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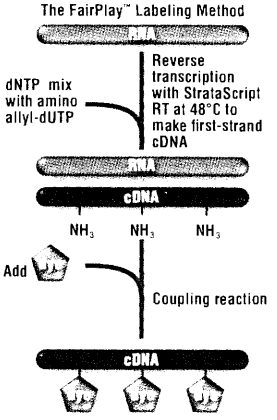

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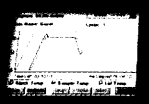

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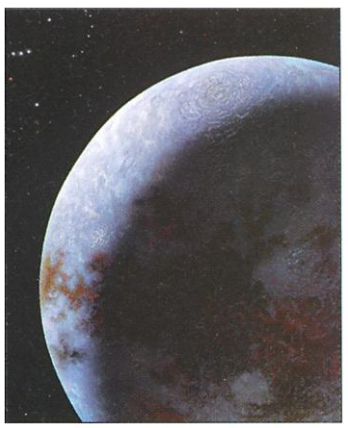

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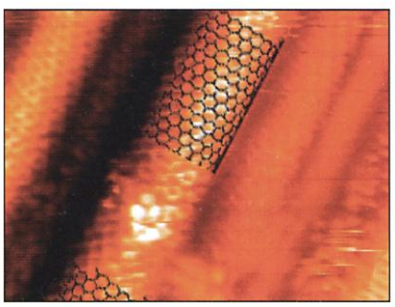

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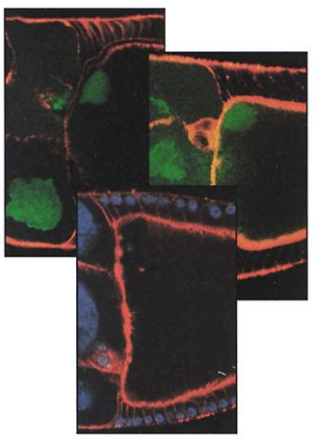
Production of an astrophysical jet by magnetic forces during gravitational contraction of a rotating, ionized torus (yellow material) as it accretes onto a central compact object. High-speed, spinning bipolar outflow (green) is generated by torsional Alfvén waves that propagate along the large-scale magnetic field (red). These waves simultaneously pinch the magnetic field into slender jets. [Image: Y. Uchida, M. Nakamura, S. Hirose]



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Border cell migration

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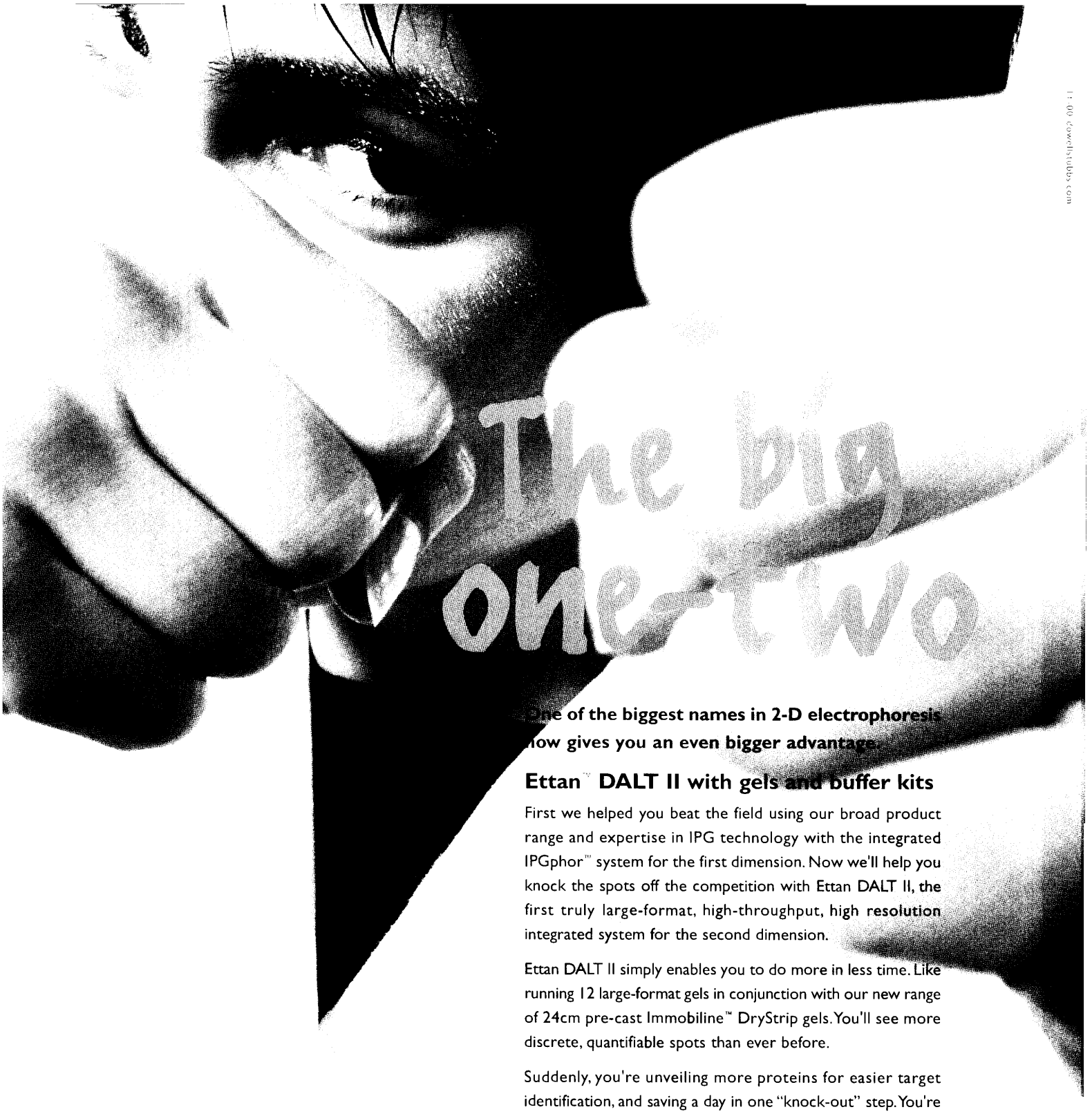

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A protected environment is demonstrated for trapped entangled ions.

Crystal Structure of an Initiation Factor Bound to the 30S Ribosomal Subunit
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Structural insights into the role of IF1 in the initiation of translation.

Role of Importin-β in Coupling Ran to Downstream Targets in Microtubule Assembly
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R. Iyengar and P. Ram

The classical β-adrenergic receptor pathway.

Connections Map: Canonical G Protein Pathway ($G\alpha_q$ Pathway)
R. Iyengar and P. Ram

The path from $G\alpha_q$ to cyclic adenosine 3′,5′-monophosphate and calcium.

Review: TGF-β Superfamily Signaling and Left-Right Asymmetry
M. Whitman and M. Mercola

From a symmetric embryo to an asymmetric organism: Cytokine cues that guide asymmetric development in vertebrate embryos.

