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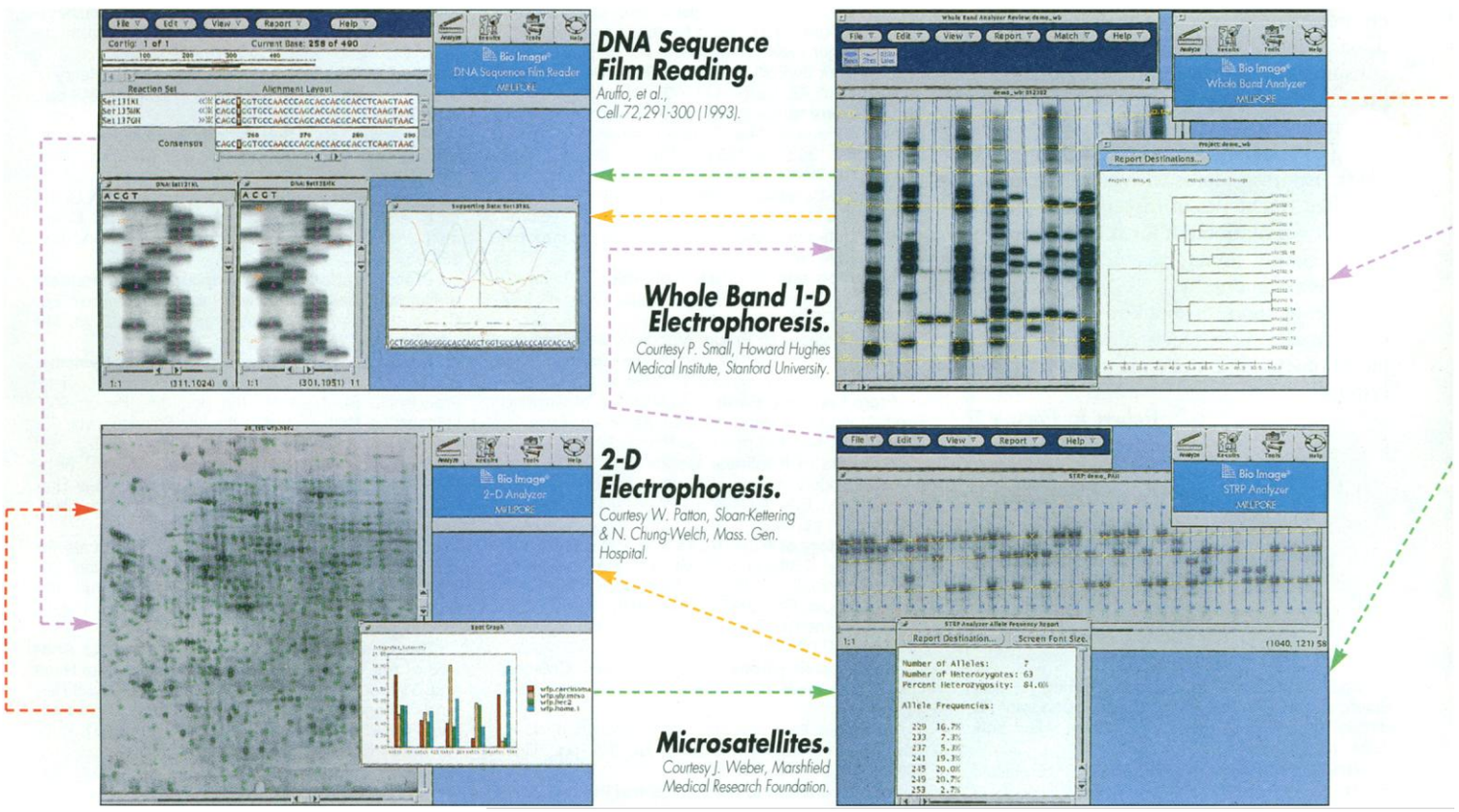

1ST INTERNATIONAL CONFERENCE

ON MYOTOXICITY AND NEUROTOXICITY OF ANTIRETROVIRAL NUCLEOSIDE ANALOGUES

HIV INFECTION 10 YEARS LATER: PROSPECTS FOR NEW THERAPIES.
Luc Montagnier, *Institut Pasteur*

NUCLEOSIDE ANTIRETROVIRAL DRUGS: DEVELOPMENT AND MECHANISM OF ACTION.
Hiroaki Mitsuya, *NIH*

IN VITRO MITOCHONDRIAL TOXICITY OF NUCLEOSIDE ANALOGUES.
Yung-Chi Cheng, *University of Yale*

AZT-INDUCED MYOPATHY IN HUMANS AND ANIMALS: INCIDENCE, DIAGNOSIS AND MECHANISMS OF ACTION.
Marinos Dalakas, *NIH*

AZT-INDUCED MITOCHONDRIAL CARDIOTOXICITY IN HUMANS AND ANIMALS: INCIDENCE, DIAGNOSIS AND MECHANISMS OF ACTION.
William Lewis, *University of Cincinnati*

NEUROTOXICITY OF NUCLEOSIDE ANALOGUES: INCIDENCE AND MECHANISM OF PERIPHERAL NEUROPATHY.
Herbert Shaumburg,
Albert Einstein School of Medicine, NYE

METABOLISM AND MECHANISM OF TOXICITY OF NUCLEOSIDE ANALOGUES: EXPERIENCE WITH IN VITRO STUDIES.
Jean Pierre Somadossi, *University of Alabama*

THERAPEUTIC OPTIONS IN HUMAN MITOCHONDROPATHIES: MYOPATHIES, ENCEPHALOPATHIES AND LACTIC ACIDEMIAS.
Stefano Di Donato, *Besta Neurological Institute*

CARNITINE DEFICIENCY IN HIV-INFECTED PATIENTS.
Giuseppe Famularo, *University of L'Aquila*

EFFECT OF L-CARNITINE IN PREVENTING AZT-INDUCED MITOCHONDRIAL TOXICITY IN VIVO AND IN VITRO.
Marinos Dalakas, *NIH*

TREATMENT OF AIDS PATIENTS WITH CARNITINE.
Claudio De Simone, *University of L'Aquila*

MYOTOXICITY OF CYTOKINES: RELEVANCE TO MUSCLE WEAKNESS IN AIDS PATIENTS.
Emilio Jirillo, *University of Bari*

L'AQUILA, ITALY - **March 22, 1994** - Hotel Duca degli Abruzzi

For informations:
CLAUDIO DE SIMONE - Cattedra di Malattie Infettive, Dipartimento di Medicina Sperimentale
Università di L'Aquila, Italy – **Tel. (0862) 433.561 - Fax (0862) - 433.523**

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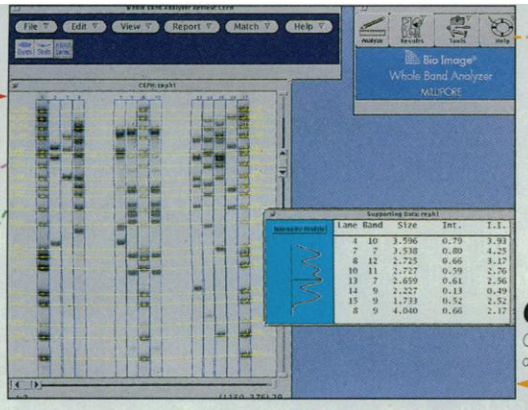

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Carlyle B. Storm

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The 1994 Spring, Summer, and Fall Gordon Research Conferences will be held in Italy, New Hampshire, Rhode Island, Germany, and Hawaii. ATTENDANCE IS LIMITED—IT IS RECOMMENDED THAT APPLICANTS APPLY IMMEDIATELY FOR EARLY CONSIDERATION BY CHAIR.

Address requests for applications to the Conference or for additional information to: Dr. Carlyle B. Storm, Director, Gordon Research Conferences, University of Rhode Island, P.O. Box 984, West Kingston, RI 02892–0984. Telephone: 401-783-4011/3372; FAX; 401-783-7644.

The author is director of the Gordon Research Conferences in Kingston, RI.

Science of Adhesion

Tilton School, Tilton, NH

R. A. Dickie, chair; V. P. Thompson, vice-chair

7–12 August

Molecules at Surfaces and Interfaces: M. Chaudhury, discussion leader

A. K. Chakraborty, "Theoretical Studies of Polymer-Metal Interfaces: Taking Steps Toward the Molecular Design of Adhesives."

M. Rubinstein, "Chain Pull Out and Polymer Adhesion."

Surface Forces and Molecular Films: A. Ulman, discussion leader

J. Frommer, "Scanning Probe Studies of Surfaces."

H. Fuchs, "Studies of Ultrathin Organic Films: Nucleation in Quasi Two-Dimensional Organic Layer Systems."

Interphase Structure and Adhesion: A. Pocius, discussion leader

J. Adams, "Computer Simulations of Polymer Adhesion to Surfaces."

C. Durning, "Adhesion of Incompatible Polymers."

J. Koberstein, "Use of Polymer End Groups for Adhesion Promotion."

F. Faupel, "Diffusion and Interface Formation at Polymer-Metal Interfaces."

L. Piche, "Ultrasonics as a Non-Invasive Probe of Interface and Interphase Behavior in Metal-Polymer Adhesive Bonds."

Polymer Adsorption and Adhesion: J. F. Watts, discussion leader

M. Gee, "Evanescent Wave and Surface Force."

M. Chehimi, "Adsorption of Molecules and Polymers onto Conducting Polymers."

Fracture Processes and Adhesion: A. Lesser, discussion leader

A. J. Kinloch, "A Fracture Mechanics Approach to Studying and Predicting Joint Durability."

E. D. Reedy, "Butt Joint Tensile Strength: Test and Analysis."

Fracture Processes and Adhesion: K. Liechti, discussion leader

L. D. Favro, "Thermal Wave Imaging Studies of Polymer Fracture Processes."

P. Fay, "Impact Performance of Adhesively Bonded Structures."

D. Yarusso, "Quantifying the Relationship Between Peel and Rheology for Pressure Sensitive Adhesives."

Bioadhesion: A. C. Bush, discussion leader

P. E. Kolenbrander, "Adherence and Colonization by the Oral Bacterial Community."

Durability, Damage Assessment and Adhesion Loss: C. A. Berglund, discussion leader

H. F. Brinson, "New Approaches for the Assessment of Bond Durability Including Damage Effects."

J. Martin, "Case Studies of Adhesion Loss."

Atomic and Molecular Interactions

Colby-Sawyer College, New London, NH

J. T. Muckerman, chair; D. J. Nesbitt, vice-chair

3–8 July

Dynamics of Chemical Reactions—Experimental: L. J. Butler, discussion leader

G. E. Hall, "Doppler Probes of the H + O_2 Reaction."

J. J. Sloan, "Time-Resolved Fourier Transform Spectroscopic Techniques for Kinetics and Dynamics Measurements."

C. Witting, "Competitive Pathways in Photoinitiated Unimolecular Reactions."

Intramolecular Energy Transfer: T. Uzer, discussion leader

T. R. Rizzo, "Vibrational Overtone Spectra of Jet-Cooled Molecules Via Infrared Laser Assisted Photofragment Spectroscopy. (IRLAPS)"

R. E. Wyatt, "Quantum Mechanical Studies of Energy Flow in Molecules."

Dynamics of Chemical Reactions—Theoretical: R. T Pack, discussion leader

T. Seideman, "Reactive Resonances in Uni- and Bimolecular Processes."

Antonio Lagana, "A Detailed Study of the Li + FH Reaction."

D. Manolopoulos, "Recent Theoretical Work on the F + H2 Reactions."

Dynamics of Inelastic Collisions, S. Walch, discussion leader

H. Nakamura, "New Developments in the Theory of Curve Crossing Problems."

A. J. McCaffrey, "Rotational Transfer: Is Energy the Driver or Passenger?"

Gas-Surfaces Interactions: D. S. King, discussion leader

B. Garrison, "Reaction at Surfaces."

T. F. Heinz, "Molecule/Surface Interactions on the Femtosecond Time Scale."

M. Head-Gordon, "Excited States and Nonadiabatic Energy Flow Between Molecules and Metals."

Interactions and Dynamics of Clusters: A. Stace, discussion leader

M. L. Mandich, "Reactions of Semiconductors Clusters."

G. Gerber, "Femtosecond Dynamics in Clusters."

Interactions and Dynamics of van der Waals Molecules, Part I: Z. Bacic, discussion leader

R. E. Miller, "Photodissociation of Oriented Molecules: Weakly Bound Complexes as Model Systems in Chemical Dynamics."

F. Gianturco, "Molecular Potentials from Quantum and Classical Dynamics of Non-Equilibrium Properties: Recent Advances."

R. J. Saykally, "FIRVRT Spectroscopy of Water Clusters: Toward a Genuine Molecular Model for the Liquid."

Intermolecular Forces: G. Scoles, discussion leader

A. Dalgarno, "Intermolecular Forces at Very Large Distances."

Interactions and Dynamics of van der Waals Molecules, Part II: D. Nesbitt, discussion leader

