholonomy. *Org.:* Bhubaneswar Mishra *(Courant Inst., NYU)*

Stereo Computer Imaging and Analysis in Science *(Tue/am).* Echocardiograms, 3-D and 4-D. *Org.:* Robert S. Ledley *(Georgetown Univ. Med. Ctr.)*

Energy; Technology

Energy R&D Policy in the United States *(Fri/am).* Congressional, industry, and economic/environmental perspectives. *Org.:* H.M. Hubbard *(Midwest Research Inst.);* Robert W. Fri *(Resources for the Future);* Barbara Farhar *(Solar Energy Research Inst.)*

Energy Technologies for Developing Countries *(Sat/pm).* China, Brazil, India, institutional views. *Org.:* Mark D. Levine *(Lawrence Berkeley Lab.);* William Fulkerson *(Oak Ridge Natl. Lab.)*

Scientific Advances in Emerging Solar Energy Technologies *(Fri/pm).* Photovoltaics, biomass. *Org.:* H.M. Hubbard *(Midwest Research Inst.);* Robert L. San Martin *(DOE);* Barbara Farhar *(Solar Energy Research Inst.)*

Engineering in Japan *(Sun/pm).* High-tech education, grad school reform. *Org.:* Robert S. Cutler *(Consultant);* Ryo Hirasawa *(Univ. of Tokyo, Japan);* Kazuhiko Kawamura *(Vanderbilt Univ.)*

Technical Sessions:

The Interaction of Science and Engineering in the Modern Age *(Sat/am).* Technological improvement, invention and design. *Org.:* Edwin T. Layton, Jr. *(Univ. of Minnesota)*

Geophysical Imaging Systems: From Medical Microcosm to Outer Space *(Tue/am).* Airborne surveys, remote sensing, computerization. *Org.:* Anna C. Roosevelt *(Amer. Museum of Natural History)*

Changing Lives: New Technology for People with Disabilities *(Sun/am).* Reading systems, E-mail, speech processors, electroejaculation, orthotics, aging. *Org.:* Virginia W. Stern *(AAAS);* Jan Galvin *(Natl. Rehab. Hospital)*

Physics; Chemistry

Seventy-five Years of General Relativity *(Fri/am).* Gravitation, quantum theory. *Org.:* Arthur B. Komar *(Yeshiva Univ.)*

Elementary Particle Physics: Present Status and Future Prospects *(Fri/pm).* Colliders, high-energy accelerators. *Org.:* Paul Frampton *(Univ. of North Carolina)*

The Quantum Mechanics of Single Atoms *(Tue/am).* Stored ions, micromaser, optical spectroscopy. *Org.:* Thomas Erber *(Illinois Inst. of Technology);* David Wineland *(Natl. Inst. of Science and Technology)*

Chemistry Rediscovers Materials Science *(Mon/am-pm).* Ceramics, solid state, polymers. *Org.:* George S. Hammond *(Georgetown Univ.)*

Mathematics in the Materials Sciences *(Sun/pm).* Microstructure, defects, phase boundaries. *Org.:* David Kinderlehrer *(Carnegie Mellon Univ.)*

Status of High-Temperature Superconductivity *(Sat/pm).* Funding, new materials. *Org.:* William T. Oosterhuis *(NSF)*

Current Directions in Musical Acoustics *(Sun/am).* Instrument sound production, perception, computer music. *Org.:* Thomas D. Rossing *(Northern Illinois Univ.);* Mark F. Hamilton *(Univ. of Texas);* Logan E. Hargrove *(Office of Naval Research)*

Technical Session:

Revisionist's Kinetics: New Views of Nature's Throttle *(Tue/pm).* Chemical reactions, rates and mechanisms. *Org.:* R. Stephen Berry *(Univ. of Chicago)*

Date and Time Key

"Fri" = 15 February
"Sat" = 16 February
"Sun" = 17 February
"Mon" = 18 February
"Tue" = 19 February
"am" = 8:30 am to 11:30 am
"pm" = 2:30 pm to 5:30 pm

Astronomy; Planetary Science

Cosmology: Our Knowledge of the Universe *(Sat/am).* Past, present, and future observations. *Org.:* Martin Harwit *(Natl. Air and Space Museum)*

Adverse Environmental Threats to Astronomy *(Mon/pm).* Light pollution, radio noise, orbital debris. *Org.:* David L. Crawford *(Kitt Peak Natl. Observatory)*

The Human Exploration of Space *(Sun/am-pm).* Policy aspects, role of science. *Org.:* Richard C. Hart *(Natl. Research Council)*

The Rationale for Human Exploration of Mars *(Mon/am).* Role of humans in space, political context. *Org.:* Louis Friedman *(The Planetary Society)*

Science with the Hubble Space Telescope *(Tue/am).* Cameras, spectrographs, early results. *Org.:* Eric Chaisson, Colin Norman *(Space Telescope Science Inst.)*

Geoscience; Climate

Human Response to Sea-Level Rise *(Sun/pm; Mon/am-pm).* Global greenhouse and tectonic effects, political consequences. *Org.:* David R. Stoddart *(UC-Berkeley);* Joanna C. Ellison *(UC-Berkeley)*

Coastal Erosion Zone Management *(Fri/pm).* Structured shoreline, beach nourishment, land use regulations. *Org.:* Stephen P. Leatherman *(Univ. of Maryland)*

Impacts of the Climate During the 1980s in the United States *(Fri/am).* Major events and surprises, socioeconomic impacts, effects on policy. *Org.:* Stanley A. Changnon *(Illinois State Water Survey)*

Technical Sessions:

Regional Climate Conditions and Their Key Impacts in the United States *(Mon/pm).* Variability, effects on activities. *Org.:* Stanley A. Changnon *(Illinois State Water Survey)*

Earthquake Prediction and Validation *(Mon/am).* Seismicity patterns, Soviet work, empirical evidence, statistical validation. *Org.:* Paul Switzer, Ian Johnstone *(Stanford Univ.);* Allan Lindh *(USGS)*

Global Change and the Carbon Cycle in Terrestrial Ecosystems *(Sun/pm).* Modeling, climatic change, vegetation response. *Org.:* Robert K. Dixon, David P. Turner *(EPA)*

Global Change

Making Informed Decisions for Planet Earth: Role of Satellite Measurements for a Safe Environment *(Fri/pm; Sat/am-pm).* Space application data, environment policy, international concerns. *Org.:* Philip H. Abelson *(AAAS);* Gerald Soffen *(NASA);* Paul F. Uhlir *(Natl. Academy of Sciences)*

Humankind in Global Change: Indicators and Prospects *(Sun/am-pm; Mon/am-pm; Tue/am-pm).* Population, resource production/consumption, values/attitudes, institutions, policies. *Org.:* Elizabeth J. Kirk *(AAAS);* Thomas Malone *(St. Josephs College)*

Science in Africa: Achievements and Prospects *(Fri/am-pm).* Biomedicine, natural resources, policy implications. *Org.:* Amy Auerbacher Wilson *(AAAS)*

Science and Technology for the Development of the Third World *(Sat/am-pm).* Development plan, applications gap. *Org.:* Cyril Ponnamperuma *(Univ. of Maryland)*

What Are The Effects of Human Activity on the Global Ecosystem? *(Fri/pm).* Climate change, ecosystems, human population growth. *Org.:* Warren M. Hern *(Univ. of Colorado);* Priscilla Reining *(Univ. of Florida)*

The Resourceful Species: The State of the Human Enterprise *(Mon/pm).* Environment, resources, population, standard of living, historical perspective. *Org.:* Julian L. Simon *(Univ. of Maryland)*

Environment

The Role and Responsibilities of Scientists and Engineers in Environmental Debates *(Mon/pm).* Professional ethics, risk communication. *Org.:* Amy Crumpton *(AAAS);* Sheldon Krimsky *(Tufts Univ.)*

Science: A Basis for Environmental Policy? *(Mon/am).* Global warming, acid rain, ozone, air toxics. *Org.:* S. Fred Singer *(Univ. of Virginia)*

Is Superfund Working? *(Tue/am).* Improved cleanup technologies, resource allocation, environmental progress. *Org.:* William F. Isherwood *(Lawrence Livermore Natl. Lab.);* Stephen Stow *(Oak Ridge Natl. Lab.)*

Assessing the Impacts of Nuclear Waste Facilities: The State of the Art *(Sat/pm).* Socioeconomic impacts, social amplification of risk. *Org.:* Roger E. Kasperson *(Clark Univ.)*

Cleaning Up the Mess at the DOE Nuclear Weapons Complex *(Sat/am).* Health impacts, citizen participation, status of effort. *Org.:* Peter A. Johnson *(Office of Technology Assessment);* Robert P. Morgan *(Washington Univ.);* Tara O'Toole *(Office of Technology Assessment)*

Technical Sessions:

Meta-analysis and Risk Assessment: A Tool for the '90s? *(Fri/pm).* Concepts, case studies, applications, policy decisions. *Org.:* Resha M. Putzrath *(Environ Corp.);* Michael E. Ginevan *(Versar, Inc.)*