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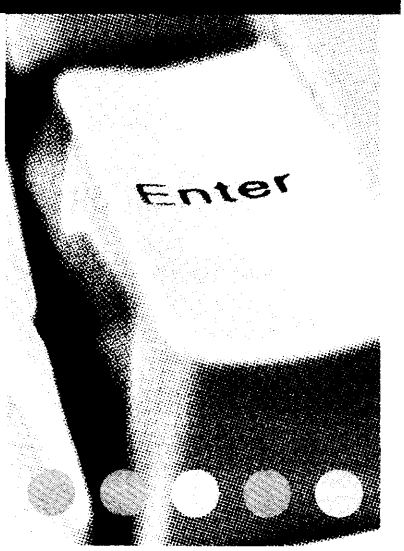

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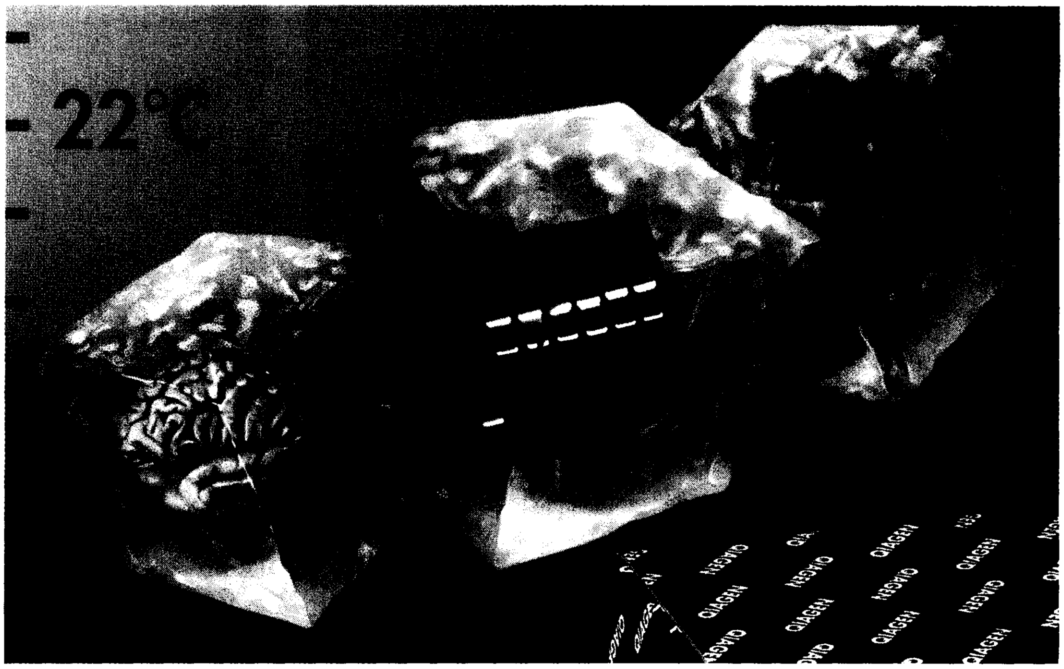

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THIS WEEK IN Science

edited by Gilbert Chin

Rapid Planet Formation

To understand star and planet formation, the locations, spatial distribution, and properties of low-mass objects that could be proto-stars or young stars need to be determined. Briceño *et al.* (p. 93; see Perspective by Kastner) have begun a large-scale photometric and spectroscopic survey of the Orion star-forming region. Their survey indicates that there are 168 new pre-main sequence stars, smaller than one solar mass, in the Orion OB1b and OB1a molecular clouds with an age range of 1 to 10 million years. Many stars are found in regions without disks or gas, which suggests that any planet formation around these stars is complete and thus that these planets formed within a few million years.

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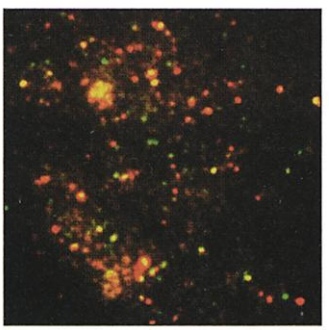
Do Nature Reserves Work?

Globally, nature reserves are set aside for the protection of biodiversity, but despite much discussion, there are few data to indicate the effectiveness of these reserves in slowing the pace of habitat destruction. Bruner *et al.* (p. 125) paint a guardedly optimistic picture of the position in tropical regions. Their survey of 93 parks in 23 countries shows that a degree of protection is achieved even if funding is scarce, but that there is also a direct correlation between the resources devoted to a park and its effectiveness.

A Silver Setting for Fluorescence

Silver clusters with unusual fluorescence dynamics have been made on demand by a photochemical route. Peyser *et al.* (p. 103) photoreduced silver oxide nanoparticles with light to create small fluorescent silver clusters stabilized within an oxide matrix. Excitation of these small silver particles with green light led to strong red fluorescence. Excitation with blue light led to unusual blinking dynamics with large spectral shifts—the same particle could switch between emitting green, red, or yellow light over time, with silver oxide likely transferring energy to the silver clusters. These results offer possibilities for writing data with blue light (creating clusters) and reading it with green light (as red fluorescence).



CREDIT: PEYSER *ET AL.*

Electrochemical Separation of Olefins

Olefins such as ethylene and propylene are basic feedstocks for the chemical industry, and most of their cost comes not from their synthesis but from expensive cryogenic separation. Electrochemical approaches for separation, in which an olefin could be bound selectively to a carrier and later released, have been explored but have suffered from poisoning by feedstream impurities or from irreversible reactions. Wang and Stiefel (p. 106; see the Perspective by Crabtree) show that certain nickel dithiolene complexes form olefin complexes. Binding appears to occur at sulfur instead of at the metal center, and thus aliphatic olefins could bind even in the presence of typical contaminants such as H_2S, H_2O, H_2, and CO.

All Together Now

Most examples of quantum tunneling through barriers in molecules involve protons. Tunneling events can be synchronized in highly symmetric molecules, but environmental effects often break the symmetry and make such coherent tunneling difficult to observe. Horsewill *et al.* (p. 100) make a case for coherent proton tunneling in a network of four hydrogen bonds between the OH groups in calix[4]arene. They observed a peak at 35 megahertz in the proton spin-lattice relaxation rate in solid-state samples below 80 K, which they attribute to tunneling of excited state levels.

Topological Junctions in Nanotubes

Theoretical studies of carbon nanotubes have indicated that the chirality, and hence the electronic properties, can change along the length of the nanotube. Far from being unwanted defects, modeling data suggest that these intramolecular junctions may function as molecular-sized metal-metal and metal-semiconductor building blocks for applications in molecular electronics. Ouyang *et al.* (p. 97) use scanning tunneling microscopy to verify the existence of such intramolecular junctions.

Southern Warmth

Ice core records of surface air temperatures in Greenland and Antarctica show that both regions experienced many of the same oscillations between warmer and colder climates during the last glacial period. It has, however, become apparent that these events were not synchronous. Blunier and Brook (p. 109; see the Perspective by Shackleton) present a relative chronology for these regions, extending back to 90,000 years before the present, using the atmospheric concentration of methane as a correlative tool. During this period, seven millennial-scale interhemispheric warming events occurred. In each case, Antarctic warming preceded warming in Greenland.

Location Does Matter

Action potentials and excitatory post-synaptic potentials (EPSPs) interact during normal nervous system function. It has been assumed that action potentials always reset the membrane potential during an EPSP. However, the original data came from spinal cord motor neurons and may not apply to neurons with extensive dendritic trees. Häusser *et al.* (p. 138) have analyzed EPSP shunting produced by antidromic action potentials and found that synaptic events with a brief underlying conductance were shunted more effectively than longer-lasting responses. Synaptic potentials initiated in dendrites were less affected than somatic ones. Thus, the interaction between action potentials and EPSPs depends on the EPSP type and location.