B. Soep, "Van der Waals Molecules as Probes for Reaction Complexes."

J. A. Beswick, "Nonadiabatic Electronic Transitions in van der Waals Complexes."

K. C. Janda, "Toward a Global Potential Energy Surface for the Interaction of Noble Gas Atoms with Halogen Molecules."

Bacterial Cell Surfaces

Brewster Academy, Wolfeboro, NH

L. Rothfield, chair; W. Boos, co-chair

10–15 July

Membrane Transport: H. Shuman, discussion leader

P. Dimroth, "Molecular Mechanisms of Na^+ Transport."

A. Davidson, "Mechanisms of Maltose Transport."

V. Ling, "MDR Transport Systems."

B. Rosen

Signal Transduction: A. Stock, discussion leader

R. Kadner, "Signal Transduction in the Uhp Transport System."

J. Spudich, "Interaction of Sensory Rhodopsin I with Its Intrinsic Transducer Protein."

A. Grossman, "Signal Transduction and Development in *Bacillus subtilis*."

Chemotaxis: M. Manson, discussion leader

D. Zusman, "The 'Frizzy' Signal Transduction Systems of *Myxococcus*."

D. De Rosier, "Looking into the Works of the Flagellar Rotor Motor."

A. Stock, "Structure and Function of CheY."

Macromolecular Organization: J. Rosenbusch, discussion leader

D. Engelman, "Helix-Helix Interactions in Membranes."

D. Oesterhelt, "Structural Aspects of Archaeal Retinal Proteins."

J. Beckwith, "Pathways of Disulfide Bond Formation in Proteins."

Protein Translocation: C. Wandersman, discussion leader

W. Wickner, "Preprotein Translocase, a Six-Cycle Engine with Two Fuels."

S. Mizushima, "Structure and Function of the Protein Translocation Machinery of *Escherichia coli*."

C. Kumamoto

Protein Export: C. Kumamoto, discussion leader

T. Silhavy, "The PRL Suppressors and the Mechanisms of Protein Secretion.'

J. Schatz, "Import of Yeast Mitochondrial Proteins."

A. Lazdunski

Cell Envelope Assembly: M. J. Osborn, discussion leader

B. Traxler, "Assembly of Hetero-Oligomeric Membrane Proteins."

J. Holtje

T. Trust

Differentiation and Division: M. Inouye, discussion leader

W. Donachie

P. Piggott J. Maddock

Pathogenesis: S. Normark, discussion leader

J. Galàn, "Surface Determinants Required for *Salmonella* Entry into Cultured Mammalian Cells."

B. Iglewski, "The Role of Cell to Cell Signaling in the Regulation of Virulence Factors."

M. Caparon, "Interactions between the Group A *Streptococcus* and the Cutaneous Epithelium."

D. Low

Basement Membranes

Brewster Academy, Wolfeboro, NH

J. Engel, chair; B. I. M. Hogan, vice-chair

12–17 June

New Components and Functions of Fragments: K. Kuehn, discussion leader

R. Burgeson, "The Role of Laminin Various in Epithelialstromal Adhesion."

M. Chu, "Structure and Expression of Fibulins."

L. Sakai, "Fibrillin."

Structure-Function Relationships: P. Yurchenco, discussion leader

J. Schwarzbauer, "Fibronectin Tenascin and Sparc: Modulators of ECM Function."

R. Trimpl, "Structure of Interacting Sites on Basement Membrane Proteins."

Cellular Receptors for Basement Membranes: M. Bernfield, discussion leader

A. Sonnenberg, "Laminin Binding Integrins."

M. Jalkanen, "Recognition of Extracellular Effector Molecules by Syndecan-1."

Basement Membranes in Development: E. Hay, discussion leader

P. Ekkblom, "Basement Membranes as Regulators of Cell Development."

R. Fleischmajer, "Artificial Matricies."

Genetic Analysis of the Role of Matrix Components in Invertebrate Development: J. Fessler, discussion leader

E. Hedgecock, "Matric and Receptor Genes in *C. elegans*."

A. Kolodkin, "Semaphorins, a New Class of Repulsive Guidance Molecules in *Drosophila*."

L. Fessler, "The Role of Extracellsular Matrix in *Drosophila* Development."

Matrix Remodeling in Development and Disease: S. Krane, discussion leader

C. Sympson, "Developmental Consequences of a Stromelysin Transgene in Mammary Gland."

L. Matrisian, "Epithelial-Mesenchymal Interactions and Protease Gene Expression in the Cycling Endometrium."

Growth Factors, Matrix Components and Morphogenesis: B. Hogan, discussion leader

D. Kingsley, "Pleiotropic Effects of the Short Ear Mutation in Mice."

R. Balling, "Pax-1 and Sclerotome Differentation."

L. Niswander, "Growth Factors and Patterns Formation in Limb Development."

Matrix Components and Neurogenesis: L. Reichert, discussion leader

A. Lander, "Neural Responses to Laminin."

J. McMahan, "Agrin."

Bioanalytical Sensors

Colby-Sawyer College, New London, NH

F. S. Ligler, chair; S. G. Weber, vice-chair

17–22 July

Medical Diagnostics: B. H. Ginsberg, discussion leader

B. H. Ginsberg, "Needs and Requirements for Clinically Useful Sensors."

M. Egholm, "Protein-Nucleic Acid Recognition."

C. Murphy, "DNA Binding Molecules."

R. Carr, "Direct Detection of Viruses."

Biomolecular Interactions: H. Ringsdorf, discussion leader

H. Ringsdorf, "Molecular Self-Organization at Surface."

S. Neal, "Multianalysis Sensing."

C. Lee, "Induced Electrostatic Potentials on Antigen-Antibody Complexes for Bioanalysis."

J. Albery, "Kinetics and Inhibitors."

Environmental Monitoring: J. Von Emon, discussion leader

J. Von Emon, "Needs, Limitations, and Opportunities."

R. K. R. Easwaran, "Ionophores and Metal Ions."

D. Squirrell, "Portable SPR and Environmental Detection of Bacteria."

K. Johnson, "Long-Term Remote Sensing."

Signal Discrimination: T. Horbett, discussion leader

T. Horbett, "Nonspecific Adsorption."

M. Barnes, "Single Molecule Analysis."

G. Patony, "Near IR-Dyes."

A. Cass, "Fluorescent Binding Proteins."

Technology Drivers: C. Lowe, discussion leader

C. Lowe, "Potential for Small Devices."

J. Harrison, "Beyond Sensors: Micromachining Sensors and Chemical Separations on a Chip."

R. Kennedy, "Monitoring Insulin in Single Cells and Islets with High Time Resolution."

G. Kovacs, "Micromachined Neural Interfaces."

Technology Drivers (continued): L. Burgess, discussion leader

L. Burgess, "Micromachined Optical Devices."

K. Mosbach, "Templating."

K. Booksh, "Chemometrics."

In Vivo Measurements: P. Lonnroth, discussion leader

P. Lonnroth, "State of the Art."

J. Justice, "Extracting New information with Microdialysis Probes."

R. Lodder, "IR Fluorescence for Nonvasive IR Sensing."

R. Kopelman, "Submicron Optical Fiber Sensors."

Molecular Electronics: W. Webb, discussion leader

W. Webb, "Electronics of Biomolecules."

J. Tour, "Chemistry of Molecular Electronics."

H. Weetall, "Molecular Electronics for Sensors."

Biocatalysis

Kimball Union Academy, Meriden, NH

C. R. Johnson and B. Rubin, cochairs; P. van Eikeren, vice-chair

10–15 July

Peptides and Amino Acids: C. R. Johnson, discussion leader

C. J. Sih, "Enzymatic Synthesis of Peptides and Nucleotides."

H. Waldmann, "Enzymatic Methods for the Synthesis of Peptide conjugates."

A. Bommarius, "Novel Biocatalytic Processes for Amino Acid and Peptide Synthesis."

Redox Processes: H. Griengl, discussion leader

G. Whited, "Production of Specialty Chemicals from the Anabolic and Catabolic Metabolism of Aromatic Compounds."

H. E. Schoemaker, "Redox Catalysis in the Endergonic Region of the Driving Force. Do Carbohydrates Play a Role in the Lignin Peroxidase Redox Cycle?"

Enzyme Specificity: T. Norin, discussion leader

J. B. Jones, "Probing the Factors Controlling Enzyme Specificity."

R. Kazlauskas, "How Does *Candida rugosa* Lipase Distinguish Between Enantiomers?"

A. Ohno, "Selection of Reaction Conditions for Controlling Stereochemistry of Microbial Reduction."

Enzymes in Organic Solvents: G. Carrea, discussion leader

D. Ringe, "Revelations from the Structures of Hydrolytic Enzymes in Organic Solvents."

M. A. Navia, "Structure and Activity of Crystalline Enzymes in Organic Solvents."

Enantioselective Syntheses: S. Servi, discussion leader

D. Coffen, "Chiral Drugs and Enzymatic Methods for Making Them."

H. Ohta, "Biocatalytic Preparation of Optically Active Carboxylic Acids. Decarboxylation and Nitrile Hydrolysis."

K. Faber, "Asymmetric Hydrolysis of Epoxides Using Microbial Epoxide Hydrolases."

Carbohydrates: D. Anton, discussion leader

J. W. Frost, "Replacing Benzene with d-Glucose as a Synthetic Starting Material."

T. Hudlicky, "Synthesis of Carboydrates and Derivatives from Arene cis-Diols. Old and New Metabolites of Dioxygenase-Mediated Degradation of Aromatics."

Carbohydrates: C. Goodhue, discussion leader

C. Wong, "Synthesis of Carbohydrates and Related Substances."

M. Palcic, "Enzyme-Assisted Synthesis of Complex Carbohydrates."

N. Turner, "Enzyme-Catalyzed Synthesis and Biosynthesis of Carbohydrates."

Catalytic Antibodies: B. Rubin, discussion leader

A. Pluckthun, "One Potential for Catalytic Antibodies."

More Hydrolytic and Oxidation Processes: K. Soda, discussion leader

M. J. Taschner, "Studies on the Enzymatic Baeyer-Villiger Oxidation."

M. Schneider, "Enzyme-Assisted Synthetic Approaches to the Inositol Phospholipid Pathway."

Bioelectrochemistry

Schwaebisches Bildungszentrum, Irsee, Germany

E. Neumann, chair; J. C. Weaver, vice-chair

19–23 September

Physico-Chemical Mechanisms of Electric Field Reception I: C. N. Rafferty, discussion leader

J. Walleczek, "Fluorimetry of Electromagnetically Induced Cytosolic Free Calcium Changes."

H. Wachtel, "Sensing of Weak Fields by Modulation of Endogenous Neural Rhythms."

B. F. Sisken, "Neurotrophin-like Activity in Sciatic Nerve in Electromagnetic Fields."

Physico-Chemical Mechanisms of Electric Field Reception II: M. Marron, discussion leader

B. Veyret, "Human Tumor Cells in Pulsed Magnetic Fields."

D. Astumian, "Mechanisms of Electromagnetic Field Interactions with Matter."

Molecular Events of Channel Proteins: E. Neher, discussion leader

R. Hedrich, "The Voltage-Dependent Properties of Ion Channels in Plant Membranes."

J. Brickmann, "Molecular Dynamics of Channel Transport Processes."

E. Neher, "Control of Exocytosis by Ion Channels in Neurosecretory Cells."

Molecular Events of Channel Proteins: M. Blank, discussion leader

L. F. Jaffe, "Classes and Mechanisms of Calcium Waves."

B. Kaupp, "Functional Domains in Cyclic Nucleotide–Gated Channels."

Bioenergetics and Photobiochemistry: W. Junge, discussion leader

B. A. Melandri, "Bacterial H^+-ATPase Activation by Electrochemical Potential Gradient."

P. Graber, "Electric Field Induced Synthesis of ATP."

R. Nuccitelli, "Endogenous Electric Fields in Developing Systems."

Bioenergetics and Photobiochemistry: H. Metzner, discussion leader

E. Bamberg, "Charge Translocation by Ion Pumps."

F. Hong, "Photobioelectrochemistry of Bacteriorhodopsin: Implications for Vision and Photosynthesis Research and Applications for Molecular Electronics and Solar Energy Conversion."

Membrane Electroporation: J. C. Weaver, discussion leader

A. Blume, "Lipid Structure and Membrane Organization."

K. Kinosita, "Time Courses of Electroporation Revealed Under Pulsed Laser Fluorescence Microscopes."

R. Potts, "Electrically Enhanced Transdermal Drug Delivery."

Membrane Electroporation: J. Teissie, discussion leader

J. A. Lucy, "Red Blood Cell Electrofusion."

Membrane Electroporation: H. Berg, discussion leader

Y. Chizmadzhev, "Theory of Electrostimulated Delivery of Charged Drugs Through Skin."

R. Heller, "Electrically Enhanced Drug Delivery to Melanoma and Pancreatic Cancer Cells."

L. M. Mir, "Antitumor Electrochemotherapy Using Electric Pulses."

Bioengineering and Orthopedic Science

Proctor Academy, Andover, NH

S. B. Trippel, chair; S. A. Goldstein, vice-chair

31 July–5 August

Articular Cartilage Biology and Pathology: A. Ratcliff, discussion leader

R. L. Sah, "Cartilage Regulation by Mechanical Forces."

J. Saklatvala, "Inflammatory Cytokine Signaling Mechanisms in Connective Tissue Cells."

A. I. Caplan, "Tissue Engineering in Articular Cartilage Reconstruction."

Skeletal Growth and Development: L. J. Sandell, discussion leader

Y. Kato, "Roles of Growth Factors, Cytokines and Hormones in the Control of Endochondral Bone Formation."

E. H. Burger, "Mechanical Determinants of Bone Formation During Development."

M. E. Grant, "Type X Collagen and Endochondral Ossification."

Bone Remodeling and Attrition: S. A. Goldstein, discussion leader

J. B. Lian and G. S. Stein, "Molecular Approaches to Bone Formation and Turnover."

R. H. Huiskes, "Mechanical Regulation of Bone Turnover."

P. H. Stern, "Failure of Bone Regulatory Mechanisms."

Bone Repair: A. H. Reddi, discussion leader

C. T. Rubin, "Role of Mechanical Forces in Fracture Healing."

M. E. Bolander, "Regulation of Cell Function by TGF- During Fracture Repair."

T. A. Einhorn, "Clinical Applications."

Determinants of Tendon and Muscle Function: C. B. Frank, discussion leader

S.-O. Abrahamson, "Factors Influencing Tendon Cell Metabolism and Matrix Turnover."

A. J. Banes, "Mechanical Regulation of Tendon Function."

N. A. Rosenthal, "Signaling Factors in Myocyte Function."

Biomechanics of the Microlevel Environment: R. A. Brand, discussion leader

F. Sachs, "Mechanically Transducing Ion Channels and Membrane Mechanics."

D. P. Fyhrie, "Finite Element Modeling of Bone Cell Formation."

V. C. Mow, "Biomechanics of the Cartilage Extracellular Matrix."

Biomaterials as Bioeffectors: R. D. Coutts, discussion leader

S. Greenberg, "Particle Ingestion by Professional Phagocytes."

N. Wang, "Control of Cytoskeletal Mechanisms by the Extracellular Matrix."

R. S. Tuan, "The Cell Implant Interface."

S. B. Trippel, discussion leader

H. J. Mankin

Manipulating the Mechanisms of Repair: L. C. Rosenberg, discussion leader

J. M. Leiden, "Gene Therapy: Genetically Modified Myoblasts: A Novel

Protein Delivery System."

C. Maniglia, "Inhibition of Cartilage Degradation: The Induction and Subsequent Inhibition of Matrix Degradation in Adult Articular Cartilage."