Proof of Environmental and Natural Resource Damages in Litigation *(Sun/pm).* Legal perspective, cleanup and community disruption, economic assessment. *Org.:* Daniel A. Bronstein *(Michigan State Univ.);* Bert Black *(Smith, Gambrell & Russell)*

Popular Science

Chemistry Is Fun! *(Mon/am).* Kids, teachers, science, spectacular demonstrations. *Org.:* Jean'ne M. Shreeve *(Univ. of Idaho);* Bassam Z. Shakhashiri *(NSF)*

Science for the Naked Eye; or, The Physics of Everyday Experience, XVIII *(Sun/am-pm).* Simple physics, bird's eye view, movement and form, Mozart's starling, computer art, lightning. *Org.:* Rolf M. Sinclair *(NSF)*

Science, Technology, Intelligence, and Espionage *(Mon/am).* Electronic eavesdropping, photographic surveillance, "hacking," analysis, East Bloc. *Org.:* Albert H. Teich *(AAAS);* Donald N. Langenberg *(Univ. of Maryland);* Jill H. Pace *(Amer. College of Real Estate Lawyers)*

Life Sciences & Technology

General Life Sciences & Technology

Consciousness in Life *(Mon/pm).* Psychosomatic networks, simple organisms, memories, beliefs. *Org.:* Roger S. Payne *(Whale and Dolphin Conservation Society);* Lynn Margulis *(Univ. of Massachusetts)*

Molecular & Cellular Biology

The Revolution in Developmental Biology *(Fri/pm; Sat/am).* Embryogenesis, animal models, gene conservation. *Org.:* Arthur S. Levine, Igor Dawid, Heiner Westphal *(NICHD)*

New Perspectives on Cellular Signaling *(Sat/pm).* Chemical signaling, calcium signals, signal transducers. *Org.:* Maryanna Henkart *(NSF)*

Technical Sessions:

New Interactions Between Topology and Science *(Mon/pm).* DNA topology, knots, catenanes, quantum fields, structure proofs. *Org.:* De Witt L. Sumners *(Florida State Univ.)*

National and International Efforts in Plant Genome Mapping *(Tue/am).* Gene sequencing, networks. *Org.:* David R. MacKenzie *(USDA);* Bruno Quebedeaux *(Univ. of Maryland)*

Medical Sciences

New Molecular Insights into "Old" Genetic Disorders *(Sun/pm).* Mendelian, mitochondrial. *Org.:* Victor A. McKusick *(Johns Hopkins Hospital)*

Gene Therapy: Scientific Prospects and Societal Implications *(Mon/pm).* Cancer, ethics. *Org.:* W. F. Anderson *(NIH)*

Molecular Determinants of Human Cancers *(Fri/pm).* Genetic and molecular mechanisms, structural elements, DNA methylation. *Org.:* Albert H. Owens, Jr. *(Johns Hopkins Hospital)*

The Aging and Cancer Interface: Multidimensional Research Perspectives *(Sun/am).* Epidemiology, senescence, diagnosis, treatment. *Org.:* Rosemary Yancik *(NIH)*

RU486 *(Sat/am-pm).* Contraception, antiprogestins, use in France, anticancer effect. *Org.:* Sheldon J. Segal *(Rockefeller Fdn.)*

Prospects for Immunocontraception *(Fri/pm).* Vaccines, gamete antigens. *Org.:* John C. Herr *(Univ. of Virginia)*

Development of Medications for the Treatment of Brain/Behavior Disorders *(Tue/am).* History, FDA, addictions, mental illness. *Org.:* Frank Vocci, Betty C. Tai *(Natl. Inst. on Drug Abuse)*

Control of Infectious Diseases: New Aspects of Vaccines *(Fri/am). Org.:* Donald A. Henderson *(Johns Hopkins Univ.)*

Scientific and Statistical Inferences in Modeling Animal Research *(Fri/am).* Animal models, biological references, alternatives, ethics. *Org.:* Ethel Tobach *(Amer. Mus. Natural History)*

Health Care & Policy

The Drug Approval Process in the United States: Current and Future Considerations *(Sun/pm).* New drug development, regulatory control, economics. *Org.:* Steven M. Niemi *(TSI Mason Research Inst.);* Betty-ann Hoener *(UC-San Francisco)*

Consequences of HIV/AIDS in Eastern Africa *(Sat/pm).* Transmission, control, intervention strategies, mortality rates. *Org.:* Priscilla Reining *(Univ. of Florida);* James A. Mercy *(Centers for Disease Control)*

AIDS: Scientific Research and Public Policy *(Sat/am).* Health care system, research in federal agencies, local and state governments. *Org.:* Andrew A. Sorensen *(Johns Hopkins Univ.)*

Modeling the Geographic Diffusion of the AIDS Epidemic *(Fri/pm).* Rural-urban difference, forecasting. *Org.:* Peter R. Gould *(Pennsylvania State Univ.)*

The Father and the Fetus: Facts and Fallacies *(Sun/am).* Paternal influence, drugs/xenobiotics. *Org.:* Gladys Friedler *(Boston Univ. School of Med.)*

Challenges to Dentistry for the '90s *(Mon/am).* Fluoride, amalgam, manpower. *Org.:* William Bowen *(Univ. of Rochester)*

Technical Sessions:

Balance and "Dizziness": Assessment and Rehabilitation *(Tue/am).* Postural control, oculomotor control, balance physiology, basic science and clinical implications. *Org.:* Neil T. Shepard *(Univ. of Michigan);* Robert G. Turner *(UC-San Francisco)*

Firearm Injury Prevention: Scientific and Public Policy Directions *(Tue/pm).* Regulation, homicide rates. *Org.:* James A. Mercy *(Centers for Disease Control)*

Improving Drug Development and Regulation via Pharmacokinetic/Pharmacodynamic Procedures *(Mon/pm).* Pharmacokinetic and pharmacodynamic modeling, regulatory research, therapeutics. *Org.:* Meyer Katzper *(FDA)*

Agriculture

Economically Useful Plants for Developing Countries: From Research to Market *(Fri/am).* Ethnobotany, bioassays, phytochemistry. *Org.:* Barbara N. Timmermann *(Univ. of Arizona);* Robert Maybury *(International Org. for Chemical Sciences in Development)*

Advancing Biotechnology: International Issues Regarding Biosafety Policy and Practice *(Sat/am-pm).* USDA regulations, collaborative research, transfer to developing countries. *Org.:* Joel I. Cohen, Judith A. Chambers *(Agency for International Development);* Marshall Phillips *(USDA)*

Biological and Biotechnological Alternatives to Chemical Insecticides *(Sun/am-pm).* Policies and regulations, microbial insecticides, predators and parasites. *Org.:* Brian A. Federici *(UC-Riverside);* Ron Arp *(Fleishman-Hillard);* Richard A. Weinzierl *(Univ. of Illinois)*

Pest Resistance to Control Tactics: Impact on Sustainable Pest Management *(Fri/pm).* Genetic engineering, multisector cooperation, agricultural policy. *Org.:* Robert M. Hollingworth, Mark E. Whalon *(Michigan State Univ.)*

(continued on page 10)

