AAAS☆93

Science and Education for the Future

Boston ✧ 11–16 February 1993

Join your fellow scientists at AAAS☆93, where you'll find a cross-disciplinary exchange of unmatched caliber. Learn how the sciences interconnect and how advances in other fields impact upon your own. With nearly 200 symposia organized into 22 thematic tracks, you can follow the same track throughout the meeting, choose sessions from different tracks, or take advantage of the various seminars and workshops. No matter how you participate, you'll find a program suited to your individual needs.

Plenary & Award Lecturers

Jean Mayer, *Tufts Univ,* Keynote Lecture (Thurs, 11 Feb, 8–9pm)

George Smoot, *Lawrence Berkeley Lab* (Fri, 12 Feb, 7–8pm)

Gerald L. Geison, *Princeton Univ,* Sarton Lecture (Sat, 13 Feb, noon–1pm)

Eric Lander, *Whitehead Inst, MIT,* (Sat, 13 Feb 7–8pm)

Patricia Goldman-Rakic, *Yale Univ,* McGovern Lecture (Sun, 14 Feb, noon–1pm)

F. Sherwood Rowland, *Univ of Calif-Irvine,* AAAS President's Lecture (Sun, 14 Feb, 7–8pm)

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Contents

Seminars

(Separate registration required; see pg. 1528.)

Protein Kinases and Phosphatases

Organized by: *Shirish Shenolikar & Anthony R. Means*

Protein Phosphorylation and Signal Transduction (Wed 8:30–11:30 am)

Signal transduction by the epidermal growth factor receptor, *Roger Davis;* Oncogenic activation of the ABL protein tyrosine kinases in human leukemias, *Ann-Marie Pendergast;* Membrane receptor protein kinases involved in sex determination, *Patricia K. Donahoe;* The T cell antigen receptor: Phosphorylation events accompanying activation, *Larry E. Samelson*

Topical Lecture (Wed 1:15–2:15pm)

Protein-Tyrosine Kinases and Phosphatases in Cell Cycle Progression from G0 to M phase, *Tony Hunter*

Growth-Regulated Protein Kinases (Wed 2:30–5:30pm)

Cell cycle regulation of the cdc2 protein kinase, *Kathy Gould;* Characterization of activation pathways for 42 kDa mitogen-activated protein kinase ($p42^{mapk}$), *Thomas W. Sturgill;* Protein phosphorylation and regulation of mitosis, *Steven Osmani;* Mos protooncogene function and the cell cycle, *George Vande Woude*

Protein Phosphorylation and Gene Transcription (Thurs 8:30–11:30am)

Growth regulation of immediate early gene transcription, *Michael Greenberg;* Positive and negative transcriptional control mechanisms, *Michael G. Rosenfeld;* IFN-tyk, a protein kinase involved in interferon a/b signaling, *Sandra Peligrini;* Regulation of muscle-specific transcription by protein kinase cascades, *Eric Olson*

Topical Lecture (Thurs 1:15–2:15pm)

Regulation of Protein Kinases by Pseudosubstrates: Intrasteric Control, *Bruce E. Kemp*

Structure and Function of Protein Kinases (Thurs 2:30–5:30pm)

Calmodulin-regulated protein kinases as transducers of the Ca^{++} signal, *Anthony R. Means;* Insights gleaned from the structure of catalytic subunit of cAMP-dependent protein kinase, *Susan Taylor;* Control of protein kinase C in vitro and in vivo, *Peter Parker;* Regulation of signal transduction through G-protein-coupled receptors, *Marc Caron*

Protein (Serine/Threonine) Phosphatases (Fri 8:30–11:30am)

Understanding cell regulation by protein (serine/threonine) phosphatases, *Shirish Shenolikar;* Protein serine/threonine phosphatases regulating cell division, *Patricia W. Cohen;* Molecular investigations of immunophilins, *Stuart L. Schreiber;* Crosstalk — Regulation of phosphatases by phosphorylation, *David L. Brautigan*

Topical Lecture (Fri 1:15–2:15pm)

Protein Tyrosine Phosphatases: Their Role in Cell Regulation and Disease, *Jack E. Dixon*

Protein (Tyrosine) Phosphatases (Fri 2:30–5:30pm)

Genetic analyses of protein tyrosine phosphatases in signal transduction, *Haruo Saito;* Regulation of eukaryotic cell cycle, *Helen Piwnica-Worms;* Effects of tyrosine phosphatases on cell transformation, *Debby Cool;* PAC-1: A member of a new family of cell cycle-regulated protein tyrosine phosphatases, *Kathleen Kelly*

Teaching Ethics in Science and Engineering

Organized by: *Stephanie J. Bird, Penny J. Gilmer, & Terrell W. Bynum*

Major Ethical Issues in Science and Engineering (Wed 1:30–3pm)

Concurrent Sessions (Wed 3:30–5pm)

Authorship and Intellectual Property ✦ Conflict of Interest ✦ Data Selection/Research Design ✦ Privacy & Confidentiality ✦ Misconduct & Whistle-blowing ✦ Safety in Design ✦ Discrimination & Sexual Harassment ✦ Implications of Funding Sources for Research ✦ Animals in Research ✦ Human Subjects in Research

Lecture and Discussion (Wed 7–9pm)

Professional values & ethical issues in graduate education

Panel on Professional Ethics & Codes of Ethics (Thurs 8:30–10am)

Concurrent Sessions (Thurs 10:30am–noon)

Physical Sciences ✦ Life Sciences ✦ Social Sciences ✦ Information Sciences ✦ Engineering

Lecture & Discussion (Thurs noon–1:30pm)

Teaching ethics to scientists & engineers

Demonstrations/Closing Panel (Thurs 2–4:30pm)

Confirmed Speakers *(additional speakers TBA)*

Stephanie J. Bird, Terrell W. Bynum, Betsy Fader, Paul Friedman, Penny J. Gilmer, Donald Gotterbarn, Keith Miller, James Moor, Judith Perrolle, Andrew Rowan, Eugene Spafford, Robert Sprague, Judith Swazey, Caroline Whitbeck, Vivian Weil, Michael Zigmond

Human Obesity

Organized by: *David B. Allison & F. Xavier Pi-Sunyer*

Basic Science (Fri 9am–12:40pm)

Hunger, satiety, nemiety, and palatability: Studying elusive constructs. *Harry Kissileff;* Evaluating the "Set-Point" hypothesis, *Rudolph L. Leibel;* Genetics and obesity: What genetic analyses do and do not tell us, *Claude Bouchard*

Etiology (Fri 1:40–5pm)

Do the obese overeat? *David B. Allison, Steven B. Heymsfield;* The role of physical activity in the development and maintenance of obesity, *James O. Hill;* Is obesity associated with a reduced metabolic rate?, *Stanley Heshka*

Health and Treatment (Sat 9am–4:40pm)

The health hazards of obesity, *F. Xavier Pi-Sunyer;* "Healthy," "ideal," "desirable," and "reasonable" weights: What are they, how do they differ, and when are you there? *George Bray;* The health hazards of intentional weight loss: What we know, what we think we know, and what we ought to know, *Steven B. Heymsfield;* The health hazards of weight variability: Epidemiological perspectives, *David Williamson;* The benefits and use of exercise in obesity treatment, *James O. Hill;* If we live in a deterministic world, why can't we predict treatment outcome? *David B. Allison;* Simple solutions for complex problems? Occam's razor, the FDA, and the pharmacological treatment of obesity, *L. Arthur Campfield*

Panel Discussion (Sat 4:40–5pm)

Mapping the Human Brain

Organized by: *Joseph B. Martin*

Understanding Neurodegenerative Diseases: Alzheimer's Disease (Sun 8:30–11:30am)

Introduction—The human brain mapping initiative, *Joseph B. Martin;* Alzheimer's disease: The clinical and pathological syndrome, *Leonard Berg;* From the amyloid precursor protein to the plaques and tangles: Where does it go wrong? *Kenneth S. Kosik;* Mutations in the amyloid precursor protein gene in Alzheimer's disease, *Alison Goate;* An analysis of the memory deficit in Alzheimer's disease, *Brad Hyman*,* The biology of Alzheimer's disease: Lessons from studies of model systems, *Donald L. Price*

Keynote Address (Sun 1:15–2:15pm)

Cell and Molecular Mechanisms of Memory Storage, *Eric R. Kandel*

Perceiving the World: An Exploration of the Senses (Sun 2:30–5:30pm)

Genes involved in visual processing; Retinal processing of visual information, *John E. Dowling;* Mapping the visual cortex: From monkeys to humans, *David C. Van Essen;* Distributed representation of odor information: A paradigm for parallel neuronal processing, *John S. Kauer;* Sensory-motor processing for smooth eye movements, *Stephen G. Lisberger*

Memory and Learning: Lessons from Models (Mon 8:30–11:30am)

Brain systems and the structure of memory, *Larry R. Squire;* Biological origins and computational features of memory in brain networks, *Gary Lynch;* Contributions of brain imaging to an understanding of brain areas involved in memory and learning, *Marcus Raichle*;* How do we think about memory? *Endel Tulving;* Panel discussion: Sharing the data involved in dissecting brain functions

Keynote Address (Mon 1:15–2:15pm)

Experience with Brain Mapping, *Floyd E. Bloom**

Mapping Strategies (Mon 2:30–5:30pm)

Mapping molecules: Computations in time & space, *Robert Langridge*,* Mapping organisms: From a worm genome to a human brain, *Bruce R. Schatz;* A neuroscientist's view of the brain, *Joseph Coyle;* A computer scientist's view of the brain map, *Vinton G. Cerf;* The Human Brain Project: The federal role, *Alan I. Leshner*

* Invited, not confirmed

Symposia & Topical Lectures*

Sessions are listed chronologically within each of 22 thematic tracks.

Perspectives on Human Genetics

Ethical and Religious Dimensions of Genetic Science and Medicine (Fri 8:30am & 2:30pm)

Steward or co-creator? Limits of human manipulation?, *Laurence J. O'Connell;* Genetics and theology on human nature, *Stanley Harakas;* Knowledge, ignorance, and responsibility, *Sue P. Stafford;* Defining acceptability and severity of genetic diseases, *Aubrey Milunsky;* Racial and ethnic concerns, *Marian Gray Secundy;* Enhancing respect for persons in genetic and pastoral counseling, *Frank D. Seydel;* Advances in genetic testing and the concerns of disabled persons, *Philip R. Reilly;* Genetic technologies: Impact on women as patients and practitioners, *Dorothy C. Wertz;* Ethical criteria for clinical priorities in genetic services, *Philip J. Boyle.* Organized by: *J. Robert Nelson.*

Human Genetic Diversity (Fri 8:30am)

Speakers TBA. Organized by: *L.L. Cavalli-Sforza.*

Ethical and Legal Aspects of Genetic Testing (Sat 8:30am & 2:30pm)

Introduction: Genetic testing today and tomorrow, *Gilbert Omenn;* Mapping the path of genetic testing into the next century, *Ruth Green-Stein;* Genetic testing for behavior traits and psychiatric disorders, *Elliot S. Gershon;* The patent controversy, *TBA;* So what's new?, *Marcia Angell;* Pedigree research: Clinical science and patient counseling, *Kimberly A. Quaid;* Linking genetics, behavior, and responsibility, *John Fletcher;* The controversy over criminal behavior and heredity: Summary remarks, *Robert F. Murray;* Genetic testing as seen by patients and families, *Joan O. Weiss.* Organized by: *Gilbert Omenn, Deborah Runkle.*

Genetic and Molecular Analysis of Homosexuality/Sexuality (Sun 8:30am)

Is sexual orientation inheritable? An evaluation of the evidence, *J. Michael Bailey;* Sexual differentiation of brain function and structure: The concept, *Roger A. Gorski;* Sexual orientation: Part of a neuropsychologic mosaic, *Sandra F. Witelson;* The nongenetics of homosexuality, *Paul Billings;* Towards the molecular genetics of sexual orientation, *Dean H. Hamer;* Discussion, *Kenneth Lewes, Jurg Ott, Richard Pillard.* Organized by: *Cassandra Smith, Richard Pillard.*

Determinants and Consequences of Human Inbreeding: A Global Perspective (Sun 2:30pm)

Preferential inbreeding in major populations and immigrant countries, *Alan Holland Bittles;* The interpretation of consanguinity effects, *James V. Neel;* Consanguinity and reproductive outcome in religious minorities, *Lynn B. Jorde;* Determinants of consanguineous marriages in Turkey, *Ergul Tuncbilek;* Epidemiologic assessment of the effects of inbreeding on morbidity and mortality, *Muin J. Khoury;* Discussion, *James F. Crow.* Organized by: *L.B. Jorde, Alan Holland Bittles.*

*All speakers listed have been invited but not all were confirmed at press time.

Knots in Biology and Chemistry (Mon 8:30am)

Knotted DNA rings, *James C. Wang;* Catenanes and kinetoplast DNA, *Sylvia Spengler;* Knots and DNA recombination, *De Witt Sumners;* Synthesis of hook and ladder molecules: A subtle new form of topological chirality, *David M. Walba;* DNA and differential geometry, *James White;* Spatial invariants of knots and molecular graphs, *Ken Millett.* Organized by: *Louis Kauffman.*

Statistics and Molecular Biology (Mon 2:30pm)

The comparison of DNA and protein molecules, *Stephen Altschul;* Markov models of ion channels, *John Rice;* Reticulate evolution, *John Hartigan;* Statistics and molecular biology, *Kenneth L. Lange.* Organized by: *Herman Chernoff.*

Confronting AIDS

Science Confronts AIDS (Fri 8:30am & 2:30pm)

Speakers TBA. Organized by: *William Haseltine, Prem Mohan.*

Topical Lecture (Fri 1:15pm)

Contributions of Science Toward Controlling HIV-1 Infection and Disease, *William Haseltine.*

Mucosal Immunity: The First Line of Defense Against AIDS? (Sat 8:30am)

Ontogeny of the mucosal immune response, *Daniel J. Smith;* Dendritic leukocytes in HIV-1 infection, *Erik Langhoff;* The humoral immune response to retroviruses, *Myron E. Essex;* Diagnostic and prognostic uses of antibodies to HIV in saliva, *David Archibald.* Organized by: *John Greenspan, David Archibald.*

AIDS: Impacts in Developing Countries (Sat 2:30pm)

Introduction, *Hiram Larew;* Impact of AIDS: Demographic and epidemiological projections, *Peter O. Way;* AIDS in developing countries: Economic myths and realities, *Stefano M. Bertozzi;* AIDS and women's lives in developing countries, *Lynellyn D. Long;* The impact of AIDS in high-risk occupational groups, *John Stover;* Historical precedents for AIDS, *William H. McNeill.* Organized by: *Hiram Larew.*

Hematopoietic Growth Factors and Their Receptors (Sun 8:30am)

Introduction, *David G. Nathan;* Alpha and beta chain interactions of the human IL-3/GM-CSF receptor, *Colin A. Sieff;* Regulation of interleukin-3 synthesis, *Bernard Mathey-Prevot;* The role of the erythropoietin receptor in murine erythroleukemia, *Alan D'Andrea;* Transcriptional control of hematopoietic development, *Stuart H. Orkin.* Organized by: *David Nathan.*

Topical Lecture (Sun 1:15pm)

Computational Analysis of Protein Structure and Applications to Drug and Vaccine Design, *Charles Delisi.*

Biology: Cells and Bugs

The Marine Biological Laboratory: Its Past and Future Role (Sun 8:30am)

Speakers TBA. Organized by: *John Burris.*

Mitosis (Sun 2:30pm)

Mitosis in living cells, *Edward Salmon;* Activation of the cell cycle, *Joan V. Ruderman;* DNA replication, *Mark Rush;* TBA, *B.R. Brinkley;* Mitosis: Problems and perspectives, *Robert Palazzo.* Organized by: *Robert Palazzo.*

Cilioprotist Diversity, Evolution, and Ecology: New Technology and New Ideas (Mon 8:30am)

The phylogeny of ciliates: A molecular approach, *Detlef D. Leipe;* Electron microscopy and the revolution in ideas on ciliate evolution, *Denis H. Lynn;* Cortical morphogenesis: A developmental component of ciliate diversity, *Bruce Hill;* Ciliates from microbial mat environments, *Lorraine Olendzenski, Lynn Margulis;* Ciliates: Diverse roles in the plankton, *Diane K. Stoecker.* Organized by: *Linda Hufnagel.*

The Boston Tradition of Insect Research (Mon 2:30pm)

Introduction, *William H. Telfer;* Chemical ecology, *Thomas Eisner;* Juvenile hormone and insect metamorphosis: Boston legacy and current concepts, *Lynn M Riddiford;* Studies of social insects: The Boston traditions, *Edward O. Wilson;* From insect melanogenesis to melanoma cancer, *Manickam Sugumaran;* A muscarine gain-control in *Manduca* motoneurons, *Barry A. Trimmer.* Organized by: *John Law, William H. Telfer.*

Molecular Aspects of Microbial Adhesion (Tue 8:30am)

Microbial biofilms, *Timothy E. Ford;* Molecular basis for the tropism of *Actinomyces viscosus* for teeth, *Ronald Gibbons;* Adhesion of *Rhizobium* to root hairs of legume hosts, *Frank B. Dazzo;* Uptake of bacterial pathogens into host cells, *Ralph R. Isberg.* Organized by: *John Greenspan, Ronald Gibbons.*

Date/Time Key

Wed = 10 February
Thurs = 11 February
Fri = 12 February
Sat = 13 February
Sun = 14 February
Mon = 15 February
Tue = 16 February

Symposium Session Hours
8:30am–11:30am
2:30pm–5:30pm

Topical Lecture Hours
1:15pm–2:15pm

Medical Research & Society

Responsibilities of Institutions Toward Animals in Research (Fri 8:30am)

Introduction, *Steven M. Niemi;* USDA responsiblity to animals in research, *Dale F. Schwindaman;* Enforcement of standards for research animal welfare: PHS policy, *Nelson L. Garnett;* Self-regulation of animal care by professionals, *Albert E. New;* The importance of institute support, *James G. Fox;* Ethical responsibilities of the IACUC, *Ernest D. Prentice;* Animals in research: Public concerns and institutional paranoia, *Peter Theran.* Organized by: *Lee Krulisch, Richard J. Traystman.*

Topical Lecture (Fri 1:15pm)

Toward a Health Care Data System for the 21st Century, *Joseph P. Newhouse.*

Sex Bias in Research: Are Males and Females the Same? (Fri 2:30pm)

Sex bias in animal research: A question of generalization, *Jeri A. Sechzer;* Age and gender bias in stroke research, *Nancy Futrell;* Sex biases in risk assessment, *Harlee S. Strauss;* Sex bias in human research: More questions of generalization, *Vita C. Rabinowitz;* Leadership in science: Gender matters for the 1990s, *Florence L. Denmark.* Organized by: *Jeri Sechzer, Nancy Futrell.*

Consequences for Women & Children Caught in the Web of Drug Abuse (Sat 8:30am)

Medical consequences of drug abuse in pregnant and parenting women, *Ira J. Chasnoff;* Drug affected children in Washington, DC: An imperative for coordinate services, *Vijaya L. Melnick;* Legal implications of concern to women and children, *Robert Horowitz;* Educating substance-exposed children in developmentally appropriate environments: Project DAISY, *Diane E. Powell;* Federal programs in research and treatment, *Warren W. Hewitt.* Organized by: *Vijaya Melnick.*

Topical Lecture (Sat 1:15pm)

Women's Health: Some New Wrinkles on Some Old Issues, *Ruth Hubbard.*

Genetic and Cellular Mechanisms of Diabetes Mellitus (Sat 2:30pm)

Beta cell dysfunction and genetic abnormalities in Type I and Type II diabetes, *M. Alan Permutt;* Pathways to autoimmunity in Type I diabetes, *Denise Faustman;* Mechanism of insulin action at a cellular level, *C. Ronald Kahn;* Molecular mechanisms for glucose transport regulation: Defects in diabetes, *Barbara B. Kahn;* NMR studies of glucose metabolism in diabetes and pre-diabetes, *Gerald I. Shulman.* Organized by: *C. Ronald Kahn.*

New Perspectives from the Anthropological Study of Aging & Well-Being (Sun 8:30am)

Chronic life: Is protracted geriatric sickness a culture-bound syndrome?, *J. Neil Henderson;* The cultural construction and management of frailty, *Catherine Hagan Hennessy;* Social theory network theory and the therapeutic community, *Jay Sokolovsky;* When caregivers disappear: Multi-generational approaches to well-being, *Maria D. Vesperi;* "4th Age" Americans and the invention of the "Domestic Unit", *Otto von Mering.* Organized by: *Otto von Mering.*

Topical Lecture (Sun 1:15pm)

Exercise-Induced Bone Hypertrophy and Osteoporosis, *William S. Laughlin.*

Blood Substitutes: Physiology, Chemistry, Physics, and Applications (Sun 2:30pm)

Overview of hemoglobin-based blood substitutes, *Robert M. Winslow;* Blood substitutes produced by chemical modification or mutagenesis, *James M. Manning;* Perfluorocarbon emulsions as substitutes for red cells in transfusion, *George P. Biro;* Physics and chemistry of perfluorocarbon blood substitutes, *Gerald L. Pollack;* Hemoglobin-based oxygen carriers: FDA role in establishing preclinical safety standards, *Joseph C. Fratantoni.* Organized by: *Gerald Pollack.*

Targeting of Radioligands, Antibodies, and Immunotoxins in Diagnosis and Therapy (Mon 8:30am)

Beta-CIT: Marker for dopaminergic innervation in Parkinson's Disease, *Robert Innis;* Enhanced in vivo targeting with negatively charge-modified monoclonal antibodies, *Ban An Khaw;* Biotin/avidin-enhanced targeted delivery of tumor antibodies for diagnosis and therapy, *Mary Rusckowski;* Long circulating immunoliposomes for diagnosis and therapeutic interventions, *Vladimir P. Torchilin;* The magic bullet: Nearing the century mark, *Vic Raso.* Organized by: *Ban An Khaw.*

Do Power Lines Cause Cancer? (Mon 2:30pm)

Assessments of EMF exposure and the wiring code paradox, *Howard Wachtel;* Extremely low frequency electric and magnetic fields and human cancer, *Dimitrios Trichopoulos;* Mechanistic consideration in EMF interactions with living systems, *Thomas S. Tenforde;* Electromagnetic fields: The need for animal studies, *Gary Boorman;* Public policy issues involving power-frequency fields, *M. Granger Morgan.* Organized by: *Leonard Sagan.*

Social Psychology and Neuroscience

Knowledge Worth Having in the Decade of the Brain (Fri 8:30am & 2:30pm)

Uniquely human? Brain-language co-evolution, *Terrence W. Deacon;* What does my cousin think? Language capacity in the great apes, *Sue Savage-Rumbaugh;* Neural transplantation: Is it time for patients?, *John Sladek;* Fetal neural grafts: Do they change who we are?, *Mary B. Mahowald;* When the urgency of real life impels brain research, *Gwill Newman;* Reductionism doesn't work: Toward a neuroscience and psychology of psychiatric disorders, *Herbert Pardes;* How religious and cultural values are coming to think about the self and its brain, *Robin W. Lovin.* Organized by: *H. Rodney Holmes.*

Emergence of Behavior in Coupled Neural Oscillators (Sat 8:30am)

Geometry and biophysics: Connecting cellular properties to behavior in networks of neurons, *Nancy Kopell;* Modulation of oscillating neural networks, *Eve Marder;* Hybrid circuits made from interacting model and biological neurons, *Larry Abbott;* Learning and spatial patterning in oscillating neural networks, *Bard Ermentrout.* Organized by: *Bard Ermentrout.*

Topical Lecture (Sat 1:15pm)

Of Mice and Memory: Modern Genetics and the Study of Cognition, *Alcino J. Silva.*

Learning, Recognition, and Memory in Humans, Monkeys, & Models (Sat 2:30pm)

Multiple memory systems in the brain, *Larry R. Squire;* The physiology of memory in primates: Recordings of things past, *Robert Desimone;* Normal and amnesic learning and memory in a corticohippocampal model, *Stephen Grossberg;* Implicit memory: A cognitive neuroscience perspective, *Daniel L. Schacter.* Organized by: *Stephen Grossberg.*

Status Characteristics and Social Behavior (Sun 8:30am)

How status organizes behavior, *Cecilia L. Ridgeway, Murray Webster;* Double standards in the evaluation of women and men, *Martha Foschi;* How and why women act differently from men in mixed-gender groups, *Linda Carli;* Interventions to overcome effects of status disadvantages in organizations, *James E. Driskell;* Recent developments in the theory of status generalization, *Joseph Berger, David Wagner.* Organized by: *Murray Webster.*

How Parenthood Effects One's Psychological Well-Being (Sun 2:30pm)

Family instability and children's sense of personal control, *Sara McLanahan, Lynn Casper;* Elderly parents and the psychological well-being of adult children, *Debra Umberson;* The impact of children on the well-being of noncustodial parents, *Michael Hughes;* Women, work, and children, *Catherine E. Ross;* The gratifications and problems of parenthood, *Walter R. Gove.* Organized by: *Walter Gove.*

Psychoacoustics and Its Contemporary Applications (Mon 8:30am)

Acoustical emissions by the auditory system, *Brenda Lonsbury-Martin;* Cochlear implants and beyond, *Robert V. Shannon;* Psychoacoustical basis of machine speech recognition, *Richard M. Stern;* The psychoacoustics of loudspeakers: Engineering good sound, *Floyd E. Toole;* Virtual acoustic environments, *Elizabeth M. Wenzel;* How birds restore hearing loss after injury, *Edwin Rubel.* Organized by: *William Hartmann, Logan E. Hargrove.*

Future Chemistry: From Carbon to Silicon

Fullerenes (Fri 8:30am & 2:30pm)

Superconductivity in alkali metal fullerides· A3C60, *D.W. Murphy;* Electron-photon coupling and superconductivity in alkali intercalated C60 solid, *Michael A. Schluter;* Fullerene films: Their growth and properties, *John H. Weaver;* Solid C60 and its intercalation compounds, *John E. Fischer;* Caged atoms and clusters: Magnetic resonance studies of metallofullerenes, *Robert D. Johnson;* Carbon nanotubes: Structures and growth, *Sumio Iijima;* Large fullerenes: Structures and growth, *Yohji Achiba;* Exotic properties of fullerene derivatives, *Fred Wudl;* Organometallics, *J.M. Hawkins;* Fullerenes in an industrial environment, *E. Wasserman;* Fullerenes endohedral complexes, *Mark M. Ross.* Organized by: *Robert C. Haddon, Richard Smalley.*

Nitrogenase: Recent Advances (Sat 2:30pm)

Topics TBA, *Douglas Rees; Jeffrey Bolin; Richard Holm; Dennis Dean; William H. Orme-Johnson.* Organized by: *William H. Orme-Johnson.*

Chemical Communication in Biological Systems (Sun 8:30am)

Choosing a mate: The molecule as a basis for appraisal, *Thomas Eisner;* Why small herbivores eat toxic plants, *Mark E. Hay;* Parasitic plant semiochemistry, *David G. Lynn;* The chemistry of herbivore-plant-parasitoid interactions, *James H. Tumlinson.* Organized by: *Jerrold Meinwald.*

Nanoengineering (Sun 2:30pm; Mon 8:30am & 2:30pm; Tue 8:30am)

Nanostructures in motion, *Noel McDonald;* Nanoscale fabrication, *William Tolles;* Understanding quantum mechanics by measuring the properties of mesoscopic devices, *Richard Webb;* STM-induced atomic/nanoscale manipulation and the properties of nanostructures, *Phaedon Avouris;* Molecular self-assembly, *Mark Wrighton;* Transport in point contact quantum waveguide structures, *Stephan Goodnick;* The single electron turnstile, *Leo Kouwenhoven;* Quantum dot spectroscopy, *Paul McEuen;* Single electron capacitance Single electronics, *Konstantin* electron transfer molecular structures, *Mark Ratner;* Molecular self-assembly, *George Whitesides;* Formation and stabilization of organic conjugated polymers, *James Tour;* TBA, *Robert Birge;* Nanometer-scale biomolecular structures, *Martin Wybourne;* Fabrication of novel quantum structures by molecular beam epitaxy on a cleaved edge, *Loren Pfeiffer;* Neutral atom nanolithography, *Mara Goff Prentiss;* Probing low-dimensional systems on the nanometer scale, *Joseph Stroscio;* Nanocrystallites, *Paul Alivisatos;* Self-assembled proteins for nanofabrication, *Noel Clark.* Organized by: *Mark Reed.*

Measuring the Matter and Energy of the Universe

Recent Advances in Atomic Physics and Atom Optics (Fri 8:30am)

Parametrically pumped electron oscillators, *Gerald Gabrielse;* Stimulated and spontaneous emission in cavity QED, *Michael S. Feld;* The classical limit of an atom, *Carlos Stroud;* Atom optics and atom interferometers, *David E. Pritchard;* New applications of the Light Pressure Force, *Mara Goff Prentiss.* Organized by: *Michael Crisp.*

Topical Lecture (Fri 1:15pm)

New Physics with fsec Pulses of THz Electromagnetic Radiation, *Daniel R. Grischkowsky.*

Exploring the Frontiers of Nuclear Physics (Fri 2:30pm)

Exploring nuclear structure with high energy-electrons, *Stanley Kowalski;* Exploring the quark-gluon structure of the nucleons and nuclei with high-energy scattering, *Xiangdong Ji;* Exploring new states of matter with ultrarelativistic collisions of nuclei, *Johanna Stachel.* Organized by: *John Negele.*

Hot Results in High-Energy Astrophysics (Sat 8:30am)

Gamma-ray bursts: New observations and theories, *Gerald J. Fishman;* Initial results from the extreme ultraviolet explorer observatory, *Roger F. Malina;* High energy radiation from pulsars, *Alice K. Harding;* A new class of supersoft X-ray sources, *Saul Rappaport;* AXAF status and scientific capability, *Martin C. Weisskopf.* Organized by: *Harvey Tananbaum, France Cordova.*

The Age of the Solar System (Sat 2:30pm)