D. C. Anderson, "Adhesion Molecules."

Biomolecular Recognition and Immobilization

Brewster Academy, Wolfeboro, NH

H. Dintzis, chair; J. Carey, vice-chair

7–12 August

Structural and Energetic Principles of Molecular Interactions: R. Spolar, discussion leader

R. Spolar, "Coupling of Local Folding to Site-Specific Protein-DNA Recognition."

R. Pascal, Jr., "Weakly Bonding Interactions in Unusual Aromatic Molecules."

M. Barkley, "Fluorescence Studies of Ligand Binding."

Quantitative Ligand Binding: E. Freire, discussion leader

E. Freire, "Structural Energetics of Protein-Ligand Interactions (Calorimetry)."

R. Granzow, "Kinetics and Equilibrium (Plasmon Resonance)."

R. Swanson, "Assembly of Macro-Molecular Complexes (Plasmon Resonance)."

Protein and Nucleic Acid Structures and Interactions: C. Royer, discussion leader

C. Royer, "Structural Dynamics and Energetics of Glucocorticoid Receptor Interactions."

T. Terwilliger, "Gene V Protein Structure and Cooperative Binding to Single-Stranded Nucleic Acids."

D. Moras, "Substrate Specificity in Eukaryotic and Prokaryotic Aspartyl-tRNA Synthetases."

D. Barrick, "Surrogate Heme Ligands in Myoglobin."

Recent Methods for Measuring Binding: J. Berg, discussion leader

M. Mammen, "Affinity Capillary Electrophoresis for Measuring Binding Constants: Application to Mono- and Polyvalent Systems."

J. Berg, "The Length-Encoded Multiplex Binding Assay."

H. Ribi, "Ligand-Lipid-Polymer Membranes as Detection Systems."

Chemistry and Biology of Carbohydrate Ligands: Y. Lee, discussion leader

W. Weis, "Structural Basis of C-Type Lectin-Carbohydrate Interactions."

K. Rice, "Oligosaccharide Solution Conformation and Receptor Recognition."

Y. Lee, "Biochemistry of Carbohydrate-Protein Interaction."

Molecular Diversity Libraries: R. Houghten, discussion leader

R. Houghten, "Peptide, Modified Peptide and Non-Peptide Libraries."

T. Clackson, "Optimizing Molecular Recognition by Phage Display."

Rational Optimization of Receptor-Ligand Interaction: M. Amzel, discussion leader

S. Dixon, "Design of Ligands Using Genetic Algorithms."

P. Weber, "Recognition of Biotin and Other Compounds by Streptavidin."

S. Fesik, "Streamlining the Cycle of Drug Design/Improvement."

C. Cantor, "Molecular Recognition Challenges in the Genome."

Protein Interaction with Solid and Liquid Surfaces: B. Ratner, discussion leader

B. Ratner, "Chemistry, Geometry and Proteins: Creating Recognition Surfaces."

D. Grainger, "Two-Dimensional Arrays of Proteins and Polymers at Interfaces."

V. Vogel, "Biorecognition at Liquid Interfaces."

Bioorganic Chemistry

Plymouth State College, Plymouth, NH

D. Kempf and D. Lynn, co-chairs

26 June–1 July

Molecular Recognition: A. Schwabacher, discussion leader

W. Jorgensen, "Insights on Molecular Recognition in Organic and Biochemical Systems from Computer Simulations."

D. Reinhoudt, "A Comparison of Synthetic and Natural Receptors."

H-J. Schneider, "Mechanisms of Molecular Recognition and Supramolecular Catalysis."

Artificial Enzymes and Catalysts: J. Chmielewski, discussion leader

S. Benner, "Designing Peptide Catalysts: The Role of Detailed Kinetic Analysis."

E. Jacobsen, "Synthetic and Biological Catalysts for Enantioselective Oxidations of Hydrocarbons."

C. Wilcox, "Intermolecular Forces and Synthetic Enzymes."

Nucleic Acids: A. Schepartz, discussion leader

J. Barton, "Probing Nucleic Acids with Transition Metal Complexes: Is the DNA Helix a Wire?"

G. Glick, "Engineering Disulfide Bonds into Nucleic Acids."

D. Herschlag, "Mechanisms of Catalysis by RNA Enzymes."

J. Williamson, "Molecular Recognition: How RNAs See Proteins."

Chemical Diversity: E. Gordon, discussion leader

M. Gallop, "Applications of Encoded Synthetic Libraries to Drug Discovery."

W. C. Still, "Using Encoded Combinatorial Synthesis to Solve Problems in Molecular Recognition"

J. Szostak, "Selection of New Ribozymes from Large Pools of Random Sequences"

Enzymes and Enzyme Complexes: D. Trainor, discussion leader

J. H. Griffin, "Structure/Function and Inhibitor Analysis of Yeast Oxidosqualene Cyclase Enzymes"

C. R. Hutchinson, "How to Make Bacteria Do It Differently: Construction of Novel Natural Products by the Genetic Engineering of Microorganisms."

R. Parry, "Recent Investigations of Antibiotic Biosynthesis."

G. Prestwich, "Dangerous Liaisons: Active Site Affinity Labels for Vertebrate Squalene Epoxidase and Oxidosqualene Cyclase."

Medicinal Chemistry/Molecular Design: E. Petrill, discussion leader

S. Bender, "Functional Consequences of the Catalytic Site Structure of Matrix Metalloproteinases."

L. Griffin, "Aptamer Technology: Discovery and Development of a Novel Nucleotide-Based Thrombin Inhibitor."

W. Lau, "Structure-Based Design of Novel Thrombin Inhibitors."

Signal Transduction: T. von Geldren, discussion leader

P. Kim, "Coiled Coils: Natural, Designed and Spring-Loaded."

E. Laird, "Computational Exploration of Peptide Binding to SH2 Domains."

J. Marsters, "Inhibitors of Ras Farnesyltransferase."

Mechanisms of Resistance

S. Hughes, "Structural and Biochemical Analysis of HIV-1 RT Drug Resistance."

C. Walsh, "Enzymes in Bacterial Cell Wall Biosynthesis."

Receptors

D. Koshland, "Response Regulators in Prokaryotes and Eukaryotes."

J. Wells, "Designing Growth Hormone Receptor Interactions."

Biopolymers

Salve Regina University, Newport, RI

J. Carey and T. Lohman, co-chairs

26 June–1 July

Macromolecular Thermodynamics and Recognition: K. Breslauer, discussion leader

P. Connelly

E. Di Cera

R. Ebright

L. Jen-Jacobson

Energy Transduction: K. Johnson, discussion leader

W. Bujalowski

H. Holden

J. Wang

Protein–Nucleic Acid Interactions: R. Sauer, discussion leader

D. Beckett

M. Brenowitz

H. Buc

H. Nelson

A. Wang

Hydrophobic Interactions and Hydration: R. Baldwdin, discussion leader

K. Dill

A. Gronenborn

A. Morton

J. Schellman

Protein Folding and Chaperones: L. Gierasch, discussion leader

K. Kirschner

G. Lorimer

R. Matthews

A. Robertson

C. Woodward

Allostery: J. Lee, discussion leader

J. Andreu

D. Draper

S. Linse

K. Matthews

Protein Structures and Sequence Analysis: P. Wright, discussion leader

J. Fetrow

N. Kallenbach

M. Levitt

G. Rose

M. T. Record, Jr., "Protein–Nucleic Acid Interactions."

Nucleic Acid Structures: H. Berman, discussion leader

C. Bustamante

R. Dickerson

D. Wemmer

Calcium Phosphates

Salve Regina University, Newport, RI

M. D. Grynpas, chair

24–29 July

Calcium Phosphate Chemistry: G. Nancolas, discussion leader

R. Verbeek, "Mechanisms for the Incorporation of Carbonate into Apatite, Enamel and Dentine."

C. Cotell, "Calcium Phosphate Coatings Produced by Pulsed Laser Deposition."

B. Martin, "Mathematical Modeling of Mineral Transport in Newly Formed Osteons."

C. Lacabanne, "Study, by Thermal Analysis, of the Interfaces/Interphase in Bone."

Calcium Phosphates Materials: C. Rey, discussion leader

T. Landh, "New Biomimetic Strategies in Materials Design: The Use of Periodic Membrane Space Partitioners."

J. Lemaitre, "Calcium Phosphate Hydraulic Cements: A New Generation of Injectable Bone Replacement Materials."

E. Griffith, "Current Trends in the Chemistry of Condensed Calcium Phosphates."

J. Antonucci, "Polymer-Based Composites and Cements for Dental Applications."

Tissue Mineralization: M. Glimcher, discussion leader

J. Davies, "Mineralization Before Collagen Assembly in Bone."

W. Landis, "Collagen-Based Mineralization."

G. Hunter, "Proteoglycans and Calcification in Chick Embryo Chondrocytes Cultures."

A. Boskey, "Proteoglycans and Matrix Proteins as Regulators of Biomineralization."

Effects of Trace Elements on Calcified Tissues: R. Legeros, discussion leader

R. Legeros, "Minor and Trace Element: Effect on Formation of Apatite and Related Calcium Phosphates."

C. Turner, "Fluoride Incorporation and Its Effect upon Skeletal Tissue."

I. Shapiro, "Trace Elements Modulation of Mineralization."

A. Alfrey, "Aluminium and Calcified Tissues."

Environmental Aspect of Calcium Phosphates: L. Chow, discussion leader

M. Sanford, "The Chemistry of Buried Bones: The Effects of Diagenesis."

C. Robinson, "Fluorosis in Skeletal and Dental Tissues."

J. M. Very, "Microgravity Effects on Bone: From Tissue to Molecular Level."

D. Bushinsky, "Acid Base and the Skeleton."

L. Fitzpatrick, "Ectopic Calcification: The Alpha or the Omega?"

W. Traub, "Mineralization Defect in Osteogenesis Imperfecta."

H. Burt, "Interaction of Crystals with Neutrophils."

H. Kruth, "Calcification in Atherosclerosis—Role of Lipids."

Calcium Phosphates Materials—Tissue Interactions: J. Davies, discussion leader

L. Addadi, "Crystals in a Biological Environment: From Molecular Recognition to Macroscopic Properties."

C. van Bitterswyk, "Interaction Between Bone and Calcified Polymers."

P. Li, "Surface Hydrolyzable Oxide Ceramics Induce Calcium Phosphate Precipitation and Tissue Attachment."

S. Radin, "Analysis of the Precipitation Reaction in Vitro Simulate in Vivo Behavior of Bioactive Ceramics."

Skeletal Regulation: R. Wuthier, discussion leader

D. Simmons, "Circadian Rhythms in Mineralization."

C. Rubin, "Biophysical Stimulation of Bone Formation."

New Methods in Calcium Phosphates: R. Levy, discussion leader

L. Arsenault, "Cryomethods in Calcified Tissues."

J. Ackerman, "Solid-State NMR Imaging and Spectroscopy of Calcium Phosphates."

A. Meunier, "Applied Scanning Acoustic Microscopy to Bone and Bone Biomaterials Interfaces."

H. Duschner, "Combined Use of Mass Spectrometric, Electron Spectroscopic, and Confocal Laser Microscopic Techniques of Surface Analysis to Characterize Apatite Surfaces."

Cancer

Colby-Sawyer College, New London, NH

R. Miesfeld, chair; J. Wang, vice-chair

14–19 August

Transcriptional Control of Oncogenesis: M. Karin, discussion leader

M. Karin, "Signaling into the Nucleus."

M. Karin, "Regulation of AP-1 Activity Through Phosphorylation."

M. Gilman, "Sources of Specificity in Nuclear Signal Transduction."

C. Desplan, "The Activity of the Bicoid Homeoprotein Is Controlled by a Morphogenetic Signal Transduction Pathway."

The $NF_{\kappa}B$/Rel Family of Transcriptional Regulators: I. Verma, discussion leader

I. Verma, "Regulation of $NF_{\kappa}B/I_{\kappa}B$/Rel."

U. Siebenlist, "Regulation of $NF_{\kappa}B$ Proteins."

S. Wasserman, "Regulation of Dorsal by Phosphorylation."

Control of Myc-Mediated Transcription: M. Cole, discussion leader

M. Cole, "Function Analysis of the Myc N-terminus."

E. Ziff, "Gene Regulation by Growth Factors."

D. Ayer, "Control of Proliferation and Differentiation by the Myc Protein Network.

p53 as a Transcriptional Regulator: A. Berk, discussion leader

A. Berk, "Adenovirus E1B 55k Oncoprotein Tethers a Transcriptional Repression Domain to p53."

P. Tegtmeyer, "p53 Domain Functions in Cellular Suppression and Transformation."

S. Elledge, "$p21^{c1p1}$, ap53-Regulated Inhibitor of Cyclindependent kinases."

Transcriptional Control by the Tumor Suppressors Rb and WT1: J. Wang, discussion leader

F. Rauscher III, "Functional Interactions Between WT1 and p53 Tumor Suppressor Proteins."

P. Farnham, "Regulatory Networks Involving Murine E2F1."

N. Dyson, "Partners and Homologs of the Retinoblastoma Protein."

Altered Transcription Factor Genes in Leukemia: M. Cleary, discussion leader

M. Cleary, "Transcriptional and Transforming Properties of E2 Chimeras in Acute Leukemias."

J. Ihle, "Inappropriate Expression of the Evi-1 Gene Blocks Erythroid and Myeloid Differentiation by Binding AGATA Sequences Resulting in Myelodysplastic Disease."