AAAS☆91 SESSION PLANNER*

		Friday, 15 February	Saturday, 16 February	Sunday, 17 February	Monday, 18 February	Tuesday, 19 February
	General Sciences; Popular Science	**AM/PM:** The Frontiers of the Physical Sciences: 1991. **PM:** The Anthropology of Science and Scientists.	**AM/PM:** The Anthropology of Science and Scientists.	**AM:** The Anthropology of Science and Scientists. **AM/PM:** Science for the Naked Eye; or, The Physics of Everyday Experience, XVIII.	**AM:** Chemistry Is Fun! **AM:** Science, Technology, Intelligence, and Espionage. **PM:** Consciousness in Life.	
PHYSICAL SCIENCES & TECHNOLOGY	Computing; Communications	**AM:** Computer Virus Legislation: Problems and Pitfalls. **PM:** Global Initiatives in High-Performance Computing and Networking.	**AM/PM:** Global Initiatives in High-Performance Computing and Networking.	**AM/PM:** Scientific Communication in a Changing World.	**AM:** Electronic Publishing and the Science Library Crisis. **AM:** Information Technology for Research. **PM:** Mathematics in Public Policy	**AM:** Stereo Computer Imaging and Analysis in Science. **PM:** Robotics and Mathematics.
	Energy; Technology	**AM:** U.S. Energy R&D Policy. **PM:** Scientific Advances in Emerging Solar Energy Technologies.	**AM:** The Interaction of Science and Engineering in the Modern Age. **PM:** Energy Technologies for Developing Countries.	**AM:** Changing Lives: New Technology for People with Disabilities. **PM:** Engineering in Japan.		**AM:** Geophysical Imaging Systems: From Medical Microcosm to Outer Space.
	Physics; Chemistry	**AM:** 75 Years of General Relativity. **PM:** Elementary Particle Physics: Present Status and Future Prospects.	**PM:** Status of High-Temperature Superconductivity.	**AM:** Current Directions in Musical Acoustics. **PM:** Mathematics in the Materials Sciences.	**AM/PM:** Chemistry Rediscovers Materials Science.	**AM:** Quantum Mechanics of Single Atoms. **PM:** Revisionist's Kinetics: New Views of Nature's Throttle.
	Astronomy; Planetary Science		**AM:** Cosmology: Our Knowledge of the Universe.	**AM/PM:** The Human Exploration of Space.	**AM:** The Rationale for Human Exploration of Mars. **PM:** Adverse Environmental Threats to Astronomy.	**AM:** Science with the Hubble Space Telescope.
	Geoscience; Climate	**AM:** Impacts of Climate During the 1980s in the United States. **PM:** Coastal Erosion Zone Management.		**PM:** Human Response to Sea-Level Rise. **PM:** Global Change and the Carbon Cycle in Terrestrial Ecosystems.	**AM:** Earthquakes: Prediction/Validation. **AM/PM:** Human Response to Sea-Level Rise. **PM:** Impacts of Regional Climate Conditions in US.	
	Global Change	**PM:** Role of Satellite Measurements for a Safe Environment. **AM/PM:** Science in Africa. **PM:** Human Activity and the Global Ecosystem.	**AM/PM:** Role of Satellite Measurements for a Safe Environment. **AM/PM:** Science and Technology for the Third World.	**AM/PM:** Humankind in Global Change.	**AM/PM:** Humankind in Global Change. **PM:** The Resourceful Species: The State of the Human Enterprise.	**AM/PM:** Humankind in Global Change.
	Environment	**PM:** Meta-analysis and Risk Assessment: A Tool for the 90s?	**AM:** Cleaning Up the DOE Nuclear Weapons Complex. **PM:** Assessing the Impacts of Nuclear Waste Facilities: The State of the Art Updated.	**PM:** Proof of Environmental and Natural Resource Damages in Litigation.	**AM:** Science: A Basis for Environmental Policy? **PM:** Role and Responsibilities of Scientists and Engineers in Environmental Debates.	**AM:** Is Superfund Working?
& TECHNOLOGY	Molecular & Cellular Biology	**PM:** The Revolution in Developmental Biology.	**AM:** The Revolution in Developmental Biology. **PM:** New Perspectives on Cellular Signaling.		**PM:** New Interactions Between Topology and Science.	**AM:** National and International Efforts in Plant Genome Mapping.
	Medical Sciences	**AM:** Control of Infectious Diseases. **AM:** Modelling Animal Research. **PM:** Molecular Determinants of Human Cancers. **PM:** Immunocontraception.	**AM/PM:** RU486.	**AM:** Aging and Cancer Interface: Multidimensional Research Perspectives. **PM:** New Molecular Insights into "Old" Genetic Disorders.	**PM:** Gene Therapy: Scientific Prospects and Societal Implications.	**AM:** Development of Medications for Treatment of Brain/Behavior Disorders.
	Health Care & Policy	**PM:** Modelling the Geographic Diffusion of the AIDS Epidemic.	**AM:** AIDS: Scientific Research and Public Policy. **PM:** Consequences of HIV/AIDS in Eastern Africa.	**AM:** The Father and the Fetus: Facts and Fallacies. **PM:** U.S. Drug Approval Process: Current and Future Considerations.	**AM:** Challenges to Dentistry in the '90s. **PM:** Better Drug Development & Regulation via Pharmacokinetic/Pharmacodynamic Procedures.	**AM:** Balance and "Dizziness": Assessment and Rehabilitation. **PM:** Firearm Injury Prevention: Scientific and Public Policy Directions.
	Agriculture	**AM:** Useful Plants for Developing Countries. **PM:** Pest Resistance to	**AM:** The Economic Potential for U.S. Aquaculture. **AM/PM:** Advancing	**AM:** Value-added Products from Agriculture. **AM/PM:** Biological and		**PM:** Bovine Somatotropin: Biotechnology, Product, and Social Issues

LIFE SCIENCES &		Control. **PM:** Knowledge-based Systems in Agriculture and Aquaculture.	Biotechnology: International Issues of Biosafety Policy and Practice.	Biotechnological Alternatives to Chemical Insecticides.		in the U.S. Dairy Industry.
	Ecology & Evolution	**AM/PM:** Defining Ecosystem Health: Science, Economics, or Ethics?	**AM/PM:** Stakes in the Tropical Forests. **PM:** Inheritance of Acquired Characteristics: Evolutionary Origins of New Significant Traits.	**AM:** Tropical Biology: Historical Perspectives; Contemporary Issues. **PM:** Seeds Since Columbus: Crop Germplasm of the Americas.	**AM:** Conserving Genetic Resources in Natural Habitats. **AM/PM:** Large Marine Ecosystems. **PM:** Zoo Biology/Conservation.	**AM:** Nonrandom Evolution: Matter, Life, Mind. **AM:** Ecosystem Perspectives: Multiple-Use Management. **PM:** Coastal Zone Management.
	Biomedical Ethics	**AM/PM:** DNA-based Identification Systems.		**AM/PM:** Alternative Approaches to Clinical Trials in AIDS: Ethics and Methodology.	**AM:** When Research Is Socially Sensitive and Liable to Misinterpretation. **PM:** Ethical/Clinical Issues in Carrier Screening for Cystic Fibrosis.	**PM:** International Aspects of Ethical and Social Issues in Human Genome Research.
	Psychology; Neurobehavior	**AM:** Cognitive Aging Among Intellectually Able Individuals: Patterns, Precursors, and Implications.	**AM:** Critical Periods in Second Language Acquisition. **PM:** A Critical Examination of the Concept of Critical Periods.	**AM:** Cults and the Courts: Use of "Brainwashing" Theory by Expert Witnesses. **PM:** Current Conceptions of Intelligence.	**AM:** Reassessing Freud and Psychoanalysis. **PM:** Evolution of Cognitive Functions in Ecological-Cultural Context.	**AM:** Fragrance Research: Effects of Fragrances on Behavior, Mood, and Physiology. **PM:** Cognitive Equilibrium.
SOCIAL SCIENCES & SCIENCE POLICY	***Anthropology; Archaeology***	**AM/PM:** Indigenous Peoples and the Rainforest: Science, Marketing, and Human Rights.	**AM:** Evolutionary Interrelationships: Technology, Language, and Social Behavior. **PM:** The Evolution of Deception: A Biocultural Approach.	**PM:** The Deterioration of Human Health in Economic and Political Development: From Ancient Egypt to 20th Century United States.	**AM/PM:** Ethnography of Drug Use in Traditional and Modern Societies.	**AM:** Light Stable Isotope Uses in the Natural and Social Sciences. **PM:** Biomolecular Archaeology: Identification of Species of Origin.
	Demography; Political Science	**AM/PM:** Scientific and Technical Personnel in the 1990s.	**AM:** Consequences of the Rapidly Increasing Physician Supply. **PM:** Supply/Demand for Scientists and Engineers in Emerging Markets.	**AM:** Science Policy for Women in Science: Lessons from Historical and Contemporary Case Studies.	**AM:** Voting: Mathematical Foundations and Political Reality.	**AM:** Women of Science: Secrets of Success.
	Sociology	**PM:** The Social Pathology of Large Cities.	**AM:** Violence and Youth: Research and Prevention Programs. **PM:** Family Violence: Etiology, Impact, Prevention of Child Abuse.	**AM:** Drugs, Crime, and Violence: What Do We Know? **PM:** Mental Health and Violence.		**AM:** Rural Development Aspects of Recreation Enterprises.
	Economics; Competitiveness	**AM:** Systematic Economic Analysis: Policy on Monopoly and Competition. **PM:** Sustainable Economic Development: Substance or Rhetoric?	**AM:** Quality of Health Care. **AM/PM:** Manufacturing's Future: New Global Challenge. **PM:** Economic Microsimulation for Public Policy Analysis.	**AM:** Frontiers of Experimental Economics. **PM:** Mineral Resources and the '90s Changing International Economy. **PM:** Ecological Economics.	**AM/PM:** Technology Transfer from the University or National Laboratory to the Market Place.	
	Science & International Security	**AM:** Soviet Politics and National Security Policy. **PM:** Verifying and Implementing Arms Control Agreements in the 1990s.	**AM:** Arms Control in a Changed Environment. **AM/PM:** Defense Technology/Policy After the Cold War. **PM:** Naval Forces / Arms Control.	**AM/PM:** Defense Technology/ Policy After the Cold War.	**AM:** Fissile Materials from Nuclear Arms Reductions: Disposition. **PM:** Chemical/Biological Weapons. **PM:** International Conflict Resolution.	**AM:** Implications of Proliferating Advanced Weaponry: Nuclear, Chemical, Missile, and Naval Forces.
	Science & Technology Policy	**AM:** Conflict Between National and International Roles of Universities. **AM/PM:** Policy Issues in Science and Technology.	**AM:** Science Advice to National Leaders. **AM:** Strategies for Communicating with Policymakers. **PM:** Giving Effective Expert Testimony.	**AM:** International S&T Issues in the 1990s. **AM/PM:** S&T in the Executive, Legislature, and Judiciary. **PM:** Risk Perception and Public Policy.	**AM:** Oz in the Courtroom. **AM:** Public Funds for Science. **PM:** Math in Public Policy. **PM:** Knowledge Synthesis: Ethical Imperative for Policy.	**AM:** Improving the Functioning of Government Agencies.
	History & Philosophy of Science	**AM:** Technical Change and the State in the 20th Century: Case Studies. **PM:** Creative Couples and Gender Complementarity.	**AM:** Measuring Similar Processes at Multiple Levels: Biological and Social Systems. **PM:** Metaphors and Models in the Brain Sciences.	**AM:** The Beginning and the End of the World: Historical Perspectives. **PM:** AAAS in Public Affairs, 1848–1970.	**AM:** Mathematics in Times of Social Upheaval. **PM:** Beyond Historical Impressionism: Testing Theories of Scientific Change.	**AM:** Neurobiology and Narrative: The Novels and Essays of Walker Percy, M.D. **AM:** Science in National Life: A Videohistory Workshop.
	Science & Technology Education	**AM:** Scientist-Teacher Partnerships. **AM/PM:** Cross-national Public Understanding of Science. **PM:** Scope, Sequence, and Coordination Reform.	**PM:** Minority Mathematics and Science: Successful Programs at Community Colleges.	**AM:** Information Controls and Science Reporting. **AM/PM:** Progress in Public Understanding of Science. **PM:** Science for Nonscience Majors.	**AM:** Animals in the K-12 Classroom. **AM:** Improving the Education System. **PM:** Education by Satellite. **PM:** Advocacy Journalism.	**AM:** Project 2061: What Can We Expect People to Learn About the Nature of Science?
	Science & Technology Curricula	**AM/PM:** Mathematics and Mathematics Education: Beyond Reports.	**AM:** Science as Faith–Radical Constructivism. **AM:** Calculus Reform. **PM:** S&T Curriculum Reform. **PM:** Longitudinal Study Report.	**AM:** S&T Education: State Models of Reform. **PM:** Assessment.	**AM:** Reform in Science and Math Curricula. **PM:** NSF-supported Innovations in Undergrad. Ed. **PM:** Progress and Impact of Project 2061.	