Solar system formation, *Douglas Lin;* The age of meteorites, *Timothy D. Swindle;* The age of planetary surfaces, *Eugene Shoemaker;* The age of planetary rings, *Carolyn Porco;* The dynamical stability of the solar system, *Jack Wisdom.* Organized by: *Carolyn Porco.*

The Age of Our Galaxy (Sun 8:30am)

The formation and evolution of the galaxy, *Richard B. Larson;* Stellar activity and stellar age, *Sallie L. Baliunas;* The ages of cooling white dwarf stars, *D.E. Winget;* Nucleosynthesis and the age of the elements, *James Truran;* The ages of the globular clusters, *Young-Wook Lee.* Organized by: *Kenneth Janes.*

The Age & Scale of the Universe (Sun 2:30pm)

The cephedi distance scale, *Wendy L. Freedman;* The distance scale and planetary nebulae, *Robin Ciardullo;* The distance scale and Type II supernovae, *Robert Kirschner;* The distance scale and surface brightness fluctuations, *John Tonry;* The distance scale and gravitational lenses, *Ramesh Narayan.* Organized by: *Jacqueline Hewitt.*

The History and Philosophy of Cosmology (Mon 8:30am)

The expanded universe: 1493-1698, *Owen Gingerich;* Relativistic cosmology: From static universe to expansion of space, *John Stachel;* Expanding space paradigm, *Edward Harrison;* The problem of initial conditions and modern cosmology, *Alan Lightman.* Organized by: *Alan Lightman.*

Topical Lecture (Mon 1:15pm)

Scientific Research on Space Station Freedom, *Robert W. Phillips.*

The New Generation Telescopes: New Technology, New Science (Mon 2:30pm)

The Keck telescope: Design and progress, *Jerry Nelson;* The Gemini 8-M telescopes project, *Matt Mountain;* The European Very Large Telescope Interferometer, *Jacques M. Beckers;* Making better telescopes: More light and sharper images, *J. Roger P. Angel;* Adaptive optics and laser guide stars for astronomy, *Claire E. Max;* New astronomy with new instruments, *Robert Kirshner.* Organized by: *Wallace Ravven, Jerry Nelson.*

Revealing High-Energy Phenomena in the Universe (Tue 8:30am)

Hubble Space Telescope observations of active galactic nuclei, *Ferdinando Macchetto;* Hubble Space Telescope images of nearby galaxies, *Tod R. Lauer;* Observing core collapse in globular clusters with HST, *Francesco Paresce;* Hubble observations of violent star-forming regions, *Sara R. Heap.* Organized by: *Eric Chaisson.*

Earth's Ever-Changing Atmosphere

Lessons from the Younger Dryas (Fri 8:30am)

Summary of climatic evidence in sea, ice, and land for period 15,000 to 9,000 years ago, *Scott Lehman;* Century and millenial-scale climate change in the North Atlantic from 15,000 to 130,000 years ago, *Gerard Bond;* Possible instabilities in ocean circulation, *Thomas Stocker;* Possible instabilities in large ice caps, *Doug MacAyeal;* The role of fresh water, *Wallace S. Broecker.* Organized by: *Wallace Broecker.*

Topical Lecture (Fri 1:15pm)

Climate and the Search for Solar History, *John A. Eddy.*

Little Ice Age (Fri 2:30pm)

Was there a Little Ice Age?, *Raymond S. Bradley;* Temperature changes during the Little Ice Age: Evidence from boreholes, *Henry N. Pollack;* Little Ice Age: Evidence from the Greenland Ice Sheet, *Paul A. Mayewski;* Evidence from tree rings, *Malcolm K. Hughes;* What could cause a Little Ice Age?, *D.H. Rind.* Organized by: *Malcolm K. Hughes.*

Urban and Regional Ozone (Sat 8:30am & 2:30pm)

Early history of urban photochemical smog, *Harold Johnston;* Reexamining the National Ambient Air Quality Standard for ozone, *Paul Lioy;* Emissions inventories and their impact on air quality ozone abatement and predictions, *Kenneth L. Demerjian;* Hydrocarbon and NOx influence on urban and rural ozone, *William L. Chameides;* Ozone observations in the eastern United States, *Jennifer A. Logan;* NOx, ROG, and reactivity control effects on photochemical pollutants, *Armistead (Ted) Russell;* How fuel composition affects vehicle emissions: The Auto/Oil Program, *William J. Koehl;* How fuel composition affects future ozone: The Auto/Oil Program, *Alan M. Dunker;* Organic gas emissions and the Los Angeles ozone problem, *Glen R. Cass;* Reflections on major issues involving motor vehicles, fuels, and air pollution, *Robert Slott.* Organized by: *John Seinfeld, Charles Kolb.*

Energy and Global Change (Sun 8:30am)

Energy, economics, and global change: Escaping the gridlock, *Robert Harriss;* Toronto's CO2 emission reduction program, *L.D. Danny Harvey;* Power to space: Energy efficiency and New England's economic recovery, *Armond Cohen;* A strategy for controlling methane emissions from natural gas systems, *Charles E. Kolb;* Roles for renewable energy for a growing global economy, *Robert Williams.* Organized by: *Robert Harriss.*

South American Dryland Ecosystems: Climate Change & Sustainable Development (Sun 8:30am)

Impacts of climate variation and sustainable development: Drylands of Brazil, Argentina, and Chile, *Stahis Panagides;* Political economy of climate change and vulnerability in drylands, *Jesse C. Ribot;* Biodiversity in South America: Its distribution among ecosystems, *Otto T. Solbrig;* Resistance of degraded dryland ecosystems in North America and Chile, *Walter G. Whitford;* Evolution of the Inter-American Institute for Global Change Research, *James Buizer.* Organized by: *James Rowe, Barbara Timmermann.*

Topical Lecture (Sun 1:15pm)

Critical Regions in Global Environmental Change, *Roger E. Kasperson.*

Forests and Biogeophysical Systems (Sun 2:30pm)

Trace gas fluxes in temperate forests, *John Aber;* Land use change in the Amazon Basin, *Jerry Melillo,* Hydrology and climate, *TBA;* Forest soil and microbial chemistry, *TBA;* Can temperate forests be the missing link for CO2?, *Steven C. Wofsy.* Organized by: *Robert Randall.*

Climate Change: What Astrophysics Can Tell Us (Mon 8:30am)

Overview of medium-to-long-term climate change, *Sultan Hameed;* The Goldilocks problem and planetary astronomy, *Michael Rampino;* Solar irradiance observations, *Hugh S. Hudson;* Observations of sun-like stars, *Richard R. Radick;* Theory of solar variability, *H.C. Spruit.* Organized by: *Sallie Baliunas.*

Integrating Space-Derived Data into Global Change Monitoring Information (Mon 2:30pm)

NASA satellite imagery and global change monitoring, *Lennard A. Fisk;* NOAA satellite imagery and global change monitoring, *TBA;* EOSAT, and on..., *Arturo Silvestrini;* Spotlighting the future of global change GIS, *Theodore G. Nanz;* ESA satellite imagery and global change monitoring, *TBA;* Japanese satellite imagery and global change monitoring, *Nagatomo Masanori;* Canadian satellite imagery and global change monitoring, *Roland Dohre.* Organized by: *Murray Felsher, Stanley A. Morain.*

Update on Global Change Research (Tue 8:30am)

Change detection in the cryosphere, *Roger G. Barry;* Climate modeling, *W. Lawrence Gates;* Ocean biogeochemistry: Climate linkages, *James McCarthy;* Modeling and observing the terrestrial biosphere, *Piers J. Sellers;* TBA, *Robert T. Watson.* Organized by: *Warren Washington.*

Causing and Coping with Environmental Change

The Economics of Biological Diversity (Fri 8:30am)

Searching for uncertain benefits and the conservation of biological diversity, *Andrew R. Solow;* The measurement of biological diversity, *Martin L. Weitzman;* Economics and the preservation of the spotted owl, *Gardner Brown;* Biological diversity, cultural diversity, and economics, *Jeffrey McNeely;* Biological diversity and the sustainable use of natural resources, *Robert Mendelsohn.* Organized by: *James Broadus, Gardner Brown.*

Least-Cost Transportation (Fri 8:30am & 2:30pm)

Win-win transportation: New York City region case study, *Charles Komanoff;* Transportation alternatives, *Jon Orcutt;* The pedestrian agenda: Land use, zoning, and development, *John A. Clark;* Litigation versus collaboration: The New England experience, *Stephen Burrington;* Doing it right the first time: Transportation and global development, *Michael A. Replogle;* The coming revolution in transportation technology and policy, *Amory Lovins;* Superefficient light vehicles, *Paul B. MacCready;* New vehicle technologies and the future of auto jobs, *Gerald Lazarowitz;* Feebates, standards, efficiency, emissions, and safety, *Deborah Gordon;* Pay-as-you-drive automobile insurance: An untapped energy conservation measure, *Mohamed El-Gasseir.* Organized by: *John Barnett, Don Chen.*

Topical Lecture (Fri 1:15pm)

Successful Transport Innovations in Curitiba, Brazil, *Jaime Lerner.*

Ecosystem Valuation: Assigning Economic Values to Ecosystem Damage (Fri 2:30pm)

Adapting ecological risk assessment for ecosystem valuation, *Glenn W. Suter;* Property rights and the context of valuation, *Daniel W. Bromley;* Ecological economic approaches to valuation, *Robert Costanza;* Ecosystem valuation: Costs and benefits of ecological structure and function, *William E. Cooper;* Issues in valuing ecological systems, *Clifford S. Russell;* Discussion, *Michael Brody.* Organized by: *Frances Sharples, Glenn W. Suter.*

The Social Value of Environmental Protection (Sat 8:30am)

Are we paying too much for environmental protection?, *William Isherwood;* Preference and payment: Psychological issues in valuing environmental impacts, *Paul Slovic;* The connection between individual preferences and social values, *Paul Stern, Tom Dietz;* Preference reversals by corporate actors seeking profits in a cage of regulation, *Daniel H. Jackson, Eugene A. Rosa;* What is environmental protection worth to communities?, *William K. Hallman;* Global ecological issues from the perspective of U.S. policy, *Donald Barnes.* Organized by: *Bonnie McCay, William Isherwood.*

Human Dimensions of Environmental Change: Central and Eastern Europe (Sat 2:30pm)

Environment, democracy, and economic reform, *Richard N.L. Andrews;* Environmental policy in Czech and Slovak federal republic, *Vladislav Balaban;* Technological development and population health in Poland, *Halina Szejnwal Brown;* Law and environment in Siberia: Oil, indigenous peoples, and sustainability, *Gail Osherenko;* Environmental consequences of Bulgaria's energy policy, *Georgi Tzekin;* Environment and the public in Hungary, *Anna Vari.* Organized by: *Richard N.L. Andrews.*

The Science, Law, and Policy Conflicts over Wetland Protection, 1989-1993 (Sun 8:30am)

The travail of the 1989 Federal Wetland Delineation Manual, *Ralph Tiner;* Federal regulatory policy for wetlands: 1990-1992, *Gregory E. Peck;* Wetland delineation: Science and politics collide with property rights, *Robert J. Pierce;* Misuse and misunderstanding of science behind the 1991 manual proposal, *Tim Searchinger;* Prospects for 1993: State-level approaches and scientific, legal, and public property implications, *Jon A. Kusler.* Organized by: *Orie Loucks.*

Lay-Professional Differences in Detecting Toxic Health Effects in Woburn, Massachusetts (Sun 2:30pm)

Citizen activists becoming "scientists", *Gretchen P. Latowsky;* Woburn today versus Woburn yesterday, *Suzanne K. Condon;* Reflections on the Woburn study, *Marvin Zelen;* Science, democracy, and knowledge: The toxic waste movement challenges traditional science, *Phil Brown.* Organized by: *Phil Brown.*

Human Dimensions of Energy and the Environment (Mon 8:30am)

U.S. residential energy consumption in the 20th century, *Bonnie Maas Morrison;* Public opinion on environmental issues: Results from an international survey, *Riley E. Dunlap;* Siting and stakeholder "visions of the future": Can conflicts be resolved?, *Elizabeth Peele;* Monitoring and mitigating social and economic impacts of energy development, *Gary Williams;* A national collaborative process on financing residential energy improvements: A retrospective, *Barbara C. Farhar.* Organized by: *Barbara C. Farhar.*

Topical Lecture (Mon 1:15pm)

Human Dimensions of Energy and the Environment, *Paul C. Stern.*

The Scientific Foundations of Environmental Ethics (Mon 2:30pm)

The relevance of ecology for environmental ethics, *Gregory Cooper;* Why thermodynamics suggests that ecological integrity is an ethical issue, *James J. Kay, Eric Schneider;* Innovative science and ecosystem integrity, *Henry A. Regier;* Environmental science and environmental ethics, *Holmes Rolston;* Integrity and environmental ethics, *Kristin Shrader-Frechett.* Organized by: *Kristin Shrader-Frechett.*

Critical Renewable Natural Resources Issues for the Twenty-First Century (Tue 8:30am)

Overview of congress on critical issues and concepts for the twenty-first century, *Robert D. Day;* Critical renewable natural resources issues and concepts, *William H. Queen;* Challenges and impediments to resolving the critical issues, *Jane A. Difley;* Recommended actions for addressing the critical issues and concepts, *Richard L. Duesterhaus;* Role of professional, scientific, and educational organizations in implementing actions, *David W. Moody.* Organized by: *Norah Davis, Robert D. Day.*

Agricultural Biotechnology: Plant Protection & Production

Science, Agriculture, and Environment in the Former Soviet Union (Fri 8:30am & 2:30pm; Sat 8:30am)

The geography, climate, and soils of the former Soviet Union, *Thomas L. Puterbaugh;* The agricultural base: Status and potentials, *Csaba Csaki;* Agricultural institutions and their relevance for the future, *Jim Holderbaum;* The policy environment for agricultural development, *Victor Nazarenko;* Environmental and agricultural challenges: Lessons from the Ararat Valley, *Jim Bushnell;* Rebuilding the research base, *Stanley Johnson;* Lessons from the Polish experience, *John Raglund;* Agrarian reform and agricultural productivity in Estonia, *Ivar Raig;* Compromises and adjustments: Developing a model farm in Tartastan, *Merrit J. Taylor;* Education, extension, and training, *Michael Sobol;* The role of international assistance, *Hartwig de Haen;* The role of private foundation assistance, *Dan Martin;* U.S. policy to assist rebuilding of the agricultural resource base, *William Stiles;* The future of the agriculture industry, *TBA;* The outlook for agriculture in the former Soviet Union, *TBA.* Organized by: *Calvin Qualset, Michael Strauss.*

Topical Lecture (Fri 1:15pm)

Meet the NEW Russian Farmers, Up Close and Personal, *George DeVault, Kent Whealy.*

Topical Lecture (Sat 1:15pm)

Effects of Global Climate Change on Soviet Agriculture, *Cynthia Rosenzweig.*

Global Conservation of Plant Germplasm: Keys to Agreement and Cooperation (Sat 2:30pm)

Contributions of international organizations and fora to effective cooperation, *Geoffrey Hawtin;* Fairness, efficiency, and intellectual property rights for plant genetic resources, *TBA;* Fairness, reciprocity, and the third world's participation in germplasm conservation, *TBA;* International political aspects of the conservation of plant genetic resources, *Daniel Witmeyer.* Organized by: *Daniel Witmeyer.*

Transgenic Farming: Science and Policy Issues (Sun 8:30am & 2:30pm)

Herbicide resistant crops: perspectives on the controversy, *Roger Wrubel;* Major needs: Parasitic weeds and wheat herbicides: Who will engineer, *Jonathan Gressel;* Herbicide-tolerant crops: Biotechnology's false promise, *Jane Rissler;* HRCs and environmentally sound weed control, *Robert T. Fraley;* Herbicide-resistant crops: An analysis of their impact, *Stephen O. Duke;* FDA's policy for foods developed by biotechnology, *James H. Maryanski;* Does federal regulation protect the public or the biotechnology industry, *Rebecca Goldburg;* The case for bioengineered foods: Who needs them?, *Leonard J. Guarraia;* Transgenic animals: What are the risks and benefits, *Franklin M. Loew;* Allergic reactions to bioengineered foods: Do we know enough?, *Steve Taylor;* Organized by: *Sheldon Krimsky, Luise Light.*

Topical Lecture (Sun 1:15pm)

Virus-Tolerant Sweet Potatoes: Food Security for Africa's Resource-Poor Farmers, *Florence Wambugu, Robert B. Horsch.*

Road Maps for the Commercialization of Genetically Engineered Plants & Microbes (Mon 8:30am)

Evolution of regulatory oversight for agricultural biotechnology: A USDA perspective, *Terry L. Medley;* Road map for microbes, *Elizabeth Milewski;* Environmental perspective, *Rebecca Goldburg;* FDA policy on biotechnology, *James Maryanski.* Organized by: *Sivramiah Shantharam.*

Byproducts from Biotechnology: An Untapped Resource (Mon 2:30pm)

Biotransformations of plant and animal lipids, *John P.N. Rosazza;* Biocatalytic synthesis of sugar-based polymers and hydrogels, *Jonathan S. Dordick;* Industrial biochemicals through biotechnology, *Alfred L. Gaertner;* Overview of biotechnology and opportunities, *Arnold L. Demain;* Socioeconomic and perceptual issues in bioremediation, *Marilyn Aronoff.* Organized by: *Rex Montgomery.*

Science and Corporate Enterprise

The Rise and Fall of the Massachusetts Miracle: Lessons Learned (Fri 8:30am)

Route 128: Lessons from Boston's high-tech community, *David R. Lampe;* The Massachusetts Miracle: How gold turned to lead, *Lynne Browne;* State policies to bolster the Mass Miracle?, *Evelyn Murphy;* High-tech entrepreneurs: Who succeeds and who fails?, *Edward Roberts;* The great Massachusetts U-turn: What can the Feds do?, *Barry Bluestone.* Organized by: *Aviva Brecher, Megan Jones.*

Topical Lecture (Fri 1:15pm)

Regional Networks: Industrial Adaptation in Silicon Valley and Route 128, *Annalee Saxenian.*

Is Technology the Key to Economic Competitiveness? (Fri 2:30pm)

Alternative methods for assessing international technological competitiveness, *Kirkor Bozdogan;* Technology and competitiveness, *Paul R. Krugman;* U.S. technology policy: What should business expect from government?, *Lewis M. Branscomb;* Identifying and exploring critical technologies: An industrial perspective, *Albert R.C. Westwood;* The Critical Technologies Institute: Organization and plans, *Stephen M. Drezner.* Organized by: *Aviva Brecher, J. David Roessner.*

Technology Transfer from Federal Laboratories to Industry: Promise & Reality (Sat 8:30am)

Technology transfer from federal laboratories to industry, *Roger A. Lewis;* Patterns of industry interaction with federal laboratories, *J. David Roessner;* GMRES experience with CRADAs: A view from the trenches, *Robert A. Frosch;* Starting new ventures based on government-developed technology, *Steven Lazarus;* Technology transfer from the industrial viewpoint: A practical critique, *Charles Gay;* Discussion, *John M. Deutch.* Organized by: *Walter Baer, David Bodde.*

Topical Lecture (Sat 1:15pm)

The Critical Technologies Institute, *Edward McGaffigan.*

Organizational Impedance-Matching in Technology Transfer (Sat 2:30pm)

Impedance matching for successful technology flow into industry laboratories, *Andrew H. Pettifor;* External technology flows to divisionist laboratories, *Lee Starr;* External technology flows in a diversified Japanese company, *Michiyuki Uenohara;* Using your culture for technology transfer, *Mike Stevenson;* Technology from national labs to industry, *Ora E. Smith.* Organized by: *J. David Roessner.*

Can Computational Modeling Contribute to Industrial Competitiveness? (Sun 8:30am)

Globalization's impact on corporate technological competitiveness, *Sheldon Weinig;* Mathematics and industrial competitiveness: Strange bedfellows or vital partnership?, *Peter E. Castro;* Manufacturing/retail linkages: A system-optimizing approach to competitive advantage, *Janice Hammond;* Computerized product definition: The wave of the present, *Leon H. Seitelman;* High technology, manufacturing competitiveness, and mathematics, *James Glimm.* Organized by: *James Glimm, Peter E. Castro.*

Topical Lecture (Sun 1:15pm)

University-Government-Industry Research Cooperation, *Charles M. Vest.*

Industrial Ecology and Global Change (Sun 2:30pm)

Industrial development paths: A multicountry comparison of carbon dioxide, *William R. Moomaw;* Industrial ecology: Definition and implementation, *T.E. Graedel;* Total quality management for environmentally conscious design, *Bruce Paton;* Cooperative industrial ecology research for environmentally conscious products and processes, *W.D. France;* Next steps for industrial ecology, *Robert H. Socolow.* Organized by: *T.E. Graedel, Theodore W. Schlie.*

Industrial Ecology: New Approaches to Organizational Learning, Adaptation, and Change (Mon 8:30am)

Intra-organizational ecology of strategy making and organizational adaptation, *Robert A. Burgelman;* Cultural ecology of work group resources to new computer-aided technology, *Marietta L. Baba;* The interrelationship of organizational stability and organizational memory, *David Hartzband;* Before the "impact" of new technology, *Robert J. Thomas;* Indistinct boundaries and continuous flux: Order and integration in technical projects, *Frank Dubinskas.* Organized by: *Marietta Baba, David Hartzband.*

Measuring Equality of Opportunity in the Workplace (Mon 2:30pm)

Statistical issues in assessing the fairness of employment practices, *Joseph L. Gastwirth;* Prospects for age discrimination litigation, *Michael O. Finkelstein;* Further remarks on Uvn models, *Bruce Levin;* Monitoring indices for partitioned variables, *Turkan K. Gardenier;* National statistics on work disability: Sources, trends, and differentials, *Gerry E. Hendershot;* Discussion, *Stephen Fienberg.* Organized by: *Turkan Gardenier.*

Improving the Efficiency of Research: Doing a Lot More with a Little More (Tue 8:30am)

Speakers TBA. Organized by: *Albert H. Teich.*

Examining and Reforming the Economic System

The Prosperous '80s and Rising Inequality: Who Won, Who Lost? (Fri 8:30am)

Rising wage inequality, *Kevin Murphy;* Changes in the employability of minority men: 1960-1985, *Marta Tienda;* Whither the middle class?, *Greg J. Duncan;* Income inequality in rich countries during the 1980s, *Timothy M. Smeeding.* Organized by: *Valerie Oppenheimer.*

Topical Lecture (Fri 1:15pm)

Examining and Reforming the Economic System, *Lester C. Thurow.*

Budget Deficits: Wolves, Termites, or Pussycats? (Fri 2:30pm)

Who pays for the public debt?, *Willem H. Buiter;* Our real deficits and how they matter, *Robert Eisner;* Federal budget deficits: The termite view, *Edward M. Gramlich;* Private sector morality, public sector reality, *Robert Heilbroner.* Organized by: *Robert Eisner.*

Socioeconomic Data Needs for the Twenty-First Century (Sat 8:30am & 2:30pm)

Macroeconomic data, *Robert J. Gordon;* International economic data needs, *Robert Summers;* Productivity needs for the 21st century: Industrial organization and productivity, *Ariel Pakes;* Education and social mobility data, *Robert M. Hauser;* Discussion, *Zvi Griliches;* Families and household decision-making data, *Duane Alwin;* Labor force behavior, global change, comparative data, *Nancy B. Tuma;* Labor force and productivity: Data on employers and their employees, *Arne L. Kalleberg;* Measuring economic inequality in the 21st century, *Timothy M. Smeeding;* Discussion, *James S. Coleman.* Organized by: *Phyllis Moen, Timothy M. Smeeding.*

Difficulties of Maintaining Efficient and Accountable Patterns of Financial Regulation (Sun 8:30am)

Developments in bank market positions, *Richard C. Aspinwall;* The changing role of nonbank depository institutions, *James Barth;* Improving incentives for federal financial programs, *Justine Farr Rodriguez;* Sixty years of banking reform, *George G. Kaufman;* Banking reform as a market-driven and global process, *Edward J. Kane.* Organized by: *Edward J. Kane.*

Adjusting the 1990 Census for Undercount: A Scientific and Political Controversy (Sun 2:30pm)

Prelude to 1990: The 1980 census evaluation program and planning for 1990, *Barbara A. Bailar;* The case FOR adjusting the 1990 census, *Eugene P. Ericksen;* The case AGAINST adjusting the 1990 census, *David Freedman;* Is census adjustment a political question?, *Harvey Choldin.* Organized by: *Jeffrey Passel.*

Recent Revisionist Proposals Regarding the Subjective Expected-Utility Paradigm (Mon 8:30am)

Discussion, *Amartya Sen, Allan Gibbard, Mark Machina, Henry E. Kyburg, Lola Lopes.* Organized by: *Edward McClennen.*

Science, Ethics, and the Law

Scientific Freedom and Responsibility: A Retrospective (Fri 8:30am)

Scientific integrity, politics, & whistle blowing, *John T. Edsall;* Recombinant DNA: Scientific and societal reactions, *Norton D. Zinder;* Intellectual freedom and government priorities, *Werner A. Baum;* Medical research amidst a pluralism of values and understanding, *Adrian R. Morrison;* Engineering challenges and opportunities, *Roger M. Boisjoly;* Discussion, *C.K. Gunsalus, Eloise E. Clark.* Organized by: *Rachelle Hollander.*

Workshops

(Separate registration required; see registration form on page 1528.)

Super-Optimizing Analysis and All Fields of Science (Thu 8:30am & 2:30pm)

Super-optimizing analysis and all fields of science, *Stuart S. Nagel;* SOS analysis and the environment, *Robert Nagel;* SOS analysis and supercomputers, *Lisa Bievenue;* SOS analysis and dispute resolution, *John Cooley;* SOS analysis and criminal justice, *Deneen Hoffman.* Organized by: *Stuart S. Nagel.*

Regulated Gene Expression & Chromosome Structure (Sat 9am & 2:30pm)

Regulation of gene expression in the nucleus, *Philip Sharp;* Chromatin remodeling and gene activation, *Gordon Hager;* Histones: Assembly and function in yeast, *Mary Ann Osley;* Molecular memory for the homeotic genes in *Drosophila, Welcome Bender;* Chromosomes: Replication and segregation in *Drosophila, Terry L. Orr-Weaver;* Telomere position effect: Spreading the silence, *Dan Gottschling;* Do some "parasitic" DNA elements earn an honest living?, *Mary Lou Pardue;* Parental imprinting on mouse chromosome 7, *Marisa S. Bartolomei;* Turning on and turning off: Summation and speculation on gene regulation, *Sara C.R. Elgin.* Organized by: *Sarah C.R. Elgin.*

Minority Perspectives on Values and Ethics in Science and Technology (Fri 2:30pm)

Ethnic perspectives and issues in applied ethics, *Jorge L.A. Garcia;* Ethics and values in science and technology: Call for diversity, *Evelynn M. Hammonds;* Minority perspectives on the Human Genome Initiative, *Pilar N. Ossorio;* AAAS Minorities Project on Values and Ethics in Science and Technology, *Mark S. Frankel.* Organized by: *Mark S. Frankel.*

Conceptualizing and Measuring Social and Economic Rights (Sat 8:30am)

The role of the UN in monitoring economic, social and cultural rights, *Philip Alston;* Monitoring economic and social human rights: Statistical considerations, *Thomas B. Jabine;* Towards a new paradigm for understanding and measuring the right to education, *Robert H. Beach;* Conceptualizing the scope and limitations of a right to health care, *Audrey R. Chapman;* Identifying human rights violations: Differences between civil-political and economic-social rights, *Henry J. Steiner.* Organized by: *Richard Claude, Audrey R. Chapman.*

Clear and Convincing Evidence: Use of Testing to Measure Discrimination (Sat 2:30pm)

Testing for discrimination in employment, *Margery Austin Turner;* Auditing discriminatory practices in car sales, *Christopher Edley;* Measuring discrimination: Fair housing audits as a research tool, *John Yinger;* Race & gender discrimination in bargaining for a new car, *Peter Siegelman;* How does testing compare with other analytical tools?, *Michael J. White.* Organized by: *Michael Fix.*

Analyzing and Redirecting Criminal Careers (Sun 8:30am)

Female initiation into violent street crime, *Deborah Baskin, Ira Sommers;* Linking official records and self reports to estimate the probability of arrest, *Jacqueline Cohen;* Crime and unemployment in the life course, *John Hagan;* Results of a large-scale prospective study of criminal careers, *Albert Reiss;* Implications of criminal career research findings for incarceration policies, *Alfred Blumstein;* Discussion, *Delbert S. Elliott, Jerome G. Miller.* Organized by: *Roland Chilton.*

Environmental Protection and Human Rights (Sun 2:30pm)

Persecution of environmental advocates, *Gara LaMarch;* Linkages between environment and human rights from an Asian grass-roots perspective, *Clarence Dias;* Relationship between Indian rights and environmental protection, *Armstrong Wiggins;* The United Nations Human Rights Subcommission Study on Human Rights and the Environment, *Lauri Adams;* Environmental justice and risk reduction in communities of color, *Robert D. Bullard.* Organized by: *John Bodley, Audrey Chapman.*

Controversy over Crime and Heredity: An Exploration (Mon 8:30am)

Research perspectives on criminal behavior, *Joan McCord;* Social controversies over genetics research, *Diane Paul;* Controversy and traditions in human genetics, *Troy Duster;* The politics of violence, *Ronald Walters;* Discussion, *Robert Murray, Jim Mercy.* Organized by: *Rachelle Hollander.*

Science and Technology in Environmental Policymaking (Mon 8:30am)

Overview of commission's perspective on science and technology in environmental decision making, *Mark Schaefer;* Establishing and achieving long-term science and technology goals for the environment, *H. Guyford Stever;* Regulatory issues in environmental decision making, *Douglas M. Costle;* Multinational environmental institutions, *Thomas F. Malone;* Discussion, *Joseph P. Kennedy, Claudine Schneider.* Organized by: *Mark Schaefer.*

Science and Technology in the Judicial Branch (Mon 2:30pm)