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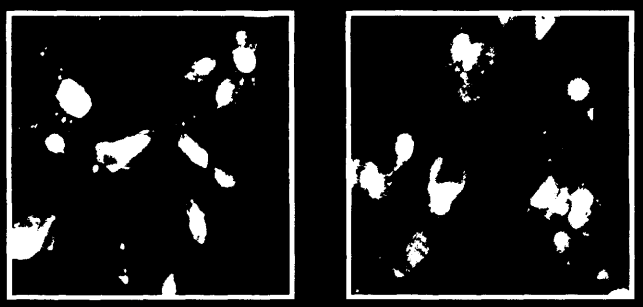
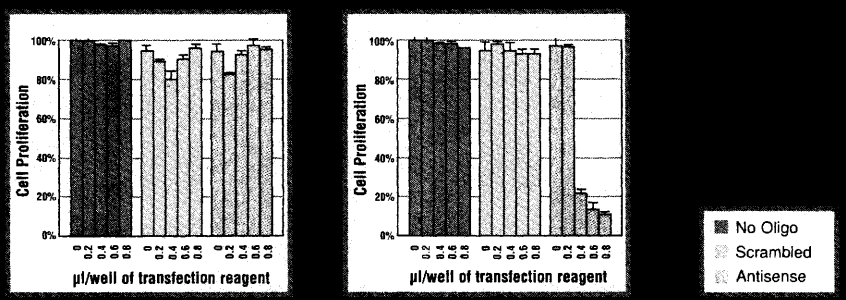


It may fluoresce, but does it function?



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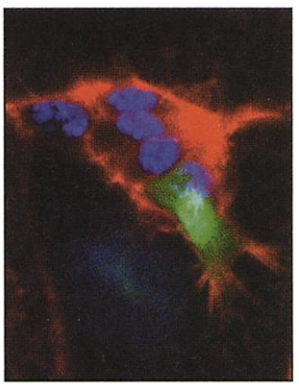
Grammar Acquisition

In evolutionary history, the emergence of language ranks as one of the most important breakthroughs. Linguistic research has suggested that humans possess a "universal grammar"—an innate set of mechanisms that is required for language learning. Nowak *et al.* (p. 114) formulate a mathematical theory for the population dynamics of grammar acquisition, showing how natural selection can determine the length of the learning period and limit the size of the searching space within which learning procedures evaluate sample sentences.

An RNA Snowplow

Processing of messenger RNA (mRNA) requires intervening sequences to be excised in a process mediated by the mRNA splicing machinery. An early step in assembling the spliceosome is forming a helical, double-stranded RNA–protein complex, which provides for sequence recognition, and then rearranging this structure. RNA helicases have been shown by genetic means to be involved in this rearrangement. Jankowsky *et al.* (p. 121) describe the biochemical role of NPH-II, an RNA helicase, in dislodging the protein (U1A) from the double-stranded RNA. The helicase appears to act as a snowplow either before or in concert with unwinding of the helix.

Breaking and Entering



CREDIT: MOTA *ET AL.*

Malaria parasites have complex life cycles. After inoculation of the parasite when a mosquito feeds on humans, the sporozoite stages motor around the body seeking out the liver. Mota *et al.* (p. 141; see the news story by Enserink) show that during this stage they are unfussy about which cells they invade and do so simply by breaking through the plasma membrane and then exiting the same way. However, the parasite will stop to replicate if it has entered by a pathway in which it becomes enfolded in host membranes, forming a parasitophorous vacuole. Perhaps the migratory phase allows the parasite to accumulate host factors on its surface, which in turn trigger signalling for a subtle form of host-cell entry that allows the parasite to reside under cover.

Fighting Mildew

Flor's gene-for-gene hypothesis has been seminal in describing plant responses: if the plant does have a resistance (*R*) gene for a specific pathogen, then that pathogen is arrested by induced local necrosis of host cells. But what farmers really want is broad-spectrum resistance to a range of plant pests. Xiao *et al.* (p. 118) have identified a new class of resistance genes in the model plant *Arabidopsis*, called the *RPW8* locus, which confers broad-spectrum resistance to a range of important agronomic fungal pathogens called the powdery mildews.

A Migration Signal

During normal animal development, cells often migrate from one area to another. Duchek and Rørth (p. 131) have examined a two-step cell migration event that occurs during oogenesis in *Drosophila*: a cluster of somatic follicle cells migrates posteriorly between the nurse cells toward the oocyte and then proceeds dorsally toward the germinal vesicle. The epidermal growth factor signaling pathway is involved, with the ligand Gurken specifically directing the dorsal migration.

Hair and Hair-after

Chemotherapy-induced alopecia (hair loss) is a frequent and emotionally distressing side effect of cancer treatment. The epithelial cells in the hair follicle are especially susceptible to cytotoxic drugs because they divide so rapidly. Davis *et al.* (p. 134; see the news story by Marx) used structure-based methods to design small-molecule inhibitors of cyclin-dependent kinase 2, a protein that promotes cell cycle progression. Topical application of these compounds to neonatal rats prior to administration of chemotherapy significantly reduced hair loss in the animals.

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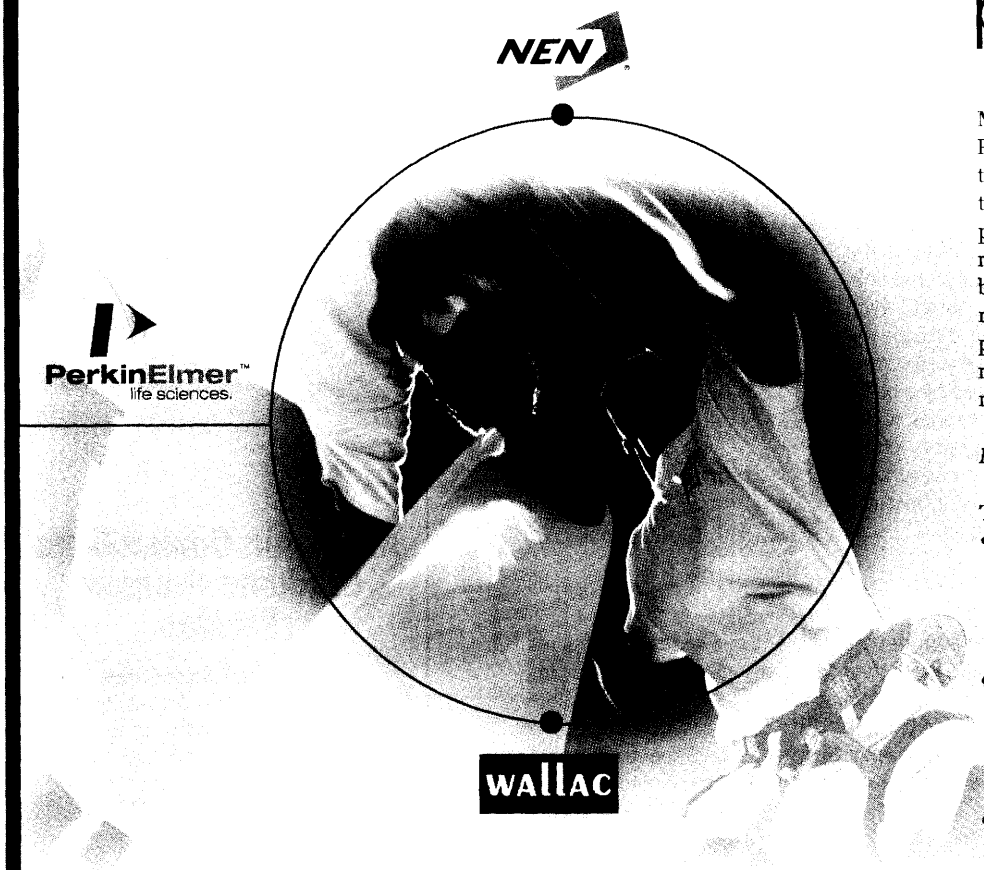