*This planner includes all symposia, technical sessions, and workshops. It does not include short courses, plenary lectures, or the neurosciences seminar. Titles of some sessions have been shortened.

(continued from page 7)

Technical Sessions:

The Economic Potential for Aquaculture in the United States *(Sat/am).* Clams, shrimp, salmon, catfish, bass. *Org.:* Morton M. Miller *(Natl. Marine Fisheries Service);* Douglas W. Lipton *(Univ. of Maryland)*

Knowledge-based Systems in Agriculture: A Developmental Perspective *(Fri/pm).* Expert systems, productivity enhancement. *Org.:* Stephen R. Ruth *(George Mason Univ.)*

Bovine Somatotropin: Biotechnology Product and Social Issues in the U.S. Dairy Industry *(Tue/pm).* Safety, regulatory approval, social and ethical issues. *Org.:* Joseph J. Molnar *(Auburn Univ.);* Robert G. Zimbelman *(Amer. Society of Animal Science)*

Value-added Products from Agriculture *(Sun/am).* Fermentation, process innovations, fibers, foods, Sterling Hendricks award. *Org.:* William H. Tallent *(USDA)*

Ecology; Evolution

Inheritance of Acquired Characteristics: Evolutionary Origins of New Significant Traits (SEMES) *(Sat/pm).* Symbiosis, symbiogenesis, gene transfer. *Org.:* David Bermudes *(Univ. of Wisconsin);* Ricardo Guerrero *(Univ. of Barcelona, Spain)*

Defining Ecosystem Health: Science, Economics, or Ethics? *(Fri/am-pm).* Conservation, judgment criteria, trophic flow networks, holistic resource management. *Org.:* Bryan G. Norton *(Georgia Inst. of Technology)*

Strategic Approaches to Conserving Genetic Resources in Natural Habitats *(Mon/am).* Pacific Northwest, Africa, Amazonia, Costa Rica. *Org.:* Joel I. Cohen, Christopher S. Potter *(AID)*

Nonrandom Evolution: Matter, Life, Mind *(Tue/am).* Big Bang, protobiotic transition, genetic code, biological form. *Org.:* Sidney W. Fox, John H. Yopp *(Southern Illinois Univ.)*

Seeds Since Columbus: Crop Germplasm of the Americas *(Sun/pm).* Biodiversity, old/new world interchange, seed conservation. *Org.:* Douglas Boucher *(AAAS)*

Stakes in the Tropical Forest *(Sat/am-pm).* Biogeophysicology, economics, conservation, development. *Org.:* Robert L. Randall *(RainForest ReGeneration)*

Science and Management of Large Marine Ecosystems *(Mon/am-pm).* Biomass yields, regional strategies, global dynamics, legal requirements. *Org.:* Kenneth Sherman *(NOAA Natl. Marine Fisheries Service);* Lewis M. Alexander *(Univ. of Rhode Island);* Barry D. Gold *(Natl. Academy of Sciences)*

Technical Sessions:

Policy Issues in Coastal Zone Management *(Tue/pm).* Estuaries, economics, land use. *Org.:* John H. Cumberland *(Univ. of Maryland)*

Ecosystem Perspectives of Multiple-Use Management *(Tue/am).* Forest ecosystems, biodiversity, balancing competing objectives. *Org.:* Wayne T. Swank *(Coweeta Hydrologic Lab.);* David H. Van Lear *(Clemson Univ.)*

Tropical Biology: Historical Perspectives and Contemporary Issues *(Sun/am).* European and North American attitudes, early 19th to late 20th century. *Org.:* Joel B. Hagen *(Radford Univ.)*

Advances in Zoo Biology and Conservation *(Mon/pm).* Reproduction, reintroduction, species survival plans. *Org.:* Benjamin B. Beck *(Natl. Zoological Park)*

Biomedical Ethics

Alternative Approaches to Clinical Trials in AIDS: Ethics and Methodology *(Sun/am-pm).* Controlled trials, design options, access, ethics, mechanisms. *Org.:* Kenneth F. Schaffner *(Univ. of Pittsburgh)*

Ethical and Clinical Issues in Carrier Screening for Cystic Fibrosis *(Mon/pm).* Informed consent, test validity, genetic technology. *Org.:* Jeffrey R. Botkin *(Case Western Reserve Univ.);* Deborah Runkle *(AAAS)*

DNA-based Identification Systems *(Fri/am-pm).* Statistical problems, impact on civil liberties. *Org.:* Paul Billings *(Pacific Presbyterian Med. Ctr.);* Nachama L. Wilker *(Council for Responsible Genetics);* Donald A. Berry *(Univ. of Minnesota)*

Scientists' Responsibilities When Research Is Socially Sensitive and Liable to Misinterpretation *(Mon/am).* Research responsibility, public understanding, founded/unfounded fears. *Org.:* Caroline Whitbeck *(MIT)*

International Aspects of Ethical and Social Issues in Human Genome Research *(Tue/pm).* HUGO, small country participation, Japan. *Org.:* Daniel Wikler *(Univ. of Wisconsin)*

Psychology; Neurobehavior

Reassessing Freud and Psychoanalysis *(Mon/am).* Mind model, social construct, theory change, unconscious mental processes. *Org.:* Frank J. Sulloway *(MIT)*

A Critical Examination of the Concept of Critical Periods *(Sat/pm).* Organismic development, language learning. *Org.:* Thomas J. Tighe *(Univ. of Conn.);* Barbara Lust *(Cornell Univ.)*

Critical Periods in Second Language Acquisition *(Sat/am).* Age dependency, brain biases. *Org.:* Suzanne Flynn *(MIT);* Barbara Lust *(Cornell Univ.);* Thomas J. Tighe *(Univ. of Conn.)*

Current Conceptions of Intelligence *(Sun/pm).* Intelligences, individual differences, twin studies. *Org.:* Thomas J. Tighe *(Univ. of Connecticut);* Bert Moore *(Univ. of Texas, Dallas)*

Cognitive Aging Among Intellectually Able Individuals: Patterns, Precursors, and Implications *(Fri/am).* Qualitative patterns, biopsychosocial approaches, professional practice. *Org.:* Douglas H. Powell *(Harvard Univ. Health Services)*

Cults and the Courts: Use of "Brainwashing" Theory by Expert Witnesses *(Sun/am).* Expert testimony, ethical/methodological issues. *Org.:* William H. Swatos, Jr. *(Sociological Analysis);* David G. Bromley *(Virginia Commonwealth Univ.)*

Fragrance Research: Effects of Fragrances on Behavior, Mood, and Physiology *(Tue/am).* Sustained attention, positive affect, behavior. *Org.:* William N. Dember *(Univ. of Cincinnati)*

Evolution of Cognitive Functions in Ecological-Cultural Context *(Mon/pm).* Reasoning, perception, language. *Org.:* Anneliese A. Pontius *(Harvard Med. School)*

Technical Session:

Cognitive Equilibrium *(Tue/pm).* Decision theory, artificial intelligence, cognitive science. *Org.:* John N. Warfield *(George Mason Univ.);* Milan Zeleny *(Fordham Univ.)*

Social Sciences & Science Policy

General Social Sciences & Policy

The Anthropology of Science and Scientists *(Fri/pm; Sat/am-pm; Sun/am).* Universality, knowledge formation, behavior, crosscultural traditions. *Org.:* Laura Nader *(UC-Berkeley)*

Anthropology; Archaeology

Indigenous Peoples and the Rainforest: Science, Marketing, and Human Rights *(Fri/am-pm).* Land rights, forest products, sustainable extraction. *Org.:* Janet Gruschow *(AAAS);* Richard P. Claude *(Univ. of Maryland)*

Evolutionary Interrelationships Between Technology, Language, and Social Behavior *(Sat/am).* Tools, language, intelligence, organized behavior. *Org.:* Kathleen R. Gibson *(Univ. of Texas, Houston);* Tim Ingold *(Univ. of Manchester, UK)*

The Evolution of Deception: A Biocultural Approach *(Sat/pm).* Morphology, behavior, adaptive significance. *Org.:* Loyal D. Rue *(Luther College);* Ursula Goodenough *(Washington Univ.)*

Ethnography of Drug Use in Traditional and Modern Societies *(Mon/am-pm).* Psychoactive drug use, anthropology, political economy. *Org.:* Willett Kempton *(Princeton Univ.)*

Deterioration of Human Health in Economic and Political Development: From Ancient Egypt to 20th-Century United States *(Sun/pm).* Economic and political development, urban society, quality of life. *Org.:* Anna C. Roosevelt *(Amer. Museum of Natural History)*

Technical Sessions:

Uses of Light Stable Isotopes in the Natural and Social Sciences *(Tue/am).* Paleoclimates, food webs, epidemiology, Greek and Roman marbles. *Org.:* Nikolaas J. van der Merwe *(Harvard Univ.)*

Biomolecular Archaeology: Identification of the Species of Origin of Blood Residues on Archaeological Artifacts *(Tue/pm).* Electrophoresis, double diffusion, radio immunoassay. *Org.:* Thomas R. Anderson *(Berkeley Antibody Co.);* David C. Hyland *(Univ. of Pittsburgh)*

Demography; Political Science

Scientific and Technical Personnel in the 1990s *(Fri/am-pm).* Pipeline issues — minorities/females, age and performance. *Org.:* Alan Fechter *(Natl. Research Council)*

The Social, Economic, and Distributional Consequences of the Rapidly Increasing Physician Supply in the United States *(Sat/am).* Health care costs, underservice, adequate care. *Org.:* Herbert Traxler, Jerald Katzoff *(U.S. Public Health Service)*

Technical Sessions:

Science Policy for Women in Science: Lessons from Historical and Contemporary Case Studies *(Sun/am).* Gender and research productivity, developed vs. developing countries. *Org.:* Pnina G. Abir-Am *(Northeastern Univ.)*

Voting: Mathematical Foundations and Political Reality *(Mon/am).* Social choice, voting schemes, electric circuit analogies. *Org.:* Alan D. Taylor *(Union College)*

Supply and Demand for Scientists and Engineers in Emerging Markets *(Sat/pm).* Salary sensitivity, market projections. *Org.:* Eileen L. Collins *(NSF)*

Workshop:

Women of Science: Secrets to Success *(Tue/am).* Career paths, balancing with outside priorities. *Org.:* Margaret M. Lobnitz *(ICF Kaiser Engineers);* Harriet Kagiwada *(California State Univ.)*

Sociology

Drugs, Crime, and Violence: What Do We Know? *(Sun/am).* Psychopharmacological, economic, compulsive, and systematic relations. *Org.:* Paul J. Goldstein *(Narcotic & Drug Research, Inc.)*

Violence and Youth: Research and Prevention Programs *(Sat/am).* Predicting risk, developmental epidemiology, community-based skills program. *Org.:* Felton J. Earls *(Harvard School of Public Health)*

Family Violence: Etiology, Impact, and Prevention of Child Abuse *(Sat/pm).* Risk factors, effects, long-term consequences, what works. *Org.:* Cathy Spatz Widom *(SUNY, Albany)*

The Social Pathology of Large Cities *(Fri/pm).* Homelessness, crime, settlement patterns. *Org.:* Keith D. Harries *(Univ. of Maryland)*

Mental Health and Violence *(Sun/pm).* Mental disorder and violence link, treatment. *Org.:* Cathy Spatz Widom *(SUNY, Albany)*

Technical Session:

Rural Development Aspects of Recreation Enterprises *(Tue/am).* Private access, economics, demand. *Org.:* Dale Colyer, Dennis Smith, Anthony Ferrise *(West Virginia Univ.)*

Economics; Competitiveness

Systematic Economic Analysis: Policy on Monopoly and Competition *(Fri/am).* Thrift failures, mergers, predatory pricing, exclusive licensing. *Org.:* Allen R. Ferguson *(AFE, Inc.)*

Frontiers of Research in Experimental Economics *(Sun/am).* Experimental design, markets, regulation. *Org.:* Vernon L. Smith *(Univ. of Arizona)*

Sustainable Economic Development: Substance or Rhetoric? *(Fri/pm).* Carrying capacity, environmental interactions, energy. *Org.:* Gardner M. Brown, Jr. *(Univ. of Washington)*

Technology Transfer from the University or National Laboratory to the Market Place *(Mon/am-pm).* Biomedical, energy/environment, manufacturing, and information technology. *Org.:* David Hsi *(New Mexico State Univ.);* Gerold Yonas *(Sandia Natl. Labs.);* Edward H. Blum *(Blum & Co., Inc.)*

Manufacturing's Future: Policy, Strategy, and the New Global Challenge *(Sat/am-pm).* Competitiveness, R&D, Japan. *Org.:* Christopher T. Hill *(Natl. Academy of Engineering/Natl. Academy of Sciences)*

Mineral Resources and the Changing International Economy of the '90s *(Sun/pm).* Implications of perestroika, federal policy, supplies. *Org.:* Carroll Ann Hodges *(U.S. Geological Survey);* John J. Schanz, Jr. *(Colorado School of Mines)*

Systems Perspective for the Quality of Health Care *(Sat/am).* Optimization, Deming's philosophy of profound knowledge, epidemiologic oversight. *Org.:* R. Clifton Bailey *(Health Care Financing Admin.);* W. Edwards Deming *(Consultant in Statistical Studies)*

Technical Sessions:

Economic Microsimulation for Public Policy Analysis *(Sat/pm).* NRC report, labor supply, socioeconomics. *Org.:* Daniel Weinberg *(US Bureau of the Census)*

Ecological Economics *(Sun/pm).* Environmental management, sustainability. *Org.:* Herman E. Daly *(World Bank)*

Science & International Security

Defense Technology and Policy After the Cold War *(Sat/am-pm; Sun/am-pm).* Changing U.S. defense needs, national security and economic competitiveness, reduced spending, nuclear weapons production. *Org.:* Amy Crumpton *(AAAS);* Ashton B. Carter *(Harvard Univ.);* Elizabeth Kirk *(AAAS);* James L. Hecht *(Univ. of Deleware);* John R. Kort *(U.S. Dept. of Commerce)*

Still Needed? Arms Control in a Radically Changed Environment *(Sat/am).* U.S., Soviet Union, European viewpoints. *Org.:* Jonathan Dean *(Union of Concerned Scientists)*

Soviet Politics and National Security Policy *(Fri/am).* Military reform, civil-military relation, arms control. *Org.:* Cynthia A. Roberts *(Hunter College)*

Implications of Proliferating Advanced Weaponry: Nuclear, Chemical, Missile, and Naval Forces *(Tue/am).* Developing world, industrial suppliers, regional arms control. *Org.:* Janne E. Nolan *(Brookings Institution)*

Chemical and Biological Weapons: Elimination or Proliferation? *(Mon/pm).* Negotiations, disposal problems, U.S. policies. *Org.:* Matthew Meselson *(Harvard Univ.)*

Verifying and Implementing Arms Control Agreements in the 1990s *(Fri/pm).* Verification regimes, national security, ratification. *Org.:* Sidney N. Graybeal, Patricia B. McFate *(Science Applications International Corp.)*

Scientific Approaches to the Study of International Conflict Resolution *(Mon/pm).* Negotiation, nationalism, crisis management. *Org.:* Eric H. Arnett *(AAAS);* Richard W. Cottam *(Univ. of Pittsburgh)*

Technical Sessions:

Naval Forces and Arms Control: Implications for U.S. Security *(Sat/pm).* Cruise missiles, confidence and security-building measures. *Org.:* Eric H. Arnett *(AAAS)*

Fissile Materials from Nuclear Arms Reductions: A Question of Disposition *(Mon/am).* Regulatory, economic, proliferation issues; USSR perspective. *Org.:* Milo D. Nordyke, William G. Sutcliffe *(Lawrence Livermore Natl. Lab.)*

Register Now!