K. Murre, "The Role of E2A and Pbx in Mammalian Development and Oncogenesis."

The Ets Family of Transcription Factors: J. Leiden, discussion leader

J. Leiden, "Regulated Interaction Between Elf-1 and Rb during T-Cell Activation."

A. Bernstein, "The Fli-1 and Spi-1/PU.1 *ets* Genes and Their Roles in Malignancy and Normal Development."

N. Kraut, "Control of Differentiation in Multipotent Hematopoietic Cells by the E26 v-Ets Protein."

Current Opinions in Transcriptional Regulation and Cancer Genetics: R. Kingston, discussion leader

R. Kingston, "Mechanisms That Regulate Transcription Factor Chromatin Interactions."

J. Rowley, "Chromosome Translocations: Dangerous Liasons."

Nuclear Receptors and Cancer: M. Parker, discussion leader

M. Parker, "Structure and Function of the Estrogen Receptor."

L. Freedman, "Role of the Vitamin D_3 Receptor in Lymphoid and Myeloid Cell Proliferation."

D. Gordon, "Androgen Receptor Regulation of Prostate Cell Growth and Differentiation."

Cardiac Regulatory Mechanisms

Salve Regina University, Newport, RI

E. G. Lakatta, chair; M. M. Hosey, vice-chair

11–15 July

Coupling of Excitation to Ca^{2+} Release: W. J. Lederer and M. Morad, discussion leaders

M. Stern, "Alternative Models of Graded Sarcoplasmic Reticulum Ca^{2+} Release in Hearts Cells."

W. G. Wier, "Gain of SR Ca^{2+} Release: Effects of SR Loading and of L-Type Single-Channel Current Amplitude."

M. Fill, "Calcium Regulation of Single SR Calcium Release Channels."

J. Lederer, "Ca^{2+} Sparks: Elementary Events in Excitation-Contraction Coupling."

S. R. W. Chen, "Structure-Function Relationships in the Ca^{2+}-Release Channel of Ryanodine Receptors of Skeletal Muscle Sarcoplasmic Reticulum."

E. Rios, "Evolving Concepts of Excitation-Contraction Coupling in Skeletal Muscle."

Coordinated Regulation of Cell Ionic Homeostasis: D. Bers, discussion leader

J. Bridge, "Functional Effects of a Peptide Inhibitor of Na/Ca Exchange."

G. Isenberg, "Calcium Distributes with Heterogeneities in Cytoplasm and Organelles of Ventricular Myocytes."

D. Bers, "Interaction of Ca Transport Systems in Intact Ventricular Myocytes."

Structure-Function Relationships in Ionic Channel Regulation: A. M. Brown, and M. M. Hosey, discussion leaders

D. Yue, "Mechanism of Ca-Sensitive Inactivation of Native and Recombinant L-Type Ca Channels."

R. Kass, "Molecular Sites of Action of Dihydropyridines."

R. Tsien, "Molecular Basis of Ca^{2+} Selectivity and Other Key Ca^{2+} Channel Functions."

M. M. Hosey, "Expression and Regulation of the Heteromeric Cardiac Ca^{2+} Channels."

E. Marban, "Mechanism of Sodium Channel Inactivation and Block by Local Anesthetics."

H. Fozzard, "Subunit Organization of the Cardiac Na Channel."

A. Brown, "Structural Correlates of Ion Channel Function."

M. Tamkun, "Relationship of Cloned Ion Channel cDNA's to Endogenous Cardiac Myocyte Currents."

Contractile Protein Regulation: R. J. Solaro, discussion leader

J. Metzger, "Structure/Function of Embryonic Stem Cell-Derived Cardiac Myocytes."

R. Moss, "Molecular Cooperation Within Cardiac Myofilaments."

J. Sellers, "Crossbridge Kinetics of Altered Myosin in Human Cardiomyopathy."

R. J. Solaro, "Cardiac Troponin I and Thin Filament Ca^{2+} Signaling."

Regulation of Cell Function Via Diverse Phosphorylation Pathways: L. Jones and M. Tada, discussion leaders

J. Benovic, "Regulation of G Protein–Coupled Receptors by Phosphorylation."

H. Schulman, "Multifunctional CaM Kinase: An Enzyme with a Rhythm?"

M. Tada, "Protein Phosphorylation and Cell Function."

L. Jones, "Phosphorylation Reactions and Cardiac Membranes Function."

Stretch Regulation of Cardiac Structure: E. G. Lakatta, discussion leader

E. White, "Mechano-Electric Effects of Stretching Cardiac Myocytes."

J. Gulati, "Does TnC Transduce Stretch Effects on Contraction?"

S. Izumo, "Signal Transduction of Stretch-Induced Growth of Cardiac Myocytes."

Mechanisms of Cardiac Growth and Development: K. R. Chien, discussion leader

C. Buck, "Programmed Expression of Cell Adhesion Receptors During Mammalian Cardiovascular Development."

J. Heller Brown, "Coupling of G Protein–Linked Receptors to Cardiac Gene Expression."

J-C. Perriard, "Dynamics of Cardiomyocyte Cytoarchitecture."

J. Brugge, "Regulation of Tyrosine Phosphorylation Signaling Pathways by Integrin Adhesion Receptors."

K. Chien, "Molecular Dissection of Ventricular Chamber Growth and Development Via Mouse Genetics."

Cardiac Gene Therapy: L. Leinwand, discussion leader

L. Leinwand, "Adenovirus-Mediated Gene Transfer into the Cardiovascular System."

Endothelial Control of Heart Cell Func-

tion: T. W. Smith and M. Endoh, discussion leaders

A. M. Shah, "Endothelial Regulation of Heart Cell Contraction."

S. Winegrad, "Regulation of Cardiac Contractility by Coronary Vascular Endothelium."

L. Brunton, "Interactions of Endothelin with Cardiac Myocytes."

M. Endoh, "Endothelin Receptor Subtypes Involved in Regulation of Cardiac Function."

R. Kelly, "Dynamic, Reciprocal Cell-Cell Signaling Between Cardiac Myocytes and Microvascular Endothelial Cells."

Catalysis

Colby-Sawyer College, New London, NH

G. B. McVicker, chair; H. H. Kung, vice-chair

26 June–1 July

M. A. Fox, discussion leader

M. A. Fox, "Mechanistic Aspects of Photocatalysis."

S. Reyes, "Frequency Response Techniques for Measuring Kinetic Processes Within Porous Catalytic Materials."

F. J. Feher, discussion leader

F. J. Feher, "Chemistry in Solution vs. Catalysis on Surfaces: How Do We Bridge the Gap?"

R. Dalla Betta, discussion leader

R. Dalla Betta, "Catalytic Combustion of Methane: A New Approach to an Old Problem."

H. C. Foley, "Carbogenic Molecular Sieves: Structure and Catalysis."

R. W. Diesen, "Catalysis Development for a Process to Convert Crude Butadiene to Styrene."

M. E. Davis, discussion leader

M. E. Davis, "Structure-Property Relationships in Zeolite Based Catalysts."

J. Dwyer, discussion leader

J. Dwyer, "Acidity and Super Acidity in Zeolite Catalysts: Comparison with Liquid Acid Systems."

A. Corma, "Hydrocarbon Catalysis Over MCM-22 and MCM-41 Mesoporous Materials."

J. B. Hall, "Monitoring Cracking Catalysts Deactivation in the Fluid Cracking Unit and in the Laboratory."

D. Farcasiu, discussion leader

D. Farcasiu, "Acidity of Liquid and Solid Acid Catalysts: Definition and Measurement."

U. S. Ozkan, discussion leader

U. S. Ozkan, "Investigation of Reaction Pathways in Selective Catalytic Reduction of Nitric Oxide Through Isotopic Labeling Studies."

B. Bent, "Mimicking Catalytic Reactions on Single Crystal Surfaces in Vacuum."

I. Aksay, discussion leader

I. Aksay, "Processing of Complex Ceramics with Complex Fluids."

H. H. Lamb, discussion leader

H. H. Lamb, "Platinum Clusters Hosted in Mordenite: Structure, Chemisorption and Catalysis Probed by in Situ X-ray Absorption Spectroscopy."

J. W. Frost, "Design and Use of Microbes as Synthetic Catalysts."

Cell Biology of the Neuron

Plymouth State College, Plymouth, NH

R. B. Kelly, chair; T. Sudhot and R. Scheller, vice-chairs

12–17 June

Exocytosis of Neurotransmitters: J. Rothman, discussion leader

J. Rothman, "Membrane Fusion."

H. Bellen, "Genetic Dissection of Neurotransmitter."

H. Bellen, "Release in *Drosophila*."

T. Sudhof, "Regulation of Synaptic Vesicle Exocytosis."

T. Martin, "ATP-Dependent and Ca^{3+}-Activated Biochemical Reactions in the Regulated Secretory Pathway."

Endocytosis: P. De Camilli, discussion leader

P. De Camilli, "Membrane Traffic in Hippocampal."

R. Kelly, "Vesicle Biogenesis in Vivo and in Vitro."

D. Selkoc, "Trafficking and Secretion of Beta-Amyloid Precursor Protein: Relationship to Alzheimer's Disease."

Process Extension I: M. Kirschner, discussion leader

M. Kirschner, "Role of Microtubules in Axonal Growth."

D. Cleveland, "Neurofilament Involvement in Axonal Growth and Motor Neutron Disease."

N. Hirokawa, "Microtubule-Associated Proteins and Neuronal Morphogenesis."

P. Forscher, "Membrane and Cytoskeletal Dynamics During Growth Cone-Target Interactions."

Process Extension II: K. Simons, discussion leader

K. Simons, "Protein Sorting in MDCK Cello and Hippocampal Neurons."

G. Banker, "Development of Polarity by Cultural Hippocampal Neurons."

C. Bargmann, "Sensory Behaviors and Neural Development in *Caenorhabditis elegans*."

J. Raper, "Repulsive Cues and Growth Cone Guidance."

Adhesion Between Neurons: R. Scheller, discussion leader

R. Scheller, "Agrins and Synapse Formation."

L. Reichardt, "Adhesive Interactions in Neuronal Development and Process Outgrowth."

G. Fischbach, "Accumulation of Chemo Receptors at Synapses."

Signaling I: M. Kennedy, discussion leader

M. Kennedy, "Signal Transduction Molecules in the Postsynaptic Density."

C. Zuker, "Sensory Signaling in *Drosophila*."

R. Axel, "The Molecular Biology of Smell."

Signaling II: L. Greene, discussion leader

L. Greene, "Mechanisms of Neuronal Survival and Death."

D. Kaplan, "Signal Transduction by Neurotrophin Receptors."

Neurotransmitters and Neurotoxins: R. Jahn, discussion leader

R. Jahn, "Clostridial Neurotoxins as Tools to Study Exocytosis."

S. Amara, "The Reuptake of Neurotransmitters at Synapses."

R. Edwards, "Transport of Neurotransmitters into Synaptic Vesicles."

B. Meyer, "*Caenorhabditis elegans* Mutants Defective in Neurotransmission."

Chemical Senses: Taste and Smell

Plymouth State College, Plymouth, NH

J. T. Caprio, chair; G. D. Burd, vice-chair

17–22 July

Biochemical and Molecular Approaches to Sensory Transduction: L. B. Buck, discussion leader

R. Reed, "Molecular Mechanisms of Sensitivity and Specificity in Odorant Detection."

G. Ronnett, "The Regulation of Second Messenger Signals on Olfaction."

R. F. Margolskee, "Molecular Approaches to Taste Transduction."

Biophysical Approaches to Chemosensory Transduction: B. Arch, discussion leader

S. C. Kinnamon, "Modality-Specific Transduction Pathways in Taste Receptor Cells."

H. Hatt, "Diversity of Odor-Activated Ion Channels in Olfactory Receptor Neurons."

Cell Biological Approaches to Olfactory Bulb Development: A. I. Farbman, discussion leader

M. T. Shipley, "Pioneering Olfactory Axons May Influence Cell Cycle Kinetics in the Developing Olfactory Bulb."

L. Tolbert, "Interactions Among Olfactory Axons, Glia, and Neurons in Formation of Glomeruli."

M. Leon, "Organizational Role of Experience in Olfactory Bulb Functional Development."

Electrophysical Approaches to Study Chemosensory Coding in the Central Nervous System: T. A. Christensen, discussion leader

K. Mori, "Coding of Odor Molecular and Olfactory Processing in the Rabbit Olfactory Bulb."

T. Scott, "Gustatory Neural Coding in the Mammalian Central Nervous System."

Cell Biological Approaches to Lingual Epithelium Development: C. M. Mistretta, discussion leader

B. Oakley, "Cytokeratin Marker of Tongue Epithelium and Taste Organs."

R. G. Northcutt, "Contributions of Endoderm, Neural Crest, and Placodes to the Development of Taste Buds."

T. E. Finger, "Cell Lineage and Interrelationships in Taste and Lingual Epithelia."

Modeling as an Approach to Understanding Chemosensory Mechanisms: J. S. Kauer, discussion leader

D. M. Ennis, "Mathematical Models for Multicomponent Interactions in Taste and Smell."

L. B. Haberly, "Physiological and Modeling Analysis of Associative Processes in Olfactory Cortex."

Behavioral Approaches to Chemosensory Functions in Feeding: R. Norgren, discussion leader

A. C. Spector, "Behavioral Approaches to Understanding Gustatory Processes in the Nervous System."

G. P. Smith, "The Dopaminergic Basis for the Hedonic Quality of Oral Fluid Stimuli."

K. Torii, "Lateral Hypothalamic Neural Plasticity in Response to Dietary L-Lysine Deficiency."

Plasticity of Sensory Receptors

J. T. Corwin, "Form, Function, Development, and Regeneration in Mechanoreceptive Hair Cell Epithelia."

Evolutionary Aspects of Reproductive Behavior: C. Wysocki, discussion leader

P. W. Sorensen, "The Function and Evolution of Hormonal Sex Pheromones in Fish."

M. McClintick, "The Pheromonal Control of Fertility: From Rats to Humans."

Chemistry and Biology of Tetrapyrroles

Brewster Academy, Wolfeboro, NH

A. F. McDonagh, chair; J. R. Bloomer, vice-chair

24–29 July

Cyclic Tetrapyrrole Synthesis in Bacteria, Plants and Algae: P. M. Jordan and S. I. Beale, discussion leaders

A. R. Battersby, "Vitamin B_{12}: Its Fantastic Biosynthesis."

M. R. O'Brian, "Heme Biosynthesis in a Plant-Bacteria Symbiosis: Peculiar or Paradigm?"

M. P. Timko, "Regulation of Protochlorophyllide Reduction in Higher Plants and Algae."

Heme-Dependent Enzymes: L. A. Andersson, discussion leader

T. L. Poulos, "New Peroxidase Structures and Peroxidase Engineering."

B. S. S. Masters, "Constitutive Brain Nitric Oxide Synthase: Flavoprotein and Heme Protein Domains and the Role of Calmodulin."