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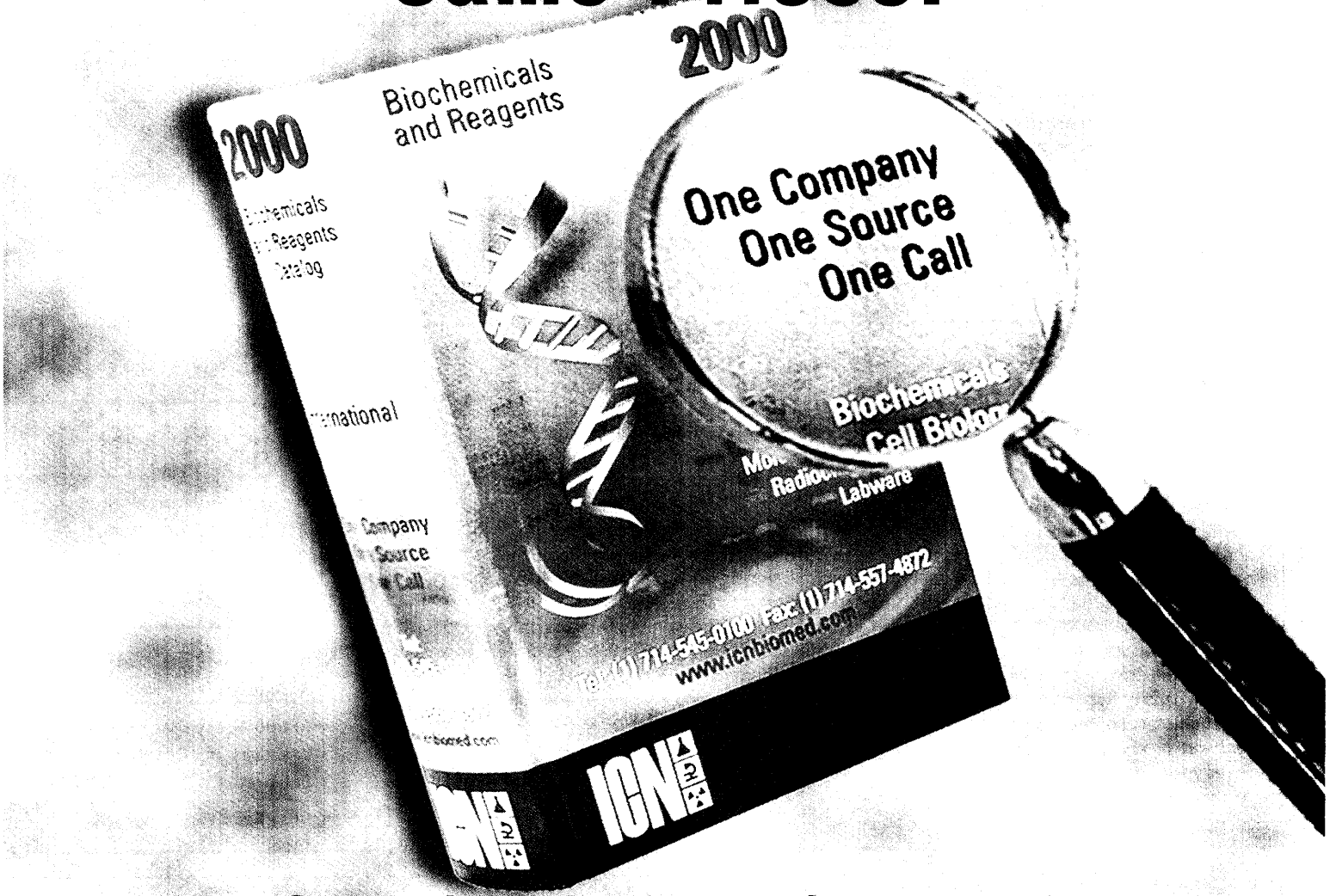

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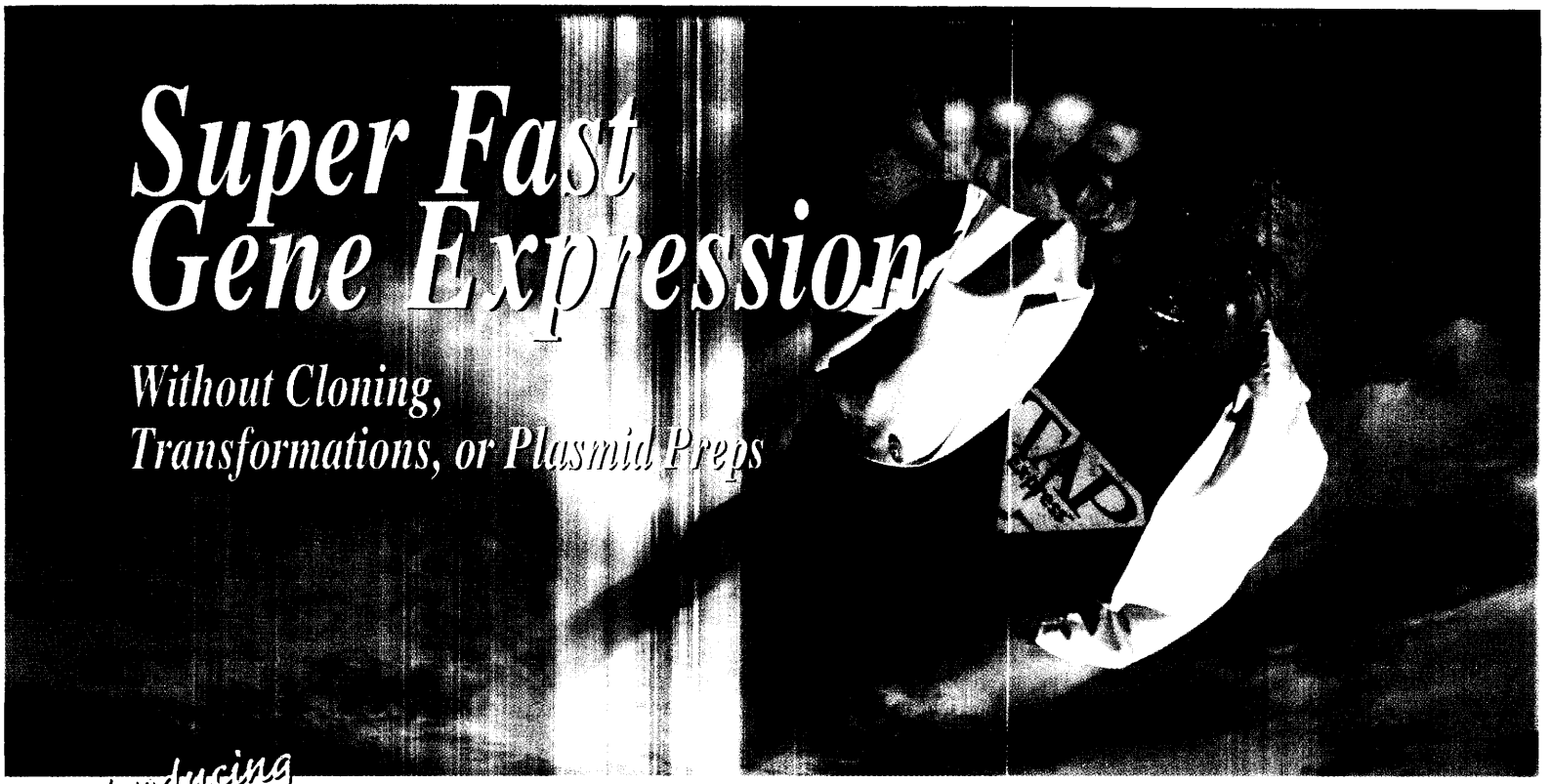