Science & Technology Policy

Policy Issues in Science and Technology *(Fri/am-pm).* Science policy, research funding and regulation. *Org.:* Albert H. Teich *(AAAS);* Leon M. Lederman *(Fermi Natl. Accelerator Lab.)*

Science Advice to National Leaders *(Sat/am).* Advising governments, comparative science policy. *Org.:* Albert H. Teich *(AAAS);* William T. Golden *(AAAS Treasurer)*

Organization for Science and Technology in the Executive, Legislature, and Judiciary *(Sun/am-pm).* Presidential advisors, science-based regulation. *Org.:* David A. Kirsch, Jonathan Bender *(Carnegie Commission on Science, Technology, and Government)*

Conflict Between National and International Roles of Universities *(Fri/am).* View from universities, states, Congress, industry. *Org.:* Thomas H. Moss *(Case Western Reserve Univ.);* Stephen D. Nelson *(AAAS)*

Making Witnesses Out of Wizards: Bringing Oz Into the Courtroom *(Mon/am).* Scientists and engineers as expert witnesses. *Org.:* Mark S. Frankel *(AAAS);* Ruth C. Berg *(Armed Services Board of Contract Appeals)*

Technical Sessions:

International Issues in Science and Technology in the 1990s *(Sun/am).* Collaboration, migration, biodiversity. *Org.:* Roberta Balstad Miller *(NSF)*

Improving the Functioning of Government Agencies *(Tue/am).* Government agencies, organizational development, science and technology personnel. *Org.:* Stephen D. Nelson *(AAAS)*

Risk Perception and Public Policy *(Sun/pm).* Radon, pesticides in food, global climate management, media impacts. *Org.:* Michael A. Kamrin, Daniel A. Bronstein *(Michigan State Univ.)*

Allocating Public Funds for Science: Practice and Possibilities *(Mon/am).* Peer review, earmarking. *Org.:* Jack Sommer *(Political Economy Research Inst.)*

Knowledge Synthesis: An Ethical Imperative for Policy Development *(Mon/pm).* Ignorant policies, biospheric survival threat. *Org.:* Keith D. Wilde *(Canada Dept. of Agriculture)*

Workshops:

Government Hearings and Expert Witnesses: Giving Effective Testimony *(Sat/pm).* Hearing types, substance, style, legal considerations. *Org.:* Stephen D. Nelson *(AAAS)*

Communicating with Policymakers: Strategies for Scientists and Engineers *(Sat/am).* Access points, federal budget process, congressional members/committees. *Org.:* Aviva Brecher *(U.S. Dept. of Transportation);* Stephen D. Nelson *(AAAS)*

History & Philosophy of Science

The Beginning and the End of the World: Historical Perspectives *(Sun/am).* Cosmology, astronomy, Newton. *Org.:* Stephen G. Brush *(Univ. of Maryland)*

Metaphors and Models in the Brain Sciences: Historical Perspectives *(Sat/pm).* Evolutionary neurobiology, cognitive neuroscience. *Org.:* Edward Manier *(Univ. of Notre Dame)*

Mathematics in Times of Social Upheaval *(Mon/am).* Scientific autonomy, social stress. *Org.:* Sanford L. Segal *(Univ. of Rochester)*

Creative Couples and Gender Complementarity: Cross-disciplinary Perspectives *(Fri/pm).* Cooperation, conflict, career moves, publication strategies. *Org.:* Helena M. Pycior *(Univ. of Wisconsin);* Nancy G. Slack *(Yale Univ.);* Pnina G. Abir-Am *(Northeastern Univ.)*

AAAS in Public Affairs, 1848-1975 *(Sun/pm).* AAAS, public policy, history of science. *Org.:* Albert H. Teich, Michele Aldrich *(AAAS)*

Technical Sessions:

Beyond Historical Impressionism: Testing Theories of Scientific Change *(Mon/pm).* Nature of scientific change, innovation, philosophy of science. *Org.:* Frank J. Sulloway *(MIT)*

Neurobiology and Narrative: The Novels and Essays of Walker Percy, M.D. *(Tue/am).* Science and literature, neuropsychiatry, medical ethics. *Org.:* Edward Manier *(Univ. of Notre Dame)*

Recent Advances in Cross-level Research: Measuring Similar Processes at Multiple Levels of Biological and Social Systems *(Sat/am).* Systems dynamics, nonequilibrium dynamics, energy flows, economics. *Org.:* James G. Miller *(UCLA);* Len Troncale *(California State Univ., Pomona)*

Technical Change and the State in the 20th Century: Case Studies *(Fri/am).* Nuclear power (France), space program (India), all-metal airplane (USA). *Org.:* Eric Schatzberg *(Rutgers Univ.)*

Workshop:

Science in National Life: A Videohistory Workshop *(Tue/am).* Lab techniques, artifact preservation. *Org.:* David H. DeVorkin *(Natl. Air and Space Museum)*

Science & Technology Education

Cross-national Perspectives on the Public Understanding of Science *(Fri/am-pm).* Scientific literacy, Europe, Japan, North America. *Org.:* Jon D. Miller *(Public Opinion Lab.)*

Animals in the K-12 Classroom *(Mon/am).* Alternatives, pupil perceptions, value formulation. *Org.:* Deborah C. Runkle *(AAAS);* J. Frederick Cornhill *(Ohio State Univ.);* Jerod M. Loeb *(Amer. Med. Assn.)*

Science for the Nonscience Major *(Sun/pm).* Unitary body of knowledge, experimentation, mathematics basis, structured approach. *Org.:* Cesare Emiliani *(Univ. of Miami);* David S. Saxon *(MIT)*

Science and the Media: Information Controls and Reporting of Science *(Sun/am).* Environment and weapons production, sensitive information, government policy. *Org.:* Cristine Russell (The Washington Post); Carol L. Rogers *(Univ. of Maryland);* Fred Jerome *(Scientists' Inst. for Public Information)*

Technical Sessions:

Advocacy Journalism: Reporting on Sustainable Development *(Mon/pm).* Environment, third world. *Org.:* James Cornell *(Intl. Science Writers. Assn.);* Tensie Whelan *(Natl. Audubon Society)*

Minority Mathematics and Science: Successful Programs at Community Colleges *(Sat/pm).* Career opportunity enhancements. *Org.:* Estrella M. Triana *(AAAS);* Eugenio Barrios *(Hostos Community College)*

Satellite Delivery of Education: From Elementary School to the Working World *(Mon/pm).* Interactive video/satellite, networks, conferencing. *Org.:* Patricia S. Curlin *(AAAS);* Peter Lykos *(Illinois Inst. of Technology)*

Reform of Scope, Sequence, and Coordination: A Progress Report *(Fri/pm).* Curriculum, science education, teaching methods, state implementation, model programs. *Org.:* Marily DeWall *(Natl. Science Teachers Assn.)*

Workshops:

Converting Rhetoric into Practice: Improving Our Educational System *(Mon/am).* Programs in Washington, DC; attracting minorities to science, engineering, and mathematics. *Org.:* Claudia Dissel *(Natl. Research Council)*

Progress in Public Understanding of Science *(Sun/am-pm).* Audience, impact assessment, art of explanation. *Org.:* Sheila Grinnell *(Consultant);* Patricia S. Curlin *(AAAS)*

Scientist-Teacher Partnerships in Middle School Science and Technology Education *(Fri/am).* New teaching methods/materials in information and communications technology. *Org.:* Gerald Kulm *(Texas A&M)*

Project 2061: What Can We Expect People to Learn About the Nature of Science? *(Tue/am).* Developmental maps, idea networks. *Org.:* Jo Ellen Roseman *(AAAS)*

Science & Technology Curricula

S&T Education: Assessment *(Sun/pm). Org.:* Shirley M. Malcom *(AAAS);* Jane Butler Kahle *(Miami Univ.);* Ann C. Howe *(Univ. of Maryland)*

S&T Education: State Models of Reform *(Sun/am). Org.:* Shirley M. Malcom *(AAAS);* Jane Butler Kahle *(Miami Univ.);* Ann C. Howe *(Univ. of Maryland)*

S&T Education: Curriculum Reform *(Sat/pm). Org.:* Shirley M. Malcom *(AAAS);* Jane Butler Kahle *(Miami Univ.);* Ann C. Howe *(Univ. of Maryland)*

S&T Education: Science as Faith-Radical Constructivism *(Sat/am). Org.:* Shirley M. Malcom *(AAAS);* Jane Butler Kahle *(Miami Univ.);* Ann C. Howe *(Univ. of Maryland)*

Mathematics and Mathematics Education: Beyond Reports *(Fri/am-pm).* Curricular reform, "opening the pipeline," formulating a national plan. *Org.:* Ronald G. Douglas *(SUNY, Stony Brook);* James A. Voytuk, Lawrence H. Cox *(Natl. Research Council)*

NSF-supported Innovations in Undergraduate Education *(Mon/pm).* Mathematics, physics, paleontology, minorities. *Org.:* Robert F. Watson *(NSF)*

Science and Mathematics Curriculum Reforms: How Do They Relate? *(Mon/am).* Philosophy, content, approaches. *Org.:* Robert L. Russell *(NSF)*

The Progress and Impact of Project 2061 *(Mon/pm).* Response to *Science for All Americans,* impact in California, Phase II, curriculum reform, future strategy. *Org.:* F. James Rutherford *(AAAS)*

Science and Mathematics Education in the United States: A Report from the Longitudinal Study of American Youth *(Sat/pm).* Gender differences, inquiry-based instruction. *Org.:* Jon D. Miller *(Northern Illinois Univ.)*

Technical Session:

Calculus Reform: Some Examples *(Sat/am).* Reports on five projects. *Org.:* Thomas W. Tucker *(Colgate Univ.)*

Special Discounts for Students and Postdoctoral Fellows

In the interest of advancing science at all levels, AAAS encourages undergraduate and graduate students and postdoctoral fellows to take advantage of a unique learning opportunity by joining the professionals who will be attending **AAAS★91.**

To make this possible, AAAS is offering specially reduced meeting registration fees for students and postdocs. For details, see the registration form on the facing page.