Heme Oxygenase: T. Yoshida and S. Sano, discussion leaders

M. D. Maines, "Heme Oxygenases: Molecular Characterization and Cellular Functions."

A. Wilkes, "Mechanistic and Physical Characterization of a Soluble Heme Oxygenase."

A. L. Balch, "Model Intermediates and Pathways Involved in Heme Destruction."

Chlorophyll and Heme Breakdown: H. Falk and K. E. Anderson, discussion leaders

A. Gossauer, "Chlorophyll Catabolism: Past, Present and Future."

C. D. Fitch, "Heme Polymerase and the Mode of Action of Quinoline Antimalarial Drugs."

Porphyins and Metalloporphyrins: Structure and Properties: R. Bonnet, discussion leader

K. M. Smith, "Non-Planarity of Porphyrins and Metalloporphyrins."

E. Vogel, "Porphyrin Structural Variants: A Cornucopia of Novel Chromophores."

J. P. Collman, "The Spectroscopic and Functional Properties of Biomimetic Models for Mb, Cyt-P_{450}, and Cyt-c_{a3}."

Biliproteins: H. Scheer, discussion leader

A. N. Glazer, "Bilin Diversity and Attachment."

J. C. Lagarias, "Phytochrome Biosynthesis and Assembly."

Porphyria: Animal Models and Therapy: M. Poh-Fitzpatrick, discussion leader

H. L. Bonkowsky and M. R. Moore, "Metalloporphyrins as Therapeutic Agents."

H. de Verneuil, "First Steps Towards Gene Therapy of Erythropoietic Porphyrias."

U. A. Meyer, "Nervous System Dysfunction in Acute Porphyria: Studies in Animals with Targeted Disruptions of Porphobilinogen Deaminase."

R. Schmid, "A Primordial Role for Heme?"

Practical Photobiology of Porphyrins: N. J. Jacobs and S. B. Brown, discussion leaders

S. O. Duke, "Pesticides Targets in the Porphyrin Pathway."

T. Hasan, "Photochemically Based Biomedical Applications of Tetrapyrroles."

Chemistry at Interfaces

Kimball Union School, Meriden, NH

E. W. Kaler, chair; J. Texter, vice-chair

24–29 July

Solvent Properties: M. Hair, discussion leader

B. Ninham, "Hydrophobic Forces in the Southern Hemisphere."

T. McIntosh, "Short- and Long-Range Bilayer Interactions."

Surfactants at Surfaces: A. Gast, discussion leader

F. Leermakers, "Self-Consistent Field Models of Surfactant Assemblies."

L. Magid, "Neutron Reflectivity of Viscoelastic Micellar Solutions Under Shear."

Monolayers: P. Pincus, discussion leader

J. Zasadzinski, "Specific Ion Effects on the Packing and Order of LB Films."

N. Abbott, "Patterned, Self-Assembled Monolayer of Organic Molecules."

Monolayers: J. Texter, discussion leader

C. Knobler, "Stars and Stripes: Textures of Langmuir Monolayers and Their Relation to Structure."

Polymer Films: K. Vanderlick, discussion leader

T. Russell, "Frustrated Polymer Multilayers."

Z. G. Wang, "New Aspects of Polymer Absorption."

Wetting: D. Miller, discussion leader

J. Klein, "Complete Wetting and Partial Wetting from Polymer Mixtures."

M. Schick, "Wetting in Complex Fluids: Microemulsions and Polymer Mixtures."

Surfactants at Surfaces: E. Ruckenstein, discussion leader

S. H. Chen, "Neutron and X-ray Reflectivity Studies of Surfaces and Interfaces in Microemulsions."

M. Klein, "Computers Simulations of Surfactant and Monolayer Systems."

E. Kaler, discusion leader

J. Israelachivili, "Breakthroughs and Belly-Flops of Surface Science."

Thin Films: M. Paulaitis, discussion leader

S. Troian, "Wetting Behavior and Hydrodynamic Instabilities in Thin Liquid Films."

M. Robbins, "Friction and Adhesion in Thin Films."

Chemistry of Hydrocarbon Resources

Turtle Bay Hilton, Oahu, Hawaii

S. T. Oyama, chair; M. Haruta and L. J. Lynch, co-vice-chairs

6–11 November

Origin and Geochemistry of Hydrocarbon Resources: M. Gorbaty and T. Oyama, discussion leaders

B. J. Katz, "Hydrocarbon Accumulations: From Organic Sedimentation to Entrapment and Beyond."

P. G. Hatcher, "Coalification Reactions for Vitrinite and the Development of Three-Dimensional Models of Structure."

Y. Okuda, "Origin and Accumulation of Hydrocarbons Sealed by Gas Hydrate in Deep Sea Sedimentary Basins."

Kinetics and Characterization of Hydrocarbon Transformations: K. Segawa and L. J. Lynch, discussion leaders

M. T. Klein, "Monte Carlo Simulation of Heavy Hydrocarbon Structure and Reactivity."

R. Quann, "New Directions in Kinetic Modeling off Complex Mixtures."

New Catalytic Transformations of Hydrocarbon: L. R. Radovic and S. H. Moon, discussion leaders

J. Kondo, "IR Spectroscopic Study on the Mechanism of Olefin Hydrogenation on Solid Surfaces."

E. Iglesia, "Thermodynamic and Kinetic Coupling Schemes for the Conversion of Light Alkanes."

D. Trimm, "The Conversion of Light Aromatics to Middle Distillate Diesel Fuel by the Arodi's Process."

Methane and Alkane Conversion: J. Lyons, M. Misono, B. Grasselli, B. Smith, and K. Wada, discussion leaders

R. Periana, "A Novel High Yield System for Methane Oxidation to Methanol."

I. T. Howath, "Emerging Concepts for Homogenous Catalytic Conversion of Light Hydrocarbons."

Preparation and Microtexture of Disordered Carbons: M. Endo and F. Derbyshire, discussion leaders

R. J. Pugmire, "What Can the Study of ^{13}C Chemical Shift Tensor Principal Values Tell Us About Carbon Structural Density?"

G. Taylor, "The Microstructure of Coals and Carbon—An Expanding Role for TEM."

I. Mochida, "Structure/Properties Correlation in Carbonaceous Liquid Crystals and Their Derived Carbon Fiber."

New Carbon Forms: P. Ehrburger and I. Mochida, discussion leaders

M. Inagaki, "Tailoring of Graphitizability in Carbon Films from Polyimides."

P. Eklund, "Optical Studies of Fullerene-Based Solids and Nanotubes."

New Applications and Properties of Fullerenes and Related Compounds: H. Kroto, discussion leader

R. Malhotra, "Recent Advances in Catalytic and Other Applications of Fullerenes."

K. Preston, "Paramagnetic Derivative of Fullerene f."

S. Iljima

Plenary Lecture: T. Oyama, discussion leader

M. Antal, "Research Concerning the Development of Renewable Resources in Hawaii."

Environmental Chemistry of Hydrocarbons: M. Haruta and H. Stephens, discussion leaders

M. Iwanmoto, "Utilization of Hydrocarbons in Selective Catalytic Reduction of Nitrogen Monoxide in Oxygen."

S-K. Ihm, "Characteristics of Carbon-Supported CoMo Catalysts for Hydrodesulfurization."

Chemotactic Cytokines

Plymouth State College, Plymouth, NH

A. Richmond, chair; D. Witt, vice-chair

19–24 June

Chemokines and Immunology: G. Butcher, discussion leader

Chemokine Structure/Function: M. Baggiolini, discussion leader

C. Hebert

A. Groneborn

I. Clark-Lewis

T. Wells

New/Novel Chemokines/Receptors: D. P. Cerretti, discussion leader

P. Gray

A. Mantovani

J. Van Damme

Chemokine Receptors; Structure/Function: T. Schall, discussion leader

P. Beckman

R. Horuk

P. Murphy

Chemokine/Receptor Interaction and Signal Transduction: C. Gerard, discussion leader

J. Westwick

G. LaRosa

M. Baggiolini

P. Olson

Chemokine/Glycosaminoglycan Interactions: W. Smith, discussion leader

A. Rot

D. Witt

S. Shaw

Regulation of Chemokine Gene Expression: K. Matsushima, discussion leader

A. Richmond

B. Sherry

C. Stiles

Chemokines in Normal Physiology (Incorporates Transgenic Models): E. Leonard, discussion leader

N. Gerard

M. Moore

D. Taub

Chemokines in Disease: S. Kunkel, discussion leader

J-M. Schroder

K. Matsushima

W. Smith

Chemokines as Therapeutic Agents: R. Streiter, discussion leader

R. Maione

H. Broxmeyer

J. J. Openheim

Chemotherapy of Experimental and Clinical Cancer

Colby-Sawyer College, New London, NH

L. C. Erickson, chair; R. C. Jackson, vice-chair

24–29 July

Genes Involved in Therapeutic Response: K. D. Tew, discussion leader

B. R. Franza, "Disease Specific Targets for Therapy."

A. B. Pardee, "Finding New Genes by Differential Display."

A. Gudkov, "Identification of Drug Sensitivity Genes Using Genetic Suppressor Elements."

Dynamic Structure Evaluation Using Multi-Dimensional NMR: R. C. Jackson, discussion leader.

J. Cavanagh, "Introduction to Multi-Dimensional NMR Analysis of a M_r 14 K Globular Protein, SPoOF."

The Nucleus: Structural Aspects in Apoptosis: J. A. Hickman, discussion leader

P. Cook, "Transcription and Replication Factories."

Y. Lazebnik, "Nuclear Changes in Apoptosis in Vitro."

S. Kaufmann, "Changes in Nuclear Proteins During Drug- and Hormone-induced Apoptosis."

Novel Genes in Drug Resistance: W. T. Beck, discussion leader

S. P. C. Cole, "The Role of MRP in Drug Resistance."

I. Roninson, "Cisplatin Sensitivity Genes."

Gene Targeted Therapy: L. C. Erickson, discussion leader

K. J. Scanlon, "Utility of Anti-Oncogen Ribozymes in Human Cancer."

P. M. Potter, "Ribozyme-Mediated Modulation of Tumor Specific Transcripts."

M. Dietel, "Antisense Ribozymes to Modify Cytostatic."

M. Litwack and T. Tritton, discussions leaders

M. Litwack, P. Perkins, M. Wolpert, "Round Table Discussion: Surviving the Funding Crisis in the 90's."

T. Tritton, "Poster Discussion Session."

Preclinical and Clinical Strategies for the Reversal of Drug Resistance: A. E. Pegg, discussion leader

A. F. List, "Reversal of Multi-Drug Resistance."

J. R. Bertino, "Reversal of Antimetabolite Resistance."

A. E. Pegg, "Reversal of Chloroethlating Agent Resistance."

Difference as a Cancer Chemotherapeutic Modulity: G. P. Studzinski, discussion leader

M. B. Sporn, "Interaction of Low Molecular Weight Ligands with the TGF Beta Regulatory System."

E. Dmitrovsky, "Retinoic Acid, Its Rearranged Receptor, and Acute Promyelocytic Leukemia."

Cell Cycle Control: J. A. Houghton, discussion leader

P. M. O'Connor, "Cell Cycle Control and Chemo-Sensitivity in Tumor Cells."

S. Lowe, "p53 Modulates the Cellular Response to Oncogenes and Anticancer Agents."

A. Koff, "Stopping the Cell Cycle: p27 Prevents Activation of CDK2."

Computational Chemistry

New Hampton School, New Hampton, NH

K. N. Houk, chair; T. A. Halgren, vice-chair

3–8 July

Quantum Mechanics: Methods and Applications: J. McKelvey, discussion leader

B. Roos, "On Ab Initio Calculations of Electronic Spectra of Molecules and Complexes."

A. St.-Amant, "Modeling Enzymatic Reactions with a Combined QM/MM Scheme Based on Divide-and-Conquer Density Functional Theory."

P. Pulay, "Calculations and Modeling of Correlation Energies in Localized Representation."

New Methods for Drug Design: D. Boyd, discussion leader

J. Blaney, "Evolution of Molecules to Fit a Binding Site of Known Structure."

K. Muller, "On Solvation/Desolvation Problems in Molecular Structure Design."

M. A. Murcko, "De Novo Drug Design."

Empirical Force Field Development: K. Lipkowitz, discussion leader

A. Rappe, "UFF2: A Force Field for Reactivity Studies Throughout the Periodic Table."

C. Landis, "Valence Bond Concepts Applied to Empirical Force Field Development: The Molecular Shapes of Hyper-

valent, Nonhypervalent, and Transition Metal Compounds."

Dynamics Methods and Reaction Rates: P. Kollman, discussion leader

E. Carter, "Advances in Ab Initio Molecular Dynamics."

D. Truhlar, "Quantum Mechanical Dynamics."

N. Makri, "Long Time Quantum Dynamics Via Path Integral Methods."

T. A. Halgren, discussion leader

Biological Molecules and Macromolecular Structure: F. K. Brown, discussion leader

J. Skolnick, "De Novo Simulations of Protein Folding."

M. Klein, "Computer Simulation Studies of Amphiphillic Assemblies."

D. Eisenberg, "3D Profiles for Assignment of Amino Acid Sequences to Protein Folds and for Assessment of Protein Models."

Organic Reactivity: M. M. Francl, discussion leader

W. T. Borden, "Applications of Ab Initio Calculations to the Prediction, Understanding, and Correction of Experimental Results."

W. L. Jorgensen, "Solvent Effects on Organic Reactions from Computer Simulations."

Massively Parallel Computing and Applications: R. Hilderbrandt, discussion leader

M. Pettitt, "Solvent-Induced Structures of Biomolecules by High-Performance Computing."

K. Schulten, "Simulations of Supramolecular Structures in Biology."

R. A. Kendall, "Computational Chemistry Application Design for Massively Parallel Supercomputers."

Corrosion—Aqueous

Colby-Sawyer College, New London, NH

H. S. Isaacs, chair; F. H. Stott, vice-chair

10–15 July

In Situ Studies of Passive Oxide Films: W. H. Smyrl, discussion leader

D. G. Wiesler, "In Situ Neutron Reflectivity Studies of Passive Oxides."

A. J. Davenport, "In Situ X-ray Studies of the Growth and Dissolution of Passive Films."

Structure and Properties of Passive Oxides: P. Marcus, discussion leader

P. Schmuki, "Semiconducting Properties and Stability of Passive Films."

H-H. Strehblow, "XPS, ISS, and EXAFS Investigations of Passive Layers."

Location and Kinetics of Active Sites: H. Bohni, discussion leader

D. E. Williams, "Imaging Electrochemical Reaction Dynamics."

H. S. White, "Scanning Electrochemical Microscopy of Precursor Sites for Pitting Corrosion on Titanium."

Localized Corrosion: Initiation and Chemistry: M. B. Ives, discussion leader

J. E. Castle, "Studies by Scanning Auger Microscopy and Atomic Force Microscopy of the Early Stages of Pitting Attack on Steels."