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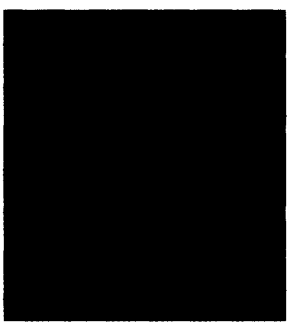

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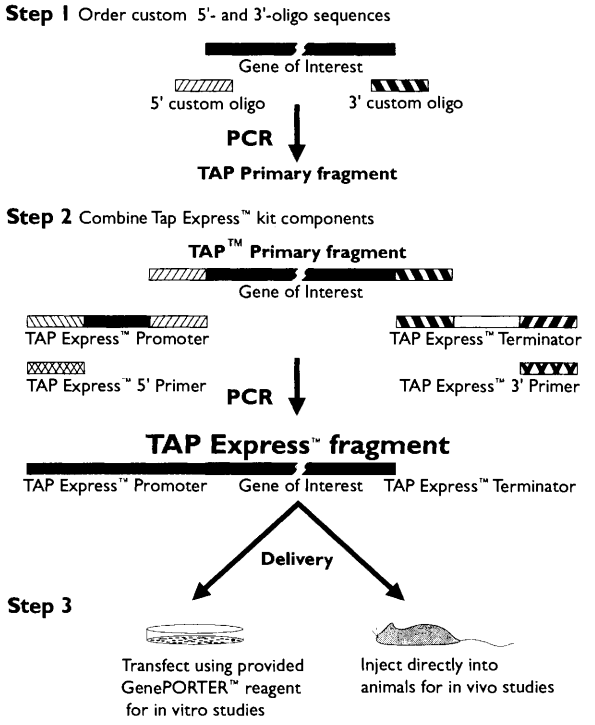

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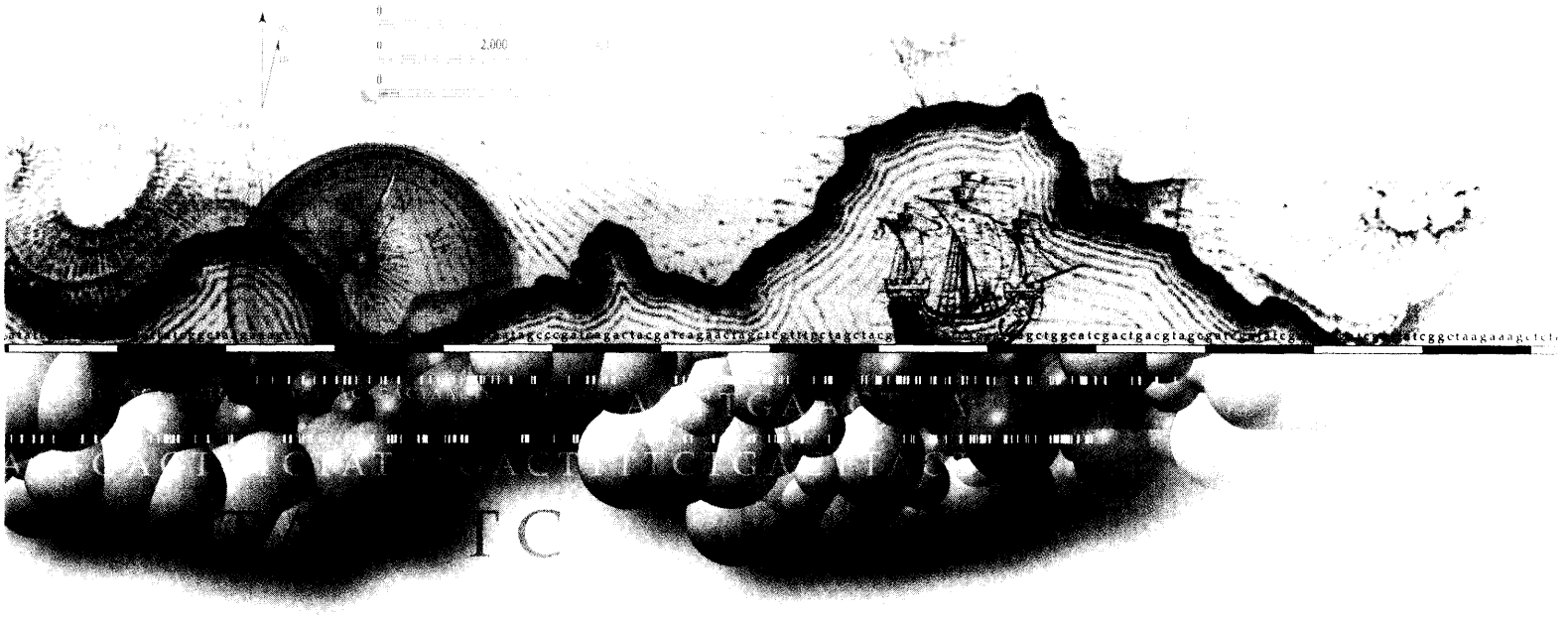

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2001

Pfizer Inc is pleased to announce the 2001 deadline for the ARA Program: A Focus on the Science. The ARA Program represents a unique opportunity for Pfizer to continue its commitment to supporting research at academic institutions throughout the United States.

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- HMG-CoA reductase pathways or novel effects of statins

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- Neuroscience
- Cardiovascular medicine
  - atherosclerosis
  - lipoprotein metabolism
  - thrombosis
  - vascular biology
- Diabetes
- Endocrinology
- Inflammation/immunology
- Oncology

The ARA will award a maximum of 20 grants for 2001 with the potential of funding for 2 years.

Awards are $50,000 per year with the potential for funding for 2 years (total: $100,000). Announcement of the award recipients will be made on or before June 1, 2001.

Application Deadline: March 15, 2001
Start of Award: On or about July 1, 2001

For more information about the ARA Program, contact:
Grant Coordinator
The ARA Program
208 East 51st Street, PMB 173
New York, NY 10022-6501
Fax: 212.308.1191
E-mail: ARAwards@mindspring.com

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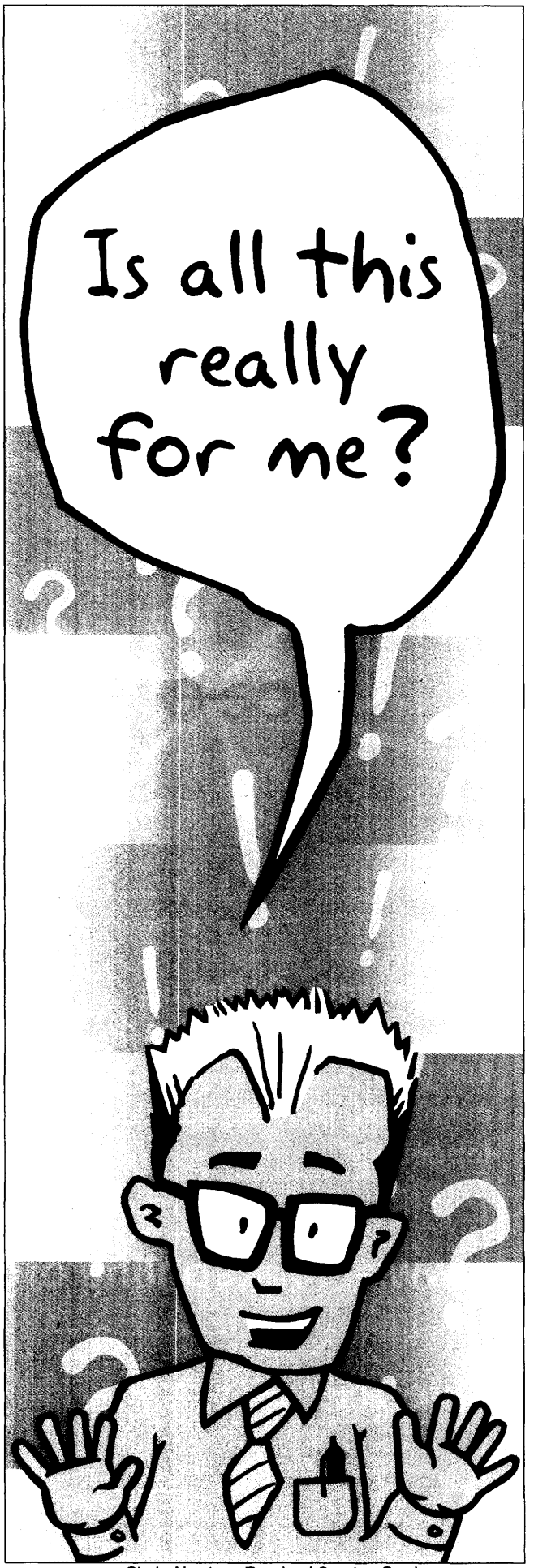