Don't Miss the Exhibition

While at **AAAS★91,** be sure to make time to visit the exhibition. You will find new products, services, and publications from more than 75 publishers, computer companies, scientific societies, government agencies, and information services.

Hours are from 6:00 pm to 8:00 pm on Friday, 15 February, and from 9:00 am to 3:00 pm on Saturday through Monday, 16 – 18 February. All registrants are also invited to attend a welcoming reception in the exhibit hall on Friday night.

Discount Air Fares to Washington

Fly United Airlines or Delta Air Lines to **AAAS★91** in Washington, DC, and save when you travel during 10 – 23 February 1991:

- **5% off** lowest published round-trip fares, subject to availability and qualifying conditions, and 5% off first class. (Not available in Canada.)
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These discounts are available only through the airlines' convention reservation desks. Certain restrictions may apply and seats are limited. For details, you or your travel agent should call one of the toll-free numbers below and give the appropriate convention code:

United Airlines:

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Call 7 days a week; 8:00 am – 11:00 pm Eastern time
USA (incl. HI, AK) & Canada: 1-800-521-4041

Delta Air Lines:

Convention Code R0030
Call 7 days a week; 8:00 am – 8:00 pm Eastern time
USA (incl. HI, AK, PR): 1-800-241-6760
Canada: Call Delta locally

General Meeting Information

Location: Sessions will be in the Sheraton Washington Hotel (2660 Woodley Road, NW) and in the Omni Shoreham (2500 Calvert Street, NW), which is across the street from the Sheraton. The exhibition will be located in the Sheraton, which will also house the meeting headquarters.

Housing: Reduced-rate guest rooms are available at the Sheraton, the Omni, and the Dupont Plaza (one Metro stop away from the Sheraton) if you make your reservations through the AAAS Housing Bureau by 15 January 1991 (see instructions on the facing page).

Transportation: The Washington Metro provides an efficient means of transportation throughout the city. To reach the hotels from National Airport via Metro, take the blue line to Metro Center, then the red line to either Dupont Circle (for the Dupont Plaza) or Woodley Park (for the Sheraton and Omni Shoreham); the cost is about $1.40. Taxis from National Airport take about 20 minutes and cost about $12 one way. From Dulles Airport, the Washington Flyer shuttle bus leaves for the downtown hotels twice an hour, at a cost of $12 one way or $20 round trip, and takes about an hour. Taxis from Dulles cost approximately $40 and take about 45 minutes. Parking is available at the Sheraton ($12/day), the Omni Shoreham ($9/day), and the Dupont Plaza ($10/day). Valet parking is at additional cost.

Services for the Disabled: A resource room for the disabled will be available in the Sheraton (Lanai Room #144). If you require special services due to a disability, indicate your needs on your advance meeting registration form and in your communications with the AAAS Housing Bureau, or contact the AAAS Project on Science, Technology, and Disability (202-326-6667; TDD available).

Invitation to Exhibit

If your organization provides publications, products, or services that would be of interest to AAAS members, or if you would like to publicize your latest advances in science and technology before a worldwide audience, you should exhibit at **AAAS★91.**

The meeting serves as an important public forum in which registrants share ideas and information with each other and (through extensive press coverage) with their colleagues around the world. By exhibiting, you can meet face to face with many of the more than 5,000 attendees — scientists, educators, and researchers from virtually every field of scientific inquiry.

Organizations that should exhibit include publishers, computer software companies, scientific associations and societies, government agencies, scientific equipment manufacturers, on-line information services, and corporations with scientific interests

For complete details: Call Ed Leonardo or Stacy Weinberg at 202-326-6462.

Advance Registration Form – AAAS 91

AAAS Annual Meeting; Washington, DC
14–19 February 1991

Please print

Name of registrant _____
(last name) (first name)

Institution/company _____
(institution/company name will appear on badge)

Mailing address _____
(number / street)

_____
(city / state / zip / country)

Daytime telephone number _____

Name of spouse registrant _____
(if registering for meeting, see spouse registration fees at right)

Convention address _____
(hotel or phone number)

Circle days you will attend meeting: Thu Fri Sat Sun Mon Tue

[ ] Check here if you need special services due to a handicap.

[1] **11 January deadline:** Advance registrations received after this date cannot be processed; however, you may register on site, beginning 14 February, at the Sheraton Washington Hotel. On-site rates: regular member, $140; regular nonmember, $190; all others, same as advance rates.

[2] **Refund requests** must be made in writing to the address below by **5 February** and will be honored after the meeting. **No refunds will be made for cancellations received after this date.**

[3] **Special rates:** To qualify for student rates, you must attach a copy of your student ID card. (Student rates apply to full-time undergraduate and graduate students only.) To qualify for postdoctoral rates or high school teacher rates, you must attach a letter from your chairman confirming your status. **Registrations received without appropriate proof of status will be charged at the regular rates.**

[4] Regular nonmember 6-day (not 1-day) registration fee includes an introductory membership with 25 issues of *Science* (16 issues if mailed outside the USA).

Advance registration deadline: 11 JANUARY 1991

Mail this registration form to:

AAAS Annual Meeting Registration
P.O. Box 23320
Alexandria, VA 22304-9330

OFFICE USE ONLY
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I. Meeting Registration Fees[1]

Registrant	Six-day	One-day	Amount
Regular member	[ ] $110	[ ] $50	$ _____
Regular nonmember	[ ] $160[4]	[ ] $65	$ _____
Student member[3]	[ ] $ 10	[ ] $ 5	$ _____
Student nonmember[3]	[ ] $ 15	[ ] $ 5	$ _____
Postdoctoral member[3]	[ ] $ 30	[ ] $15	$ _____
Postdoctoral nonmember[3]	[ ] $ 40	[ ] $20	$ _____
HS teacher[3] or emeritus	[ ] $ 50	[ ] $25	$ _____
Spouse of registrant	[ ] $ 40	[ ] $20	$ _____

Important: *Students, postdocs, and high school teachers must attach proof of status.[3]*

One-day registrants circle one: Thu Fri Sat Sun Mon Tue

II. Additional Fees

(Seminar and short course fees are in addition to, not in lieu of, the meeting registration fee.)

Neuroscience Seminar (16-18 February)
Regular [ ] $110
Grad student or postdoc [ ] $ 30 $ _____

Short Courses (14 February)
Regular [ ] $ 50
Grad student or postdoc [ ] $ 15 $ _____
Select one short course only:
[ ] Sophisticated Uses of Computers
[ ] Computers in Medical Imaging

TOTAL AMOUNT: $_____

III. Payment [2]

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Hotel Reservation Instructions

To make hotel reservations: Call the AAAS Housing Bureau, toll free, weekdays between 9:00 a.m. and 5:00 p.m., Eastern time, at the following numbers:

United States: 1-800-535-3336

Canada: 1-800-535-3356

Metropolitan Washington: 202-842-2930

Have the following information ready when you call: [**1**] Name of convention: "AAAS Annual Meeting"; [**2**] 1st, 2nd, and 3rd choice of hotel; [**3**] arrival/departure dates [**4**] number of rooms needed; [**5**] type of room (single, double, etc.); [**6**] number of persons in party; [**7**] arrival time; [**8**] credit card name, number, and expiration date; [**9**] names of all occupants of room; [**10**] your mailing address; [**11**] your telephone number; [**12**] any special needs due to a handicap.

Hearing-impaired and international attendees: Hearing-impaired attendees and those from outside the USA and Canada may send written requests containing the indicated information to: AAAS Housing Bureau, 1212 New York Ave., Washington, DC 20005, USA (FAX: 202-789-7037).

Hotel confirmations: Confirmations will be sent by the Housing Bureau. If you do not use a credit card, you must remit the deposit indicated on the confirmation within 15 days of its receipt. (No deposit is required if you use a credit card.) Your choice of hotel and/or room is subject to availability.

Changes/cancellations: Prior to 15 January, changes and cancellations must be made with the Housing Bureau. After this date, contact the appropriate hotel directly.

Hotels and rates:
Please add 11% DC sales tax and $1.50 room tax per night.