The role of scientists in the courtroom: The judge's perspective, *Stephen G. Breyer;* The role of scientists in the courtroom: The scientist's perspective, *Gilbert S. Omenn;* Judge's use of scientists in managing the litigation process, *Jack B. Weinstein;* The Federal Judicial Center's plans for incorporating science and technology, *William W. Schwarzer;* Discussion, *Miron L. Straf, Helene L. Kaplan.* Organized by: *Steven G. Gallagher.*

The Role of Information in Litigation and Dispute Resolution (Tue 8:30am)

Bargaining in the shadow of the judge, *Orley Ashenfelter;* Inter-arbitrator differences and collective bargaining outcomes, *Linda C. Babcock;* Is medical malpractice litigation related to negligence?, *Troyen A. Brennan;* Judicial background and outcomes in civil rights cases, *Stewart Schwab;* Quality of care and the disposition of medical malpractice complaints, *Michelle J. White.* Organized by: *Henry Farber.*

Communicating Science to the Public

The Bad News Bearers: Press, Public, and Scientific Warnings (Fri 8:30am)

AIDS: When bad news is really, really bad, *Laurie Garrett;* Nature's way: Denial of natural calamity, *Bunmi Makinwa;* Suitcase journalism: Perils of the far-away assignment, *Charles Petit;* The challenge of investigative reporting about science, *Jean-Pierre Rogel.* Organized by: *James Cornell.*

On the Record: Scientific Advocacy in the News Media (Fri 2:30pm)

Genetics in the media: The discourse of scientists and journalists, *Dorothy Nelkin;* Is a scientist/advocate an oxymoron?, *Stephen H. Schneider;* The role of scientists-advocates as news sources, *Christopher Anderson;* Credible scientist, effective advocate: The divided self, *Robert W. Kates;* Science objectivity and advocacy, *Nicholas Wade.* Organized by: *Stephen Push.*

Public Environmental Awareness: Strategies for Communication (Sat 8:30am & 2:30pm)

Understanding the environmental forecast· The role that science museums must play, *Talbert Spence;* The urban environment exhibit, *Jeffrey N. Rudolph;* The Greenhouse Earth exhibit, *William M. Sudduth;* Discussion, *Michael Templeton, Catherine Morrison;* The greening of museums: Environmental initiatives in museums, zoos, and aquariums, *Judith Gradwohl;* How British public places of science are emphasizing environmental awareness, *TBA;* Discussion, *Hill Williams;* Building environmental awareness in urban cities through environmental equity, *Clarice E. Gaylord;* Covering the environment on television, *Valerie Crane;* Discussion, *Sharon Dunwoody;* News reporting on the environment, *Richard Thompson;* Mass media attention to the environment in the UK and EC, *TBA;* Discussion, *David L. Crippens, Gerald F. Wheeler.* Organized by: *Marcel LaFollette.*

Whither Dioxin: Media and the Uncertain Nature of Science (Sun 8:30am)

Mechanisms of dioxin toxicity: Implications for risk assessment, *Linda S. Birnbaum;* Institute for Chemical Education: JCE:Software, Project CATALYST, *John W. Moore;* Dioxin in the news, *John A. Palen;* The media: Meeting deadlines when scientific uncertainty doesn't, *Janet Raloff;* The relationship between the institutions of science and journalism, *Stephen Hilgartner.* Organized by: *Sharon Friedman, Sharon Dunwoody.*

Ignorance and Science: Emerging Perspectives (Sun 2:30pm)

Ignorance and science: Dilemmas, perspectives, and prospects, *Michael Smithson;* The complementarity of knowledge and ignorance in science, *Jerome R. Ravetz;* Mass media coverage of scientific ignorance, *S. Holly Stocking;* Towards a curriculum on medial (and all other) ignorance, *Marlys Hearst Witte, Ann Kerwin;* Discussion, *TBA.* Organized by: *S. Holly Stocking.*

Science Television and Science Literacy: Watching and Learning (Mon 8:30am)

Speakers TBA. Organized by: *Richard Hudson, Paula Apsell.*

Writing Science Books for One's Peers and for the General Public: What's Involved (Mon 2:30pm)

Beyond two cultures: The emergence of a new literature, *Howard Boyer;* Why difficult science books do best in the marketplace, *William Frucht;* Editing scientists, *Barbara Sullivan;* Why scientists must communicate regularly with the public, *Susan Rabiner.* Organized by: *Susan Rabiner.*

Public Understanding of Environmental Science Concepts: Cross-National Studies (Tue 8:30am)

The public understanding of environmental science concepts in Europe, *John Durant, Martin Bauer;* The public understanding of environmental science concepts in Germany, *Erwin K. Scheuch;* The public understanding of environmental science concepts in Japan, *Hajime Nagahama;* The public understanding of environmental science concepts in China, *Xiang-Yi Li;* The public understanding of environmental science concepts in the United States, *Jon D. Miller.* Organized by: *Jon D. Miller.*

Information Technology & the Changing Face of Science

Toward the Knowledge Navigator: Visions and Technologies (Fri 8:30am-6:30pm)

On growth and form: Learning concepts of probability and fractals, *H. Eugene Stanley;* Applying database techniques to laboratory data acquisition, *Frank S. White;* Discovering pattern and structure in multivariate data using NTSYS-pc, *F. James Rohlf;* Integrated application of multivariate statistical analyses: A biological example, *Richard A. Pimentel;* Data acquisition and instrument control using graphical programming in LabVIEW, *Meg Fletcher Kay;* Interactive simulations of complex liquids: Teaching and research with workstations, *Sharon C. Glotzer;* Computer graphics in the operating room, *William E. Lorensen, Ron Kikinis;* Psyclops: An exploratory graphical system for clinical research and education, *Charles Stinson;* Mathematica and Maple: An introduction to their graphics capabilities, *Nancy Blachman;* The role of visualization in science and mathematics education, *Nora H. Sabelli;* Toward the knowledge navigator: Visions and technologies, *Bob Wolff;* Discussion, *John Mucci.* Organized by: *Katherine Baum.*

The Department of Energy's High-Performance Computing Research Centers (Fri 8:30am)

The DOE perspective of computational science and high-performance computing research centers, *James F. Decker;* Oak Ridge National Laboratory's partnership in computational science, *Alvin W. Trivelpiece;* Los Alamos National Laboratory's Advanced Computing Laboratory, *Sigfried Hecker;* Grand challenges in computational science, *David B. Nelson.* Organized by: *Carl Edward Oliver, Bonnie C. Carroll.*

The Computer Science and Telecommunication Board and the HPCC Program (Fri 2:30pm)

Computing the future, *Juris Hartmanis;* Changing needs for the 1990s, *Alan Fechter;* HPCC and systems integration: Tools and targets of scientific inquiry, *Laszlo A. Belady;* Computers at risk: Safe computing in the Information Age, *Butler Lampson.* Organized by: *Herb Lin.*

International Scientific Data Cooperation: Issues and Experience (Sat 8:30am)

Speakers TBA. Organized by: *Barbara Mihalas, Bonnie C. Carroll.*

Adaptive Computation and Artificial Worlds (Sat 2:30pm)

Introduction to adaptation and complexity in artificial worlds, *L.M. Simmons;* Spontaneous emergence of parasites and sex in digital organisms, *Thomas S. Ray;* ECHO: A base for evolutionary modeling of adaptive complex systems, *John H. Holland;* Adaptation and learning by artificial economic agents, *W. Brian Arthur.* Organized by: *L.M. Simmons, Rolf M. Sinclair.*

Electronic Dissemination of Scientific and Technical Information (Sun 8:30am)

Technologies and challenges of networked information, *Clifford A. Lynch;* Harnessing the power of networked information, *Paul Evan Peters;* Scientific data management in a knowledge management environment, *Richard E. Lucier;* Exploiting technology for scholarly communication, *Vinton G. Cerf.* Organized by: *Toni Carbo Bearman, Dana S. Scott.*

Advances in Data Management for the Scientist and Engineer (Sun 2:30pm; Mon 8:30am & 2:30pm; Tue 8:30am)

Multimedia database system for integrating knowledge with biomedical databases, *Alfonso F. Cardenas;* An object-oriented toolbox for data from the protein data bank, *Philip E. Bourne;* Representing biological function in databases, *Toni Kazic;* Data knowledge bases for biological papers and technologies, *Kenneth Baclawski;* An object-oriented interface to macromolecular data, *Thomas Ferrin;* Integrating computational chemistry codes with an object-oriented database, *Judith Bayard Cushing;* Infrastructure for integrated, heterogeneous engineering databases and design histories, *Susan Urban;* Integrated data exchange and concurrent design for engineered facilities, *H. Craig Howard;* Management, analysis, and representation of large scientific databases, *Lawrence Sirovich;* Design of a visual database system for computer vision research, *Linda G. Shapiro;* A user-centered hypermedia database from the computer science literature, *Edward A. Fox;* Design of a large capacity object server supporting earth system science researchers, *TBA;* Derivation semantics in a DBMS for global change research, *Nabil I. Hachem;* Software systems to support conceptual modeling in data-intensive scientific investigations, *Terence R. Smith;* Parallel realtime scientific data collection and processing tool kit for application to spacecraft data, *Goetz Graefe;* Combining learning and search to create good classifiers, *Steven Salzberg;* Visualization tools for large seafloor databases accessed over networks, *William B.F. Ryan;* Processing heterogeneous data in scientific databases, *Arie Segev;* The computational scientist's notebook: An interactive, multimedia repository, *Elliot Soloway;* Integrating data management, analysis, and visualization for collaborative scientific research, *Ted M. Sparr;* Object-oriented data management for interactive visualization of scientific databases, *Sandra Walther.* Organized by: *Maria Zemankova, Bonnie C. Carroll.*

Using Wide Area Information Servers and the Internet to Acquire Research Data (Tue 8:30am)

Introduction to WAIS and the Internet, *Timothy Gauslin;* Using WAIS to locate and acquire spatial data and information, *Doug Nebert;* The role of WAIS in the National Geographic Data System, *TBA;* WAIS as an information-sharing tool in a highly decentralized organization, *Peter Schweitzer;* WAIS and global change research, *Eliot Christian.* Organized by: *Timothy Gauslin.*

Mathematics: Concepts & Computations

How Mathematicians Think (Fri 8:30am)

The "Pythagorean Theorem" and Chinese mathematics: Not the Euclidean way, *Joseph W. Dauben;* The calculus as algebra, the calculus as astronomy, *Judith V. Grabiner;* Doing mathematics: The inductive approach of James Joseph Sylvester, *Karen V.H. Parshall;* TBA, *Andrew Gleason.* Organized by: *Karen V.H. Parshall, Judith V. Grabiner.*

The Mathematics of Everyday Language (Fri 2:30pm)

The mathematics of language, *Noam Chomsky;* Mathematics, information, and language, *Jon Barwise;* Mathematical semantics, *Stanley Peters;* The statistics of language, *Mark Liberman;* Neural net models of language acquisition, *David Rumelhart.* Organized by: *Keith Devlin.*

Randomized Algorithms in Mathematics and Computer Science (Sat 8:30am)

Randomized algorithms: An overview, *Prabhakar Raghavan;* The probabilistic method: From Erdos to algorithms, *Joel Spencer;* Constrained random walks in n-space, *Ravi Kannan;* Randomized algorithms in computational geometry, *Peter W. Shor;* Randomized algorithms in computational number theory, *Arjen K. Lenstra.* Organized by: *Peter Winkler.*

Symbolic Computation: Its Impact on Mathematics and Science (Sat 2:30pm)

Symbolic computation: A revolutionary force, *Zaven A. Karian;* Computer algebra systems: Issues, inquiries, impact on mathematics/science instruction, *Warren Page;* Symbolic manipulators in undergraduate physics courses, *Ron R. Winters;* Directions in tools for mathematics for the 21st century, *Benton Leong.* Organized by: *Zaven A. Karian.*

Statistical, Methodological, & Substantive Aspects of Meta-Analysis (Sun 8:30am)

Meta-analysis in the 1990s: The state of the science, *Harris Cooper;* Controversy & cumulation: Meta-analytic techniques & how they advance theory, *Monica J. Harris;* Meta-analysis of a specific controversial domain: Replicable evidence for telepathy?, *Daryl J. Bem;* Critical evaluations of meta-analysis, *Robert Rosenthal;* Statistical issues for meta-analysis in the 21st century, *Donald B. Rubin.* Organized by: *Robert Rosenthal, Jessica Utts.*

Interdisciplinary Curricula in Mathematics, Statistics, and Science (Sun 2:30pm)

Quantitative literacy in the sciences, *Art Christensen;* Shifting paradigms in mathematics education, *Marcia P. Sward;* Using television to teach statistics, *Solomon Garfunkel;* Manipulating mathematics: A new paradigm, *Martha Fields;* Statistical design and graphics for data collection and analysis, *Turkan K. Gardenier.* Organized by: *Turkan Gardenier.*

Operations Research and Mathematics (Mon 8:30am)

Computational mathematics in nonlinear programming, *Stephen Nash, Ariela Sofer;* Polyhedral combinatorics & its impact on solving large integer problems, *Karla L. Hoffman, Manfred Padberg;* Computational problems in probability modeling, *Daniel P. Heyman;* Axiomatic arguments for evidential reasoning, *David Schum;* Combinatorial optimization and network design, *Thomas L. Magnanti.* Organized by: *Carl Harris.*

Knots in Mathematics & Physics (Mon 2:30pm)

Knots and the structure of space and spacetime, *Louis H. Kauffman;* Knots and mathematical physics, *N. Reshetikhin;* Knots and relativity, *Lee Smolin;* Energy of knots, *Jonathan Simon;* Knots, space, and new algebraic structures, *Ruth Lawrence;* Knots and statistical mechanics: A physicist's perspective, *F.Y. Wu.* Organized by: *Louis Kauffman.*

Contemporary Methods of Numerical Computation and Analysis (Tue 8:30am)

Understanding finite element methods for incompressible flow, *Douglas N. Arnold;* Multigrid methods, *James H. Bramble;* Numerical methods for time-dependent problems in mechanics and physics, *Roland Glowinski;* The computation of microstructure, *Mitchell Luskin;* Numerical methods for nonlinear equilibria, *Werner C. Rheinboldt.* Organized by: *Douglas Arnold.*

International Cooperation and Human Survival

Meeting Security Challenges in the Soviet Successor States & Yugoslavia (Fri 8:30am)

Ethnic conflicts in the Soviet successor states: Implications and prospects, *Nancy Lubin;* Nuclear warhead elimination in the former Soviet Union, *Frank von Hippel;* How have Europe's security organizations moved to meet the times?, *Jenonne Walker;* What did we do right or wrong in Yugoslavia?, *George Kenney;* Can Western security institutions meet the post-Cold War challenge?, *Jonathan Dean.* Organized by: *Jonathan Dean.*

Advanced Weaponry in the Developing World (Fri 2:30pm)

Speakers TBA.

U.S. Nuclear Weapons and the Future of Deterrence (Sat 8:30am)

Speakers TBA.

Theater Missile Defense: Technical and Political Challenges (Sat 2:30pm)

Speakers TBA. Organized by: *W. Thomas Wander.*

Conflict Resolution & Confidence-Building in Regions of Tension (Sun 8:30am)

Confidence-building measures in Northeast Asia: Alternatives to zero-sum games, *James Goodby;* Confidence building in the Middle East, *Alan Platt;* Confidence-building measures in Central America, *Jorge Ramon Hernandez-Alcerro;* Confidence-building measures in South Asia, *Kanti Bajpai;* Open skies as a confidence-building measure, *Amy Smithson.* Organized by: *Michael Krepon.*

Battlefield of the Future: Technologies for Tomorrow's Conflicts (Sun 2:30pm)

The international security environment and defense requirements, *John Steinbruner;* Future conflict scenarios and defense requirements for the United States, *Randall Forsberg;* Defense technologies for the battlefield of the future, *Ashton Carter;* Future defense technologies: A view from industry, *TBA;* U.S. defense needs and technologies for future conflicts, *TBA.* Organized by: *Charles Zraket, Elizabeth J. Kirk.*

Energy & Security: Future Sources of Tension & Potential Conflict (Mon 8:30am)

Energy prices and markets and their relationship to international crises, *David Deese;* Nuclear energy: Safety, terrorism, and proliferation threats in the Former Soviet Union, *William Potter;* Hydro-electric power and security issues, *Peter Gleick;* Energy, war, and environment, *TBA;* Tensions over oil in the South China Sea: China and the Spratly Islands, *TBA.* Organized by: *Peter Gleick, Elizabeth J. Kirk.*

Topical Lecture (Mon 1:15pm)

World Scientists' Warning to Humanity: Controlling Global Risks, *Henry W. Kendall.*

Converting U.S. Industry from Defense to Civilian Markets: Lessons and Policies (Mon 2:30pm)

Economic conversion legislation, *David Pryor;* The basic political decisions required for industrial conversion, *Richard J. Barnet;* Converting to civilian business at the Grumman Corporation, *Richard J. Gran;* Converting to civilian business at United Technologies Corporation, *Robert J. Hermann;* Converting to civilian business at Rockwell International Corporation, *Andrew H. Pettifor.* Organized by: *Frank X. Werber, Robert L. Stern.*

Science for Everyone

The Objectivity Crisis: Rethinking the Role of Science in Society (Fri 8:30am)

The role of the human sciences in the human future, *Herbert A. Simon;* Objectivity in the social sciences: Too much or too little?, *Marvin Harris;* Myths, scientific and political, *Ronald D. Brunner;* Philosophy of technology, *Langdon Winner;* Respondent, *Philip Morrison.* Organized by: *George E. Brown, Jr.*

The New Antievolutionism (Sat 8:30am)

"Abrupt appearance theory" replaces creation "science", *William M. Thwaites;* Evolution and the argument from design, *Kenneth R. Miller;* Non-Darwinism and anti-Darwinism, *Jonathan Marks; , Lauri Godfrey;* Nonliteralist antievolution: The case of Phillip Johnson, *Michael Ruse;* Antievolution as a reaction to scientism, *Howard J. Van Till.* Organized by: *Eugenie C. Scott.*

Biological Science in the Public Domain (Sat 2:30pm)

A comparison of T.H. Huxley and S.J. Gould, *Michael Ruse;* A philosopher looks at public science, *David Hull;* Writing in the public domain, *Stephen J. Gould;* Telling moral tales: Paleontologists and the popularization of evolution, *Ron Rainger;* Postmodern rhetoric in evolutionary biology, *Jack Selzer;* Science in the museum, *Mary P. Winsor.* Organized by: *Michael Ruse.*

Frontiers of the Physical Sciences, 1993 (Sun 8:30am & 2:30pm)

Organic chemistry at the interface of biology and human medicine, *Peter B. Dervan;* The birth of the cosmos, *Alan H. Guth;* Tectonics and climate: The "Icehouse" Effect, *Maureen E. Raymo;* Wavelets: What, why, how, and what's next?, *Ingrid Daubechies; Two additional speakers TBA.* Organized by: *Rolf Sinclair.*

Science Is Fun! (Sun 2:30pm)

Speakers TBA. Organized by: *Bassam Shakhashiri.*

Discoveries of Natural Coding in Musical Linguistics and Musicality (Mon 8:30am & 2:30pm)

Music and brain mechanisms of emotionality, *Jaak Panksepp;* Different kinds of differences, *Marvin Minsky;* Analysis, perception, and evaluation of performance microstructure, *Bruno H. Repp;* Formal, biological, and cultural signification in music, *David Lidov;* Natural meaning and microstructure: Shaping the double stream of music, *Manfred Clynes;* Discussion, *Donald Martino, Otto Laske;* Rhythm and musicality principles of nuance and accent, *Robert M. Abramson;* The realisation of composers' pulses in practical orchestral technique, *Denis Vaughan.* Organized by: *Manfred Clynes.*

Science for the Naked Eye, XX (Mon 8:30am & 2:30pm)

Fantastic archaeology: Another road taken by some, *Stephen Williams;* Why dogs bark, *Raymond Coppinger, Mark Feinstein;* Sleep: Of the brain, by the brain, and for the brain, *John Allan Hobson;* Artificial life: Evolution inside a computer, *Danny Hillis;* Chasing tornadoes (and catching them!), *Howard B. Bluestein;* The last days of Pompeii: The 79 AD eruption of Vesuvius, *Haraldur Sigurdsson.* Organized by: *Rolf Sinclair.*

Topical Lecture (Mon 1:15pm)

Science Yesterday, Today, & Tomorrow, *Victor F. Weisskopf.*

Handedness in the Scientific Domain (Mon 2:30pm)

Desymmetrization and the generation of chiral observables, *Jay S. Siegel;* A topological hierarchy of molecular chirality, *David M. Walba;* Chirality, the cosmos, and life, *William A. Bonner;* Handed electrons in atoms and molecules, *Roger A. Hegstrom;* Handedness and life span: Some sinister findings, *Stanley Coren.* Organized by: *Kurt Mislow.*

Science and Religion: Examining Both

What Is Life? Origin & Evolution (Sat 8:30am)

What is life? Astronomical background, *William M. Irvine;* Life and the atmosphere, *H.D. Holland;* Prebiological chemistry, *Cyril Ponnamperuma;* Geological evidence for early evolution, *Andrew S. Knoll;* Symbiogenesis and early evolution, *Lynn Margulis;* Discussion, *Mark McMenamin , John Stolz, Paul Strother.* Organized by: *Cyril Ponnamperuma, Lynn Margulis.*

Scientific Resources for a Global Religious Myth (Sat 2:30pm)

Introduction, *Loyal D. Rue;* Cosmic evolution: A universal synthesis, *Eric J. Chaisson;* What science can and cannot offer to a religious narrative, *Ursula W. Goodenough;* The evolution of consciousness: Past and future, *Mihaly Csikszentmihalyi;* Religious dimensions of the environmental movement, *Tom Hayden.* Organized by: *Loyal D. Rue, Ursula W. Goodenough.*

The Religious Significance of Big Bang Cosmology (Sun 8:30am)

Quantum cosmology, eternal inflation, and God, *Joel R. Primack;* Varieties of religious perspectives on the Big Bang, *Ian G. Barbour;* COBE, Hawking, and theological implications, *Robert John Russell;* New mythology music, *Nancy E. Abrams;* The dilemma between theological concreteness and scientific speculation on cosmology, *Eduardo R. Cruz.* Organized by: *Robert John Russell.*

Oil and Water? Institutional Interactions Between Science & Religion (Sun 2:30pm)

Introduction and concluding remarks, *James B. Miller;* The church in an age of science and technology, *Verlyn L. Barker;* Nondenominational associations, *Kevin J. Sharpe;* The Black Church Project, *Shirley Malcom;* Interface in the Academy, *Robert John Russell;* None of the above, *Rolf Sinclair.* Organized by: *James B. Miller.*

Anthropology: Dynamics of Human History

The End of Eve? Fossil Evidence from Africa (Fri 8:30am & 2:30pm)

Klasies River Mouth Cave: Modern human or not?, *Rachel Caspari, Milford Wolpoff;* Continuity in the evolution of *Homo sapiens* in Southern Africa, *J.F. Thackeray;* Border Cave and modern human origins, *Alan Morris;* Southern African and levantine humans, *G. Philip Rightmire;* Circum-Mediterranean gene flow and modern human origins, *Fred H. Smith;* The dental evidence for an African Eve, *Alan Mann;* Modern human origins in Africa: The postcranial evidence, *E. Trinkhaus;* Modern human origins in the Levant: An African connection?, *Bernard Vandermeersch;* Evidence for early modern Africans out of Africa, *Alan G. Thorne.* Organized by: *Milford Wolpoff, Alan G. Thorne.*

Topical Lecture (Fri 1:15pm)

Evidence for Human Brain Evolution, Fossil and Otherwise, *Ralph L. Holloway.*

The Origin and Dispersal of Maize in the Americas (Sat 8:30am)

Maize and the rise of the New World civilizations, *Frances B. King;* The role of maize in prehistoric subsistence in Latin America, *Deborah M. Pearsall;* The development of maize agriculture in Eastern North America, *Bruce D. Smith;* Phytoliths as evidence for the presence of maize, *Dolores R. Piperno;* Palynological evidence of the occurrence of maize, *James Schoenwetter;* Stable isotope measurements as evidence for maize consumption, *Nikolaas J. van der Merwe;* Concluding remarks, *J. Scott Raymond.* Organized by: *Nikolaas J. van der Merwe.*

Topical Lecture (Sat 1:15pm)

Guts, Brains, Diet, & Human Evolution, *Katharine Milton.*

Foragers in the Tropical Forests of South America: The Evolution of Human Society (Sat 2:30pm)

Ancient and modern hunter-gatherers of lowland South America, *Anna Roosevelt;* The Bororo of Central Brazil and their ancestors, *Irmhild Wust;* Homage to San Sebastian: Why so many kinds of arrows?, *Stephen Beckerman;* The Pume of the Orinoco Basin, *Ted L. Gragson;* Nondomesticated plants of the Guaja, *William Balee.* Organized by: *Anna Roosevelt.*

The Los Angeles "Riots": Who, What, Why, and Now What? (Sun 8:30am)

Riot, rebellion, disturbance, or unpleasantness? The Los Angeles media depictions, *W.A. Jordan;* "Public nuisance?": Korean liquor stores in south central Los Angeles, *Kyeyoung Park;* "And now where do we go?": Guatemalan Mayas and urban violence, *James Loucky;* Assessing policy and practice responses to the Los Angeles rebellion of 1992, *Stephen C. Maack.* Organized by: *Stephen C. Maack.*

Ethnomathematics (Sun 2:30pm)

Survey of current work in ethnomathematics, *Paulus Gerdes;* Number trees in ancient Maya art and writing, *Michael Closs;* The notion of proof in Indian and Chinese mathematical traditions, *George G. Joseph.* Organized by: *Chandler Davis.*

Models of Biocultural Evolution: Understanding Human Social and Moral Development (Mon 8:30am & 2:30pm)

Exploring the model of biocultural evolution, *Solomon Katz;* Evolution and human culture, *Peter Richerson;* Genes and culture in child development, *Sandra Scarr;* Human differences in genetic perspective, *Lindon J. Eaves;* The significance of biocultural evolution for understanding human nature, *Karl Peters;* Are there any moral absolutes?, *William Irons;* Human parental behavior: Nurture as nature?, *Daniel Perusse;* Signals, manipulation, and biocultural evolution, *Lee Cronk;* The emerging significance of the biocultural model, *Philip Hefner;* Commentary, *Mihaly Csikszentmihalyi.* Organized by: *Philip Hefner, William Irons.*

Evolution Medicine: New Directions and Perspectives (Mon 2:30pm; Tue 8:30am)

Evolutionary paradigm in medicine, *E.O. Smith;* SIDS and infant sleep: An evolutionary experiment, *James J. McKenna;* Evolutionary significance of neonatal jaundice, *John Brett; , Susan Niermeyer;* Crying and colic: Adaptive behavior, clinical syndrome, or both?, *Ronald G. Barr;* The company they keep: Sex differences in maturational timing, *Carol M. Worthman;* Evolutionary obstetrics, *Wenda R. Trevathan;* Evolutionary selection for salt and water retention: Implications for CHF, *E. Jennifer Weil;* Women's reproductive cancers in evolutionary context, *S. Boyd Eaton;* Evolutionary psychiatry, *Randolph M. Nesse;* The logic of evolutionary medicine, *Melvin Konner;* Discussion, *Nadine Peacock, Bernard S. Rappaport, Justin Call.* Organized by: *James J. McKenna, E.O. Smith.*

International Science Issues

Environment and Development After UNCED: The Road from Rio (Fri 2:30pm)

Engineering and pressures for overdevelopment, *Lt. Gen. Hatch (ret.);* Business, environment, and sustainable development, *TBA;* Role of nongovernmental and voluntary organizations, *Elizabeth Barratt-Brown;* Role of governments, *Dante Fascell;* Integrating environment & development: Third World perspective, *Noel Brown.* Organized by: *Robert Randall, Harry Tollerton.*

Technology Management in Japan (Sat 8:30am & 2:30pm)

Introduction, *H. Guyford Stever;* Technology management in Japan, *TBA;* Technology strategies of Japanese high-tech companies, *Lewis M. Branscomb, Fumio Kodama;* Technology R&D management in the semiconductor industry, *Yoshio Nishi;* A comparison between Japanese & American technology management practices, *Hisashi Kobayashi;* Discussion, *George R. Heaton, Martha Harris, Edward B. Roberts, A. Donald Ketley;* The US-Japan management training program: Origins and obstacles, *Edward McGaffigan;* Overview: US-Japan Industry & Technology Management Training Program, *Claude Cavender;* The Japan Technology Management Program at the University of Michigan, *John Creighton Campbell;* MIT Japan Program: An overview, *Patricia Gercik;* Wisconsin's Japan programs for engineers, *Thomas W. Chapman;* US-Japan Technology Management Program at Vanderbilt University, *Kazuhiko Kawamura;* Discussion, *Masazumi Sone, Leo Young, Mark Myers.* Organized by: *Robert Cutler.*

Improving Formal Science Education

International Comparative Test Scores: Precollege Science Education in Selected Countries (Fri 8:30am)

Questioning the international comparisons of science & mathematics achievement, *Iris C. Rotberg;* Secondary science education in developing countries: For a few or many?, *Sylvia A. Ware;* Precollege science & mathematics education in the former Soviet Union, *Catherine P. Ailes;* The structure of Japanese education: Some comparative lessons, *Roger Benjamin;* Human resources for science continue to expand in Asia, *Jean M. Johnson.* Organized by: *Barbara B. Mandula, Iris C. Rotberg.*

Science and Engineering Workforce for the 21st Century: The Minority Contribution (Fri 2:30pm)

Minority students in science/engineering at undergraduate & graduate levels, *Susan T. Hill;* Effective strategies for increasing minority participation in engineering, *George Campbell;* The baccalaureate origins of African-American doctoral scientists, *Willie Pearson;* Commonality of success: Undergraduate program for science/engineering careers, *Melvin Webb;* The dynamics of retention: A review & a prescription, *Diola Bagayoko.* Organized by: *Franklin D. Hamilton, George Campbell.*

Strategies for Teaching Life Sciences to Undergraduates (Sun 8:30am)

Coalition for Education in the Life Sciences: An action plan for change, *Sharon L. Zablotney;* Teaching introductory biology in a large public research university, *Samuel Ward;* Coping with the diverse field of biology, *Leona Truchan;* Strategies for creating undergraduate learning environments: Researchlike, collaborative problem solving, *John R. Jungck;* Linkages to the Life Sciences Education Clearinghouse, *Paul H. Williams.* Organized by: *Sharon L. Zablotney, Amy Chang.*

Topical Lecture (Sun 1:15pm)

Artists, Scientists, and Teachers: A Conversation for Improving Science Education, *Sue Anne Berger, Steven Iona, Linda J. Morris.*

History and Philosophy of Science as Aids to Science Teaching (Sun 2:30pm)

Evolutionary biology, *Michael Ruse;* The current rapprochement between history, philosophy, and science education, *Michael R. Matthews;* Can science use history? Some examples, *Gerald Holton;* Physics teaching, *Jed Buchwald;* History of science in "The Astronomical Perspective", *Owen Gingerich.* Organized by: *Michael Ruse.*

Women in Science, Engineering, and Mathematics: Research and Institutional Change (Mon 8:30am)

Climate for graduate women in scientific and technical fields, *Carol Hollenshead;* Factors influencing undergraduate studies and science careers: Diverse pathways, *Paula M. Rayman;* How will we know good curricula when we see them?, *Brian P. Coppola;* Effecting institutional change: Fostering retention and persistence rates, *Barbara B. Lazarus;* Institutional change, *Cora B. Marrett.* Organized by: *Cinda Sue Davis, Carol Hollenshead.*

Topical Lecture (Mon 1:15pm)

Enhancing Opportunities for Women in Science and Engineering, *Mildred Dresselhaus.*

Mentoring and How It Impacts on Women in Science, Engineering, and Mathematics (Mon 2:30pm)

Why mentoring is difficult and what institutions can do about it, *Bernice R. Sandler;* The Sloan Foundation's Women and Minorities Program, *Ted Greenwood;* The AWIS Mentoring Project for undergraduate and graduate women in science, *Stephanie J. Bird;* Gender, race, and mentoring in chemistry, physics, and sociology, *Kathryn B. Ward;* Mentoring, gender, and scientific careers: A national survey, *Linda Grant.* Organized by: *Catherine J. Didion.*

Technology for Special Needs on Campus: Service, Research, and Education (Mon 2:30pm)

Assistive technology as a case study in engineering design, *Michael J. Rosen;* History of a rehabilitation capability from research through commercialization and application, *Robert W. Mann;* Assistive technology for the "wet laboratory", *Richard Yeh;* Improved methods of evaluating user effectiveness of assistive technology, *S.K. Shin;* Engineering students with disabilities in cooperative education, *Veronica L. Porter.* Organized by: *Michael J. Rosen, Virginia W. Stern.*

Undergraduate Involvement in Research: Professional Training in Science and Engineering (Tue 8:30am)

Introduction, *Arthur Smith;* The importance of research experiences in undergraduate education, *James Duderstadt;* College-university collaborations in "REU" programs: Benefits and leverage effects, *Marilyn E. Williams;* The NSF Research Experiences for Undergraduates Program, *Rolf M. Sinclair;* Undergraduate research: A biology perspective, *Janet Lanza;* The experience of an undergraduate, *Lori-Anne Mooney, Isaac Chappell.* Organized by: *Rolf M. Sinclair.*

Designing Engineering Curriculum for a Diverse Student Body (Tue 8:30am)

Teaching engineering dynamics to diverse student populations, *Taft H. Broome;* Reaching out: From the university to the high school, *Gretchen Kalonji;* "Introduction to Design": Experiential engineering design for high school students, *Harry West;* Removing barriers to women and minorities in the engineering curriculum, *Caroline Whitbeck.* Organized by: *Caroline Whitbeck.*

Science Education Reform in America

(Special one-day symposium)

Keynote address (Sat 9:15am)

Speaker TBA.