R. G. Kelly, "Probing the Chemical Composition of Occluded Corrosion Sites."

Dissolution Mechanisms: R. C. Newman, discussion leader

G. S. Frankel, "Studies of Pitting Corrosion in Thin Metallic Films."

K. Sieradzki, "Alloy Dissolution."

Light Alloy Corrosion: G. E. Thompson, discussion leader

O. Lunder, "Corrosion of Cast Magnesium-Aluminum Alloys."

J. R. Scully, " Behavior of High Strength Titanium Alloys."

M. C. H. McKubre, discussion leader

P. C. Pistorius, "Open Circuit Pitting Corrosion of Heat-Tinted Stainless Steel."

C. H. Windisch, "Fundamental Studies of the Effects of Grain Boundary Impurities on the Corrosion of Nickel Iron and Stainless Steel."

F. Huet, "Revisiting Hydrogen Interactions During Metallic Corrosion."

Research-Industry Interactions: R. W. Staehle, discussion leader

P. Rhodes, "How Industry Can Benefit from Academic Research."

L. A. Scribner Jr., "Research-Industry Collusion."

S. Ito, "Industry-Research Collaborations in Japan."

Atmospheric Corrosion: V. Brusic, discussion leader

C. Leygraf, "Atmospheric Corrosion of Metals—a Multianalytical Approach."

R. Lobnig, "Atmospheric Corrosion of Metals by Submicron Dust Particles."

Crystal Growth

Proctor Academy, Andover, NH

P. A. Morris Hotsenpiller, chair; I. Alexander, vice-chair

26 June–1 July

Fundamentals of Growth: C. A. Handwerker, discussion leader

W. C. Carter, "Evolving Crystal Forms."

R. F. Sekerka, "Anisotropic Interface Kinetics and Surface Energies: Effects on Morphological Stability."

S. R. Coriell, "Effects of Anisotropy and Shear on the Stability of an Interface."

Fundamentals of Growth: I. Alexander, discussion leader

J. P. van der Eerden, "Surface Structure and Crystal Quality: Monte Carlo Simulations."

G. Gilmer, "Molecular Dynamic Simulations of Growth."

Vapor Growth: M. A. DiGiusseppe, discussion leader

M. G. Legally, "Atomic Level View of Kinetic and Thermodynamic Influences in the Growth of Thin Films."

G. G. Stringfellow, "Influence of Surface Structure on Thin Films Growth."

F. K. LeGoues, "Mechanism and Conditions for Anomolous Strain Relaxation in Graded Thin Films and Superlattices."

Vapor Growth: A. I. Kingon, discussion leader

A. Roshko, "Heteroepitaxial Growth of Oxide Thin Films."

K. Matsushige, "Structural Evolution of Eputaxially Grown Organic Films."

Melt Growth: R. N. Andrews, discussion leader

R. A. Brown, "Modeling Bulk Growth: Strain and Defect Generation."

G. Muller, "Convective Instabilities in Melt Growth Configurations."

B. H. T. Chai, "Critical Issues in Melt Growth of Oxide Crystals."

Solution Growth: J. Sherwood, discussion leader

B. Heywood, "Crystallization Processes at Inorganic/Organic Interfaces."

M. Ward, "Crystallization of Organics."

A. J. Malkin, "Nucleation Phenomena and Kinetics of Macromolecular Crystal Growth."

Solution Growth: R. A. Laudise, discussion leader

N. Zaitseva and J. DeYoreo, "Rapid Solution Growth."

R. Bolt, "High-Temperature Solution Growth of NLO Crystals."

Grain Growth/Future Directions of Crystal Growth: J. Wenckus and F. Rosenberger, discussion leaders

J. Floro, "Effects of Anisotropy on Grain Growth in Thin Films."

M. J. Wargo and J. J. Derby

P. F. Bordui

Diamond Synthesis

Plymouth State College, Plymouth, NH

S. J. Harris, chair; J. Butler, vice-chair

19–24 June

Formation and Growth: R. Thomas, discussion leader

J. Angus, "Secondary Nucleation, Morphological Stability and Other Factors Influencing Diamond Growth Rate and Quality."

D. Goodwin, "Scaling Laws for Diamond Chemical Vapor Deposition."

B. Hauge, "Florine- and Chlorine-Activated Diamond CVD."

J. Butler

Materials and Characterization: L. Plano, discussion leader

P. Koidl, "Structure and Morphology of Oriented Diamond Films: The Influence of CVD Process Parameter."

J. Glass, "Growth and Electrical Characterization of Oriented Diamond."

M. Murakawa, "Characteristics and Potential Applications of cBN Films Made by the Reactive Ion Plating Method."

Formation and Growth

D. Woodin, "Interrelationship of CVD Diamond Properties, Defects, and Growth Environment."

S. Harris, "Influence of Process Parameters on Diamond Growth and Diamond Quality."

Materials and Characterization: J. Graebner, discussion leader

M. Geis, "Electronic Properties of Diamond."

D. Shechtman, "Defect Structure of CVD Diamond."

K. Gleason, "Diamond Defect and Surface Studies by ^{1}H, ^{13}C, and ^{19}F NMR."

Diagnostics: V. Subramanian, discussion leader

T. Miller, "Diagnostics of Diamond Deposition Environments."

J. Jeffries, "Optical Diagnostics During Diamond Growth CVD Growth."

Formation and Growth

M. Kordesch, "Seeded Molecular Beam Growth of Diamond Observed with Emission Microscopy."

S. Jin, "The Mechanisms and Implications of CVD Diamond Etching by Chemical Reactions with Metals."

S. Girshick, "Thermal Plasmas, Flow Velocity, and the Role of C Atoms in Diamond Growth."

Formation of Growth: L. Raff, discussion leader

M. D'Evelyn, "Surface Phenomena During Diamond Growth: Kinetics, Chemistry, and the Role of Oxygen."

D. Brenner, "Nanometer-Scale Material Properties and Engineering on Diamond Surfaces."

Materials and Characterization: T. Anthony, discussion leader

T. Ando, "Chemisorption of Hydrogen and Oxygen on Diamond Surfaces."

P. Pehrsson, "Diamond Surface Oxidation Chemistry."

Dielectric Phenomena

Holderness School, Plymouth, NH

R. H. Boyd, chair; W. J. Sarjeant, vice-chair

31 July–5 August

S. Matsuoka, discussion leader

G. Zumofen, "Hierarchies and Power Laws in Relaxation Processes."

R. V. Chamberlin, "Non-Debye Primary Response of Liquids, Glasses, Polymers and Crystals."

N. G. McCrum, "The Unsolved Problem of Physical Aging."

W. J. Sarjeant, discussion leader

B. E. Read, discussion leader

W. A. Goddard III, "First Principles Atomistic Simulations of Polymers."

G. D. Smith, "Dielectric and Related Dynamic and Equilibrium Properties of Poly(ethylene Oxide) from Molecular Dynamics Simulation."

J. Bendler, "Dipole Motions in Glassy Polyetherimides."

R. E. Wetton, discussion leader

F. Kremer, "Dielectric Relaxation in Systems with Confined Geometries."

P. Cebe, "Dielectric Relaxation and Depolarization Current Studies of Polymers and Blends."

L. Dissado, discussion leader

R. E. Newnham, "Scaling Effects in Ferroelectric Ceramics."

B. Auman, "Fluorinated Polyimides for Interlayer Dielectrics in Electronics Applications."

W. Haase, "Dynamical and Structural Behavior of Dislocation Domains in Ferroelectric Liquid Crystal."

M. Buttram, discussion leader

W. J. Sarjeant, "Energy Storage in Practical Dielectrics Issues Versus Reality."

R. Jow, "Development of High Energy Density Dielectrics."

J. E. Anderson, discussion leader

J. Shaw, "Microwave Processing Application in the Semiconductor Industry."

K. D. Singer, "Orientational Relaxation Phenomena in Electrooptic Polymers."

B. E. Conway, "Fundamental Aspects of Supercapacitor Behavior and the Origins of Double-Layer and Pseudocapacitance."

N. G. McCrum, discussion leader

G. Williams and B. Read, "Anelastic and Dielectric Effects in Polymeric Solids. Then and Now."

J. J. Fitzgerald, discussion leader

B. Sauer, "Applications of Thermally Stimulated Currents, Including to Amorphous and Semicrystalline Polymers and Blends."

G. Williams, "Dielectric Relaxation Behavior of Thermosetting and Photosetting Polymer Systems."

J. K. Vij, "Dielectric Relaxation and Libration Spectroscopy of Dipolar Liquids."

Diffraction Methods in Molecular Biology

Proctor Academy, Andover, NH

S. R. Sprang, chair; S. J. Remington, co-chair

19–24 June

Protein Kinases and Signal Transduction

E. Goldsmith, "MAP-2 Kinase."

S-H. Kim, "CDK2 Kinase/Inhibitor Interactions."

M. Eck, "SH2/SH3 Domain Interactions in Tyrosine Kinases."

J. Trainer, "The Cell Cycle Regulator CksHs2."

Accurate Reduction of Data from Image Plate Detectors: J. Pflugrath, discussion leader

W. Kabsch, "Image Plate Data Reduction."

J. Pflugrath, "Image Plate Reduction with MADNES."

A. Leslie, "MOSFLM: An Integrated Program for the Processing of Image Plate Data."

Real-Space and Maximum Entropy Phase Refinement: C. Carter, discussion leader

G. Bricogne, "Maximum Likelihood and Maximum Entropy."

D. Baker, "PRIZM."

K. Zhang, "SQUASH."

A. Jones, "O Developments."

Eukaryotic Transcription Factors

C. Pabo, "Structure and Design of DNA-Binding Proteins."

S. Burley, "X-ray Crystallographic Studies of Eukaryotic Transcription."

T. Ellenberger, "Intricacies of DNA Recognition by Simple Structural Motifs."

Structure-Based Inhibitor Design and Enzyme Redesign: D. Matthews, discussion leader

J. Davies, "Iterative Design of Nonpeptide HIV-Protease Inhibitors."

P. Weber, "Structure-Based Design of Thrombin Inhibitors."

J. Janin, "Xylose Isomerase: Alteration of pH Profile and Metal Specificity."

Enzyme and Inhibitor Structures

C. Hasemann, "Comparative Analysis of P-450 Structures."

D. Christianson, "Structure of an Active Serpin."

C. Stauffacher, "HMG-CoA Reductase."

Transduction at the Cell Membrane: S. Sprang, discussion leader

J. Noel, "Transducin."

G. Schertler, "Rhodopsin."

D. Wiley, "Membrane Fusion–Competent State of the HLA Antigen."

The Next Steps for Protein Folding and Design?: F. M. Richards, discussion leader

New Structures and Hot Topics

R. Jacobson, "Beta-Galactosidase."

Z. Otwinoski, "Gro-EL."

Drug Carriers in Biology and Medicine

Tilton School, Tilton, NH

D. FitzGerald, chair; T. Allen and R. Mrsny, co–vice-chairs

10–15 July

Targeting with Antibodies and Ligands, Part I: A. Fritzberg, discussion leader

A. Fritzberg, "Antibody Pretargeting."

E. Vitetta, "Immunotoxins for the Treatment of B-Cell Lymphoma."

A. Pluckthun, "Recombinant Antibodies."

Targeting with Antibodies and Ligands, Part II: R. Youle, discussion leader

D. Strickland, "Ligands Targeted to the LRP."

J. Murphy, "Ligand-Toxin Chimerics."

P. Frieden, "NGF-Peptides."

Liposome-Mediated Delivery: T. Allen, discussion leader

D. Papahadjopoulos, "Receptor Targeting of Liposomes."

L. Huang, "Liposome-Mediated Gene Delivery."

T. Allen, "Stealth Liposomes."

Vaccine Development: C. Alving, discussion leader

C. Alving, "Vaccines and Adjuvants."

J. Robbins and R. Schneerson, "Polysaccharide-Toxoids as Immunogens."

P. Felgner, "DNA Injection/Muscle Expression."

Polymers as Drug Carriers: D. Meijer, discussion leader

R. Duncan

R. Langer

Patent Strategies: R. Mrsny, discussion leader

R. J. Keitman, "Fusion-Proteins as Therapeutics."

J. Fordis, Esq., "Innovation in Biotechnology as Intellectual Property."

Site-Specific Delivery, Part I: A. Allison, discussion leader

P. Thorpe, "Targeting to Tumor Endothelium."

A. Allison, "Targeting to Sites of Inflammation."

R. Mrsny, "Transport Across the Gut Wall."

Site-Specific Delivery, Part II: A. Stracher, discussion leader

A. Stracher, "Delivery to Muscle."

D. Meijer, "Delivery to the Liver."

U. Bickel, "Peptide Delivery to the Brain."

Innovative Approaches to Drug Delivery: R. Dedrick, discussion leader

M. Liu, "Delivery to MHC–Class I."

J. Campbell, "Lymphocyte Homing."

M. Rosenfeld, "Viral-Mediated Gene Therapy."

Drug Metabolism

Holderness School, Plymouth, NH

T. A. Baillie, chair; D. M. Dulik, vice-chair

17–22 July

Interrelationships Between Xenobiotic and Lipid Biotransformations: S. D. Hall, discussion leader

H. Kaneko, "Formation and Disposition of Cholesterol Ester Conjugates."

P. F. Dodds, "Synthesis and Degradation of Lipid Conjugates of Xenobiotic Carboxylic Acids, Analogous to Natural Glycerolipids."

S. D. Hall, "Activation of 2-Arylpropionic Acids Via Hybrid Lipid Formation."

The Metabolic Chemistry of Cytochrome P-450: N. P. E. Vermeulen, discussion leader

N. P. E. Vermeulen, "Metabolic Predictions Based on Mechanisms of Action and Active Site Structures of Cytochrome P-450."

L. M. H. Koymans, "Characterization and Visualization of the Relationship Between Cytochrome P-450 (Sub) Families and Isozymes by Spectral Map Analysis."