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January 2001

The AAAS Annual Meeting is always one of the year's premier scientific events, and we expect the 2001 meeting to be truly exciting. The program is diverse, comprehensive and showcases some of the most exciting, cutting edge work in science and engineering. We are assembling lectures, symposia, seminars and other events that will challenge and inform you on a wide array of emerging issues in science, engineering and technology.

Many remarkable advances in science and engineering hold great promise for the future. With completion of the human genome, attention turns now to the application of this massive body of information. The 2001 Genome Seminar will examine many of the issues, including drug development, proteomics, data management and ethics that this new frontier presents. Equally exciting are the startling potentials that will be presented in a special seminar on nanotechnology. Leading researchers will present the opportunities and challenges of nanotechnology in materials science, medicine, electronics, and computing.

In addition to the outstanding sessions on cutting edge science and engineering, the meeting will provide the unusual opportunity to hear in-depth discussions on a wide range of issues that confront us all—from how to best educate our children to the role of science in government to international environmental initiatives.

With meeting co-chairs, Michael Bishop of the University of California at San Francisco and Goéry Delacôte of the Exploratorium, I invite you to be a part of a most exciting and intellectually stimulating week.

I look forward to seeing you in San Francisco!

Sincerely,

Mary L. Good

AAAS President, University of Arkansas at Little Rock and Venture Capital Investors, L.L.C.

Plenary Lectures

Thursday, February 15

Student Science Convocation

5:00PM–6:30PM

American Junior Academy of Science Poster Displays

AAAS President's Lecture and Reception

6:30PM–9:00PM

Mary L. Good, President, AAAS, Venture Capital Investors and University of Arkansas at Little Rock

Friday, February 16

Plenary Lecture

6:30PM–7:30PM

Karen Stephenson, Chair and CEO, NetForm and Anderson School of Management, UCLA

Saturday, February 17

Plenary Lecture

6:30PM–7:30PM

Francis Collins, National Center for Human Genome Research, National Institutes of Health

Sunday, February 18

Plenary Lecture

6:30PM–7:30PM

J. Craig Venter, President and CSO, Celera Genomics

Monday, February 19

Plenary Lecture

8:00AM–9:00AM

Alfred Berkeley, President, The NASDAQ Stock Exchange, Inc.

Plenary Lecture

6:30PM–7:30PM

David Malin, Photographic Scientist and Astronomer, Anglo Australian Observatory

Lectures

Topical Lectures

Friday, February 16

■ Morning Lectures (8:00AM–8:45AM)

Daniel Kleppner, Massachusetts Institute of Technology
Two Hundred Years of Quantum Physics

Luis Villarreal, University of California-Irvine
Role of Persisting DNA Viruses and Retroviruses in Host Evolution

■ Special Lecture (12:30PM–1:15PM)

Hendrik Tent, Research Directorate General, European Union
Towards a European Research Area Opened to the World

■ Afternoon Lectures (1:30PM–2:15PM)

Troy Duster, University of California-Berkeley
Human Genetic Technologies and Taxonomies: Old Wine in New Bottles and New Wine in Old Bottles

Judy Kegl, University of Southern Maine
Language Emergence in a Language-Ready Brain

Norman Neureiter, U.S. Department of State

Lisa Randall, Massachusetts Institute of Technology
New Dimensions to Einstein's Gravity

Saturday, February 17

■ Morning Lectures (8:00AM–8:45AM)

Lewis Branscomb, John F. Kennedy School of Government, Harvard University
Setting the Standard for Scientific Integrity: 100 Years of NBS/NIST

Charles Groat, U.S. Geological Survey
Natural Hazard Reduction: Is Our Science Bold Enough?

Maria Elena Zavala, California State University-Northridge
Molecular Signals in Plants

■ Afternoon Lectures (2:00PM–2:45PM)

Donald Kennedy, Stanford University and *Science* Magazine
New Tests for Science

Isaiah Warner, Louisiana State University
Diversity: A Necessary Component of Science

JOHN P. MCGOVERN AWARD LECTURE:
Brenda Milner, Montreal Neurological Institute, McGill University

Sunday, February 18

■ Morning Lectures (8:00AM–8:45AM)

Susan Quinn, Author
Marie Curie and the Nobel Committee

Mark Yim, Xerox PARC
Rethinking Robotics: A Modular Reconfigurable Approach

Alison Gopnik, University of California-Berkeley
The Scientist in the Crib: What Early Learning Tells Us about the Mind

■ Special Lecture (1:00PM–1:45PM)

Rita Colwell, National Science Foundation

■ Afternoon Lectures (2:00PM–2:45PM)

Margaret Johnston, National Institute for Allergy and Infectious Diseases, National Institute of Health
Progress in HIV/AIDS Vaccine Development

Jerry Nelson, University of California-Santa Cruz
Astronomy and Adaptive Optics

GEORGE SARTON AWARD LECTURE:
David A. Hollinger, University of California-Berkeley
Why Are Jews Preeminent in Science and Scholarship? The Veblen Thesis of 1919 Reconsidered

Cynthia Kenyon, University of California-San Francisco
The Regulation of Aging in C. elegans

Monday, February 19

■ Afternoon Lectures (2:00PM–2:45PM)

Goéry Delacôte, The Exploratorium
Apoptosis: The Way for Science Centers to Thrive

Science Innovation

Seminars

NANOTECHNOLOGY

A New Frontier for Science and Engineering

Thursday, February 15
12:00NOON–5:30PM

Friday, February 16
9:00AM–12:00NOON
2:30PM–5:30PM

Organized by Philip H. Abelson, AAAS, Charles W. Clark, National Institute of Standards and Technology, James Ellenbogen, Mitre Corporation, Paul Alivisatos, University of California-Berkeley and Michael S. Strauss, AAAS

The emerging field of nanotechnology provides new opportunities to transform wide areas of science and engineering. The unique behavior of nanoscale materials enables them to serve as catalysts and to take advantage of giant magnetic resistance they afford. Further, new instrumentation is providing the tools for exploration and manipulation of the nanoscale environment. As a successor to the current technology employed in silicon and other semiconductor devices, nanoscale materials promise a new "computer revolution." Laboratories and research institutes in the U.S. have been increasingly active in studies related to nanotechnology and nanoengineering. However, these face a rapidly increasing global competition. To this end, recent government initiatives provide promise of much-needed funding for this work. This seminar will examine important opportunities presented by nanotechnology for engineering, technology, science and society. It will encompass several areas where this technology promises transforming innovations showcasing the work of leading scientists and engineers in this emerging field.