Concurrent Sessions A–F (Sat 10:30am–1pm)

(A) Recommendations for Science and Mathematics Education Reform: An Empirical Examination
Speakers TBA. Organized by: *Jon D. Miller.*

(B) Project 2061's Master Plan, Learning Goals, and Benchmarks
Project 2061's master plan for systemic reform, *F. James Rutherford;* Project 2061 Benchmarks: What should students know and be able to do by grades 2, 5, 8, and 12?, *Andrew Ahlgren.* Organized by: *Frances Gatz.*

(C) K-16 Initiatives in Chemistry
NSF's science education programs, *Luther S. Williams;* Enhancing the teaching of chemistry through inservice programs, *Glenn A. Crosby;* Institute for Chemical Engineering, JCE Software, and Project Catalyst, *John W. Moore;* Chemistry on a need-to-know basis: The ACS Curriculum Projects, *Sylvia A. Ware;* Chemistry in Context: A new college text for nonscience majors, *A. Truman Schwartz.* Organized by: *Alvin L. Kwiram.*

(D) SuperQuest: A National Computational Science Competition for High Schools
Overview of the SuperQuest Program, *Helen M. Doerr;* Incorporation of computational science in high school curricula, *Mary Ellen Verona;* Public high school SuperQuest experiences, *Judith Tarrant;* Advancing computational science in K-12: Importance of industrial involvement, *Gil Brezler;* Creating a comprehensive regional effort, *Mike C. Cox.* Organized by: *Linda Callahan, Helen M. Doerr.*

(E) Gifted Students at Risk: Issues and Implications for Educational Policy
The development of talent in adolescence, *Mihaly Csikszentmihalyi;* Implications for identification and teaching of the gifted, *Robert J. Sternberg;* Policy affecting the education of gifted and talented students, *Sally M. Reis;* Controversial issues in the education of high-ability students, *Joseph S. Renzulli.* Organized by: *Thomas J. Tighe, Joseph S. Renzulli.*

(F) Designing a Science Curriculum for Middle School Students
Hands-on activity from the Models in Physical Science Program, *Bernard Zubrowski;* Implementing and using the hands-on activity in the classroom, *Teacher/Student TBA;* Impact of the curriculum: Study results, *Pat Campbell.* Organized by: *Bernard Zubrowski.*

Concurrent Sessions G–K (Sat 2–4:30pm)

(G) Using Project 2061 Benchmarks to Guide Curriculum and Instruction Reform
Using Project 2061 Benchmarks to guide curriculum reform, *Jo Ellen Roseman, Danine Ezell;* Naturalistic research methods in science education reform, *Mary Jo McGee Brown, Vicky Brantley.* Organized by: *Frances Gatz.*

(H) Sociology as Social Science in the High School Curriculum
Transforming social studies to include sociology in the secondary school curriculum, *Paul S. Gray;* TBA, *James S. Coleman;* Using social science methods in high school to understand American families, *Peter J. Stein,* Symmetrical and asymmetrical approaches to solving social problems, *Charles Willie.* Organized by: *Carla B. Howery.*

(I) Redesigning Math, Science, and Foreign Language Education Through Telecommunications and New Media
Support for interactive technologies and new math, science, and foreign language projects, *Arlene Krebs;* NTU: Enabling technical professionals to share educational resources via telecommunications, *Douglas M. Yeager;* TERC's math and science projects in international distance learning, *Robert Tinker;* MCET's science education television programs, *Inabeth Miller;* Innovative approaches to teaching critical languages, *Harry G. Barnes.* Organized by: *Harry G. Barnes, Arlene Krebs.*

(J) Applications of Science Instruction R&D for LEP Students to All Students
Introduction, *Frank X. Sutman;* Field analysis of the IALS approach to basic science instruction, *Matthew H. Bruce;* Science instructional strategies for LEP students and their teachers, *Estella Triana;* Comprehension and higher-order science skills among language minority students, *Richard P. Duran;* Scientific sense-making in language minority classrooms, *Beth Warren;* Integrating science and language, *Deborah Short;* Developing math motivation among students of Mexican descent, *Ronald Henderson.* Organized by: *Frank X. Sutman.*

(K) Using Video for Teacher Training in Physical Science
Topics TBA, *Lynn Cadwallader, Bebe Nixon, Terry Kwan.* Organized by: *Lynn Cadwallader.*

Register Now!
Use the form on page 1528.

Plan Ahead!
Use the chart on page 1524 to work out a personal meeting schedule suited to your own individual needs and interests.

Explore the continent at the end of the world.

Immediately following AAAS☆93, the M.V. *Illiria* will take to the waterways for an unforgettable expedition to Antarctica! Sail aboard this extraordinary ship built for comfortable expedition cruising. Remote and isolated, Antarctica is a mysterious land, rich in wildlife and beauty, which only a fortunate few have experienced.

Antarctica's waterways are open to navigation for just a few months each year. Only during the austral summer are the rocky headlands crowded with nesting Adelie, Gentoo, and Chinstrap penguins, Antarctic blue-eyed shags, kelp gulls, and Antarctic terns. Along the ice-strewn beaches, you may see elephant and fur seals gather while minke, orca, and humpback whales course through the icy waters, past blue-hued glaciers and towering icebergs. Summer days in Antarctica are moderate — 50 degree Fahrenheit days are not uncommon.

Illiria's fleet of Zodiac landing craft allows you to cruise among ice floes, view playful seals, and land almost anywhere. You may participate in surveys of nesting penguins, or collect photographs to assist in the identification of individual whales. This expedition will explore penguin rookeries in small groups of less than 20.

Take advantage of this rare opportunity to explore the seventh continent! For complete details, call AAAS Travels at Betchart Expeditions, Inc., 800-252-4910.

Take a day trip to Woods Hole!

Join AAAS for a field trip to the village of Woods Hole, Massachusetts, an international center for natural science, on Tuesday, 16 February. In addition to Woods Hole Oceanographic Institution and the Marine Biological Laboratory, Woods Hole is also home to the National Marine Fisheries Service and the US Geological Survey.

Research at Woods Hole Oceanographic Institution covers all aspects of oceanography in biology, chemistry, geology and geophysics, physical oceanography, and ocean engineering.

Scientists and students throughout the world come to the Marine Biological Laboratory to conduct research in areas such as parasitology, embryology, marine ecology, microbial diversity, neurobiology, physiology, marine biomedicine, and molecular evolution.

The bus leaves the Hynes in the morning and returns to Boston by early evening. The cost is $20, *but please do not send money now.* If you are interested in this tour, please fill out and return the coupon below to: Jackie Wester, AAAS Meetings, 1333 H St., NW, Washington, DC 20005, or fax to 202-289-4021.We will contact you before the meeting with payment instructions.

❑ **Save me a seat on the Woods Hole Tour!** I will send my check for $20 *after* I have received confirmation & payment instructions from AAAS.

Name _____

Institution _____

Address _____

City/state/zip _____

Country _____

Phone _____

Mail to: Jackie Wester, AAAS Meetings, 1333 H Street, NW, Washington, DC 20005 **Or fax to**: 202-289-4021. *Do not send money now!* A12

AAAS☆93 Exhibitors

(As of 31 October 1992)

Academia Book Exhibits
Allen Press, Inc.
Amer. Soc. Mechanical Engineers
Arlington Hews
Assn. of Amer. University Presses
Avery Dennison
Battelle Memorial Institute
Boeing Defense & Space Group
Casio
Council for Responsible Genetics
Discover Magazine
Discovery Scope, Inc.
Dover Publications, Inc.
Elsevier Science Publishing Co.
Encyclopaedia Britannica
Harvard University Press
Heldref Publications
Island Press
Joint Oceanographic Institutions
Nat'l Geographic Research
National Science Foundation
Oak Ridge Associated Universities
Office of Chief of Naval Research
Oxford University Press
Publishers Book Exhibit
Science By Mail
Science Service
Sigma Delta Epsilon/ Graduate Women in Science
Space Telescope Science Institute
U.S. Geological Survey
Union of Concerned Scientists
United Nations Publications
University Science Books
Yale University Press

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☆93. **For complete details:** Call the AAAS Exhibit Sales Office at 202-326-6462.

AAAS☆93 Meeting at a Glance*

Track / Day	Friday, 12 February	Saturday, 13 February	Sunday, 14 February	Monday, 15 February	Tuesday, 16 February
Perspectives on Human Genetics	**AM/PM:** Ethical and Religious Dimensions of Genetic Science and Medicine. **AM:** Human Genetic Diversity.	**AM/PM:** Ethical and Legal Aspects of Genetic Testing.	**AM:** Genetic and Molecular Analysis of Homosexuality/Sexuality. **PM:** Determinants and Consequences of Human Inbreeding: Global Perspective.	**AM:** Knots in Biology and Chemistry. **PM:** Statistics and Molecular Biology.	
Confronting AIDS	**AM/PM:** Science Confronts AIDS.	**AM:** Mucosal Immunity: The First Line of Defense Against AIDS? **PM:** AIDS: Impacts in Developing Countries.	**AM:** Hematopoietic Growth Factors and Their Receptors.		
Biology: Cells and Bugs			**AM:** The Marine Biological Laboratory: Its Past and Future Role. **PM:** Mitosis.	**AM:** Cilioprotist Diversity, Evolution, and Ecology: New Technology and New Ideas. **PM:** The Boston Tradition of Insect Research.	**AM:** Molecular Aspects of Microbial Adhesion.
Medical Research and Society	**AM:** Responsibilities of Institutions Toward Animals in Research. **PM:** Sex Bias in Research: Are Males and Females the Same?	**AM:** Consequences for Women and Children Caught in the Web of Drug Abuse. **PM:** Genetic and Cellular Mechanisms of Diabetes Mellitus.	**AM:** New Perspectives from Anthropological Study of Aging & Well-Being. **PM:** Blood Substitutes: Physiology, Chemistry, Physics, Applications.	**AM:** Targeting of Radioligands, Antibodies, and Immunotoxins in Diagnosis and Therapy. **PM:** Do Power Lines Cause Cancer?	
Social Psychology and Neuroscience	**AM/PM:** Knowledge Worth Having in the Decade of the Brain.	**AM:** Emergence of Behavior in Coupled Neural Oscillators. **PM:** Learning, Recognition, and Memory in Humans, Monkeys, and Models.	**AM:** Status Characteristics and Social Behavior. **PM:** How Parenthood Effects One's Psychological Well-Being.	**AM:** Psychoacoustics and Its Contemporary Applications.	
Future Chemistry: From Carbon to Silicon	**AM/PM:** Fullerenes.	**PM:** Nitrogenase: Recent Advances.	**AM:** Chemical Communication in Biological Systems. **PM:** Nanoengineering.	**AM/PM:** Nanoengineering.	**AM:** Nanoengineering.
Measuring the Matter and Energy of the Universe	**AM:** Recent Advances in Atomic Physics and Atom Optics. **PM:** Exploring the Frontiers of Nuclear Physics.	**AM:** Hot Results in High-Energy Astrophysics. **PM:** The Age of the Solar System.	**AM:** The Age of Our Galaxy. **PM:** The Age and Scale of the Universe.	**AM:** The History and Philosophy of Cosmology. **PM:** The New Generation Telescopes: New Technology, New Science.	**AM:** Revealing High-Energy Phenomena in the Universe.
Earth's Ever-Changing Atmosphere	**AM:** Lessons from the Younger Dryas. **PM:** Little Ice Age.	**AM/PM:** Urban and Regional Ozone.	**AM:** Energy & Global Change. **AM:** South American Dryland Ecosystems. **PM:** Forests and Biogeophysical Systems.	**AM:** Climate Change: What Astrophysics Can Tell Us. **PM:** Integrating Space-Derived Data into Global Change Monitoring Information.	**AM:** Update on Global Change Research.
Causing and Coping with Environmental Change	**AM/PM:** Least Cost Transportation. **AM:** Economics of Biological Diversity. **PM:** Ecosystem Valuation: Assigning Values to System Damage.	**AM:** The Social Value of Environmental Protection. **PM:** Human Dimensions of Environmental Change: Central and Eastern Europe.	**AM:** Science/Law/Policy Conflicts over Wetland Protection, 1989-93. **PM:** Lay-Professional Differences in Detecting Toxic Health Effects in Woburn, MA.	**AM:** Human Dimensions of Energy and the Environment. **PM:** The Scientific Foundations of Environmental Ethics.	**AM:** Critical Renewable Natural Resources Issues for the Twenty-First Century.
Agricultural Biotechnology: Plant Protection and Production	**AM/PM:** Science, Agriculture, and Environment in Former Soviet Union.	**AM:** Science, Agriculture, and Environment in Former Soviet Union. **PM:** Global Conservation of Plant Germplasm: Keys to Agreement.	**AM/PM:** Transgenic Farming: Science and Policy Issues	**AM:** Road Maps for Commercialization of Genetically Engineered Plants and Microbes. **PM:** Byproducts from Biotechnology: Untapped Resource.	
Science and Corporate Enterprise	**AM:** The Rise and Fall of the Massachusetts Miracle: Lessons Learned. **PM:** Is Technology the Key to Economic Competitiveness?	**AM:** Technology Transfer from Federal Labs to Industry. **PM:** Organizational Impedance-Matching in Technology Transfer.	**AM:** Can Computational Modeling Contribute to Industrial Competitiveness? **PM:** Industrial Ecology and Global Change.	**AM:** Industrial Ecology: New Approaches. **PM:** Measuring Equality of Opportunity in the Workplace.	**AM:** Improving the Efficiency of Research: Doing a Lot More with a Little More.
Examining and Reforming the Economic System	**AM:** The Prosperous '80s and Rising Inequality: Who Won, Who Lost? **PM:** Budget Deficits: Wolves, Termites, or Pussycats?	**AM/PM:** Socioeconomic Data Needs for the Twenty-First Century.	**AM:** Difficulties of Maintaining Efficient and Accountable Patterns of Financial Regulation. **PM:** Adjusting the 1990 Census for Undercount.	**AM:** Recent Revisionist Proposals Regarding the Subjective Expected-Utility Paradigm.	
Science, Ethics, and the Law	**AM:** Scientific Freedom and Responsibility: A Retrospective. **PM:** Minority Perspectives on Values and Ethics in Science/Technology.	**AM:** Conceptualizing and Measuring Social and Economic Rights. **PM:** Clear and Convincing Evidence: Testing to Measure Discrimination.	**AM:** Analyzing and Redirecting Criminal Careers. **PM:** Environmental Protection and Human Rights.	**AM:** Controversy over Crime/Heredity. **AM:** Science/Technology in Environmental Policymaking. **PM:** Science/Technology in Judicial Branch.	**AM:** The Role of Information in Litigation and Dispute Resolution.

Communicating Science to the Public	**AM:** The Bad News Bearers: Press, Public, and Scientific Warnings. **PM:** On the Record: Scientific Advocacy in the News Media.	**AM/PM:** Public Environmental Awareness: Strategies for Communication.	**AM:** Whither Dioxin: Media and the Uncertain Nature of Science. **PM:** Ignorance and Science: Emerging Perspectives.	**AM:** Science TV and Science Literacy: Watching and Learning. **PM:** Writing Science Books for One's Peers and the General Public: What's Involved.	**AM:** Public Understanding of Environmental Science Concepts: Cross-National Studies.
Information Technology and the Changing Face of Science	**AM/PM:** Knowledge Navigator. **AM:** DOE's High-Performance Computing Research Centers. **PM:** CS&T Board and the HPCC Program.	**AM:** International Scientific Data Cooperation: Issues and Experience. **PM:** Adaptive Computation and Artificial Worlds.	**AM:** Electronic Dissemination of Scientific and Technical Information. **PM:** Advances in Data Management for the Scientist and Engineer.	**AM/PM:** Advances in Data Management for the Scientist and Engineer.	**AM:** Advances in Data Management for the Scientist and Engineer. **AM:** Using Wide Area Info Servers & Internet to Acquire Research Data.
Mathematics: Concepts and Computations	**AM:** How Mathematicians Think. **PM:** The Mathematics of Everyday Language.	**AM:** Randomized Algorithms in Mathematics and Computer Science. **PM:** Symbolic Computation: Its Impact on Mathematics and Science.	**AM:** Statistical, Methodological, and Substantive Aspects of Meta-Analysis. **PM:** Interdisciplinary Curricula in Mathematics, Statistics, and Science.	**AM:** Operations Research and Mathematics. **PM:** Knots in Mathematics and Physics.	**AM:** Contemporary Methods of Numerical Computation and Analysis.
International Cooperation and Human Survival	**AM:** Meeting Security Challenges in the Soviet Successor States and Yugoslavia. **PM:** Advanced Weaponry in the Developing World.	**AM:** U.S. Nuclear Weapons and the Future of Deterrence. **PM:** Theater Missile Defense: Technical and Political Challenges.	**AM:** Conflict Resolution and Confidence-Building in Regions of Tension. **PM:** Battlefield of the Future: Technologies for Tomorrow's Conflicts.	**AM:** Energy and Security: Future Sources of Potential Conflict. **PM:** Converting U.S. Industry from Defense to Civilian Markets.	
Science for Everyone	**AM:** The Objectivity Crisis: Rethinking the Role of Science in Society.	**AM:** The New Antievolutionism **PM:** Biological Science in the Public Domain	**AM/PM:** Frontiers of the Physical Sciences, 1993. **PM:** Science is Fun!	**AM/PM:** Natural Coding in Musical Linguistics & Musicality. **AM/PM:** Science for the Naked Eye. **PM:** Handedness in the Scientific Domain.	
Science & Religion: Examining Both		**AM:** What Is Life? Origin and Evolution. **PM:** Scientific Resources for a Global Religious Myth.	**AM:** Religious Significance of Big Bang Cosmology. **PM:** Oil and Water? Institutional Interactions Between Science and Religion.		
Anthropology: Dynamics of Human History	**AM/PM:** The End of Eve? Fossil Evidence from Africa.	**AM:** The Origin and Dispersal of Maize in the Americas. **PM:** Foragers in the Tropical Forests of South America: The Evolution of Human Society.	**AM:** The Los Angeles "Riots": Who, What, Why, and Now What? **PM:** Ethnomathematics.	**AM/PM:** Models of Biocultural Evolution: Human Social and Moral Development. **PM:** Evolution Medicine: New Directions and Perspectives.	**AM:** Evolution Medicine: New Directions and Perspectives.
International Science Issues	**PM:** Environment and Development After UNCED: The Road from Rio.	**AM/PM:** Technology Management in Japan.			
Improving Formal Science Education	**AM:** International Comparative Test Scores: Precollege. **PM:** Science and Engineering Workforce for the 21st Century: Minority Contribution.	**9:15am–4:30pm:** Science Education Reform in America	**AM:** Strategies for Teaching Life Sciences to Undergraduates. **PM:** History & Philosophy of Science as Aids to Science Teaching.	**AM:** Women in Science: Research & Institutional Change. **PM:** Technology for Special Needs on Campus. **PM:** Mentoring: Impacts on Women in Sci.	**AM:** Undergraduate Involvement in Research: Professional Training. **AM:** Designing Engineering Curriculum for a Diverse Student Body.

Plenary and Topical Lectures	**1:15pm–2:15pm** (concurrent lectures): George DeVault, *Rodale Press; Kent Whealy, Seed Savers Exchange,* The new Russian farmers ✦ John Eddy, *CIESIN,* Climate and solar history ✦ Daniel Grischkowski, *IBM,* New physics ✦ William A. Haseltine, *Dana-Farber Cancer Inst.,* Controlling HIV-1 ✦ Ralph Holloway, *Columbia Univ,* Human brain evolution ✦ Jaime Lerner, Curitiba, Brazil's, successful transport innovations ✦ Joseph P. Newhouse, *Harvard Univ,* A health care data system for the 21st century ✦ Annalee Saxenian, *Univ of California-Berkeley,* Route 128 and Silicon Valley ✦ Lester C. Thurow, *MIT,* Examining and reforming the economic system. **7:00pm–8:00pm:** George Smoot, *Lawrence Berkeley Lab*	**Noon–1:00pm:** Gerald L. Geison, *Princeton Univ,* Sarton Lecture. **1:15pm–2:15pm** (concurrent lectures): Ruth Hubbard, *Harvard Univ,* Women's health ✦ Sheila Jasanoff, *Cornell Univ,* Science, environmental change, and international cooperation ✦ Edward McGaffigan, *Office of Sen. Bingaman,* The Critical Technologies Institute ✦ Katharine Milton, *Univ of California-Berkeley,* Guts, brains, diet, and human evolution ✦ Cynthia Rosenzweig, *NASA,* Global climate change & Soviet agriculture ✦ Alcino J. Silva, *MIT,* Mice and memory: Modern genetics and the study of cognition. **7:00pm–8:00pm:** Eric Lander, *Whitehead Inst, MIT*	**Noon–1:00pm:** Patricia Goldman-Rakic, *Yale Univ,* McGovern Lecture. **1:15pm–2:15pm** (concurrent lectures): Sue Anne Berger, Bear Creek High School; Steven Iona, Horizon High School; Linda Morris, *Sheridan District #2,* Artists, scientists, and teachers: A conversation for improving science education ✦ Charles De Lisi, *Boston Univ,* Drug and vaccine design ✦ Roger Kasperson, *Clark Univ,* Critical regions in global environmental change ✦ William S. Laughlin, *Univ of Connecticut,* Osteoporosis ✦ Charles M. Vest, *MIT,* University-government-industry research cooperation ✦ Victor F. Weisskopf, *MIT,* Science yesterday, today, & tomorrow. **7:00pm–8:00pm:** F. Sherwood Rowland, *Univ of California-Irvine,* AAAS President's Lecture.	**1:15pm–2:15pm** (concurrent lectures): D. Allan Bromley, *OSTP,* Science advising in the US & abroad ✦ Mildred S. Dresselhaus, *MIT,* Opportunities for women in science & engineering ✦ Henry W. Kendall, *MIT,* Controlling global risks ✦ Robert W. Phillips, *NASA,* Space Station Freedom ✦ Paul C. Stern, *Nat Research Council,* Human dimensions of energy & the environment.	
Thursday, 11 February **Keynote Address** **8:00pm–9:00pm** Jean Mayer, *Tufts Univ*					

AM=8:30am–11:30am; **PM**=2:30pm–5:30pm ***Note:** This chart does not include seminars (see page 1512) or workshops (see page 1518).

Employment Exchange

AAAS is inviting recruiters representing a wide spectrum of scientific disciplines within industry, government, and academia to review resumes and conduct interviews with qualified candidates on site.

If you're a student graduating in 1993 or a scientist seeking to make a career move, you should take advantage of this program.

For more information, contact: Jacquelyn Roberts, AAAS Employment Exchange, Suite 1163, 1333 H Street, NW, Washington, DC 20005 (phone: 202-326-6737).

Get discounted airfare to AAAS☆93, and your next flight may be free.

Make your reservations through Gil Travel to save money on discount air fares for travel to and from Boston on selected major airlines from 8–19 February 1993.

Save 40% off full coach fares published at the time of ticket purchase. (In Canada, discounts of up to 35% are available.) No minimum stay is needed; 7 days advance purchase is required. No one-way discounts.

Save 5% off the lowest promotional roundtrip fares, subject to availability. This includes travel originating in Canada.

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

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

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

Toll-free Number: 1-800-888-5127
Outside the US: 1-215-742-4242
Fax Number: 1-215-742-4050

Hotel Reservation Form

AAAS☆93 ✧ 11–16 February 1993 ✧ Boston

Send confirmation to:

Name _____ (last name) _____ (first name)

Institution/company _____ (if part of address)

Address _____

City/state/zip/country _____

Phone _____ Fax _____

Other occupant(s) of room _____ (name)

_____ (name) / _____ (name)

Special housing needs: ❑ Wheelchair-accessible room ❑ Nonsmoking room

❑ Other _____

Late Arrivals (after 4 pm) must be guaranteed with a deposit for the first night plus 9.7% occupancy tax, either by a major credit card or check (payable to the appropriate hotel).

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

Credit card # _____

Exp. date _____ Signature _____

- ✦ **Reservations must be received at the appropriate hotel by 18 January 1993.** (Housing requests received after this date are conditional on room availability.)
- ✦ Reservation changes and cancellations must be made directly with the hotel.
- ✦ Children under 18 stay free in same room as parents.
- ✦ Check-in time is 4 pm; check-out time is 12 noon.

Room Rates:

Check appropriate box for your choice of hotel and room. Add 9.7% occupancy tax to rates shown.

Boston Marriott Copley Place
Attn: Reservations, 110 Huntington Avenue, Boston, MA 02116

- ❑ Single (1 person, 1 bed) ..... $ 99
- ❑ Double (2 persons, 1 bed) ..... $ 99
- ❑ Triple (3 persons, 2 beds) $109
- ❑ Quad (4 persons, 2 beds) $119

Sheraton Boston, Attn: Reservations, 39 Dalton Street, Boston, MA 02199
[Specify main hotel or tower] ..... main / tower

- ❑ Single (1 person, 1 bed) ..... $105 / $125
- ❑ Double (2 persons, 1 bed) ..... $115 / $135
- ❑ Twin (2 persons, 2 beds) ..... $115 / $135
- ❑ Suite ..... $150 & up

Arrival & Departure:

List definite arrival/departure dates & times. Reservations are held until 4 pm. *Arrivals after 4 pm must be guaranteed with a deposit for one night plus tax.*

Arrival date _____ Time _____
Departure date _____ Time _____

Mailing Instructions:

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

Youth Activities at AAAS☆93

The American Junior Academy of Science will present award-winning student posters during the reception from 9pm to 10pm on Thursday, 11 February (immediately following the keynote address). The Academy will also feature award-winning research by AJAS student members in a series of lectures on Saturday, 13 February, from 2:30 to 5:30pm, in the meeting rooms on the Marriott's fourth floor. All AAAS☆93 registrants are invited to attend.

The Science Encounters '93 Youth Symposium (Thursday, 11 February, 10am–1:30pm) will give selected local high school students an opportunity to explore the most exciting advances in physics, biology, computer and space science, and medicine. Prominent scientists will share their enthusiasm with the students, who will be selected from among the areas high schools by a local education committee. Limited space may be available for high school age children of AAAS☆93 registrants. If you're interested in enrolling your child, call Judy Kass at 202-326-6667.