Conjugation-Dependent Toxicities: M. W. Anders, discussion leader

M. W. Anders, "Glutathione-Dependent Bioactivation: Novel Reactive Intermediates."

P. E. Hanna, "Acetyltransferase-Dependent Bioactivation."

S. J. Hargus, "Acylglucuronide-Dependent Toxicity."

Hepatic Transport of Glutathione and Glutathione S-Conjugates: M. Vore, discussion leader

N. Kaplowitz, "Expression, Cloning and Characterization of Sinusoidal and Canalicular GSH Transporters of Rat Liver."

N. Ballatori, "An Intrahepatic Pathway for Glutathione and Glutathione S-Conjugate Metabolism."

Novel Analytical Methods in Drug Metabolism and Pharmacokinetic Studies:

D. M. Dulik, discussion leader

R. J. Sawchuk, "Application of Microdialysis in Pharmacokinetic Studies."

R. Pohland, "Applications of Quantitative Whole-Body Autoradiography in Drug Metabolism Studies."

J. Foley, "Capillary Electrophoresis and Electrokinetic Chromatography: Useful Tools for Drug Metabolism Studies?"

Hepatic Responses to Inflammatory Mediators: R. E. Billings, discussion leader

S. I. Shedlofsky, "Altered Cytochrome P-450–Mediated Metabolism in Inflammation."

R. E. Billings, "Tumor Necrosis Factor–α Induction of Nitric Oxide Synthase and Oxidative Injury of Hepatocytes."

Xenobiotic-Macromolecule Covalent Interactions: R. P. Hanzlik, discussion leader

P. Skipper, "Site Specificity in Reactions of Carcinogens with Proteins."

N. L. Anderson, "General Methods for Finding and Characterizing Proteins Covalently Modified by Unknown Reactive Xenobiotic Metabolites: Cabilities and Limitations of 2D Electrophoresis and Associated Techniques."

J. A. Swenberg, "Formation and Repair of DNA Adducts: Potential as Molecular Dosimeters."

In Vitro/in Vivo Correlations in Drug Metabolism: W. F. Trager, discussion leader

W. F. Trager, "In Vitro Approaches to Predicting Metabolically Based Drug Interactions."

M. Eichelbaum, "In Vitro Approaches to Predict Human in Vivo Drug Metabolism."

Electron Donor-Acceptor Interactions

Salve Regina University, Newport, RI

M. R. Wasielewski, chair; G. B. Schuster, vice-chair

14–19 August

P. I. Dutton, discussion leader

M. Newton, "Electron Transfer Kinetics as a Function of Donor-Acceptor Separation: The Roles of Electronic Coupling and Medium Reorganization."

J. Miller, "Energetic Control of Long-Distance Electron Transfer."

F. DeSchryver, "Light-Induced Intramolecular Donor-Acceptor Interactions."

J. Verhoeven, discussion leader

G. Jones, "The Charge-Shift Reaction in 9-Substituted Acridinium Ions."

M. Therian, "New Systems for Light Harvesting and the Study of Charge Separation Reactions at High Donor-Acceptor Electronic Coupling."

S. Farid, "Electronic Structures of Exciplexes."

A. Harriman, discussion leader

A. Osuka, "A Directed Photoinduced Electron Transfer Relay in Synthetic Porphyrin Arrays."

D. Gust, "Photoinduced Electron Transfer in Photosynthetic Model Systems."

Y. Sakata, "Influence of the Nature of the Spacer Bond on Intramolecular Electron Transfer."

K. Schanze, discussion leader

J. Hupp, "Electrochemical Interfaces as Donor-Acceptor Systems."

T. Mallouk, "Electron Transfer in Supramolecular/Solid-State Assemblies."

N. C. Yang, "Photoinduced Electron Transfer in Bichromophoric Molecular."

A. Moore, discussion leader

M. Zimmt, "Exploring Through-Solvent Electronic Coupling."

J. Sessler, "Noncovalent Electron Transfer Model Systems."

D. Nocera, "Proton-Coupled Electron Transfer."

G. Schuster, discussion leader

S. Mukamel, "Charge Transfer and Optical Nonlinearities of Conjugated Polyenes."

S. Marder, "Linear and Nonlinear Polarization in Conjugated Organic Donor-Acceptor Molecules."

L. Yu, "Rational Design and Synthesis of Photorefractive Polymers."

S. Isied, discussion leader

J. Onuchic, "Theoretical Methods for Dissecting Electron Tunneling interactions in Proteins: From Pathway Families to a 'Renormalized Protein'."

M. Gunner, "Stabilization of Charges Within Proteins: Insights from the Photosynthetic Reaction Center."

B. Hoffman, "Long-Range Electron Transfer in Protein Complexes."

J. Lindsey, discussion leader

G. McLendon, "Experiment and Marcus Theory: The Common Denominator."

F. Lewis, discussion leader

M. Michel-Beyerle, "Electron Transfer in Proteins."

W. Rettig, "Adiabatic Photochemical Processes in Donor-Acceptor Polyenes."

Electron Spectroscopy

New England College, Henniker, NH

D. M. Hanson, chair; N. Smith, vice-chair

3–8 July

Scanning Tunneling Spectroscopy and Microscopy

M. F. Crommie, "Quantum Corrals and Waves on a Metal Surface."

O. Pankratov, "Bound Bipolarons at Metal-Covered Semiconductor Surfaces: Metallic Versus Insulating Behavior of Alkali-Metal/GaAs(110) Interfaces."

S. Alvarado, "STM, Inverse Photoemission, and Circular Dichroism."

Photoemission from Aligned Atoms and Oriented Molecules: U. Becker, discussion leader

B. Sonntag, "Inner-Shell Photoelectron Spectroscopy of Laser-Aligned Atoms."

A. Yagishita, "Angular Distributions of Photoelectrons from Spatially Aligned Molecules."

Multiple Electron Ionization

J. Briggs, "Continuum Correlation in Ionization Processes."

A. Huetz, "New Trends in the Double Photoionization of Atoms."

R. Hall, "Observation of Doubly Charged Molecular Ions by Threshold

Photoelectron Coincidence Spectroscopy."

Nanocrystals and Clusters: M. Kastner, discussion leader

P. E. Batson, "Spatially Resolved Electronic Structures of Nanocrystals and Silicon Quantum Wells."

G. Gantefor, "Photoelectron Spectroscopy of Metal and Semiconductor Clusters."

Recent Advances in Auger Spectroscopy: D. Thomas, discussion leader

S. Hulbert, "Auger-Photoelectron Coincidence Spectroscopy of Solids and Gases."

L. Cederbaum, "Theoretical Developments in Understanding Molecular Auger Spectra."

J. Levin, "Auger-Electron-Photoion Coincidence Studies of Noble Gases."

Electron Energy Spectra of Open-Shell Atoms and Ions: S. Manson, discussion leader

D. Caldwell, "Normal and Resonance Auger Spectra of Atomic Oxygen."

J-M. Bizau, "Angle-Resolved Photoelectron Spectroscopy of Excited Atoms and Ions."

Issues in Nanofabrication and Devices: P. D. Johnson, discussion leader

K. Likharev, "Single Electronic Devices."

M. Johnson, "Bipolar Spin Transistor-Conduction Electron Spin Transport in Metals."

R. Opila, "XPS in the Real World—Opportunities and Challenges."

I. Lindau, discussion leader

D. Shirley, "Science, Technology, and Electron Spectroscopy in the Twenty-First Century."

High T_c Superconductors and Magnetic Materials—PE and MCD: R. Willis, discussion leader

Z. X. Shen, "What Can Be Learned about High T_c Superconductors from High Resolution Photoemission Spectroscopy?"

G. Kaindl, "Magnetic Circular Dichroism in Photoemission from Magnetically Ordered Rare-Earth Materials."

Electronic Processes in Organic Materials

Proctor Academy, Andover, NH

R. Kopelman, chair; G. Kepler, vice-chair

24–29 July

Single Molecule Electronic Spectroscopy and Imaging: M. Orrit, discussion leader

W. E. Moerner, "New Frontiers in Single Molecule Spectroscopy in Solids: From TLS Dynamics to Imaging in Frequency and Space."

E. Betzig, "Near-Field Optical Microscopy and Its Application to Single Molecule Detection."

J. Klafter, "Anomalies in Spectral Random Walk."

Charge Transport: H. Bassler, discussion leader

M. Abkowitz, "Time-Resolved Dark Injection as a Probe of Interfacial Processes in Disordered Molecular Systems."

L. Schein, "Recent Charge Transport Experimental Results in Molecularly Doped Polymers."

Glasses and Hole Burning: R. Silbey, discussion leader

M. Fayer, "Dynamics of Glasses and Liquids Probed with Electronic and Vibrational Non-Linear Experiments."

G. Small, "Hole Burning in Hyperquenched Glassy Films of Water."

J. Skinner, "Spectral Diffusion of Individual Molecules in Solids."

Non-Linear Optical Materials: M. Ratner, discussion leader

S. Marder, "Understanding the Relationships Between Ground-State Polarization and Hyperpolarizabilities in Conjugated Organic Molecules."

V. Chernyak, "Non-Linear Optical Responses of Nanostructures."

D. Burland

Conjugated Polymers: R. Chance, discussion leader

Z. Vardeny, "Optical Probes of Pi-Conjugated Polymers."

Z. Soos, "Electronic Structure of Conjugated Polymers."

Y. Tokura, "Excitonic Processes in Polysilanes and Polygermanes."

Light Emitting Diodes and Devices: R. Friend, discussion leader

D. Bradley, "Electroluminescence in Conjugated Polymers."

C. Tang, "Organic Light-Emitting Diodes for Display Application."

Electron Transfer: J. Jortner, discussion leader

D. Chandler, "Role of Environmental Dynamics on Non-Adiabatic Electron Transfer."

J. Miller, "Long-Distance Intramolecular Electron Transfer."

M. Michel-Beyerle, "Light-Induced Electron Transfer Processes in Proteins."

M. Pope, discussion leader

H. C. Wolf

S. Mukamel, discussion leader

R. Pearlstein, "Donor Acceptor Electron Transfer with a Strongly Coupled Reaction Mode."

D. Beratan, "Supermolecular Electron Transfer."

R. C. Haddon, "Electronic Structure, Conductivity and Superconductivity of Metal Doped C-60."

Energetic Materials

New Hampton School, New Hampton, NH

R. L. Simpson, chair; J. C. Oxley, vice-chair

26 June–1 July

J. Lee, discussion leader

C. White, "Molecular Hydrodynamics."

J. Belak, "Atomic-Scale Computer Simulation of the Behavior of High Explosive Molecules at a Shock Front."

D. Robertson, "Condensed-Phase Molecular Dynamics of Energetic Materials."

C. White, discussion leader

W. Holian, "Fracture Simulations by Massively Parallel Molecular Dynamics."

J. Dick, "Orientation-Dependent Shock Sensitivity of Explosives and the Mechanism of Steric Hindrance."

L. Fried, "Energy Transfer Dynamics Are Important in Determining Explosive Sensitivity."

D. Dlott, "Picosecond Dynamics Behind the Shock Front."

E. Apkarian, "Ultrafast Fast Reaction Dynamics in Solids."

C. Melius, discussion leader

K. Nelson, "Ultrafast Single-Shot Spectroscopy of Energetic Materials."

A. Ruggiero, "Femtosecond Spectroscopy of Single Crystal HMX."

T. Brill, discussion leader

P. Haskins, "Molecular Dynamic Studies of Initiation in Energetic Materials."

Ph. Simonette, "Shock Sensitivity and Electronic Structure of High Energy Materials: Modeling Molecular Excitations Behind a Shock Wave."

J. Richie, "Coulomb Interactions in Energetic Materials."

S. DuFort, discussion leader

S. Coffey, "Energy Localization and Initiation of Crystals."

P. Politzer, "Computational Approaches to the Prediction of Shock/Impact Sensitivities."

A. Renlund, discussion leader

R. Behrens, "Thermal Decomposition Mechanisms of Nitramines and TATB."

C. Wight, "Transient Laser Pyrolysis of Energetic Materials."

J. Oxley, "Thermal Decomposition of Nitroarenes."

T. Russell, discussion leader

S. Bulusu, "Molecular Inclusion Complexes of Explosives with Cyclodextrins: Characterization by NMR Techniques."

J. M. McBride, "Nitrogen Oxide Intermediates in the Early Decomposition of Crystalline Nitramines."

R. Bardo, "Novel Energetic Processes Involving Ultrafine-Grain Structures."

R. Armstrong, discussion leader

M. F. Foltz, "Molecular Structure and Sensitivity of Energetic Materials."

R. Gilardi, "Crystal Analyses of Insensitive Energetic Materials."

A. Dremin, "Energetic Materials Shock Wave Chemistry and Detonation Limiting Phenomena."

Environmental Sciences: Water

New Hampton School, New Hampton, NH

R. G. Luthy, chair; A. J. B. Zehnder, vice-chair

19–24 June

Reactions and Movement of Chemical in Soil: H. Fluhler, discussion leader

J. N. Ryan, "When Do Colloids Affect the Transport of Contaminants in Soil and Aquifers?"

J. G. Hering, "Direct and Indirect Effects of Organic Compounds on the Mobility of Metals in Soils."

S. Haderlein, "Adsorption of Organic Compounds in Subsurface Environments: Is There a Unifying Concept?"

Reactions and Movement of Chemicals in the Subsurface Environment: S. J. Traina, discussion leader

D. Langmuir, "Transport and Fate of Selected Radionuclides in Ground Water."

E. M. Murphy, "The Use of Ground-Water Isotope Geochemistry for Understanding Subsurface Biogeochemical Cycles."

Environmental Microbiology: A. J. B. Zehnder, discussion leader

E. J. Bouwer, "Influence of Electron Acceptor and Sorption on Biotransformation of PAHs in the Subsurface."

M. K. Firestone, "A Bacterial Perspective on VOCs in the Vadose Zone."

B. E. Rittmann, "Integrating Physical, Chemical and Biofilm Processes in Bioremediation."

Environmental Biotechnology: L. Y. Young, discussion leader

J. R. van der Meer, "Molecular Mechanisms of Natural Genetic Adaptation of Bacteria to Xenobiotic Compounds."

R. Unterman, "Applications of Biotechnology to Soil and Subsurface Remediation."

Transport and Transformation of Contaminants in the Subsurface: P. V. Roberts, discussion leader

L. M. Abriola, "NAPL Entrapment and Persistence: Experimental and Modeling Investigations."

E. J. Weber, "Chemical Transformations at the Solid-Water Interface."

W. P. Ball, "Mass Transfer Limitations of the Remediation of Ground Waters Contaminated by Organic Chemicals."

Constraints and Uncertainties in Clean-up Strategies: J. W. Mercer, Jr., discussion leader

M. C. Kavanaugh, "Remediation and Engineering Constraints."

C. M. Shoemaker, "Optimization and Uncertainty in Ground-Water Remediation Modeling."

Experimental Controlled Release and Site Studies: R. W. Gilham, discussion leader

D. B. Kent, "Influence of Chemical Reaction on the Transport of Metal Ions in Ground Water: Results of Field Scale Experiments."