	Single	*Double*
Sheraton Washington	$110	$130
2660 Woodley Road, NW	$125	$145
(AAAS headquarters hotel)	$140	$160
Omni Shoreham	$105	$120
2500 Calvert Street, NW	$121	$136
(Across from Sheraton)	$134	$149
Dupont Plaza	$ 80	$ 90
1500 New Hampshire Ave., NW		
(One Metro stop from Sheraton)		

Hotel reservation deadline:
15 JANUARY 1991

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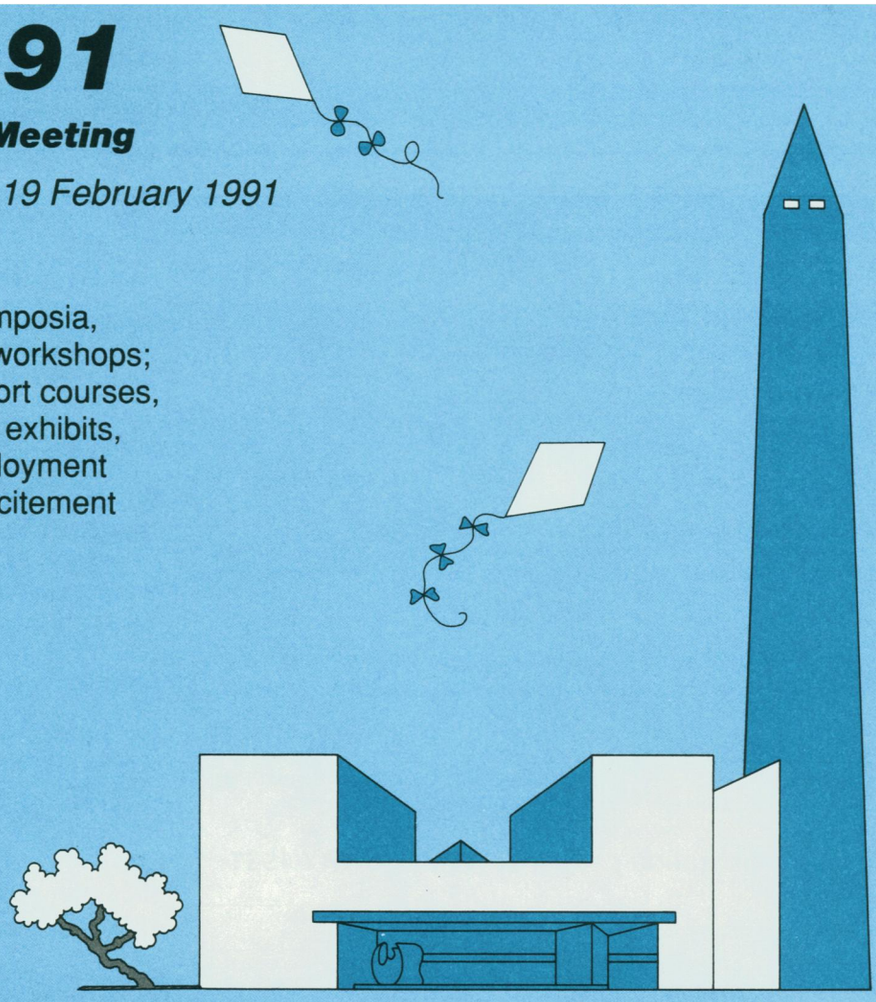

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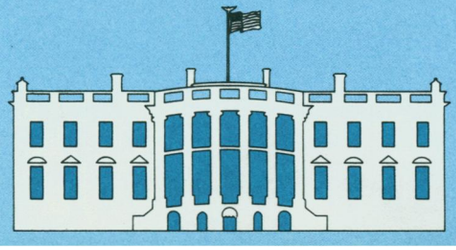

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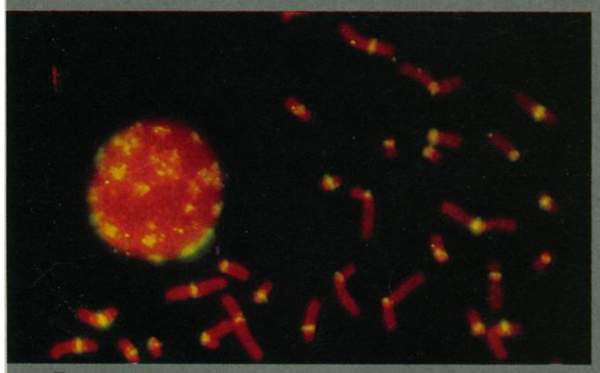

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Request for Applications of Research Funds

The Health Effects Institute—Asbestos Research is an independent non-profit corporation formed recently to support research to determine the airborne asbestos levels prevalent in buildings, to characterize peak exposures and their significance, and to evaluate the effectiveness of asbestos management and abatement strategies in a scientifically meaningful manner. HEI-AR is organized to gather and to generate reliable information, and is supported jointly by the Environmental Protection Agency and a broad range of private parties that have an interest in asbestos. The Congressional mandate under which HEI-AR now operates specifies that the HEI-AR's research "effort shall in no way be construed to limit or alter EPA's authority or obligation to proceed with rulemakings and to issue rules as necessary."

HEI-AR is now soliciting applications for research in the following areas:

RFA 90-1 Effect of Maintenance And Custodial Activities On Asbestos Exposures to Building Occupants

- **Exposures of custodial and maintenance personnel**
- **Frequency of disturbances of asbestos-containing materials**
- **Impact on exposure levels to building occupants**

Deadlines: Public Meeting: November 26, 1990. Letters of intent due: December 10, 1990; Applications due: January 15, 1991.

RFA 90-2 Population Exposure to Indoor Asbestos

- **Determination of the U.S. population's exposure to asbestos in public and commercial buildings**

Deadlines: Letters of intent due: December 10, 1990. HEI-AR-sponsored scientific workshop: Early 1991 (date to be announced); Full applications due: April 1, 1991.

Materials describing the Health Effects Institute—Asbestos Research, more specific details of the research topics, and preparation of applications are available.

Requests and inquiries should be directed to:

Dr. Rashid Shaikh
The Health Effects Institute—Asbestos Research
141 Portland Street, Suite 7100
Cambridge, MA 02139

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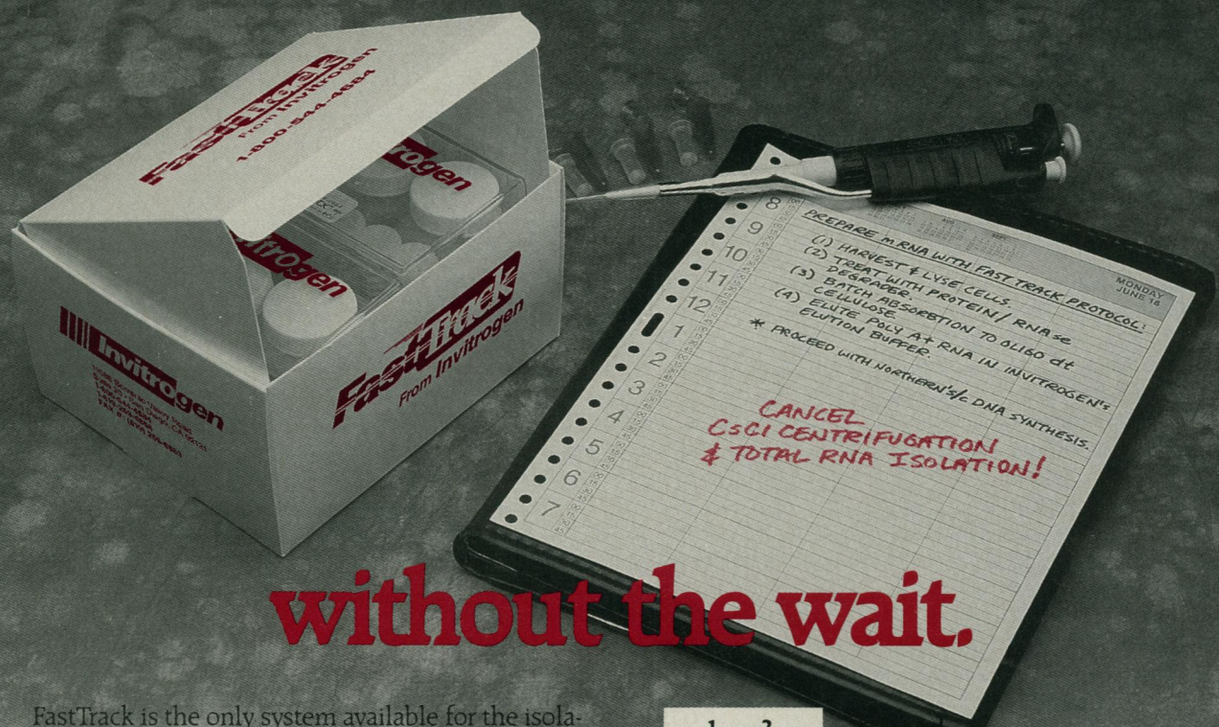

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