General Information

Location: Exhibits and most sessions will be in the Hynes Convention Center, 900 Boylston Street. Most seminars and social functions will be in the adjacent Sheraton Boston Hotel & Towers, Prudential Center. The Boston Marriott Copley Place at 110 Huntington Avenue will host some events. All three facilities are connected by the all-weather Prudential Center Walkway.

Transportation: From the airport—Taxicabs are available around the clock; fares run about $10-$15. Airways Transportation Service (617-267-2981) is located outside the baggage claim areas of each terminal, with stops at various Boston hotels; the fare is $7.50 per person one way, and runs on the following schedule: Sunday–Friday, every half hour from 7am–10pm; Saturday, every hour from 8am–8pm. For information, call MASSPORT, 24 hours a day at 1-800-23-LOGAN. Between airline terminals and the "T" Airport station on the Blue Line, take #22 from Terminals A and B; #33 from Terminals C, D, and E. **Note:** Other shuttle buses may not stop at the Airport "T" station. To reach the convention sites, take the Blue Line to Government Center, change to the Green Line, and exit at the Hynes Convention Center station for the Convention Center and the Sheraton Boston Hotel & Towers. To reach the Marriott, take the Green Line to Copley Square (walk straight ahead from the Copley Square station, cross Huntington Avenue, and turn right two blocks, hotel on left).

The preferred method for getting around Boston is the "T" (subway): Basic fare is $0.85, but the best buy may be the Passport available at the Hynes Station (among many others). The cost is $5 for one day, $9 for 3 days, and $18 for a 7-day pass. The Passport gives you unlimited "T" rides during the valid time and discounts to major tourist attractions, and it comes with a guide book. All major attractions in the city can be reached from the "T"; maps are readily available.

Parking in the city can cost $12–$20 per day. There is an underground parking lot beneath the Prudential/Convention Center/Sheraton complex.

On-site registration: Regular registration and badge pick-up location: Hynes Convention Center, Exhibit Hall C, Thursday, 11 February, 2–8pm; Friday–Monday, 12–15 February, 7:30am–3pm; Tuesday, 16 February, 7:30am–noon. **Seminar registration** and badge pick-up location: Sheraton Boston Hotel & Towers, Republic Foyer, Wednesday–Monday, 10–15 February, 7:30am–3pm.

Services for people with disabilities: Resources for people with disabilities will be available in Hynes 209. If you require special services due to a disability, indicate your needs on your advance meeting registration form and in your communications with the hotel. TDD is available in your room if requested in advance; signing is available upon request for any AAAS session. For additional information, contact the AAAS Project on Science, Technology, and Disability (202-326-6630; V/TDD).

Experience Boston in February!

Now that the Hynes Convention Center and the Sheraton and Marriott hotels are connected by a glass walkway, you can attend every session at AAAS☆93 and never have to brave the elements.

While we could keep you busy just attending sessions, you may want to explore the many science-related sights that Boston has to offer.

The Boston **Museum of Science** features over 400 exhibits on everything from space exploration to anthropology. The museum's **Omni Theater** has a screen 4 stories tall and will be screening "Tropical Rain Forest" during AAAS☆93. You may also want to visit the world-famous **New England Aquarium**, with its 200,000-gallon glass ocean tank, or the **Children's Museum**, one of the best hands-on museums around. Boston is also home to the world's first **Computer Museum**, which features an early-model walk-through computer.

February is Black History Month. Why not follow the **Black Heritage Trail**, to see the African Meeting House (the oldest Black church in the country) and the Museum of Afro-American History?

You can also cross the river to Cambridge to explore the **Harvard-Smithsonian Center for Astrophysics.** Or see **MIT,** perhaps visiting the **robot labs**.

Of course, Boston also offers great historical and cultural activities, such as the **John F. Kennedy Library and Museum**, the **Old North Church** and **Paul Revere's House**, or any of the famous stops along the **Freedom Trail**.

All this *and* AAAS☆93, too! How can you beat Boston in February?

Advance Registration Form

AAAS☆93 ✧ 11–16 February ✧ Boston

REGISTRANT INFORMATION *(Please type or print)*

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

Last/family name (as you would like it to appear on your badge)

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

Mailing address

City | State | Zip code

Country

Daytime phone number | Fax number

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

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

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

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

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

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

Chairperson/principal's name | Chairperson/principal's phone number

IMPORTANT FOOTNOTES

[1] **22 January deadline:** Registrations received after this date will not be processed, but you may register on site beginning 11 February. On-site rates are $30 higher than advance rates for Regular members/nonmembers, $10 higher for students, and $20 higher for all others. **One-day registration** (for all sessions *except* seminars) will be available to AAAS members ($90) and nonmembers ($120) on site only.

[2] **Special rates:** To qualify for the student rate, you must attach a copy of your student ID card. To qualify for the postdoctoral or K-12 teacher rate, you must provide the name and phone number of your department chairperson or principal in the space above. *Registrations received without appropriate verification will be charged at the Regular rates.*

[3] **Seminar/workshop fees:** "AAAS☆93 registrant" rates are *in addition to* (not in lieu of) the AAAS☆93 registration fees. "Non-registrant" rates are for those wishing to attend a seminar or workshop only — without registering for AAAS☆93. "Special" rates are applicable to students, postdocs, K-12 teachers, and retirees.

[4] **Membership dues** indicated herein are at 1992 rates, which are guaranteed through 16 February 1993 for registrants of AAAS☆93; $47 of dues are allocated to *Science*. Please allow 6-8 weeks for receipt of first issue of *Science*.

[5] **Cancellations** must be received in writing by 22 January 1993. *No refunds will be made for cancellations received after this date.* Refunds are subject to a $25 cancellation charge and will be processed after the meeting.

[6] **Checks** must be in United States currency and must be payable on a U.S. bank.

1 2 3 4 5 6 7 8 9

AAAS★93 REGISTRATION FEES[1] *(No seminars/workshops)*

	AAAS member	Nonmember
Regular	❑$145	❑$195
Student[2]	❑$ 25	❑$ 45
Postdoctoral[2]	❑$ 50	❑$ 75
K–12 Teacher[2]	❑$ 50	❑$ 75
Retired	❑$ 50	❑$ 75

SEMINAR AND WORKSHOP FEES *(Optional)*

	AAAS☆93 registrant regular[3]	AAAS☆93 registrant special[3]	Non-registrant regular[3]	Non-registrant special[3]
Kinases and Phosphatases	❑$130	❑$95	❑$200	❑$100
Mapping the Human Brain	❑$130	❑$95	❑$200	❑$100
Human Obesity	❑$130	❑$95	❑$200	❑$100
Integrating Ethics	❑$100	❑$50	❑$100	❑$ 50
Regulated Gene Expression	❑$ 0	❑$ 0	❑$ 5	❑$ 5
Super-Optimizing Analysis	❑$ 10	❑$10	N/A	N/A
Science Education Reform	❑$ 0	❑$ 0	❑$ 30	❑$ 30

MEMBERSHIP DUES *(Optional)*

If you're not a AAAS member, you can join now by checking the appropriate box below — and take advantage of the discounted *member* registration fees above. You'll also get a year's subscription (51 issues) to the journal *Science*[4].

	USA	Canada	International
Regular	❑ $87.00	❑ $146.59	❑ $182.00
Student	❑ $47.00	❑ $103.79	❑ $142.00
Postdoctoral	❑ $62.00	❑ $119.84	❑ $157.00
Retired	❑ $47.00	❑ $103.79	❑ $142.00

PAYMENT

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

Seminar or workshop fees[5] ..... $ _____

Membership dues[4] (if joining now) ..... $ _____

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

❑ Check enclosed[6] ❑ VISA ❑ MasterCard (no other cards accepted)

❑ Original institutional purchase order attached

Credit card number

Signature_____ Exp. date _____

MAILING INSTRUCTIONS *(22 January deadline[1])*

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

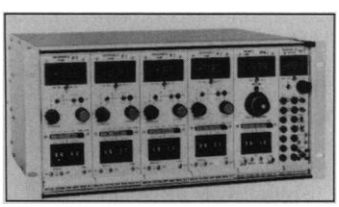
Statistical Software

SigmaStat is a statistical software package that performs such computations as *t* tests, analyses of variance, correlations, rates and proportions, nonparametric methods, linear and nonlinear regressions, and power and sample size analyses. SigmaStat's procedures are automated and require little statistical knowledge from the user. An "Advise" command helps the user select the most appropriate statistical procedure for the data and then automatically performs the test. The program also checks that the user's data fit the assumptions underlying the selected statistical methods, warns the user if they are violated, and automatically suggests and computes more appropriate alternative tests. Data import options include text, spreadsheet, database, and SigmaPlot files. The program requires an IBM-compatible computer, DOS 3.0 or higher, a hard disk with 3 megabytes free, and 535K conventional memory or 510K with extended memory. Jandel Scientific. Circle 89.

■

Fluid Ejector

The NeuroPhore BH-2 is designed to facilitate controlled ejection of fluids from micropipettes. It features both pneumatic and iontophoretic pump modules. Intracellular or extracellular ejections of minute volumes can be delivered using up to five pumps in parallel. The ejection schedule for each pump can be independently programmed. The manufacturer also offers multibarrel micropipettes for use with the system to enable a scientist to eject several different fluid combinations to investigate cell responses. Medical Systems Corp. Circle 90.



Lambda Phage DNA Isolation Kit

Lambda FaZe I and Lambda FaZe II are simple, rapid procedures suitable for both minipreps and large-scale purifications of DNA from lambda phage. No overnight cesium chloride gradient centrifugation or ultracentrifugation is required. Lambda DNA obtained is highly purified, of high quality, and free from bacterial RNA, DNA, proteins, and ribonuclease. It is suitable for restriction enzyme analysis, polymerase chain reaction, transcription of RNA, subcloning, and sequencing. Biotecx Labs. Circle 91.

■

Stabilized Substrate

TMB Stabilized Substrate for Horseradish Peroxidase is a ready-to-use alternative to 4-chloro-1-naphthol (CN). In protein immunoblots, TMB Stabilized Substrate shows a threefold increase in sensitivity compared with detection with CN, according to the manufacturer. In experiments comparing Stabilized TMB and CN protein immunoblots, as little as 412 pg of β-galactosidase could be detected on the Stabilized TMB blot, compared with 1.23 ng on the CN blot. With longer incubation times, 100 pg have been detected using Stabilized TMB. The reaction between TMB Stabilized Substrate and horseradish peroxidase produces a dark blue product that does not fade rapidly and that photographs easily. Promega Corp. Circle 92.

■

Automatic Developing Chamber for TLC

The Automatic Developing Chamber (ADC) for thin-layer chromatography (TLC) offers complete control of the developing process. The developing conditions are reproducible from plate to plate and so are the chromatograms. Because developing parameters can be stored in memory, the user simply puts the plate in the ADC and presses the start key. The ADC develops, dries, and preserves the sample. CAMAG Scientific. Circle 93.

■

Cytotoxicity Assay

The CytoTox 96 Nonradioactive Cytotoxicity Assay quantitatively measures lactate dehydrogenase, a stable cytosolic enzyme that is released upon cell lysis. The assay is a colorimetric alternative to ^{51}Cr release cytotoxicity assays. Advantages of this new alternative include safety, nonradioactivity, speed, accuracy, and convenience. Promega Corp. Circle 94.

■

Growth Supplement

ORIGEN B & T Cell Growth Supplement is designed for such research applications as the stimulation of B and T cells in in vitro immunization procedures, growth and maintenance of IL-2– and IL-4–dependent T cell lines or clones, and the establishment or maintenance of antigen-specific helper T cells. The supplement also supplies helper activity for B cell growth and differentiation and enhances the antigen-presenting activity of bone marrow–derived macrophages. The supplement is derived from a stimulated murine lymphoma line. It provides higher levels of IL-2 than rat or mouse mitogen-stimulated spleen cells or thymocyte-conditioned medium. IGEN Inc. Circle 95.

■

Literature

Advanced Cytodiagnosis is a technical bulletin on a new product, the Cyto-Clear glass slide, that improves observation of microscopic samples viewed on the surface of polycarbonate filters. Used in place of a regular glass slide, the Cyto-Clear slide eliminates filter pore outlines by light diffusion. Poretics Corp. Circle 96.

Caltag 1992–93 Catalog presents 50 pages of immunological reagents for flow cytometry and a wide range of other research applications. The catalog features monoclonal antibodies to human, murine, and rat cell surface markers, as well as human, murine, and rat immunoglobulins. Caltag Labs. Circle 97.

1993 Life Science Research Products includes sections on affinity chromatography media, antisera, biological buffers, kits, laboratory animal test diets, lectins, and restriction endonucleases. It contains more than 7000 products. U.S. Biochemical Corp. Circle 98.

Sample Preparation for Trace Analysis Methods: An Alternative Approach compares the preparation time, costs, and waste involved in two sample preparation approaches for high-performance liquid chromatography: a traditional volumetric method and a semi-automated microdiluter method. Hamilton Co. Circle 99.

Second European BIAsymposium '92 Report contains 22 papers from invited speakers on BIAcore and real-time biospecific interaction analysis, a technology for characterizing biomolecules through their interactions with other molecules. Pharmacia. Circle 100.

Newly offered instrumentation, apparatus, and laboratory materials of interest to researchers in all disciplines in academic, industrial, and government organizations are featured in this space. Emphasis is given to purpose, chief characteristics, and availability of products and materials. Endorsement by *Science* or AAAS is not implied. Additional information may be obtained from the manufacturers or suppliers named by circling the appropriate number on the Readers' Service Card and placing it in a mailbox. Postage is free.

SCIENCE

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☛ **Credit Cards:** *Science* accepts MasterCard and VISA. Discount does not apply to credit cards.

☛ **Cancellations:** Deadline for cancellation is 10 a.m., Tuesday, 10 days prior to issue date.

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CONDITIONS: Personnel advertising is accepted only with the understanding that the advertisers do not discriminate among applicants on the basis of race, sex, religion, age, color, handicap or sexual preference. The AAAS encourages employers to actively recruit and employ underrepresented minority groups. *Science* reserves the right, at its discretion, to decline to publish advertisements submitted to it.

POSITIONS OPEN

ASSISTANT PROFESSOR PHYSIOLOGICAL ECOLOGY

The Biology Department of Gonzaga University invites applications for a tenure-track position in physiological ecology. Gonzaga is a competitive, Jesuit, comprehensive University in the inland Northwest. Applicants should have a Ph.D. in biology and preferably have postdoctoral training. They should be broadly trained and committed to teaching in a traditional liberal arts setting. Research is also expected to be an integral part of our training opportunities. Thus, development of a research program suitable for the involvement of undergraduates is required and the successful candidate will be expected to compete for extramural funding. Teaching assignments will include primary responsibility in the area of ecology as well as comparative physiology and participation in introductory courses for both majors and non-majors. Teaching responsibilities begin September 1993, but the appointment may be initiated as early as June 1, 1993, to facilitate establishment of research and participation in an NSF-funded summer program for high school students. Send curriculum vitae, statement of research and teaching interests, recent reprints and three letters of recommendation by January 8, 1993, to:

Dr. Robert D. Prusch, Chairman
Biology Department
Gonzaga University
Spokane, WA 99258

Gonzaga University is an Equal Opportunity/Affirmative Action Employer.

ASSISTANT PROFESSOR OF BIOLOGY. DePauw University. Tenure-track position at the **ASSISTANT PROFESSOR** level beginning August 1993. Ph.D. required. Primary duties include teaching introductory zoology, developing upper-level courses in ecology and in other areas of interest, and supervising undergraduate research. DePauw is a liberal arts institution dedicated to involving undergraduates in research. Summer 1993 the department will be housed in new Olin Biological Sciences building. Review of applications begins January 5, 1993. Please send curriculum vitae, synopsis of teaching and research interests, transcripts, and names, addresses, and telephone numbers of four references to: **Dr. Wade Hazel, Department of Biology, DePauw University, Greencastle, IN 46135.** *Affirmative Action/Equal Opportunity Employer. Women and minorities encouraged to apply.*

FACULTY/RESEARCH POSITIONS. The University of Puerto Rico Medical School, a fully accredited research and teaching institution, invites applications for four tenure-track faculty positions: two positions, rank open, in cell/integrative physiology; two **ASSISTANT PROFESSOR** positions for molecular biologists with research interests related to physiology or pharmacology. Two **RESEARCH ASSOCIATE** positions are also available for persons with training in cellular physiology/pharmacology and interest in any of the following research areas: gap junctions, intracellular signalling, secretory processes, oxygen biology, membrane transport, mesangial cell function. Send applications, including curriculum vitae and names of three references, to: **Dr. Susan Opava-Stitzer, RCMI Program Director, University of Puerto Rico Medical Sciences Campus, PO Box 365067, San Juan, PR 00936–5067.**

ASSISTANT PROFESSOR, GENETICS. Department of Biochemistry, University of Alabama at Birmingham. Several tenure-track faculty positions are available in 1993. Areas of particular interest include chromosome structure and function, transcriptional regulation, RNA processing and control of development in lower and higher eukaryotes; however, outstanding candidates in any area of genetics are encouraged to apply. Successful candidates will teach in graduate and medical/dental curricula as well as direct active research programs. Please send curriculum vitae, a brief statement of present and future research interests, selected reprints and the names/addresses of three references by January 31, 1993 to: **Dr. Tim Townes, Search Committee Chairman, Department of Biochemistry, Schools of Medicine/Dentistry, University of Alabama at Birmingham, Birmingham, AL 35294.** *An Equal Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

THE UNIVERSITY OF ALABAMA AT BIRMINGHAM (UAB)

The Department of Cell Biology in the schools of Medicine and Dentistry at UAB is seeking a eukaryotic molecular geneticist to fill a tenure-track position at the level of **ASSISTANT PROFESSOR.** Applicants should have a Ph.D. or equivalent degree, postdoctoral experience and evidence of research productivity. Candidates using molecular biological approaches to address problems in protein folding and stability are especially encouraged to apply. Duties will include the development of a strong, extramurally funded research program, the training of Ph.D. candidates, responsibilities in a program integrating undergraduate and graduate education at UAB, and participation in a secondary school outreach program. Applications, including the names of three references, current curriculum vitae, and a summary of research plans, should be sent by December 15, 1992 to: **Dr. Richard B. Marchase, Department of Cell Biology, The University of Alabama at Birmingham, Birmingham, AL 35294–0005.**

The University of Alabama at Birmingham is an Equal Opportunity/Affirmative Action Employer.

PLANT CELL BIOLOGIST UNIVERSITY OF WISCONSIN–MADISON

The Department of Botany at the University of Wisconsin–Madison invites applications for a tenure-track faculty position at the **ASSISTANT PROFESSOR** level to become available in January of 1994. We seek an individual who applies techniques of biochemistry, genetics, and/or molecular biology to the study of significant problems in plant cell biology and who has a strong commitment to teaching at both the undergraduate and graduate levels. The position includes the possibility of participation in a campus-wide *Arabidopsis* training grant as well as training grants in molecular and cell biology, genetics, and/or biotechnology. Applicants should submit a letter of application, complete curriculum vitae, and statements of research plans and teaching interests to: **Professor Wayne Becker, Chair, Search Committee, Department of Botany, Birge Hall, University of Wisconsin, Madison, Wisconsin 53706.** Applicants should also arrange for three letters of reference to be sent to the same address. Applications received by January 8, 1993 will be assured of consideration. *The University of Wisconsin–Madison is an Affirmative Action/Equal Opportunity Employer and encourages applications from women and minorities.* Unless confidentiality is requested in writing, information regarding the applicants must be released upon request. Finalists cannot be guaranteed confidentiality.

POSITIONS OPEN BIOLOGICAL SCIENCES

Northern Illinois University anticipates two tenure-track **ASSISTANT PROFESSOR** positions for fall, 1993. A Ph.D. and postdoctoral experience are required. Each candidate will be expected to develop a vigorous, externally funded research program, direct graduate (M.S. and Ph.D.) students, and teach introductory courses for majors and non-majors.

CELL BIOLOGIST: The candidate should have research experience in cell signal transduction, cell growth control (oncogenes), and/or the cytoskeleton. Teaching obligations will include an introductory human anatomy-physiology course and a course in the candidate's area of expertise.

EVOLUTIONARY BIOLOGIST: The candidate should be organismally oriented and have research experience dealing with evolutionary aspects of physiology or development. The candidate's research program will complement the department's current strengths in evolutionary biology and ecology. Teaching obligations will include courses in evolution and ecology and a course in the candidate's area of expertise.

Send a letter of interest, curriculum vitae, brief statement of research goals and teaching goals, representative reprints, and three letters of reference by December 31, 1992 to: **Dr. Marvin Starzyk, Chair, Department of Biological Sciences, Northern Illinois University, DeKalb, IL 60115–2861. Telephone: 815-753-1753.** *Northern Illinois University is an Affirmative Action/Equal Opportunity Employer.*

Postdoctoral Opportunities In The Biomedical Sciences.

Listed below are a few of the excellent opportunities for conducting research that are now available with leading scientists at the National Institutes of Health.

Regulation of Gene Expression
Michael Brenner, PhD

The factors involved in the regulation of gene expression in the central nervous system are being examined using *in vitro* transcription, cell transfection, and transgenic mice. Current studies focus on *gfa*, a gene responsible for encoding an intermediate filament protein found primarily in astrocytes. Experience in molecular biology, biochemistry, or cell culture is desirable. Laboratory of Molecular Biology (OE-23), NINDS, Building 36, Room 3D02.

Guanine Nucleotide-binding Proteins
Martha Vaughan, MD

Mechanisms of action of guanine nucleotide-binding proteins are studied using a broad range of techniques. Emphasis is placed on elucidating the roles of these proteins in transmembrane signaling, protein trafficking, and the effect of bacterial toxin ADP-ribosyltransferases on G protein function. Experience in molecular biology or biochemistry is preferred. Laboratory of Cellular Metabolism (OE-23), NHLBI, Building 10, Room 5N307.

Molecular Determinants of Drug Sensitivity
Robert H. Shoemaker, PhD

The expression of genes which may serve as determinants of tumor cell response to anti-cancer drugs is being studied. Both conventional chemotherapeutic drugs and new agents emanating from natural product screening efforts are being evaluated. Experience in molecular biology is required. Laboratory of Drug Discovery Research and Development (OE-23), NCI-FCRDC, Building 1052, Room 121, Frederick, Maryland 21702-1201.

Molecular Hematopathology
Mark Raffeld, MD

Molecular biological approaches are being used to study the molecular pathogenesis of lymphoproliferative diseases and tumor progression. The position includes responsibility for developing the laboratory's clinical molecular pathology unit where molecular approaches for diagnosing lymphomas and other neoplasms are being evaluated for potential clinical use. Laboratory of Pathology (OE-23), NCI, Building 10, Room 2N110.

Neuropharmacology
Joseph M. Masserano, PhD

Neurotransmitter systems in both human and animal tissues are being studied using neurochemical and molecular biological techniques to understand the biochemical nature of schizophrenia and other neuropsychiatric disorders. Candidates should have experience in neuropharmacology, neurobehavior, neurochemistry or molecular biology and have less than three years of postdoctoral experience. Laboratory of Neuropsychiatry (OE-23), NIMH, Neuroscience Center at St. Elizabeths, 2700 Martin Luther King Avenue, SE, Washington, DC 20032.

Tumor Suppressor Genes
B. Zbar, MD and Michael Lenman, MD, PhD

Positional cloning is being used to identify genes that predispose to human renal cell carcinoma. Emphasis is on von Hippel-Lindau disease, a multi-system neoplastic disease. This project involves identification and characterization of families with hereditary urologic malignancies, the use of linkage analysis to locate disease genes and gene isolation and characterization. Background in biochemistry or molecular biology is preferred with less than five years of postdoctoral experience. Candidates must be U.S. citizens or permanent residents. Laboratory of Immunobiology (OE-23), NCI-FCRDC, Building 571, Room 12-71, Frederick, Maryland 21702.

Additional Postdoctoral Fellowship Opportunities

For an on-line listing of additional postdoctoral openings you may access the NIH EDNET Bulletin Board's POSTDOC conference via modem (1,3014922221 or 1,8003582221). The settings for modem access are "7,Even,1". When connected to NIH, type in ",vt100" at the connect message, "F5E" at initial, and "AJL1" at account.

Those interested in receiving information on other postdoctoral opportunities in NIH research laboratories, as well as information on clinical training opportunities, may contact the Office of Education, Building 10, Room 1C129. Phone: 301-496-2427.

To Apply

If you hold a PhD, MD, or equivalent degree and would like to be considered for one of these positions, please send a cover letter, *curriculum vitae*, bibliography, and statement of research interests to the address listed with each position. In addition, please arrange to have letters of recommendation sent from three scientists who can provide an evaluation of your qualifications.

NATIONAL INSTITUTES OF HEALTH

National Institutes Of Health

9000 Rockville Pike, Bethesda, MD 20892

Equal Opportunity Employer

POSITIONS OPEN

GEOHYDROLOGY
UNIVERSITY OF COLORADO, BOULDER

The Department of Geological Sciences is recruiting for a tenure-track faculty position in geohydrology (ground water). Beginning **ASSISTANT PROFESSOR** preferred, but candidates at all levels will be considered.

For a complete description interested parties should contact the **Geohydrology Search Committee, Department of Geological Sciences, University of Colorado, Boulder, CO 80309–0250; Telephone: 303-492-8141**. Initial consideration of completed applications will begin on February 28, 1993, and will continue until the position is filled.

The University of Colorado at Boulder has a strong institutional commitment to the principle of diversity. In that spirit, we are particularly interested in receiving applications from a broad spectrum of people, including women, members of ethnic minorities, and disabled individuals.

ENVIRONMENTAL MICROBIOLOGIST
TENURE-TRACK

The Department of Biological Sciences, University of Cincinnati is inviting applications for an environmental microbiologist at the **ASSISTANT PROFESSOR** level, starting 1 September 1993. We are a comprehensive state university, with an enrollment of approximately 36,000 students. The department has 32 full-time faculty and 83 graduate students. We are seeking a person who will complement an already strong program in the department encompassing microbial ecology, biodegradation and toxicology, and who demonstrates a very strong background in molecular biology/biochemistry and/or microbial physiology/genetics. The successful candidate will be expected to develop a vigorous, externally funded research program, train graduate students, and teach graduate as well as undergraduate courses related to an expanding curriculum in microbiology. The position requires a Ph.D. with postdoctoral experience. Applicants should submit as soon as possible, but no later than **4 January 1993**, curriculum vitae, a one-page description of their current research interests and future research plans, and arrange to have three letters of recommendation sent to:

Dr. Richard D. Karp
Environmental Microbiologist Search Committee
Department of Biological Sciences
Mail Location #006
University of Cincinnati
Cincinnati, OH 45221

The University of Cincinnati is an Equal Opportunity/Affirmative Action Employer.

ASSISTANT PROFESSOR. The Department of Psychiatry, Uniformed Services University of the Health Sciences: **TENURE-TRACK** research and teaching position. The Department seeks an individual with research interests to complement ongoing psychosocial, stress and neuroscience research in: stress and illness, neurobiology of anxiety disorders (including PTSD), psychiatric responses to trauma, circadian rhythms, memory, behavioral pharmacology, neurochemical correlates of drugs and behavior, and psychoimmunology. Send curriculum vitae, a description of current and planned research and the names of three references to: **Uniformed Services University of the Health Sciences; CHR-Room A1022, ATTN: SY:LD; 4301 Jones Bridge Road; Bethesda, MD 20814–4799** before 15 March 1993. *Affirmative Action/Equal Opportunity Employer.*

FACULTY POSITION IN NEUROSCIENCE

A **TENURE-TRACK** faculty position is available in the Department of Neuroscience at the University of Virginia Health Sciences Center. We are seeking to recruit an individual at the **ASSISTANT PROFESSOR** level with expertise in Cellular and/or Molecular Neuroscience. Please send curriculum vitae, sample reprints, a description of research plans, and the names and telephone numbers of three references to:

Oswald Steward, Ph.D.
Professor and Chair
Department of Neuroscience
University of Virginia Health Sciences Center
Charlottesville, VA 22908

The University of Virginia is an Equal Opportunity/Affirmative Action Employer.