Speakers include:

Paul Alivisatos, UC-Berkeley
Phaedon Avouris, IBM-Yorktown
Charles Clark, NIST
Harold G. Craighead, Cornell Univ
Mildred Dresselhaus, MIT
Donald Eigler, IBM Almaden Rech Cntr
James Ellenbogen, MITRE
Franz J. Himpsel, Univ of WI
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George Whitesides, Harvard Univ
Ellen Williams, Univ of MD
Bernard Yurke, Bell Lab, Lucent

* Invited, not yet confirmed

2001 GENOME SEMINAR

Beyond the Human Genome

Saturday, February 17
9:00AM–12:00NOON
3:00PM–6:00PM

Sunday, February 18
9:00AM–12:NOON
3:00PM–6:00PM

Organized by J. Craig Venter, Celera Genomics, Claire Fraser, TIGR and Barbara Jasny, AAAS and *Science*

The 2001 Genome Seminar is cosponsored by AAAS, *Science* Magazine and The Institute for Genomic Research (TIGR)

The recent sequencing of the human genome, although it represents an enormous landmark in the history of science, is not the end but the beginning of a new era of research. From microarray technology to DNA vaccines to taking the first steps into the new frontier of proteomics—this two-day seminar explores the new kinds of research that will be possible and the new technologies being developed.

Among the topics to be addressed are whole genome sequencing, comparative genomics regulatory regions, proteomics, microarrays, SNPs, functional genomics, genetic networks, pharmacogenomics, artificial chromosomes, DNA patenting and genetic discrimination.

Speakers include:

Adam Arkin,* Stanford Univ
Aravinda Chakravarti,* John Hopkins Univ
Andrew Clark, Celera Genomics
John Doll, U.S. Pat Off
Bernard Dujon, CNRS
Michael Eisen, Lawrence Berkeley Nat'l Lab
Eric Green, NHGRI/NIH
Leroy Hood,* Univ of WA
Dennis Hochstrasser, Geneva Univ Hosp
Mike Hunkapiller, Appl Byosyst
Barbara Jasny, AAAS and *Science*
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Greg Petsko, Brandeis Univ
Wendell Weber, Univ MI
Hunt Willard, CWR Univ
Barbara Wold, Caltech
J. Craig Venter, Celera Genomics

* Invited, not yet confirmed

2001 FORUM FOR SCHOOL SCIENCE AND MATHEMATICS

Addressing Critical Issues in K-12 Science, Mathematics and Technology Education: What Can Urban School Districts Do?

Monday, February 19
9:30AM–6:30PM

Organized by Shirley Malcom, Madeline Long and Betty Calinger, AAAS

The 2001 Forum for School Science and Mathematics will be devoted to issues identified by urban school districts in California and across the nation as critical to the teaching and learning of science and mathematics. These include: (1) strategic uses of technology to support children's cognitive development, (2) what mathematics should be taught to all students, (3) literacy and K-12 science education, and (4) recruiting, preparing, and retaining K-12 teachers of mathematics and science. Participants will discuss these topics in multi-hour sessions organized by practitioners and researchers. In addition to group discussions, a panel of superintendents from large urban districts will address these issues and others that they have faced while leading system-wide programs to improve mathematics and science education.

Among those organizing panels and speaking are:

Louis Gomez, Northwestern University
Elizabeth Stage, University of California System
Jerry Valadez, Fresno Unified School District
Maria Lopez-Freeman, California Science Project
Martin Friedman, National School and Community Corps, Woodrow Wilson National Fellowship Foundation
Santiago Wood, Fresno Unified School District

Symposia

Brain, Mind and Behavior

FRI	AM	Reading & Dyslexia: The Brain
FRI	PM	Addiction Is a Brain Disease
FRI	PM	Statistics in Natural Language
SAT	AM	Origin of Mathematical Thinking
SAT	PM	Many Languages–One Grammar
SUN	AM	The Human Brain After Injury
SUN	AM	Wine & Conversation
SUN	PM	Precursors to Human Communication
MON	AM	Modality Effects on Language
MON	PM	Language Learning in Infancy

Communicating Science

FRI	AM	Juggling, Magic, Sports and Combinatorics
FRI	AM	Who Should Write the Story of Science?
FRI	PM	Communicating the Future
SAT	AM	Science & the News Media
SAT	PM	Science Is Fun!
SUN	AM	Science & Conflicts of Interests
SUN	PM	Communicating Sustainability
MON	AM	Biotechnology Communications
MON	PM	What Makes a Science Book Become a Best Seller?
TUE	AM	Science Fiction & Science

Doing Science Globally

FRI	AM	Int'l Efforts to Stop Invasive Species
FRI	PM	Science & Health Disparities
FRI	PM	Int'l Efforts to Stop Invasive Species
SAT	AM	Science at the Earth's Poles
SAT	AM	Drug Abuse Research: Latin America
SAT	PM	Science at the Earth's Poles
SAT	PM	Science & Technology in Latin America
SUN	PM	Pollutants Without Borders
SUN	PM	Agr Biotech & the Public Sector
MON	AM	Globalization of Science
MON	PM	Global Perspectives on Emerging Research
MON	PM	Capital, Innovation & the Pacific Rim

Education and Public Understanding of Science

FRI	AM	Science Education as a Subversive Activity?
FRI	PM	Policy for Pre-College Science Education
SAT	AM	Minority Outreach in Science & Math
SAT	PM	Technological Literacy
SUN	AM	Beyond TIMSS: Professional Development
SUN	AM	Making Active Learning Successful
SUN	PM	Journey Beyond TIMSS: New Insights
SUN	PM	"Antievolutionism": What Changed?
MON	AM	Computerized Adaptive Testing
MON	AM	Collaboration of Scientists & Museums
MON	PM	The Literacy Crisis in Deaf Education
MON	PM	Bringing Space Science to Earth
MON	PM	Historical Sciences & Science Education
TUE	AM	Genetically Modified Foods

Environment, Food and Natural Resources

FRI	AM	Prospects for Feeding 10 Billion People
FRI	PM	The Livestock Revolution
SAT	AM	Food Safety & the Tech Revolution
SAT	AM	Subglacial Lakes: Planetary Perspective
SAT	PM	Carbon Mgmt, Energy & Environment
SAT	PM	Natural Disasters Along the Pacific Rim
SUN	AM	Pre-European Landscapes of the West
SUN	PM	Advances in Wine & Cheese
SUN	PM	The Aquaculture Paradox
MON	AM	Archaeology & Sustainable Development
TUE	AM	Science & Water Issues of Northern CA

Life Science and the Science of Life

FRI	AM	Deep-Sea Hydrothermal Vents: Life
FRI	PM	Phylogeny, Evolution & Genomics of Plants
SAT	AM	Understanding Domestication
SAT	PM	The Scientific Role of National Parks
SUN	AM	Biology Into Space: Gravity
SUN	AM	The Future of Plant and Animal Biotech
SUN	PM	Earth System Science: Quiet Revolution
SUN	PM	Life is Complex
MON	PM	Influences on Biol Community Structure

Looking Beyond Earth

FRI	AM	Assembling the Universe: Star Formation
SAT	AM	From Gas and Gravity to Galaxies
SAT	PM	Rebuilding the Galactic Neighborhood
SUN	AM	A Telescope the Size of Earth
MON	AM	Infrared Astronomy: Molecules of Life
MON	PM	Human Exploration of Space
MON	PM	Planetary Systems: Origin and Evolution