ASSISTANT PROFESSOR OF BIOLOGY

The Department of Biology at Loyola College invites applications for an entry-level, tenure-track position to begin Fall 1993. Loyola College is a mid-size comprehensive university with a commitment to quality teaching. Applicants should have a Ph.D. and both teaching and research experience. Courses to be taught include a sophomore-level ecology course and another undergraduate animal/plant field biology course, as well as coordination and participation in the General Biology course for majors. Faculty are expected to conduct active research. Please send curriculum vitae, statement of teaching and research interests, and names and addresses of three references by December 30, 1992 to: **Dr. Donald Keefer, Chairman, Department of Biology, Loyola College, 4501 North Charles Street, Baltimore, MD 21210–2699.** *Loyola College is an Affirmative Action/Equal Opportunity Employer.*

ASSISTANT PROFESSOR
NEUROBIOLOGY

The Department of Anatomy & Neurobiology, University of Kentucky, invites applications for two tenure-track positions at the **ASSISTANT PROFESSOR** level. The candidates should hold a Ph.D. and/or M.D. degree with appropriate postdoctoral experience and publications. One position is for a developmental neurobiologist with a molecularly oriented research program. The second position is for a neurobiologist using cellular and/or molecular approaches in the area of excitatory amino acids with particular emphasis on glutaminergic systems. The candidates will be expected to develop strong research programs and contribute to the departmental teaching responsibilities in medical and graduate education. Salary and start-up funds are extremely competitive. The Department offers a stimulating environment which is committed to high quality research and teaching. Deadline for receipt of applications is January 31, 1993. Interested candidates should submit curriculum vitae, description of current and future goals, representative reprints and names and addresses of three references to: **Dr. Stephen Scheff, Chair of Search Committee, Department of Anatomy & Neurobiology, University of Kentucky, Lexington, KY 40536–0840.** *University of Kentucky is an Affirmative Action/Equal Opportunity Employer.*

CELLULAR PHYSIOLOGIST
University of Tennessee, Knoxville (UTK)

The Department of Zoology, University of Tennessee, Knoxville, invites applications for a tenure-track position at the level of **ASSISTANT PROFESSOR**, effective 1 August 1993. The successful candidate will be expected to develop a vigorous and externally funded research program in **CELLULAR PHYSIOLOGY**. A Ph.D. (or equivalent) and at least one year of postdoctoral experience is required. The successful candidate will be expected to supervise M.S. and Ph.D. students, and to participate in the teaching of undergraduate and graduate courses in cell, systems, and comparative animal physiology. Applicants are requested to submit curriculum vitae, statement of research goals, statement of teaching interests, and should arrange to have three letters of recommendation sent to: **Dr. Gerald L. Vaughan, Department of Zoology, University of Tennessee, Knoxville, TN 37996–0810; (Telephone: 615-974-2371; FAX: 615-974-0978)**. Review of applications will begin on 15 January 1993. *UTK is an Equal Employment Opportunity/Affirmative Action/Title IX/Section 504/ADA Employer.*

The Department of Biology at Illinois Wesleyan University has a tenure-track opening at the **ASSISTANT PROFESSOR** level in **ECOLOGY**. Candidate must have a Ph.D., a broad background in biology, a commitment to teaching excellence and the promise of research. Responsibilities include teaching Ecology (introductory and advanced), Genetics, Environmental Issues, and supervision of student research. Applicants should submit a letter of application, curriculum vitae, three letters of recommendation (including comments on teaching effectiveness), a one-page statement of teaching philosophy and an outline of future research plans to: **Dr. Bruce B. Criley, Chairman, Department of Biology, Illinois Wesleyan University, Bloomington, IL 61702–2900.** *Illinois Wesleyan is an Equal Opportunity Employer; women and minorities are encouraged to apply.*

ASSISTANT PROFESSOR IN BIOLOGY (Tenure-track position): Serve as a member of the Biology faculty with expertise in symbiotic and microbial biology, teaching both upper- and lower-division Biology courses for majors as well as some general science courses for non-majors. **Requires**: Ph.D. (with dissertation), broad training in biology with expertise in symbiotic or microbial biology, and an interest in providing quality undergraduate instruction at a church-related college. **To Apply**: Please submit a letter of interest, résumé/curriculum vitae, name, address, and telephone number for three references, and graduate and undergraduate transcripts to: **Assistant Professor in Biology Search Committee, Office of Human Resources, Whitworth College, Spokane, WA 99251–0103.** Applications accepted until January 4, 1993. *Whitworth College strongly encourages women, persons of color, and persons with physical limitations to apply. Whitworth College reserves the right to extend the search proceedings, as necessary.*

OHIO UNIVERSITY
ASSISTANT PROFESSOR—VIROLOGY

Applications are being accepted for this tenure-track position available September 1, 1993 (pending adequate funding). We seek a medical virologist to participate in the lecture and laboratory components of a two-quarter medical school infection and immunity course. A Ph.D. and postdoctoral experience are required; previous teaching experience in medical virology is desirable. Research area is open. Minimum salary is $32,000. Our department has 50 faculty members, 75 graduate students and good research facilities. Ohio University has approximately 18,000 undergraduate students, 2000 graduate students, including an osteopathic medical school with 100 students in each class. Athens is located in the foothills of rural southeastern Ohio where costs of living are moderate. Please send curriculum vitae, statement of research and teaching interests, a few representative publications and three letters of recommendation by 22 January 1993 to: **Ms. Jean Witkowski, Department of Biological Sciences, Ohio University, Athens, OH 45701–2979.**

OHIO UNIVERSITY IS AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER.

DEVELOPMENTAL NEUROBIOLOGIST

ASSISTANT PROFESSOR, tenure-track teaching/research position is available for a developmental neurobiologist, whose area of expertise includes neurophysiology, and/or neuroendocrinology. The successful candidate will join an 8-member department which includes a neuroanatomist and a behavioral biologist. The candidate should be able to teach a combination of courses in general biology, neurobiology, endocrinology, or developmental biology. An opportunity exists for developing additional courses in your specialty. The development of a research program involving undergraduates is required and will be supported. Salary is competitive and commensurate with qualifications. Submit curriculum vitae, transcripts, evidence of teaching ability, publications, plan of proposed research, and 3 letters of recommendation by December 15, 1992, to: **Dr. Paula Dehn, Chair, Biology Department, Canisius College, 2001 Main Street, Buffalo, NY 14208**. Informal inquiries are welcome (716) 888-2550. *Women and minorities are encouraged to apply.* Position made possible by the Howard Hughes Medical Institute.

ANALYTICAL CHEMISTRY—IOWA STATE UNIVERSITY. Applicants are sought for a faculty appointment at the level of **ASSISTANT PROFESSOR** or higher beginning Fall Semester 1993. Applicants should be prepared to contribute to the teaching program in analytical chemistry at the graduate and undergraduate level, and conduct a vigorous independent research program. Whereas all research specialties will be considered, preference is for applicants with research interests related to separation science broadly defined. Each applicant should send curriculum vitae, list of publications and a description of future research plans, and arrange for three letters of recommendation to be sent to: **Professor James H. Espenson, Chair, Department of Chemistry, Iowa State University, Ames, IA 50011.** *Iowa State University is an Equal Opportunity/Affirmative Action Employer. Applications from qualified women and underrepresented minority candidates are especially welcome.* Complete application materials should be received no later than January 15, 1993.

INCYTE

PHARMACEUTICALS, INC.

3330 Hillview Ave., Palo Alto, CA 94304
Tel. (415) 855-0555 • Fax (415) 855-0572

Incyte Pharmaceuticals is a privately held biotechnology company focused on the research and development of protein biotherapeutics for inflammatory and degenerative disorders. Incyte's discovery programs, based on large-scale sequencing of cDNAs and proteins from inflammatory cells, have identified several new products which are now in preclinical development. Incyte's lead product, BPI for endotoxic shock, is being co-developed with Genentech, Inc. Incyte has immediate openings for skilled scientists (BS., M.S., and Ph.D.) in the following departments:

Immunobiology

- Candidates with experience in macrophage and neutrophil biology or immunoassay and bioassay development

Molecular Immunology

- Candidates with experience in autoimmunity, T-cell biology and cell adhesion to head an expanding project on immunosuppression
- Candidates with strong basic molecular biology skills in cDNA cloning and expression

Protein Discovery

- Candidates with strong protein chemistry background: protein isolation and microcharacterization, microsequencing, amino acid analysis, and capillary electrophoresis

Protein Engineering

- Candidates with experience in recombinant protein purification and characterization. Additional background in enzymology and protease biology helpful

Process Development

- Candidates with 3-5 years experience in developing large-scale protein purification processes for both mammalian and bacterial derived proteins. GMP experience helpful
- Candidates with strong background in mammalian cell culture. Experience in DNA transfections, cell cloning, large scale cell culture and media development helpful

Bioinformatics

- Candidates with a strong background in computer and data processing to head up a major program on bio-sequence information processing

Product Development

- Director/Vice President level candidates to head preclinical development of two new proprietary biotherapeutic molecules moving toward clinical trials

Incyte Pharmaceuticals' R&D facility has a premier location in the foothills of Palo Alto, California. Situated in the Stanford Research Park, Incyte is close to the Stanford Campus and a number of bicycling and running trails. Incyte offers competitive salaries, outstanding benefits, significant equity participation and an opportunity for professional growth. Please fax or mail your resume to our Human Resources Department at the above address.

POSITIONS OPEN

POPULATION/QUANTITATIVE GENETICS THE UNIVERSITY OF MICHIGAN ASSISTANT PROFESSOR

The Department of Biology at the University of Michigan solicits applications for a tenure-track position in the field of Population/Quantitative Genetics. The individual hired will be joining a well established group of ecologists, evolutionists, and organismal biologists who are part of a large department of biology, with research interests that embrace a wide range of basic biological phenomena. The specific subfield of interest within population/quantitative genetics is of less concern than a record of excellence. In addition to establishing a successful research program, the candidate will be expected to participate in both the undergraduate and graduate-level teaching programs of the Department. Applications should include current curriculum vitae, copies of up to five relevant reprints, a brief statement of future research plans, and three letters of reference. Application deadline is January 15, 1993. Minorities and women are especially encouraged to apply. Application materials should be sent to:

Chair, Population Genetics Search Committee
Department of Biology
University of Michigan
Natural Science Building
Ann Arbor, MI 48109–1048

The University of Michigan is an Affirmative Action/Equal Opportunity Employer.

ASSISTANT PROFESSOR POSITIONS IN MOLECULAR BIOLOGY

The **Department of Molecular Biology and Microbiology** has several full-time, tenure-track faculty positions available in the recently established **Center for Molecular Parasitology**. We seek highly qualified individuals whose research programs will focus on basic aspects of gene regulation in parasitic organisms or organisms that can serve as model systems for the study of parasitic gene expression. The latter includes but is not exclusive of free living protozoa and helminths. We also encourage applications from individuals trained in other systems who contemplate switching to the study of gene expression in lower eukaryotes. Competitive start-up funds will be available to the successful applicant. Review of applications will begin immediately and continue until suitable candidates have been identified.

Send curriculum vitae, summary of past research, a short statement of future plans and the names of at least three references to: **Timothy W. Nilsen, Director, Center for Molecular Parasitology, Department of Molecular Biology and Microbiology, Case Western Reserve University, School of Medicine, 10900 Euclid Avenue, Cleveland, OH 44106–4960.** *Equal Opportunity/Affirmative Action Employer.*

The Biology Department at Georgia College invites applications for a **TENURE-TRACK POSITION** in Plant Physiology starting September, 1993. Applicants should have a strong commitment to teaching and research. Teaching responsibilities include Plant and Cell Physiology, Introductory Biology, supervision of student research and laboratories. Rank commensurate with experience. Applicants should send curriculum vitae, **official transcripts**, a letter describing relevant experience, and three letters of recommendation by January 15, 1993 to: **Thomas Toney, Ph.D., Search Committee Chair, Department of Biology, Georgia College, Milledgeville, GA 31061**. The search will remain open until filled. *Georgia College is an Affirmative Action/Equal Opportunity Employer.*

RESEARCH FACULTY POSITION UROLOGIC ONCOLOGY

University of Washington, Department of Urology

Accomplished Scientist to complement existing immunocytochemistry/image analysis research program developing markers of progression in prostatic disease (BPH and carcinoma). Ph.D. in biological science required, postdoctoral experience in molecular oncology highly desired. Academic rank commensurate with qualifications. Send curriculum vitae and names of five references to: **Dr. Michael K. Brawer, M.D., University of Washington Department of Urology, RL-10, Seattle, WA 98195.**

The University of Washington is an Affirmative Action, Equal Opportunity Employer.

UNIVERSITY OF TORONTO DEPARTMENT OF CHEMISTRY TENURE-STREAM POSITIONS

The Department of Chemistry, University of Toronto, invites applications for tenure-track positions at the **ASSISTANT PROFESSOR** level in **biological chemistry** (theoretical, physical, inorganic or organic), **Environmental chemistry** and **synthetic organic chemistry**, effective on or after July 1, 1993. Applicants should possess a strong academic background and an excellent research record. The successful candidates will be expected to conduct active and innovative research programs and to teach at both the undergraduate and graduate level.

In accordance with Canadian Immigration requirements, priority will be given to Canadian citizens and permanent residents (landed immigrants) of Canada. The University of Toronto encourages both women and men to apply for positions.

Applications will be accepted until December 31, 1992. Applicants should provide curriculum vitae and an outline of their proposed research, and should arrange to have three confidential letters of recommendation sent on their behalf to:

Chair of Chemistry
Department of Chemistry
UNIVERSITY OF TORONTO
80 St. George Street, Room 150
Toronto, Ontario, Canada, M5S 1A1

Grinnell College invites applicants for a tenure-track faculty position as an **ASSISTANT PROFESSOR** (Associate Professor possible) of Biology to begin in August 1993. We seek a biologist well acquainted with modern techniques of molecular biology to teach at all levels of our curriculum. Teaching duties include upper-level and intermediate-level courses in molecular biology, and participation in the general education program of the College. We seek candidates who will conduct an active research program involving undergraduates. A Ph.D. is required and postdoctoral experience is preferred. Start-up funds, support for student-faculty research and excellent facilities are available. Send curriculum vitae, three letters of recommendation and all transcripts to: **Charles H. Sullivan, Molecular Biology Search Committee, Department of Biology, Grinnell College, Grinnell, IA 50112–0806; FAX: 515-269-4285; E-mail: SULLIVAC @GRIN1.BITNET**. To assure full consideration, applications must be received by January 1, 1993. *Grinnell College is an Affirmative Action/Equal Opportunity Employer and especially seeks women and minority candidates.*

The University of Washington in Seattle wishes to fill the Robert H. Williams **CHAIR OF MEDICINE**. This fully endowed Professorship includes dedicated laboratory and office space. We are seeking an outstanding investigator whose research is related to diabetes mellitus. The candidate can be either an M.D. or a Ph.D. (or both). *The University of Washington is an Equal Opportunity Employer and encourages applications from women and minorities.* Please send curriculum vitae and bibliography to:

William J. Bremner, M.D., Ph.D.
Professor and Vice-Chair
Department of Medicine
University of Washington
Chief, Medical Service
VA Medical Center (111)
1660 South Columbian Way
Seattle, WA 98108

TENURE-TRACK POSITION. Junior tenure-track faculty position in environmental toxicology to develop an independent research program, and to teach/advise Environmental–Public Health graduate students. Earned doctorate necessary and preferably at least two years of postdoctoral experience. Send curriculum vitae, a summary of research interests, past research-teaching accomplishments, and future research plans; three publications; and the names, addresses, telephone/FAX numbers of at least three references by January 15, 1993 to: **Dr. Shane Que Hee, Vice Chair, Department of Environmental Health Sciences, UCLA School of Public Health, 10833 Le Conte Avenue, Los Angeles, CA 90024–1772.**

The University of California is an Equal Opportunity/Affirmative Action Employer. Women and Minorities are encouraged to apply.

FACULTY POSITION, Molecular Biology of Infectious Diseases. The Department of Microbiology at Colorado State University invites applications for a tenure-track **ASSISTANT** or **ASSOCIATE PROFESSOR** position to address the molecular biology of infectious diseases. Host-parasite interactions, with particular regard to basic mechanisms of pathogenesis by bacteria, viruses, or other parasitic microorganisms are areas of research interest appropriate to this position. Candidates should possess the Ph.D., D.V.M./Ph.D., M.D./Ph.D. or equivalent degree, and postdoctoral research experience in the biomedical sciences. The successful applicant will be expected to establish an independent research program, and participate in the teaching of undergraduate and graduate courses within the Department and the College. There will be ample opportunity to interact with faculty and students in our nationally recognized programs such as those concerning mycobacteria and arthropod-borne infectious diseases. Applicants should send curriculum vitae, a statement of research interests, and a list of at least three references, to: **Dr. Ian Orme, Search Committee Chairman, Department of Microbiology, Colorado State University, Fort Collins, CO 80523, Telephone: 303-491-5777** by December 31, 1992.

Colorado State University is an Equal Opportunity/Affirmative Action Employer.

Dartmouth Chemistry Department invites applications for a tenure-track position at the **ASSISTANT** or **ASSOCIATE PROFESSOR** level starting July or September 1993. An individual is sought who will establish a vigorous, productive research program at the interface of chemistry and biology and who will excel at teaching in both our undergraduate and Ph.D. programs. Preference will be given to candidates with experience in biological applications of magnetic resonance and who will use NMR as an integral method in their research. The new appointee will be expected to teach undergraduate courses in general or organic chemistry and in our biophysical chemistry major, and graduate courses in his or her specialty. Applicants should submit curriculum vitae, a description of research projects that would be pursued, a list of start-up requirements, and a brief statement of teaching experience and interests; applicants also should arrange to have graduate and undergraduate transcripts and three letters of recommendation sent on their behalf. All application materials should be sent to: **Professor David M. Lemal, Chair, Faculty Search Committee, Department of Chemistry, Burke Laboratory, Dartmouth College, Hanover, NH 03755–3564**. The Search Committee is considering completed applications at the present time. *Dartmouth College is an Equal Opportunity/Affirmative Action Employer.*

CELLULAR/DEVELOPMENTAL BIOLOGIST

The Department of Biological Sciences at Stanford University invites applications for a **TENURE-TRACK FACULTY** position. Applications will be considered at either the junior or the senior level. Research areas of special interest include cell cycle control, cytoskeleton structure and assembly, protein trafficking, embryonic induction, pattern formation and cell/cell interactions. Research on any organism (vertebrate, invertebrate, plant or bacterial) is appropriate. The successful candidate should have a sincere interest in teaching and will be expected to participate in undergraduate and graduate courses. *Applications from women and minority candidates are strongly encouraged.* Applicants should send curriculum vitae, a letter summarizing accomplishments and goals for research and teaching, selected reprints, and the names and addresses of three to five references before January 15, 1993 to: **Chair, Cellular/Developmental Search Committee, Department of Biological Sciences, Gilbert Building, Stanford University, Stanford, CA 94305–5020.** *Stanford University is an Equal Opportunity/Affirmative Action Employer.*

FACULTY POSITION: The Biology Department at Viterbo College invites applications for a tenure-track position involving teaching comparative vertebrate anatomy and physiology, ecology, and limnology and advising undergraduate research. The position will remain open until filled. Application, including curriculum vitae, three letters of recommendation, and graduate transcripts should be sent to: **Dr. Linda Malick, Chairperson, Biology Department, Viterbo College, 815 South 9th Street, La Crosse, WI 54601**. *Equal Opportunity/Affirmative Action Employer.*

Molecular Biologist

Key position in Signal Transduction

Wellcome

BECKENHAM, KENT

Wellcome is an international pharmaceutical company dedicated to the discovery and marketing of products that promote the quality of human health. This extends to our commitment in cancer research where we are actively exploring the potential of key signal transduction pathways, and their components, as therapeutic targets. Within the Department of Cell Biology, there are already established research programmes focused on the involvement of tyrosine kinase receptors and the *ras* oncogene as part of a multi-disciplinary approach.

We now have a key staff position available within this Department for a highly motivated molecular biologist to join the tyrosine kinase team, which is directed predominantly towards identifying novel targets and treatments for human breast cancer. This would involve the cloning, manipulation, and expression of target receptors, followed by detailed characterisation of the signalling mechanisms with the objective of designing and evaluating therapeutic strategies.

This represents an excellent career opportunity and candidates should have completed Post-Doctoral research within molecular biology, ideally involving aspects of signal transduction and/or cancer research and be willing to work within a team environment. We are looking for ambitious candidates with a track record of productive research.

A highly competitive salary is offered, and is supplemented by an extensive range of benefits including 5 weeks' holiday, pension and profit share schemes, excellent sports and social facilities, subsidised restaurant, and assistance with relocation expenses where appropriate.

Please write with full CV, quoting reference JAL/279, to Jacqui Lodge, Personnel Officer, The Wellcome Research Laboratories, Langley Court, Beckenham, Kent BR3 3BS. Tel: 081-658 2211.

• The Wellcome Foundation Ltd • Major International Pharmaceutical Group
• Research Centre at Beckenham • Annual Turnover > £1,600m • An Equal Opportunity Employer

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MOLECULAR/ CELLULAR BIOLOGIST

Molecular/Cellular Biologist to conduct research on the molecular basis for lung cancer and other health effects of inhaled toxicants. Doctoral degree or equivalent scientific credentials in cellular or molecular biology, tumor biology, molecular toxicology or closely related field with an understanding of radiobiology, and post-doctoral training or relevant experience in the molecular basis for abnormalities in mammalian cells is required. Interests in carcinogenesis and toxicology preferred.

The Inhalation Toxicology Research Institute offers a highly interactive, multi-disciplinary team environment and an opportunity to live and work in the beautiful Southwest.

Please send resume and salary requirements to **Human Resources Unit, Inhalation Toxicology Research Institute, P.O. Box 5890, Albuquerque, New Mexico 87185 by December 11, 1992. Refer to Job #118.**

AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER

SENIOR SCIENTIST

Tumor Biology

Glaxo Inc., one of the largest pharmaceutical companies in the world, has an established record of developing the highest quality prescription medicines for unmet patient needs. Located in Research Triangle, NC, the new Glaxo Research Institute is a premier facility which provides a stimulating environment for scientists working in all aspects of discovery and development.

Successful candidate will join our team of scientists involved in the study of hormonal approaches to tumor therapy. This position requires ***in vivo*** *model development and drug evaluation in collaborative projects of hormone and growth factor stimulated tumor growth.*

This is a Ph.D. level position requiring a minimum of 2 years relevant experience with a broad knowledge of hormone regulation, steroid biochemistry and molecular biological approaches to studying endocrine/exocrine growth factor pathways. Individuals must possess excellent communication skills and have the ability to work effectively in a team setting, and apply their individual expertise in a multi-disciplinary approach to discovery of new therapeutics.

Join Glaxo and enjoy an excellent salary, flexible benefits, an on-site fitness center, a spirit of enthusiasm and teamwork and outstanding opportunities for career satisfaction. Equally appealing is our world famous scientific, industrial and academic community in Research Triangle Park, NC. Send your resume, WHICH MUST INCLUDE POSITION TITLE and salary history, to: ***Human Resources Department, Job # 9116B209-SC, Glaxo Inc., P.O. Box 13398, Research Triangle Park, NC 27709.*** *(No Phone Calls or Agency Referrals, Please.) An Equal Opportunity Employer M/F/D/V.*

Glaxo Inc.

THE SALK INSTITUTE

ASSISTANT PROFESSOR

The Salk Institute is seeking candidates to undertake independent research in the area of growth control in yeast or animal cells in the Molecular Biology and Virology Laboratory (MBVL) of the Armand Hammer Center for Cancer Biology. Current areas of research in MBVL include: mechanisms of growth control and cell transformation (W. Eckhart); molecular analysis of neuroendocrine function (R. Evans); growth control and oncogenesis (T. Hunter); mammalian transcription factors (K. Jones); chromosome structure and function in *Drosophila* (G. Karpen); sexual differentiation in *Drosophila* (M. McKeown); protein tyrosine kinases (B. Sefton); oncogenes and gene transfer (I. Verma); transformation of hematopoietic cells (M. Vogt) and genome remodeling in mammalian cells (G. Wahl). The Salk Institute offers a highly interactive environment, with a number of research groups working in areas of molecular biology and neuroscience. Interested individuals may submit an application to: MBVL Search Committee, The Salk Institute, P.O. Box 85800, San Diego, CA 92186. Please include a curriculum vitae, a description of present and future scientific endeavors, and names of references. *The Salk Institute is an equal opportunity employer.*

POSTDOCTORAL POSITION
In Chromosome Structure and Function at The Salk Institute

The Salk Institute is seeking candidates interested in studying chromosome inheritance and genome structure in *Drosophila*. The manipulable and accessible *Dp(1;f)1187* minichromosome system has been used to perform detailed genetic, molecular and cell biological analyses of chromosome structure and function (Karpen and Spradling, Cell 63, 97 (1990); Karpen and Spradling, Genetics 132 (1992)). We are currently using *Dp(1;f)1187* to:

1) determine the molecular organization of *Drosophila* heterochromatin,
2) isolate and analyze the centromeric DNA essential to meiotic and mitotic chromosome transmission,
3) identify the chromosomal elements responsible for homologue pairing during meiosis,
4) study the gene products that interact with the chromosomal elements to ensure proper pairing and transmission.

Practical applications of these studies include the development of a minichromosome vector for genetic transformation (including "gene therapy") and for further analyses of genomic functions in higher eukaryotes. The Salk Institute offers a highly interactive environment, with a number of research groups working in the areas of molecular biology and neuroscience. Interested candidates with experience in genetics, molecular biology or cell biology may apply by submitting a curriculum vitae along with three letters of recommendation to: Dr. Gary Karpen, Molecular Biology and Virology Laboratory, The Salk Institute, 10010 North Torrey Pine Road, La Jolla, CA 92037.

The Salk Institute is an Equal Opportunity Employer

POSITIONS OPEN

CHAIR

Department of Pharmacology/Pharmaceutics/Medicinal Chemistry, College of Pharmacy, University of Houston. Applications/nominations are solicited for the chair of the newly combined department. Candidates must have a Ph.D. in the pharmaceutical/biomedical sciences, appreciation of graduate and professional programs in pharmacy, recognized research excellence, demonstrated administrative skills and an ability to lead. The department offers M.S. degrees in all disciplines and Ph.D. in Pharmacology and Pharmaceutics with research emphasis in drug delivery systems, pharmacokinetics, cardiovascular and neuropharmacology, and molecular mechanisms of aging and disease. The position is available June 1, 1993. Applicant screening will begin in early 1993 and continue until the individual is identified. Send applications containing curriculum vitae and three references or nominations to: **Dr. T. Lemke, Chair Search Committee, College of Pharmacy, University of Houston, Houston, TX 77204–5511.** *Equal Opportunity/Affirmative Action Employer.*

FACULTY POSITION
Hydrology and Water Resources
School of the Environment

Duke University's School of the Environment seeks applicants at any level for a tenure-track or tenured faculty position in hydrology and water resources. The successful applicant is expected to develop a nationally recognized, externally funded research program, and to teach and advise graduate and professional students. Expertise related to hydrology and to the management of water resources (quantity/quality) is desirable. Interest and experience in modeling and/or experimental approaches to solving hydrologic and water resource problems is especially desirable. Applicants should send curriculum vitae and the names of three references to: **Dr. Kenneth A. Reckhow, Chair, Hydrology and Water Resources Search Committee, School of the Environment, Duke University, Box 90328, Durham, NC 27708–0328, USA.** Applications will be accepted through February 1, 1993 or until a suitable candidate is identified. *Duke University is an Equal Opportunity/Affirmative Action Employer.*

FACULTY POSITION in computational sciences: Indiana University is expanding its program in Computational Science and invites applications for a faculty position in the program. We are particularly interested in applicants with an interdisciplinary orientation and a background in Astronomy, Chemistry, Computer Science, Mathematics or Physics. Applicants with other backgrounds who can make a strong contribution to this interdisciplinary program will also be considered. The position is tenure-track (open rank) in one of the above departments; teaching and research in this department will be required.

Send curriculum vitae, publication list, documentation of teaching experience and accomplishments, a one-page statement of research goals, and the names of three references to: **The Computational Sciences Program, Office of the Dean of Arts and Sciences, Indiana University, Bloomington, IN 47405** by 15 February, 1993. The position is to start in the Fall of 1993. *Indiana University is an Equal Opportunity Employer.*

FACULTY POSITION—Sexually Transmitted Diseases (STDs). The Department of Microbiology, The University of Texas Health Science Center at San Antonio (UTHSCSA), seeks to hire a tenure-track faculty member (**ASSISTANT** to **FULL PROFESSOR**) with interest and training in the molecular pathogenesis of STDs. Individuals with an accomplished record of research in STDs are encouraged to apply. Successful candidates are expected to develop/maintain innovative research programs and to participate in departmental teaching activities. This is an exceptional opportunity to join a strong department committed to excellence in research and teaching and located in a desirable academic-geographic setting. Applicants should mail curriculum vitae, a statement of current and future research goals, and arrange to send three letters of reference by February 26, 1993 to: **Dr. Joel B. Baseman, Professor and Chairman, Department of Microbiology, The University of Texas Health Science Center at San Antonio, 7703 Floyd Curl Drive, San Antonio, TX 78284–7758.** *UTHSCSA is an Equal Employment Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

CALIFORNIA INSTITUTE OF TECHNOLOGY invites applications for a tenure-track **JUNIOR FACULTY POSITION in biochemistry.** Outstanding individuals with a strong commitment to research and teaching excellence are encouraged to apply. Curriculum vitae including a list of publications, a description of proposed research activities, and three letters of recommendation should be sent to: **Professor Douglas C. Rees, Division of Chemistry and Chemical Engineering, 147-75CH, California Institute of Technology, Pasadena, CA 91125.** *The California Institute of Technology is an Equal Opportunity/Affirmative Action Employer. We welcome applications from qualified women and minority candidates.*

OHIO UNIVERSITY
ASSISTANT PROFESSOR

HISTOLOGIST/CELL BIOLOGIST. Applications are being accepted for a tenure-track position available September 1, 1993. We seek an individual trained in histology with research interests in developmental and/or cell biology. Teaching duties involve participating in team-taught histology courses offered to undergraduate, graduate, and medical students. Ability to teach a parasitology course is highly desirable. A Ph.D. and postdoctoral experience are required; the candidate should demonstrate the ability to establish a strong research program in his or her area. Salary is competitive (minimum $30,000). Our department has 50 faculty members, 75 graduate students and excellent research facilities. Related research interests of the faculty in our department include developmental biology, neurobiology, muscle biology, functional/comparative morphology, and exercise physiology. Ohio University has 18,000 students and is located in a small town in the hills of rural southeastern Ohio where costs of living are moderate. Please send curriculum vitae, a statement of research and teaching interests, and three letters of recommendation by 22 January 1993 to: **Ms. Jean Witkowski, Department of Biological Sciences, Ohio University, Athens, OH 45701–2979.**

Ohio University is an Equal Opportunity/Affirmative Action Employer.