Medicine and Public Health

FRI	AM	Support During Pregnancy & Birth
FRI	AM	Bioactive Lipids & Drug Discovery
FRI	PM	Non-Injectable Insulin–A Reality?
FRI	PM	Stem Cell & Parkinson's Disease
FRI	PM	The Rebirth of Tetracyclines
SAT	AM	Malaria in Africa
SAT	AM	Screening for Inborn Diseases
SAT	PM	The Autoimmune Diseases–Why Women?
SUN	AM	Stress & Health
SUN	PM	How Long Can Humans Live?
MON	AM	Mathematics & Medicine
MON	PM	Obesity: Causes & Solutions

Science and Society

FRI	AM	Cultivating the Civic Scientist
FRI	AM	Language & the Criminal Law
FRI	PM	Visual Symbiosis of Art & Math
FRI	PM	Statistics & Human Rights
SAT	AM	Bio-Technology & Bio-Weapons
SAT	PM	Recruiting & Retaining Minorities
SAT	PM	Technology & Cultural Heritage Materials
SUN	AM	Native American Human Remains
SUN	AM	Music & Statistical Models
SUN	PM	Science for the Community
SUN	PM	The Return of 'Collegiality' to Science
MON	AM	To Pledge or Not to Pledge
MON	AM	Mathematics in Pricing & Hedging
MON	PM	The Research Museum

Science and the Biosphere

FRI	AM	Sustainable Coasts: Counting the Costs
SAT	AM	The Scientific Theory of Marine Reserves
SAT	PM	Science & Policy of Marine Reserves
SUN	AM	Extinction Vulnerability
SUN	PM	Humans & High Altitude Environments
MON	AM	Coral Reefs in Crisis

Science, Engineering and Public Policy

FRI	AM	The Comprehensive Test Ban Treaty
FRI	PM	Arms Control & Proliferation Concerns
SAT	AM	Standards & Rate of Technology Development
SAT	AM	Math of Apportionments
SAT	PM	Math Aspects of Intellectual Property
SUN	PM	Shaping the Genetic Future of Man
MON	AM	Government's Role in the Commercialization
MON	AM	Bench Scientists & Science Policy
MON	PM	Patenting Genes & Business Methods
TUE	AM	Implications of Minimal Genomes

Technology Impacts on Society and Engineering

SAT	PM	Simulations, Complexity & Ethics
MON	AM	Functional Genomics
MON	PM	Networking Technologies & Research

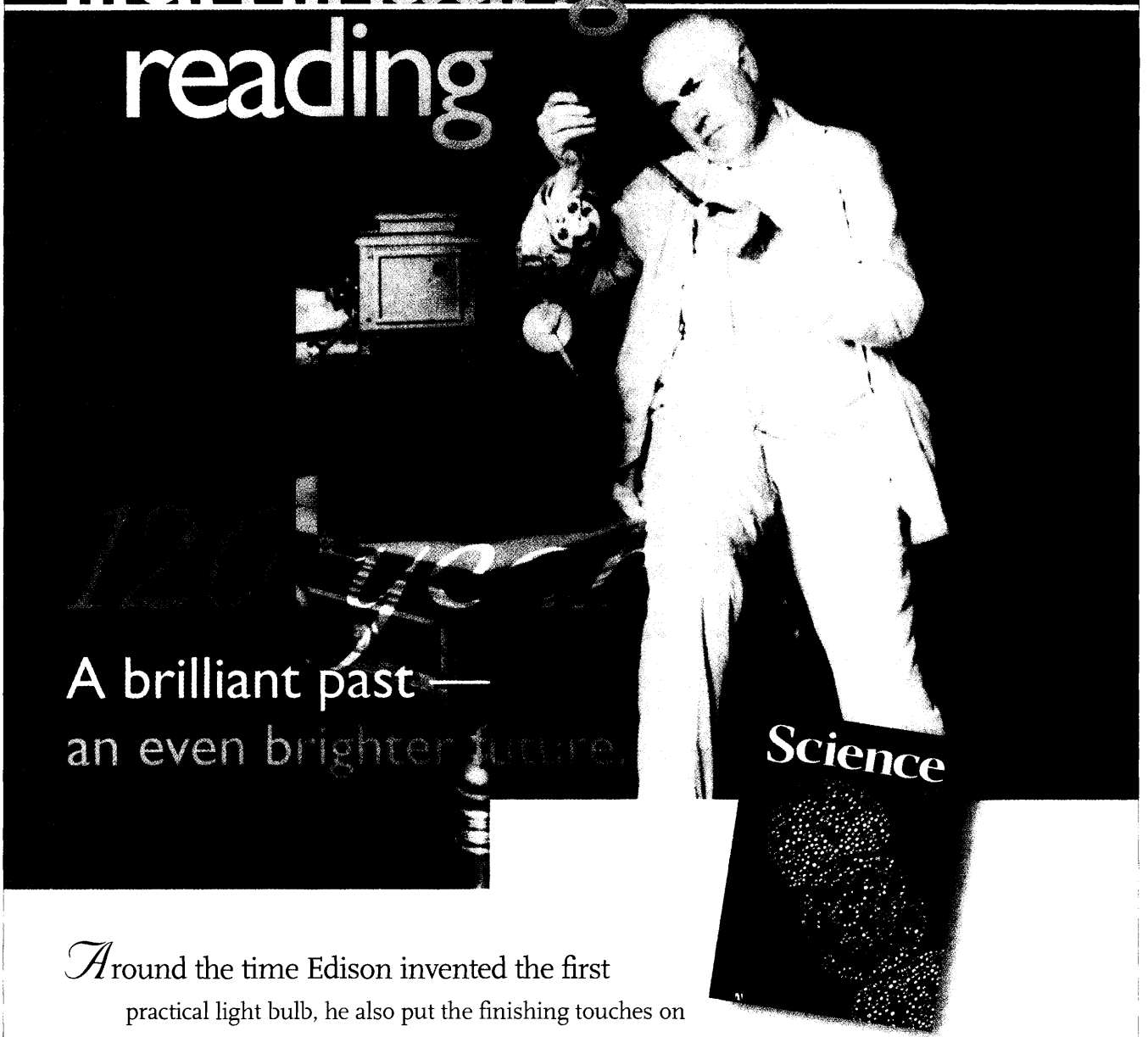
Science Innovation

FRI	AM	Matter and Antimatter: Not Quite Opposites
FRI	PM	Accelerating Discovery: Supercomputers
FRI	PM	Coming Revolutions in Particle Physics
SAT	AM	Learning and Plasticity in the Brain
SAT	PM	Signal Transduction
SUN	PM	Mathematics & Visual Cortex
MON	AM	Managing the Sea of Data
MON	PM	Quantum Computing & Communication

Seminars

THUR	PM	Nanotechnology Seminar
FRI	AM	Nanotechnology Seminar
FRI	PM	Nanotechnology Seminar
SAT	AM	2001 Genome Seminar
SAT	PM	2001 Genome Seminar
SUN	AM	2001 Genome Seminar
SUN	PM	2001 Genome Seminar
MON	AM	2001 Forum for School Science
MON	PM	2001 Forum for School Science

illuminating reading



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1 Science *June 1999 BPA Publisher's Statement*

2 Science *Harvey Research Readership surveys; 7 Aug. 1998, 18 July 1997 (Japan), 1998 European Cumulative Report as applied to AAAS June 1999 Membership Profile, publisher's own data.*

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