POSTDOCTORAL POSITIONS
MOLECULAR BIOLOGY OF VISION
Johns Hopkins School of Medicine

Positions available in the new molecular biology unit of the Department of Ophthalmology (**Wilmer Eye Institute**). Areas of research include homeobox genes and inductive interactions in eye development, RPE differentiation and the role of growth factors, regulation of retinal gene expression, retinal gene therapy, and the molecular basis of glaucoma. Sponsoring faculty include Peter Campochiaro, Olof Sundin, and Donald Zack. Please send letter of interest and curriculum vitae to: **Ms. Liddian Hedger, 832 Maumenee, 600 North Wolfe Street, Baltimore, MD 21287–9289.**

POSTDOCTORAL POSITIONS
JOHNS HOPKINS UNIVERSITY

Two postdoctoral positions will open here in 1993 for candidates who have experience both in molecular biology and working with membrane proteins. One position will open in early 1993 and the other in July 1993. Structure-function studies of the mitochondrial ATP synthase and the Cystic Fibrosis Transmembrane Conductance Regulator (CFTR) will be carried out. Students completing their Ph.D. work will be given preference. Send curriculum vitae, and names of three references to: **Dr. Peter L. Pedersen, Department of Biological Chemistry, School of Medicine, 725 North Wolfe Street, Baltimore, MD 21205.** *Equal Opportunity Employer.*

POSTDOCTORAL FELLOW IN RADIOCHEMISTRY to conduct research in radiochemistry. Synthesis and analysis of various CNS ligands for in vivo and in vitro characteristics of CNS receptors. Job requires a Ph.D. with a strong background in organic synthesis. Interdisciplinary research opportunity in pharmacology, psychiatry, and imaging available. Annual stipend of $27,000. Send resume to: **Dr. Hank F. Kung, Departments of Radiology and Pharmacology, University of Pennsylvania, Room 305, 3700 Market Street, Philadelphia, PA 19104.**

HOWARD HUGHES MEDICAL INSTITUTE

POSTDOCTORAL RESEARCH FELLOWSHIPS FOR PHYSICIANS

1993 Competition

25 Fellowships will be awarded to physicians by the Howard Hughes Medical Institute for three years of training in fundamental biomedical research. Awards, based on an international competition, focus on research directed to an understanding of basic biological processes and disease mechanisms. Fellowships may be held at any academic or not-for-profit research institution, including but not limited to Hughes laboratories.

■ Fellowship Terms

- Three years of support
- Full-time fundamental research
- $40,000-$55,000 annual stipend
- $15,000 annual research allowance
- $12,000 annual institutional allowance

■ Eligibility

- M.D., M.D./Ph.D. M.B.B.S., or D.O., with the first medical degree awarded no earlier than 1983
- At the start of the fellowship
  - at least two years of postgraduate clinical training completed
  - no more than two years of postdoctoral research training completed
- Applicants (and fellows) may not have faculty appointments
- Fellows may not be enrolled in graduate degree programs
- No citizenship requirements: U.S. citizens may study abroad, but others must study in the United States

■ Schedule

- Application deadline: January 5, 1993
- Awards announced: June 1993
- Fellowships start: September 1, 1993 - September 1, 1994

FOR 1993 PROGRAM ANNOUNCEMENTS AND APPLICATIONS

Howard Hughes Medical Institute
Office of Grants and Special Programs
Postdoctoral Research Fellowships for Physicians
Department CC93
6701 Rockledge Drive
Bethesda, MD 20817, United States of America
Telephone (301) 571-8412

The Howard Hughes Medical Institute, an Equal Opportunity Employer, welcomes applications from all qualified candidates and encourages women and members of minority groups to apply.

POSITIONS OPEN

POSTDOCTORAL POSITIONS available immediately at UCSF to study TIMP-3 and its role in cell transformation. Structure/function relationships of this new member of the metallopreotinase inhibitor family will be investigated using molecular and biochemical techniques. Applicants should have a strong background in biochemistry, cell biology or molecular biology. Please send or **FAX: (415-476-2744)** cover letter, curriculum vitae and names, addresses and telephone numbers of three references to: **Dr. Susan P. Hawkes, Department of Pharmacy, University of California, San Francisco, CA 94143–0446.**

POSTDOCTORAL POSITIONS

Positions are available immediately to study the molecular mechanisms of membrane transport in plants. Candidates must have a Ph.D. or equivalent training in molecular biology/biochemistry with experience in PCR, gene cloning and DNA sequencing. Ongoing research in our laboratory includes the molecular identification of H^+-coupled ion transporters, ion channels and environmental stress-related proteins. Applicants should send a résumé, the name of three references and a statement of scientific interests to: **Dr. Eduardo Blumwald, Department of Botany, University of Toronto, 25 Willcocks Street, Toronto, Ontario M5S 3B2, Canada. FAX: (416) 978-5878 E-mail: blumwald@botany.utoronto.ca.**

POSTDOCTORAL POSITION

Two postdoctoral positions for either M.D. or Ph.D. candidates will be available June 1, 1993 for research on the mechanisms of activation and development of human and murine B lymphocytes. Projects include the molecular regulation of expression of stage-specific genes and the mechanisms of control of B lymphocyte activation by complement and Epstein-Barr virus receptors. Experience in either molecular biology or cellular immunology is advisable. The laboratory is located within the University of Colorado Interinstitutional Graduate Program in Immunology. Send curriculum vitae, names and addresses of three references and a short letter describing research experience to: **Dr. V. Michael Holers, Smyth Professor of Rheumatology, University of Colorado Health Sciences Center, Box B-115, 4200 East Ninth Avenue, Denver, CO 80262.** *The University of Colorado is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL POSITIONS UNIVERSITY OF WASHINGTON, SEATTLE

Available immediately to study gene therapy as treatment for purine immunodeficiency and hematopoietic diseases. Projects involve animal models and employ a variety of target tissues. Experience in molecular and cellular biology desirable. Please send curriculum vitae and three reference names to: **Dr. Bill Osborne, Department of Pediatrics, RD-20, University of Washington, Seattle, WA 98195; Telephone: (206) 543-4735.**

POSTDOCTORAL POSITIONS at Savannah River Technology Center, Aiken, South Carolina, in technology transfer (business and patent law), metallurgy optics, analytical chemistry (spectroscopy), chemical engineering (process simulation), and computer science and engineering (visualization). For application material: **Postgraduate Research Program/SRL, Science/Engineering Education Division, Oak Ridge Institute for Science and Education, P.O. Box 117, Oak Ridge, TN 37831–0117, Telephone: (615) 576-3456.**

POSTDOCTORAL POSITIONS INTEGRATIVE PHOTOSYNTHESIS RESEARCH
University of Illinois at Urbana–Champaign

A Department of Energy–funded training program offers postdoctoral opportunities for research into mechanism and integration of all aspects of photosynthesis. Projects cross traditional boundaries of photosynthesis research and encourage training and experience in multiple techniques of biochemistry, biophysics, molecular genetics and physiology. Salary starts at $24,000 per year, with full benefits. *Only U.S. citizens and permanent residents are eligible.* Send curriculum vitae and names of three references to: **Professor C. A. Wraight, 190 Plant and Animal Biotechnology Laboratory, University of Illinois, 1201 West Gregory Drive, Urbana, IL 61801. FAX: 217-244-1336.** *UIUC is an Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL POSITION available immediately in laboratory using electrophysiological and pharmacological techniques to investigate the role of the inositol phosphate cascade in vision. Send curriculum vitae and two letters of reference to:

Alan Fein, Ph.D.
Department of Physiology
University of Connecticut Health Center
Farmington, CT 06030

An Affirmative Action/Equal Opportunity Employer M/W/H.

POSTDOCTORAL POSITION available immediately: Preparative and biophysical studies on the copper monooxygenase peptidyl-α-amidase; tissue culture, enzyme isolation, and characterization using X-ray absorption, EPR, FTIR. Preferred experience: protein chemistry/biophysical chemistry; tissue culture. Collaboration with Drs. R. E. Mains, B. A. Eipper, Department of Neuroscience, Johns Hopkins University. Send curriculum vitae and list of three references to: **Professor Ninian Blackburn, Chemical & Biological Sciences, Oregon Graduate Institute of Science & Technology, 19600 NW von Neumann Drive, Beaverton, OR 97006–1999**, or to **blackburn@vax1.cbs.ogi.edu.** *Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL POSITION available immediately for the study of the structural/functional properties of penicillin-binding proteins from *E. coli* and *N. gonorrhoeae* and the mechanisms involved in acquisition of penicillin resistance in *N. gonorrhoeae*. Applicants should have experience in protein biochemistry or molecular biology/genetics. Send curriculum vitae and the names of three references to: **Dr. Robert A. Nicholas, Department of Pharmacology, CB#7365 FLOB, Chapel Hill, NC 27599–7365. FAX: (919) 966-5640.** *Equal Opportunity Employer.*

POSTDOCTORAL POSITION IN MOLECULAR BIOLOGY/BIOCHEMISTRY/PHARMACOLOGY

Position available immediately to study neurotransmitter-receptor signal transduction mechanisms. Candidates must have previous experience in molecular cloning/recombinant technology. Send curriculum vitae and names of three references to:

Department of Pharmacology
c/o Kay Jarosinski
College of Medicine
University of Arizona
Tucson, AZ 85724
FAX: (602) 626-2204

POSTDOCTORAL POSITION—PLANT PHYSIOLOGICAL ECOLOGY. Field and laboratory research on soil heterogeneity, root competition for water and nutrients, and root interactions with soil microorganisms. Required: Ph.D. in some aspect of plant/soil relationships completed at time of appointment. Desirable: Ph.D. completed at time of application, statistical and computer skills, training in plant ecology and physiology, experience with isotope techniques, completed research in plant nutrient and water relations. Send curriculum vitae, copy of transcripts, and names of three references to: **Martyn Caldwell, Ecology Center, Utah State University, Logan, UT 84322–5230.** Closing date: 15 December 1992 or until suitable applicant is found. *An Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL POSITIONS MOLECULAR BIOLOGY

Three positions are available immediately for individuals with strong molecular biology backgrounds. Position (1): molecular characterization of LINE-1 retrotransposons in human cancers (see *PNAS* **87**:6990, 1990; *Oncogene* 7:507, 1992). Position (2): characterization of vaccinia virus late gene transcription (see *J. Virol.* **63**:4224, 1989; *J. Virol.* **65**:3715, 1991). Position (3): relationship between p53 structural alterations and prognosis in breast cancer. Individuals applying for these positions must have experience in DNA cloning, sequencing and the use of eukaryotic expression vectors. Send curriculum vitae and telephone numbers of three references to: **T. G. Fanning (Position 1), C. W. Wright (Position 2) or T. J. O'Leary (Position 3)** at the: **Department of Cellular Pathology, Armed Forces Institute of Pathology, Washington, DC 20306–6000.**

POSTDOCTORAL FELLOW. Immediate position available for a molecular biologist. Must have demonstrated experience with constructing and screening cDNA libraries as well as sequencing clones. Publication record necessary. Candidates with additional experience in protein biochemistry will be given preference. Projects include work on a new second messenger enzyme system (see *Cell Regulation* **2**:193–202, 211–218, 1991) and on a neuronal circadian oscillator (*Prog. Brain Res.* **92**:309–320). Salary depends on experience. Send curriculum vitae and names of three references to: **Dr. Felix Strumwasser, Department of Psychiatry, Uniformed Services University of the Health Sciences, 4301 Jones Bridge Road, Bethesda, MD 20814–4799** by 15 January 1993. *Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL FELLOW. A position is open to study the effects of ethanol and other drugs of abuse on the immune system. Areas of research include immune mechanisms of resistance to infectious agents including bacteria and viruses, T- and B-cells interactions, *in vitro* and *in vivo* molecular aspects of T- and B-cell activation, and T-dependent antibody production to defined antigens. A Ph.D. in immunology/microbiology is preferred. Starting salary commensurate with qualifications. Send curriculum vitae and the names of three references to: **Dr. Thomas R. Jerrells, Department of Cellular Biology and Anatomy, Louisiana State University Medical Center at Shreveport, P.O. Box 33932, Shreveport, LA 71130.** *An Affirmative Action Employer.*

POSTDOCTORAL FELLOWSHIP IN DEVELOPMENTAL BIOLOGY

A postdoctoral position is available immediately for a recent Ph.D. interested in the molecular biology of development. The Fellow will join a multidisciplinary group studying the differentiation of epithelial cells during embryonic, fetal and early postnatal life. The project involves identification, characterization and functional analysis of genes that determine early differentiation decisions in the developing lung. Candidates with strong background in molecular biology techniques, such as cDNA cloning and expression, will be preferred. Send curriculum vitae, including a short description of research interests, and the names of three references to: **S. Alex Mitsialis, Ph.D., Evans 613, Boston University Medical Center, Boston, MA 02118. Telephone: (617) 638-6019. FAX: (617) 638-6009.** *Equal Opportunity/Affirmative Action Employer.*

1992–1995 POSTDOCTORAL FELLOWSHIPS IN PULMONARY BIOLOGY

Postdoctoral fellowships are available in the well established Interdisciplinary University of California, Davis (UCD) Lung Biology Research Program for basic science training in the molecular, cellular, and structural biology of the respiratory system. Research topics include lung epithelial cell biology (differentiation and development), gene transfer to airway epithelium, regulation of airway mucin metabolism, lung xenobiotic metabolism, lung fibrogenesis, inhalation toxicology including oxidant damage to lung tissues, phagocyte physiology and lung injury, and pathophysiology of lung injury and repair mechanisms. Up to three years of funding is available on a competitive basis. Candidates who have an M.D., a D.V.M. or a Ph.D. degree and are *U.S. citizens or permanent residents*, are eligible to apply.

UCD faculty members include, but are not limited to: Timothy Albertson, Ann Bonham, Alan Buckpitt, Don Carlson, Carroll Cross, Shri Giri, Jerry Green, Barry Halliwell, Dallas Hyde, Jessie Joad, Marc Kaufman, Jerry Last, Paul Luciw, Ruth McDonald, Kent Pinkerton, Charles Plopper, Karen Reiser, Cynthia Robinson, Robert Rucker, Hanspeter Witchi, and Reen Wu.

Interested candidates should submit a résumé with three references to: **Dr. Carroll Cross, Pulmonary and Critical Care Medicine, 4301 X Street—Room 2120 Professional Building, Sacramento, CA 95817; FAX: (916) 734-7924.** *We are especially committed to an aggressive affirmative action plan.*

SCIENCE welcomes placement of line classified ads by FAX. Please include name and telephone number for our confirmation call when transmitting ad to:

FAX NUMBER: 202-682-0816

Postdoctoral Fellows

accelerate the rate of discovery

At Lilly Research Laboratories, a division of Eli Lilly and Company, we know that, as the pace of scientific discovery quickens, research strategies must quickly accommodate new ideas. Consequently, we continue to strengthen our technological capabilities by recruiting outstanding scientists and supporting them with the most sophisticated research tools available.

A postdoctoral fellowship here offers several impressive advantages. Working on independent research projects, you'll interface with highly respected Lilly scientists using state-of-the-art instruments and equipment, and you'll gain in-depth research training and experience while becoming acquainted with the pharmaceutical industry. You will provide creative input and actively participate in project design. In addition, you'll have the opportunity to share your knowledge as our postdoctoral scientists are encouraged to publish, attend at least one major conference a year, and interact with other Lilly scientists through our seminar series and informal meetings. Opportunities are within the following areas:

BIOCHEMISTRY OF ISCHEMIA-REPERFUSION INJURY – The project will utilize biochemical and bioanalytical techniques to study alterations in drug metabolism, intermediary metabolism, biochemical pathways and ionic homeostasis in a hepatic ischemia-reperfusion model. A strong background in biochemistry, some experience with oxidative or free radical chemistry, and familiarity with instrumentation are required.

MOLECULAR BIOLOGY/PEPTIDERGIC RECEPTORS – This program involves the study of the molecular biology of the noradrenergic/neuropeptide Y system. Studies are based on a molecular approach using techniques such as receptor cloning and expression, receptor binding, receptor autoradiography, in situ hybridization and calcium imaging. The successful candidate will have technical experience in one or more of these areas with an interest in peptidergic receptors in the central nervous system. Requires M.D. or Ph.D. in Pharmacology, Neurosciences or Molecular Biology.

ENZYME BIOCHEMISTRY – The program will involve biochemical studies of enzymes for biocatalysis and inhibitor-design. Responsibilities include use of conventional and advanced methodologies for enzyme identification, purification, characterization, kinetics, and/or structure-function relationship. A background in Biochemistry and Microbiology as well as an enzyme publication record are desired.

GENE CLONING & EXPRESSION – This project involves, but is not limited to, cDNA library construction, isolation of cDNA coding sequences, PCR amplification, DNA sequence analysis, and enzyme characterization. Responsibilities involve cloning, expressing and analyzing genes for proteins with interesting pharmaceutical properties. A background in Molecular Biology, Biochemistry, and/or Microbiology is desired.

GENE EXPRESSION – The program involves the study of gene expression during chemical carcinogenesis. Experience is desired with: DNA & RNA isolation, cDNA library construction, protein expression, subtractive & differential hybridization, PCR, and/or 2-D gel electrophoresis.

REGULATION OF INSULIN ACTION OR SECRETION – We seek a scientist with a Ph.D. in Biochemistry, Cell Biology or Physiology and experience with tissue isolation and cell- and tissue-culture techniques. A strong interest in diabetes and prior experience with methods used to isolate and study pancreatic islets and/or insulin-sensitive tissues also is desirable.

All positions are for one year, renewable for a second year upon mutual agreement. Eli Lilly and Company provides a comprehensive salary and benefits program, including relocation expenses. Candidates with no more than one previous postdoctoral experience are encouraged to send a CV to: Albert L. Peyton, PhD, PhD Recruitment, Dept. SC-1127P, Eli Lilly and Company, Lilly Corporate Center, Indianapolis, IN 46285. Please attach a cover letter indicating specific area(s) of interest.

We are an equal opportunity employer committed to diversity in the workplace.

Lilly

POSTDOCTORAL OPPORTUNITY

Lederle-Praxis Biologicals, a division of American Cyanamid Co., is recognized internationally as a leader in the research, development and manufacture of vaccines for prevention of viral and bacterial disease. Currently, the Department of Viral Vaccine Research and Development is seeking an energetic and talented individual to work as an integral member of a multi-faceted scientific team.

Projects will involve analysis of host immune responses to viral antigens, both in vitro and in vivo. Studies will primarily focus upon the identification and characterization of cellular and humoral correlates of vaccine-mediated protection. There will also be extensive interaction with our protein chemistry, molecular biology and cell biology groups in the context of the development and immunological evaluation of recombinant and natural viral vaccine candidates.

The individual we seek will be a recent graduate of a Ph.D. degree program in Immunology. Hands-on experience in cellular immunology, virology and cell culture is desirable.

We offer an excellent salary and benefits package, including a 401K savings plan, and a convenient Rockland Country location 25 miles north of New York City. If you're ready to make a contribution to a challenging program, send your resume to: Dept. CG-EM, Personnel Section, Lederle Laboratories, Pearl River, NY 10965. We are an equal opportunity employer.

Lederle

University of London
Wye College

Department of Biochemistry
and Biological Sciences

SERC Postdoctoral Research
Associateship in
PLANT MEMBRANE TRANSPORT
AND MOLECULAR BIOLOGY

Applications are invited for a Postdoctoral Associateship in the area of plant membrane transport funded by the British Science and Engineering Research Council. The post is on the RA1A scale (£12,638 to £20,140 per annum) and is available starting 1 January 1993, in the first instance for up to 2 years. The successful candidate will join an interdisciplinary group at Wye College and the University of Kent, in nearby Canterbury, engaged in structural and functional studies of ion channels and H^+ coupled transporters. The project focuses on cloning and expression of K^+ channels from plant membranes and on their characterization using patch-clamp methods. Previous experience in molecular (incl. yeast) genetics or single-channel recording techniques would be an advantage. For further details contact Dr. M.R. Blatt or Dr. T. Hill {phone (0233) 812401; FAX (0233) 813320; overseas prefix 44-233 and the number}. Applications--to include a covering letter, curriculum vitae, list of publications and the names of three individuals from whom letters of references may be sought--should be sent to Dr. T. Hill (Assistant to the Principal), University of London, Wye College, Wye, Kent TN25 5AH, England. Priority will be given to applications arriving before 11 December 1992.

Wye College is an equal opportunities employer

ILRAD

INTERNATIONAL LABORATORY FOR RESEARCH ON ANIMAL DISEASES (ILRAD)

Director General

ILRAD was established in 1973 in Nairobi, Kenya as one of the research Centres of the Consultative Group on International Agricultural Research (CGIAR), a consortium of donor agencies which now supports 18 centres worldwide. ILRAD has a global mandate to work on the improved control of livestock diseases which seriously limit world food production and are impediments to sustainable agriculture. It applies the best of modern science in pursuit of this goal. ILRAD is a leader in the field of molecular parasitology and its application in vaccine development and has a substantial interest in the genetic basis of resistance to diseases. Presently, its research program is focused on trypanosomiasis and serious tick borne hemoprotozoan diseases such as theileriosis. ILRAD envisages an expanding range of interests to improve the productivity of livestock in developing nations.

ILRAD occupies a modern complex of research laboratories and supporting units at Kabete, on the outskirts of Nairobi. The Laboratory currently employs approximately 60 scientists and 350 support staff. It is governed by an international Board of Trustees consisting of 12 members.

Applicants are expected to have demonstrated capacity for dynamic leadership, innovative research, strategic planning, effective administration, and a comprehensive understanding of animal diseases and their control especially those pertinent to ILRAD's interests. International experience in a developing country is highly desirable. The position requires the ability to interact with international donor agencies, national governments, commercial organizations, and other laboratories in the CGIAR system. Candidates must be familiar with infectious diseases, biotechnology, immunology, molecular biology, genetics, epidemiology, the role of livestock in sustainable farming systems, and methods of technology transfer.

The position becomes available in April of 1994 upon the retirement of the incumbent Director General and will be for an initial five-year term that is renewable. Salary, and other emoluments, will be negotiated and will be consistent with similar positions in the CGIAR system. Deadline for receipt of applications is February 28, 1993. Applicants should make arrangements for three letters of reference to be sent to the Chair of the Board.

For further information contact: **Dr. N. Ole Nielsen, Chair, Board of Trustees, ILRAD, c/o Ontario Veterinary College, University of Guelph, Guelph, Ontario, Canada N1G 2W1. 519-823-8800, ext. 4417. FAX: 519-837-3230.**

INDUSTRIAL POSTDOCTORAL POSITION
CANCER GENE RESEARCH

Monsanto Agricultural Group is seeking a Postdoctoral Scientist to join an ongoing investigation of the molecular biology of chemical carcinogenesis at our Environmental Health Laboratory in St. Louis, Missouri. Candidates are required to have a Ph.D. with research experience in molecular biology, including DNA sequencing techniques. Previous research experience in carcinogenesis is desirable. This position is renewable on an annual basis with an anticipated duration of two years. External publications and participation in the scientific community will be highly encouraged.

Monsanto provides a competitive compensation package relative to your responsibilities and qualifications. Interested candidates, please forward your resume to:

John D. Figiel,
Human Resources Manager
MONSANTO COMPANY,
700 Chesterfield Parkway North
St. Louis, Missouri 63198

Monsanto is an Equal Opportunity Employer M/F/D/V. We will provide reasonable accommodations upon request

Monsanto

USDA FOREST SERVICE
FOREST ENVIRONMENT RESEARCH
FISHERIES STAFF SPECIALIST

$54,607 - $64,233

The USDA Forest Service is seeking applicants for the position of Fisheries Staff Specialist to provide leadership and coordination of national programs in fisheries and fish habitat research. The incumbent assists in formulating policies related to fisheries resources, develops research program objectives and budgets, and reviews and coordinates the fisheries and fish habitat programs of eight regional experiment stations. The staff specialist coordinates Forest Service research programs with other public agencies and private institutions and consults with land management agencies on the application of research results. Major areas of emphasis for Forest Service fisheries research include protection, improvement and restoration of fish habitat; relationships between habitat structure and fish populations; management of threatened, endangered and sensitive aquatic species; and monitoring and evaluation of fish populations and habitats. Candidates may represent a variety of professional backgrounds including fisheries biology and equatic ecology. Experience in conducting research and managing research programs is preferred. The position is located at Forest Service Headquarters in Washington, DC, and frequent travel is required.

For additional information contact Richard V. Smythe, Director of Forest Environment Research, USDA, Forest Service, 14th and Independence, SW, Washington, DC, 20250 (202-205-1524). Applications must be received by December 28 and must include all information specified in the official vacancy announcement. A copy of the vacancy announcement can be obtained by calling 703-235-2313 or 202-205-1524.

The Forest Service is an Affirmative Action/Equal Opportunity employer. Cultural diversity in the workplace is welcomed and women, members of minority groups, and people with disabilities are encouraged to apply.

MOLECULAR BIOLOGIST
ASSISTANT PROFESSOR
THE UNIVERSITY OF MICHIGAN

The Department of Biology at the University of Michigan solicits applications for a tenure-track position in the general field of Molecular Biology. This individual will join an expanding group of cell and molecular biologists who are part of a large department, with research interests that embrace a wide range of basic biological phenomena. We are interested in individuals who work with either prokaryotic or eukaryotic systems. The specific subfield of interest within molecular biology is of less concern than a record of excellence. Candidates should have a Ph.D., postdoctoral training, a demonstrated record of publication and a strong interest in training undergraduate, graduate, and postdoctoral students. The successful candidate will be expected to develop a strong program of extramurally-funded research and to participate in both the undergraduate- and graduate-level teaching programs of the Department. Laboratory and office space has been newly renovated and set-up funds will be available. Applications should include a current C.V., copies of up to five relevant reprints, 3 letters of recommendation, and a brief summary of past research and statement of future research plans. Application material should be sent by January 10, 1993 to:

Chair, Molecular Biology Search Committee
Department of Biology
University of Michigan
Natural Science Building
Ann Arbor, Michigan 48109-1048

The University of Michigan is an Affirmative Action/Equal Opportunity Employer.
Women and members of minority groups are strongly encouraged to apply.

Developmental/ Reproductive Toxicologist

CIBA-GEIGY's Plant Protection Division has an opening for a Developmental/Reproductive Toxicologist at its Environmental Health Center located in Farmington, CT. Responsibilities include the design, conduct and interpretation of developmental and reproductive toxicity studies to evaluate product safety, meet health safety guidelines of governmental regulatory agencies and support product registrations.

A successful candidate at the **Research Toxicologist** level will have a Ph.D. or an M.S. and at least four years of closely related experience.

A successful candidate at the **Toxicologist** level will have an M.S. and at least two years of closely related experience, or a B.S. and at least four years of closely related experience.

Broad knowledge in the areas of embryology, reproductive physiology, anatomy, experimental design and statistical analysis is required. Excellent interpersonal, oral and written communications skills are needed. Strong intuitive problem solving and decision making skills are necessary for the analysis, interpretation and organization of data collected during studies. Computer experience is desirable.

CIBA-GEIGY Corporation offers on-going growth opportunities, excellent salaries and an attractive package of paid company benefits. The Environmental Health Center is adjacent to the University of Connecticut Health Center, in one the state's most attractive semi-rural towns. To apply, please send your resume, a brief description of your experience and your salary requirements to: **Human Resources Coordinator, CIBA-GEIGY Corporation, Plant Protection Division, 400 Farmington Avenue, Farmington, CT 06032.** We Are An Equal Opportunity Employer M/F/D/V.

Science Serving Mankind

CIBA–GEIGY

POSITIONS OPEN

POSTDOCTORAL POSITION

Molecular Biologist/Biochemist to study the intracellular assembly of glycoinositol phospholipid anchor structures and defects in human disease; expression cloning of genes, transcriptional regulation, and chemical analyses of intermediates. Contact: **Beth McCarty, Institute of Pathology, Case Western Reserve University, 2085 Adelbert Road, Cleveland, OH 44106.** *An Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL ASSISTANT

Postdoctoral Assistant needed to independently conduct research in the area of intravenous nutrition support, concentrating on hepatic function and cellular physiology; specifically, immunologic studies on the effect of intravenous nutrition support. Must have experience in surgical preparation of animal models, cell culture, and protein assay. Related experience in radioimmunoassay, HPLC, and immunocytochemistry highly desirable. Ph.D. in related field and minimum one to three years of experience required. Interested parties should send curriculum vitae and letters of reference to: **Business Manager, Department of Surgery, 231 Bethesda Avenue, Cincinnati, OH 45267–0558.**

POSTDOCTORAL FELLOW

Funded research associate position available immediately in **retinal biochemistry and molecular biology**. Seeking an individual with expertise in the purification and manipulation of membrane-associated proteins to join a dynamic research group. We are using genetic and molecular techniques to study the morphogenesis of photoreceptor outer segment discs (see *Neuron* **9**, 113–119, 1992). Send application letter, statement of scientific interest and curriculum vitae to: **Dr. Gabriel H. Travis, U. T. Southwestern Medical Center, 5323 Harry Hines Boulevard, Dallas, TX 75235–9070. FAX: (214) 688-7980.**

POSTDOCTORAL FELLOW
RESEARCH ASSOCIATE

Beckman Instruments, Inc., a leading Life Sciences Company, has immediate opportunities in the Molecular Biology Group of Beckman Advanced Technology. Candidates will join ongoing efforts to develop immunoassays and nucleic acid probe technologies for both the diagnostic and research markets. Candidates should have a Ph.D. or M.S. with a background in bacterial genetics, molecular biology and/or biochemistry. The positions are funded for up to two years renewable given project viability. Please send curriculum vitae and references to: **G.S. Scott (D-27-A), Beckman Instruments, Inc., 2500 Harbor Boulevard, Fullerton, CA 92634–3100.** *An Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL POSITION available immediately for Cell Biologist to study the role of the nuclear matrix in cell division and heat-induced cell death using confocal laser scanning microscopy, resinless section electron microscopy and image analysis. *Applicants must be U.S. citizens or permanent residents.* Send curriculum vitae and names of three references to: **Ronald A. Coss, Ph.D., Radiation Oncology and Nuclear Medicine, Thomas Jefferson University, 1020 Sansom Street, Philadelphia, PA 19107–5004. FAX: (215) 955-2052.** *Thomas Jefferson University is an Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL POSITION available in **CELLULAR AND MOLECULAR NEUROBIOLOGY** to study the physiology of central excitatory synapses. Current projects include the kinetics and regulation of glutamate receptor channels, and molecular studies of metabotropic glutamate receptors. Background in cellular neurophysiology preferred. Send curriculum vitae to: **Gary L. Westbrook, Vollum Institute, L474, Oregon Health Sciences University (OHSU), Portland, OR 97201.** *OHSU is an Affirmative Action/Equal Opportunity Employer.*

SCIENCE welcomes placement of line classified ads by FAX. Please include name and telephone number for our confirmation call when transmitting ad to:

FAX NUMBER: 202-682-0816.

POSITIONS OPEN

POSTDOCTORAL FELLOW—PENN STATE. Applications are being accepted for a newly funded NIH training grant in Endocrinology, Diabetes and Metabolism at The Pennsylvania State University College of Medicine. M.D. or Ph.D. candidates will be trained for an academic research career. Sixteen senior faculty members provide expertise in the areas of diabetes (insulin action and resistance, control of protein metabolism, adenosine receptor physiology, signal transduction, metabolic events in sepsis, glucose transporters, molecular biology of the insulin receptor, protein phosphorylation), reproductive endocrinology (ovarian physiology, polycystic ovarian syndrome, prostaglandin action and metabolism), and endocrine/oncology (cell-cell interactions, phosphorylation and cell cycle regulation, estrogen and polyamine mediation of cellular proliferation, hormonal control of polyamines, hormonal control of viral replication, variant estrogen and progesterone receptors). Qualifications include U.S. citizenship or permanent resident status, strong academic background and plans for a career in academic research. Application deadline date: February 15, 1993. The salary is commensurate with NIH stipend guidelines. For a detailed descriptive brochure and application, write to: **Dr. Richard J. Santen (Training Grant Director) or Dr. Leonard S. Jefferson (Co-Director), The Milton S. Hershey Medical Center, The Pennsylvania State University, P.O. Box 850, 500 University Drive, Hershey, PA 17033.** *An Affirmative Action/Equal Opportunity Employer, women and minorities are encouraged to apply.*

The Department of Pharmacology at Baylor College of Medicine is seeking applications for a **RESEARCH ASSOCIATE** or **POSTDOCTORAL FELLOW** with experience in modern techniques of molecular biology and/or biochemistry to undertake a research project on mechanisms of action on antisense oligonucleotides. The initial stipend is dependent on training and experience. The Department of Pharmacology has a long-standing program in molecular biology, protein chemistry, RNA structure and function. Antisense oligonucleotides to G1 phase specific proteins have been developed and tested in animal tumor models. Preliminary studies have suggested the oligonucleotides act in the early G1 phase of the cell cycle. Studies on the precise mechanisms are in progress. Applications should be sent to: **Harris Busch, M.D., Ph.D., Chairman, Department of Pharmacology, Baylor College of Medicine, One Baylor Plaza, Houston, TX 77030.** *Baylor College of Medicine is an Equal Opportunity Employer.*

RESEARCH SCIENTIST
POSTDOCTORAL

CEDARS-SINAI MEDICAL CENTER is seeking a professional to study the post-transcriptional regulation of lipoprotein lipase, mechanism of translational regulation and the structural requirements. Must have solid knowledge of basic cell and molecular biology techniques. Experience with post-transcriptional regulation is highly desirable.

We offer long-term support, a salary commensurate with qualifications as well as the potential for development into an independent faculty position. Send curriculum vitae with names of three references and several sample publications or research summary to: **Philip A. Kerns, M.D., Associate Professor of Medicine at UCLA, CEDARS-SINAI MEDICAL CENTER, Division of Endocrinology, 8700 Beverly Boulevard, Los Angeles, CA 90048.** (*Affirmative Action/Equal Opportunity Employer.*)

The Biotechnology Patent Examining Group of the Patent and Trademark Office is currently recruiting scientists for positions as **PATENT EXAMINERS**. Individuals with advanced degrees and/or equivalent experience in the fields of immunology, molecular biology, gene therapy, plant genetics and plant breeding, biochemistry, protein engineering and microbiology are urged to send a resume or SF-171 to the following address:

Patent and Trademark Office
Office of Personnel
Box 171
Washington, DC 20231
ATTN: D. Dowell (180)

For further information, call David L. Lacey at (703) 308-4314. *U.S. CITIZENSHIP IS REQUIRED FOR EMPLOYMENT.*

POSITIONS OPEN

RESEARCH ASSOCIATE

POSTDOCTORAL POSITION in accelerator-based atomic physics with the Department of Physics and Astronomy, studying the structure of H^- and its interactions with photon beams, static fields and foils at energies up to 800 MeV at LAMPF (Los Alamos National Laboratory) and at the Advanced Light Source in Berkeley. Residence at Los Alamos may be required. Experience in the use of high-power lasers, high speed electronics, computers for data acquisition, vacuum technology and particle-counting techniques is highly desirable. Because of security difficulties of Los Alamos, *U.S. Citizenship is preferred, but not required.* Must have Ph.D. in physics (or related field) with emphasis on experimental atomic or particle physics. Send curriculum vitae and the names and addresses of three references by January 8, 1993, to: **Human Resources, University of New Mexico, 1717 Roma, NE, Albuquerque, NM 87131.** Reference your curriculum vitae with **Employment Requisition #1154-92A.** *The University of New Mexico is an Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL ASSOCIATE

University of Iowa College of Medicine
CFTR
Structure, Function, and Cell Biology

Two positions are available to study the structure, function, and cell biology of CFTR, a regulated chloride channel which is mutated in the genetic disease cystic fibrosis. The structure of CFTR is being probed by both site-directed mutagenesis and single channel patch-clamp analysis of the mutated channels. Work may also focus on the processing of wild-type and mutant CFTR and on gene therapy of cystic fibrosis. Positions will open in 1993. Skills with patch-clamp electrophysiology and cellular or molecular biology are required. Send curriculum vitae with references to: **Michael J. Welsh, M.D., University of Iowa, College of Medicine, 500 EMRB, Iowa City, Iowa 52242.** *An Equal Opportunity Employer.*

TOXICOLOGISTS

The California Environmental Protection Agency, Department of Pesticide Regulation seeks Staff Toxicologists and Associate Toxicologists in its pesticide regulatory program. Incumbents will evaluate toxicology studies and/or conduct risk assessments. Positions exist for individuals with Master's and/or Doctorate degrees in toxicology, pharmacology, or a closely related field with suitable experience in animal toxicology. Salary ranges begin at $4378 per month for Staff Toxicologist (minimum, Ph.D. and 3 years of experience) and $3312 per month for Associate Toxicologist (minimum, M.S. and 4 years of experience or Ph.D.). Comprehensive benefits package. Continuous testing, oral exam required. Submit résumés to:

Department of Pesticide Regulation
Examinations Unit
1220 N Street, Room 154
Sacramento, CA 95814

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X-RAY CRYSTALLOGRAPHER

The Institute for Cancer Research, Fox Chase Cancer Center, has a long and distinguished history in the forefront of X-ray crystallography. FCCC is looking to expand its efforts in macromolecular crystallography with the addition of a tenure-track independent investigator interested in applying the technique of X-ray crystallography to questions of macromolecular structure. FCCC will provide generous start-up funds. Please send curriculum vitae, a brief description of research plans, and the names of three professional references by February 1, 1993 to: **J. P. Glusker, Chair, X-ray Crystallography Search Committee, ICR/FCCC, 7701 Burholme Avenue, Philadelphia, PA 19111.**

Molecular Biosystems, Inc. (MBI), a leader in the development and manufacturing of contrast agents for medical imaging, including ultrasound and MRI is seeking candidates for the following position:

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Responsible for the initiation, design and execution of scientific research projects. Investigates the feasibility of applying a wide variety of scientific principles and concepts to potential inventions and products. Maintains substantial knowledge of state of-the-art principles and theory. Contributes to scientific literature and conferences. May supervise the activities of other research personnel.

Qualified candidates must have a PhD in Biochemistry with three years laboratory experience, some lipid experience a plus. Demonstrated success in technical proficiency, scientific creativity, collaboration with others and independent thought.

We offer competitive salaries, a comprehensive benefits package and a pleasant working environment. Qualified candidates should submit their résumé with salary history to: **Molecular Biosystems, Inc.**, Human Resources Department A220-93, 10030 Barnes Canyon Road, San Diego, CA 92121.

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University of California, Davis

Novo Nordisk Fellowships in EnzymeTechnology/ Molecular Biology

The College of Agricultural and Environmental Sciences, University of California, Davis invites applicants for graduate fellowships in the areas of enzyme technology and molecular biology as applicable to the agricultural, environmental and food sciences. The fellowships are to be funded by Novo Nordisk to provide first-year funding of up to $20,000, including tuition and fees. Applicants must submit a completed application for Graduate Admission and Fellowship, a Novo Nordisk Fellowship application, a Statement of Purpose, GRE scores, official transcript and three letters of recommendation.

For further information and applications, contact: College of Agricultural and Environmental Sciences, University of California, Davis, CA 95616; (916) 752-0107.

Application Deadline is January 15, 1993.

UC Davis is an equal opportunity institution.

Novo Nordisk

AN INVITATION TO SUBMIT NOMINATIONS FOR THE KING FAISAL INTERNATIONAL PRIZE IN SCIENCE

The General Secretariat of the King Faisal International Prize is pleased to invite universities & specialist research centers throughout the world to nominate qualified candidates for the King Faisal International Prize in Science. The topic for 1414 H. (1994) is:

"MATHEMATICS"

Nominations should meet the following requirements:

1. Nominees must have accomplished an outstanding academic work in the Prize topic, benefiting mankind and enriching human progress.
2. Submitted work must be original and published.
3. Only recognized educational or research institutions may make nominations.
4. Each nomination should include:
   a) a typed list of the nominee's nominated works.
   b) a typed CV detailing the nominee's academic background, experience and published works.
   c) ten copies of each submitted work.
   d) three recent colour photos 4″ × 6″.
   e) the nominee's mailing address including:
      (1) office address, telephone number, telex & fax.
      (2) home address and telephone number.
5. Nominations will be evaluated by a Selection Committee consisting of highly recognized specialists in the topic.
6. More than one person may share the Prize.
7. The nominee's submitted work will not be accepted if:
   a) it has been previously awarded a prize by any international organization;
   b) it is a university degree;
   c) it is unpublished.
8. The nomination will not be accepted if:
   a) it is nominated by individuals or political parties;
   b) it does not meet all the prize conditions;
   c) it is received after the announced date.
9. The Prize consists of:
   a) a certificate in the winner's name containing an abstract of the work that qualified him/her for the Prize;
   b) a gold medal;
   c) a sum of three hundred and fifty thousand Saudi Riyals, (approximately US $93,333).
10. The winner(s) name(s) will be announced in February 1994, and the Prize will be awarded in an official ceremony at a later date.
11. The latest date for receiving the complete nomination requirements will be September 1, 1993.
12. No nomination papers or works will be returned to the senders, whether or not the nominee was awarded the prize.
13. All correspondence must be sent by registered airmail to:

    The General Secretariat
    King Faisal International Prize
    P.O. Box 22476, Riyadh 11495
    Kingdom of Saudi Arabia
    Tel 4652255
    Tlx 404667 PRIZE SJ
    Fax 4658685
    Cable JAEZAH

RESEARCH SCIENTIST

Saint Francis Hospital and Medical Center located in Hartford, Connecticut, is seeking a candidate to join our Department of Research and Heart Institute to establish a new program in Vascular Biology. Candidates should have completed a doctoral degree and a postdoctoral fellowship, and have prior experience in molecular aspects of vascular cells. Candidates will be eligible for an appointment at the University of Connecticut School of Medicine. Interested candidates should send a resume and references to:
Dr. Ernesto Canalis.

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Fax: (203) 548-5415

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The Royal Society

VACANT RESEARCH APPOINTMENTS 1993

Applications are invited for about 15 Royal Society University Research Fellowships and four named research fellowships; the Eliz. Challenor, the Howe, the Horace Le Marquand and Dudley Bigg and a Pickering Research Fellowship, tenable in the first instance for five years from 1 October 1993 (or slightly later in the academic year 1993–94). Renewals of three years and then a further two may be possible. The appointments available embrace all branches of science, including agriculture, medicine, mathematics, engineering and technology.

Persons appointed will be paid on the academic and academic-related staff (Lecturer A and B) salary scale which currently runs from £13 611 (age 26) to £23 739 (age 39) plus three additional discretionary points up to £26 526. Starting salaries will be on this scale, with London Allowance where appropriate, and will rise incrementally each year. Annual research expenses (up to £11 000 for 1993–94) will be available together with travel expenses and a contribution to baggage costs for successful applicants from overseas and their families.

Applicants must have a Ph.D. or equivalent research experience. They should be at least 26 but should not have passed their 33rd birthdays by 1 October 1993 although, in exceptional cases, older applicants will be considered. Applicants should propose to hold the fellowship in a university or polytechnic in the United Kingdom. Those already holding substantive posts in those places will not be considered. University Research Fellowships are only open to European Community citizens employed or permanently resident in the United Kingdom.

Application forms and further information, including eligibility criteria and details of the subject areas of the four named fellowships, are available from the Research Appointments Department, The Royal Society, 6 Carlton House Terrace, London SW1Y 5AG (Fax 071-930 2170). Closing date 12 February 1993. Application forms are not available after 29 January 1993 and applications arriving after 4 p.m. on 12 February will not be considered.

Wayne State University

FACULTY POSITIONS

The Department of Biological Sciences has recently occupied a new seven-story Biological Sciences Building and undertaken a major development effort which includes the recruitment of a significant number of new faculty over the next four years.

Applications and nominations are invited for tenure-line faculty positions at any rank from individuals with research interests in the following four areas (areas of particular interest are noted):

MEMBRANE BIOLOGY
(signal transduction or membrane excitability)

EVOLUTIONARY ECOLOGY
(adaptive nature of phenotypes or genetic systems)

MOLECULAR CELL BIOLOGY
(signal transduction pathways)

MOLECULAR MICROBIOLOGY
(prokaryotic/lower eukaryotic gene expression and regulation)

Applicants should have a doctoral degree and suitable postdoctoral experience. Successful candidates will be expected to establish extramurally-funded research programs and to teach at the undergraduate and graduate levels. *Women and minority candidates are encouraged to apply.* Review of applicants will begin on **4 January 1993** and continue until suitable candidates have been identified. Send curriculum vitae, including a one page statement of research interests, and the names of at least three references to:

Dr. P. Dennis Smith, Chair
Department of Biological Sciences
Wayne State University
Detroit, Michigan 48202

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WOMEN IN SCIENCE
March 13 Reprint

This first-time special section, reprinted from the March 13 issue of SCIENCE takes an in-depth look at women in science.

This section explores:

- Women's Progress in Science
- Career Advancement
- Networking
- Mentoring
- Two Career Couples in Science
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A Ph.D. and at least two years of postdoctoral experience in modern heteronuclear NMR spectroscopy are required. An ability to develop and implement new pulse sequences and computational techniques along with proficiency in the biological sciences are desired. The ability to interact effectively with colleagues of diverse backgrounds is a must.

The NMR facility is presently equipped with a UNITY-500 NMR spectrometer with plans to add a higher field spectrometer next year. Computational facilities include several workstations and access to Lilly's Cray 2S supercomputer for advanced NMR processing and molecular calculations. These facilities are housed in a newly completed suite of laboratories which also includes x-ray crystallography, vibrational spectroscopy and computational chemistry.

Eli Lilly and Company offers a competitive salary and a comprehensive benefits package. Qualified candidates should submit a letter of application along with their curriculum vitae, official transcripts and the name of three references to: Albert L. Peyton, PhD, PhD Recruitment, Dept. SC-1127, Eli Lilly and Company, Lilly Corporate Center, Indianapolis, Indiana 46285.

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Lilly

Research Scientist Experimental Hematology

Pro-Neuron, Inc., a development-stage pharmaceutical company, has an immediate opportunity for a qualified senior cell biologist. Responsibilities and qualifications are as follows:

- Conduct analyses of new pharmaceutical agents *in vitro* and *in vivo*
- Hematopoietic cell culture assays and isolation of factors from culture
- Exploration of the mechanism of action of novel hematopoietic regulators
- Ph.D. degree and postdoctoral research experience required

Pro-Neuron offers a competitive salary and comprehensive benefits package. For immediate consideration, please send your resume to Pro-Neuron, Inc., Human Resources Department (SCI), 1530 East Jefferson Street, Rockville, Maryland 20852.

Pro-Neuron, Inc.

We are an equal opportunity employer.

REGULATORY AFFAIRS

Great Lakes Chemical Corporation, a leading Fortune 500 manufacturer of industrial and specialty chemicals, has the following opportunities available in its Regulatory Affairs Department:

MANAGER OF NEW PRODUCT REGISTRATION

Reporting to the Director of Regulatory Affairs, this position requires an MS or PhD degree in Toxicology or Chemistry and experience in the area of chemical regulation. Specific knowledge and experience in product registrations under TSCA and FIFRA is required. Professional will be charged with initiating, expediting, and follow-up to completion premanufacture notices and new pesticide registrations.

MSDS/LABELING SPECIALIST

This junior level position will require a BS in Toxicology, Chemistry or Biology and will possess good organizational skills, an aptitude for details and computer use. Responsibilities will include time sensitive preparation, maintenance, and distribution of MSDS and product labels. Implement system(s) for handling MSDS and labels, and ensure that each commercial product is properly labelled.

If you are qualified and interested in utilizing your ambition and skills in a long-term career position with excellent advancement potential, Great Lakes can offer you an attractive salary and fringe benefit package. Send a resume and salary history in confidence to:

Gayle L. Hardison

Great Lakes Chemical Corporation

P. O. Box 2200
West Lafayette, IN 47906

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POSITIONS OPEN

POSTDOCTORAL/RESEARCH ASSOCIATE CELL BIOCHEMISTRY/ MOLECULAR BIOLOGY

Person to participate in research involving regulation of cell proliferation by lipids and related substances in transfected cells. Please send curriculum vitae to: **SS, c/o Personnel Department, Fox Chase Cancer Center, 7701 Burholme Avenue, Philadelphia, PA 19111.** *Equal Opportunity Employer.*

POSTDOCTORAL RESEARCH ASSOCIATE for an NIH-funded position to study the mechanism of B_{12}-dependent methylmalonyl-CoA mutase by spectroscopic and kinetic methods. Ph.D. and experience with protein purification required. Send applications to: **Dr. Ruma Banerjee, Department of Biochemistry, University of Nebraska, Lincoln, NE 68583–0718.** *UNL is committed to Affirmative Action/Equal Employment Opportunity and ADA.*

IMMUNOLOGIST

The Division of Pathobiology and Immunobiology of the Yerkes Regional Primate Research Center, and the Department of Microbiology and Immunology, School of Medicine, Emory University have an opening for an immunologist with experience in retrovirus research. Candidates should have a Ph.D., D.V.M., M.D., or equivalent and should have sufficient research experience to demonstrate the ability to establish an independent research program in areas related to the pathogenesis of AIDS and related retroviruses in nonhuman primate models. The successful applicant will also participate in ongoing clinical, virological, and pathological studies with human or simian immunodeficiency viruses. The primary appointment will be at the Yerkes Primate Center, with a secondary, research-track appointment in the Department of Microbiology and Immunology. Salary is negotiable and commensurate with experience. The position is available immediately. Letters of application including curriculum vitae, a brief statement of research interests, and the names of three references, should be forwarded to: **Dr. Harold McClure, Associate Director, Yerkes Primate Research Center, Emory University, Atlanta, GA 30322.** Applications should be submitted by January 1, 1993. *Emory University is an Equal Opportunity/Affirmative Action Employer.*

COURSES AND TRAINING

BIOLOGY OF DISEASE VECTORS

June 20 to July 3, 1993
Colorado State University
Fort Collins, Colorado

This unique course introduces the biology of vectors of infectious diseases and emphasizes current molecular biological, genetic, biochemical, and physiological research. Introductions to significant aspects of vector biology, including host seeking, blood feeding, organ structure-function, gene regulation, vector manipulation and containment, and control, are covered and followed by in-depth analyses of selected major vector borne diseases. Faculty are drawn mainly from the MacArthur Foundation Network on the Biology of Parasite Vectors.

The course is designed for advanced graduate students, postdoctoral fellows, and independent investigators. The course can be taken for college credit. Accommodations are located on the main campus of Colorado State University, near lecture and laboratory facilities. Vector-pathogen experimentation and demonstrations are conducted in the containment facility of the Arthropod-borne and Infectious Diseases Laboratory of the CSU Foothills Campus. A portion of the course will be given at the CSU Pingree Park Mountain Campus.

Limited to 30 students. Enrollment is competitive. Financial aid (based on need) will be available. Application deadline is February 28, 1993. For information and application forms, contact: **Dr. William C. Marquardt, Telephone: (303-491-5994 or 491-7167), FAX: (303-491-1815), Colorado State University, Arthropod Borne and Infectious Diseases Laboratory (AIDL), Foothills Campus, Fort Collins, CO 80523, USA.**

COURSES AND TRAINING

GRADUATE TRAINEESHIPS INTEGRATIVE PHOTOSYNTHESIS RESEARCH

University of Illinois at Urbana–Champaign (UIUC)

Traineeships are available in the Integrative Photosynthesis Research Graduate Training Program, funded by the Department of Energy. The program offers opportunities for research into mechanism and integration of all aspects of photosynthesis, across traditional boundaries of photosynthesis research. Training and experience are provided in multiple techniques of biochemistry, biophysics, molecular genetics and physiology. Traineeships start at $14,000 per year with full tuition and fee waiver. *Only U.S. citizens and permanent residents are eligible. Women and members of minority groups are encouraged to apply.* For further information write to: **Professor C. A. Wraight, 190 Plant and Animal Biotechnology Laboratory, University of Illinois, 1201 West Gregory Drive, Urbana, IL 61801. FAX: 217-244-1336.**

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ANNOUNCEMENTS

ALOE RESEARCH FOUNDATION
Research and Fellowship Grants Programs

The Aloe Research Foundation is pleased to announce two (2) grants programs for the 1993–1995 funding period. The Foundation invites proposals for the Research Grants program which will fund grants of approximately $10,000 per year and for the Fellowship Grants program which will fund grants of approximately $20,000 per year. The purpose of these programs is to promote scientific inquiry on understanding the basic biochemical mechanisms of phytobiologic efficacy of aloe.

To apply for either of the 1993 programs, submit a letter requesting application information about that program and include a description of the applicant's expertise, experience and capabilities in performance of phytobiology research. Please send letters of request to: **Dr. B. P. Yu, Chairman–Scientific Advisory Board, Aloe Research Foundation, Department of Physiology, The University of Texas Health Science Center, 7703 Floyd Curl Drive, San Antonio, TX 78284–7756. Telephone: 210-567-4376 or FAX: 210-567-4410.**

You will be sent guidelines for preparation of the program proposal. Deadlines for submission of proposals are January 31, 1993 and July 30, 1993.

XENOPUS STOCK CENTER AT THE UNIVERSITY OF GENEVA

The Center maintains a unique collection representing most of the species and subspecies of the genus *Xenopus*, as well as a collection of mutants.

Because of impending cutbacks, we are looking for new homes for the whole or parts of the collection, or for specific requests for individual species. Offers of long-term financial support from associations, laboratories or individuals are welcomed to avoid a drastic cutdown of the collection by March 1993.

Requests for information and stocks, or offers of support, should be addressed to: **President of the Section of Biology, University of Geneva, 30 quai E.-Ansermet, CH-1211 Geneva 4, Switzerland. FAX: (+41 22) 349 26 47.**

SCIENCE welcomes placement of line classified ads by FAX. Please include name and telephone number for our confirmation call when transmitting ad to:

FAX NUMBER: 202-682-0816

ANNOUNCEMENTS

GRADUATE RESEARCH ASSISTANTSHIPS, "Ecological and Social Science Challenges of Conservation," Cornell University. Assistantships are available for the 1993–94 academic year in an interdisciplinary Research Training Group in Environmental Conservation and Sustainable Development focusing on the Dominican Republic and Costa Rica. Students will undertake a major in a relevant discipline and a minor in Conservation and Sustainable Development. For more information and application guidelines, contact: **Dr. John Schelhas, Department of Natural Resources, Fernow Hall, Cornell University, Ithaca, NY 14853.**

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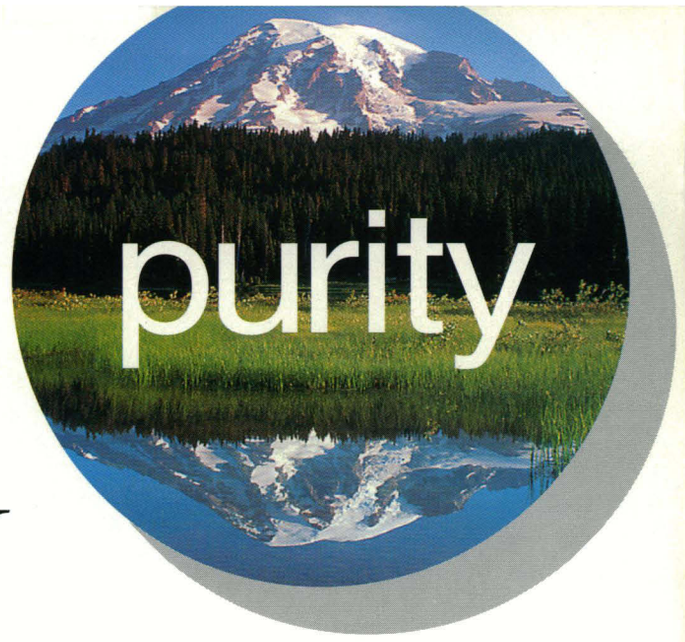

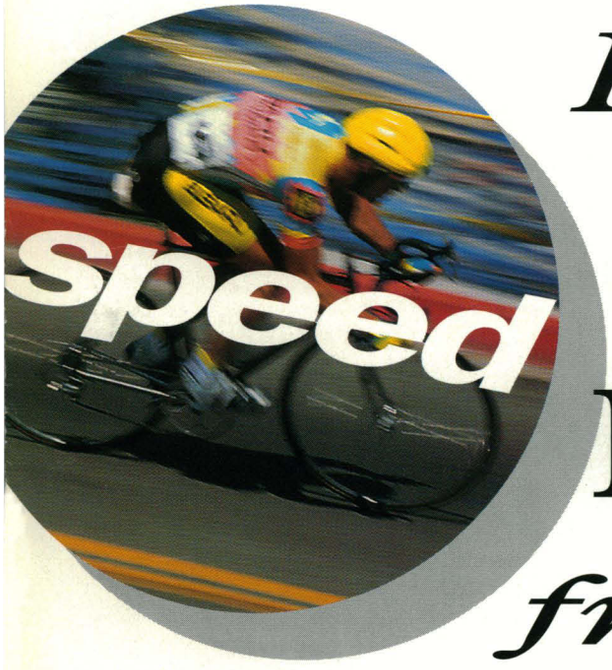

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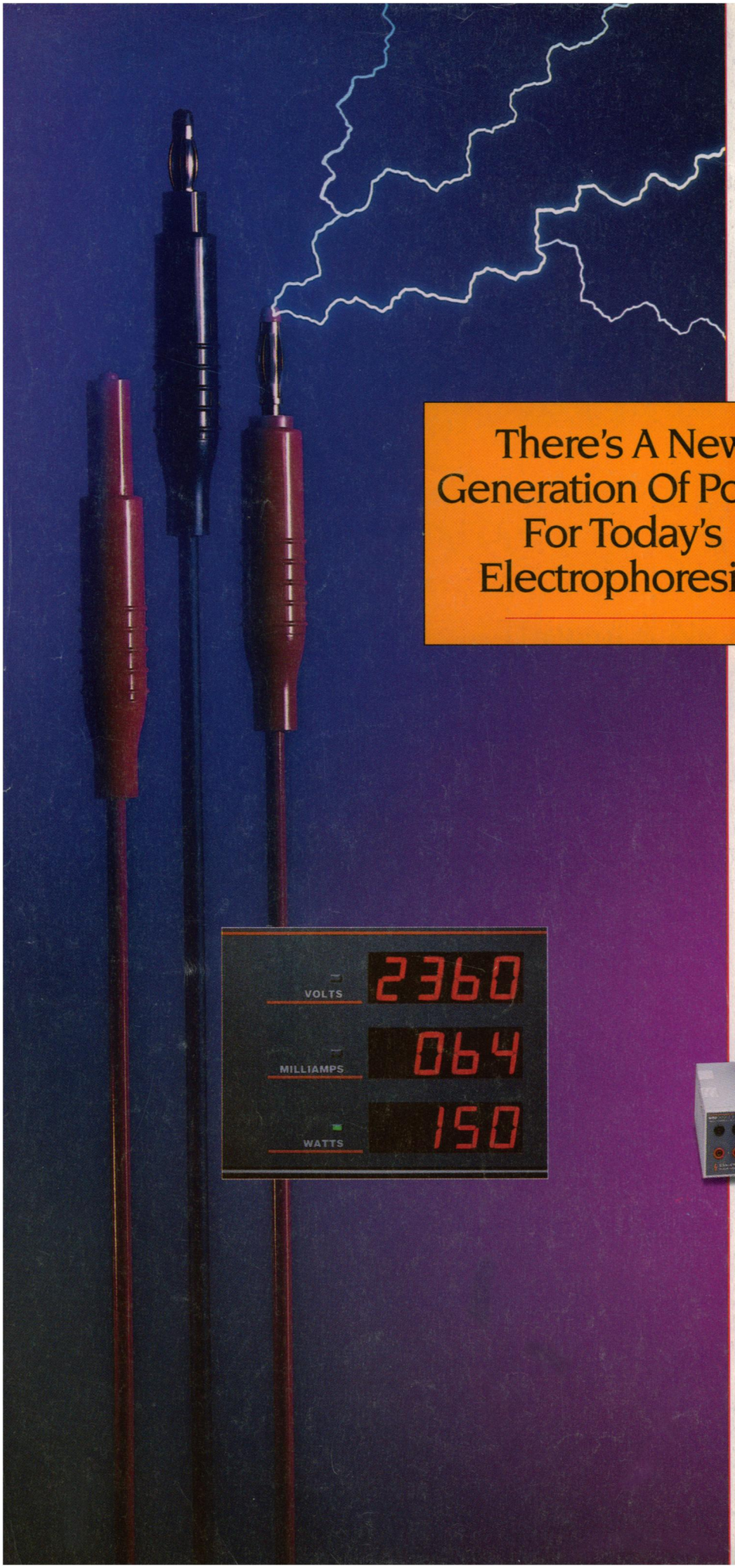

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