M. J. Baedecker, "The Biodegradation of Petroleum Hydrocarbons and Geochemical Processes in Aquifers."

P. L. McCarty, "In Situ Biodegradation of Chlorinated Solvents."

Environmental Risks and Regulations: J. J. Morgan, discussion leader

M. J. Small, "Reducing Uncertainty in Environmental Health Risk Assessment."

J. Highland, "Environmental Science, Risk and Regulation."

Environmental Assessment and Exposure: D. Kamely, discussion leader

J. D. Wilson, "Input of Science and Engineering in Environmental Policy Formation."

H. Coller, "Development of Mutational Spectra Technology to Assess Health Risks Posed by Environmental Contaminants."

J. J. Wong, "A Multimedia Model for Problems Posed by Hazardous Waste Sites in California."

Enzymes, Coenzymes, and Metabolic Pathways

Kimball Union Academy, Meriden, NH

R. B. Silverman and D. Ringe, co-chairs; V. E. Anderson and D. N. Silverman, co–vice-chairs

17–22 July

Enzyme Models: P. Dowd, discussion leader

P. Dowd, "On the Mechanism of Action of Vitamin K."

A. D. Hamilton, "Design of Synthetic Receptors for Complexation and Catalysis."

S. J. Lippard, "Models for Nonheme Iron."

Enzymes with Interesting Coenzymes: J. P. Klinman, discussion leader

J. P. Klinman, "Quinoproteins as Redex Catalysts."

M. A. Marletta, "Nitric Oxide Synthase."

V. L. Davidson, "Catalysis and Electron Transfer by Tryptophan Tryptophylquinone in Methylamine Dehydrogenase."

Hydrolytic Enzymes: R. N. Armstrong, discussion leader

R. N. Armstrong, "Mechanistic Studies of Microsomal Epoxide Hydrolase, a Mammalian C-X Bond Hydrolase."

S. G. Withers, "Glycosidase Mechanisms: New Approaches to Their Elucidation."

T. S. Widlanski, "Rational Design of Suicide Substrates for Phosphates and Phosphodiesterases—New Tools for Modifying Signal Transduction."

S. Mobashery, "Overcoming Resistance to Antibiotics: The Challenge of Inhibition of β-Lactamases."

DNA Enzymes: N. O. Reich, discussion leader

N. O. Reich, "Bacterial and Mammalian DNA Methyltransferases."

D. J. Hupe "Studies on the Mechanism and Inhibition of HIV-1 Reverse Transcriptase and Integrase."

S. S. Patel, "Mechanistic Studies of DNA Helicase-Primase."

Metabolic Pathways: C. A. Townsend, discussion leader

C. A. Townsend, "Recent Experiments on the Origins and Functions of Natural Products."

D. E. Cane, "Dissecting the Mechanisms of Multistep Enzyme-Catalyzed Reactions."

H-w. Liu, "Mechanistic Studies on the Biosynthesis of β-Lactam Antibiotics."

Enzyme Technology: A. M. Klibanov, discussion leader

A. M. Klibanov, "Enzyme Structure and Action in Nonaqueous Solvents."

C.-H. Wong, "Enzymes for Synthesis and Inhibition."

K. D. Janda, "Methodologies for Obtaining and Improving Antibody Catalysts."

Oxidative Enzymes: M. C. Pirrung, discussion leader

M. C. Pirrung, "In Vitro Studies of the Ethylene-Forming Enzyme."

P. R. Ortiz de Montellano, "Structure and Mechanism of Heme Oxygenase."

R. Cowling, "Mechanistic Studies of Soybean Lipoxygenase."

B. J. Gaffney, "Structure of Lipoxygenase."

R. H. Abeles, "A Methionine Salvage Pathway and CO Production."

A. S. Mildvan, "Mechanistic Studies of the MutT Enzyme, a Beta-NTPase."

Other Enzymes: R. S. Phillips, "Structure and Mechanism of a PLP-Dependent Carbon-Carbon Lyase, Tyrosine Phenol-Lyase."

D. L. Lawrence, "Probes of Protein Kinase Specificity: Implications for Inhibitor Design."

K. Anderson, "Mechanistic Studies of UDP-*N*-Acetylglucosamine Enolpyruvoyl Transferase."

Excitation at Semiconductor Surfaces

Turtle Bay Hilton, Oahu, Hawaii

J. T. Yates and N. Itoh, co-chairs

13–18 November

Electronically Excited Processes on Semiconductors: Desorption and Photochemistry: W. Ho, discussion leader

W. Ho, "Photochemical Dynamics at Semiconductor Surfaces."

N.Itoh, "Defect-Related Photo-Induced Desorption and Photochemistry on Semiconductor Surfaces."

Y. Murata, "Photo-Induced Processes on Chlorinated Si Surfaces."

Thermal Processes on Semiconductor Surfaces: P. Avouris, discussion leader

P. Avouris, "Thermal Activation at Silicon Surfaces as Studied by the STM."

Thermal Processes on Semiconductor Surfaces: H. Metiu, discussion leader

H. Metiu, "Adsorbate Self-Organization: Island Shapes and Step Flow."

A. Namiki, "Molecular Beam—Adsorbates Reactions on Semiconductor Surfaces."

M. Lagally, "Scanning Tunneling Microscopy Studies of Surface Diffusion."

S. George, "Thermal Chemistry for Atomic Layer Growth on Silicon Surfaces."

Surfaces Spectroscopies on Semiconductors: Y. Chabal, discussion leader

Y. Chabal, "Infrared Spectroscopy of Semiconductor Surfaces."

M. Hirose, "In Situ FTIR Spectroscopy of Semiconductor Surfaces."

J. Weaver, "Photoelectron Spectroscopy of Semiconductor Surfaces."

S. Ushioda, "Raman Scattering and Electron Energy Loss Spectroscopy of Semiconductor Surfaces."

Theoretical Considerations of Electronic and Thermal Excitations at Semiconductor Surfaces: Y. Motizuki, discussion leader

Y. Motizuki, "Ab Initio Molecular Orbital Studies on the Fundamental Reactions Related to the Chlorides: Atomic Layer Epitaxial Growth."

J. W. Gadzuk, "Fundamental Excitations—Electronics."

J. C. Tully, "Thermal Versus Nonthermal Excitations at Surfaces."

Critical Needs for Controlled Surface Excitations in Semiconductor Technology: Y. Katayama, discussion leader

Y. Katayama, "Surface Excitations in the Fabrication and Characterization of Semiconductor Nono-Heterostructures."

J. Greene, "Fundamental Studies of Thin-Film Growth Processes."

H. Matsunami, "Contribution of Photoexcitation Processes on Semiconductor Surfaces to Crystal Growth."

Foams

Plymouth State College, Plymouth, NH

R. E. Keegan, chair; F. A. Shutov, vice-chair

7–12 August

A. J. Ryan, discussion leader

J. R. Booth, "Comparisons of Predictions of Foam Diffusion Models with Thin-Slice Accelerated Measurements."

M. B. Rhodes, "Further Comparisons of Computer Programs for Characterization of Cellular Structures."

K-H. Doerner, "Influence of RIM Processing Parameters on Processing Characteristics, Mechanical Properties, and Surface Quality."

R. E. Keegan, discussion leader

K. Suh, "Latex-Modified Polystyrene Foam."

K. G. Spitler, discussion leader

R. D. Priester, "Dynamic Small Angle X-ray Scattering of Flexible Polyurethane Foam Systems."

A. J. Ryan, "Flexible Polyurethane Foam: Polymerization and Structure Development."

G. Campbell, discussion leader

D. G. Baird, "The Role of Microcellular Foams in the Toughening of Thermoplastics."

K. A. Seeler, discussion leader

D. Rasmussen, "Nucleation of Microcellular Foams."

V. Kumar, "Mechanical Behavior of Microcellular Foams."

G. Campbell, "Nucleation Phenomena in Microcellular Foams."

A. C. Savoca, discussion leader

S. F. Thomas. "Lesquerella-Based Polyurethane Foams."

F. A. Shutov, discussion leader

A. C. Savoca, "Non-Fugitive Catalysts for Polyurethane Foams."

C. D. Eisenbach, "Synthesis, Structure, and Properties of 1,5-Naphthalene and *t,t*-4,4′-Dicyclohexylmethane Diisocyanate–Based Polyurethanes—Implications for Microcellular Foams."

R. B. Turner, discussion leader

W. Meckel, "Polyurethane Foams: Chemistry of Recycling."

F. A. Shutov, "Pulverization of Polymer Foam Wastes and Properties of Filled/Foamed Polymers."

Fractals

San Miniato, Italy

B. Sapoval, chair; M. Scheesinger, vice-chair

1–6 May

Rough Surfaces and Interfaces: L. Sander, discussion leader

F. Family, "Fractals Aspects of Sub-Monolayers in Thin-Film Growth."

T. M. Lu, "Dynamic Scaling in Surfaces During Etching and Thin-Film Growth."

J. Ferre, "Magnetic Domain Fractal Structures in Ultrathin Ferromagnetic Films."

Fractals in Life Sciences: M. Matshushita, discussion leader

E. Weibel, "Fractal geometry: A Design Principle for Biological Organisms."

H. Hentschel, "Pattern Formation and Cellular Denditric Growth."

Turbulence and Geometetry: K. R. Sreenivasan, discussion leader

I. Procaccia, "The Wrinkling of Hydrodynamic Graphs and the Consequence for the Scaling Theory of Turbulence."

Y. Couder, "The Observed Dynamical Structure in Three-Dimensional Turbulence."

J. Feder, "Crossover in Self-Similar and Self Affine Fractals."

Fractals in Electrochemistry: R. C. Ball, discussion leader

T. Pajkossy, "Impedance of Capacitive Fractal Electrodes and Related Issues."

J-N. Chazalviel, "Basic Electrochemical Aspects of Ramified Electrodepostion."

Fractals in Non Scaling Physics: A. Aharony, discussion leader

N. Frankel, "Fractals in General Relativity."

I. Dremin, "Fractality in Particle Physics."

D. L. Jaggard, "Wave Interactions with Fractal Objects."

Fractals in DNA: R. Viczek, discussion leader

H. E. Stanley, "What Are the Properties and Function of the Non-Coding Regions of DNA?"

R. Voss, "Fractal Correlations in DNA: Comparing Techniques."

Power Laws and Self-Organized Criticality: M. Kolb, discussion leader

A. Coniglio, "Frustrated Percolation: Applications to Spin-Glasses, Gels, and Rubber."

E. Bouchaud, "Experimental Investigation of Fractal Cracks."

H. Hermann, "Spontaneous Density Waves in Traffic Flow and Related Dissipative Transport."

General Lecture: B. Sapoval, discussion leader

B. Mandelbrot, "Early History of Fractals."

Fractal Geometry and Geophysics: C. Barton, discussion leader

P. Meakin, "Simple Models for the Structure of Branched Rivers and Their Associated Topographies."

D. Turcotte, "Fractal Hazard Assessment—Floods, Earthquakes and Volcanic Eruptions."

J. Levy-Vehel, "Multi-Fractal Tools for Images Processing."

Fungal Metabolism

Holderness School, Plymouth, NH

O. C. Yoder, chair; J. Leach, vice-chair

19–24 June

Regulation of Primary Metabolism: A. Hinnebusch, discussion leader

M. Carlson

T. Cooper

Regulation of Secondary Metabolism: L. Lasure, discussion leader

D. Sherman

P. McAda

Mechanisms of Plant Pathogenesis: A. Desjardins, discussion leader

A. Osbourn

P. deWit

Virulence Factors in Animal Disease: M. Kurtz, discussion leader

D. Feldman

D. Holden

Sexual Growth and Development: G. Turgeon, discussion leader

R. Kahmann

R. Ullrich

Asexual Growth and Development: G. May, discussion leader

W. Loomis

M. Gustin

Cell Wall Genetics and Metabolism: P. Robbins, discussion leader

H. Bussey

F. Klis

Genome Dynamics: E. Selker, discussion leader

J. Kinsey

R. Metzenberg

Population Genetics: M. Berbee, discussion leader

M. Sogin

T. Bruns

Glass

Tilton School, Tilton, NH

D. E. Day, chair; G. H. Sigel, vice-chair

26 June–1 July

Glass Surfaces—I: C. Pantano, discussion leader

H. Arribart, "Atomic Force Microscopy of Glass Surfaces and Debounded Interfaces."

S. M. Garofalini, "Atomistic Structural and Dynamic Behavior Occurring at Interfaces with Glass Surfaces."

D. L. Allara, "Ultrathin SiD_2 Films—Model Structures for Probing the Chemistry of Silica Surfaces."

Glass Surfaces—II: R. K. Brow, discussion leader

T. A. Michalske, "Reactivity and Chemical Bonding at Pristine Glass Surfaces."

J. T. Dickinson, "Energetic Processes at Glass Surfaces."

Bonding Glass to Polymers—I: E. M. Vogel, discussion leader

D. Innis, "Fractured Polymer-Silica Glass Surface Studied by Atomic Force Microscopy."

B. Evans, "The Surface Condition of Glass and Its Bonding to Polymer Surfaces."

P. Chartier, "The Influence of Alkali Content of Glass on Adsorption and Adhesion of Polymers."

Bonding Glass to Polymers—II: J. L. Barton, discussion leader

C. J. Quinn, "Adhesion of Low Temperature Zinc Phosphate Glasses to Polymers."

G. L. Smay, "Surface Chemistry Considerations and Bonding Characteristics of Glass Container Coatings."

Bonding Glass to Living Tissue—I: D. C. Greenspan, discussion leader

S. Radin, "The Mechanisms of Bioactive Bone-Bonding Behavior."

K. H. Karlsson, "Bioactivity of Glass and Bioactive Glasses."

J. K. West, "Interaction Between Amino Acids and Hydrated Silica Surfaces for Bioactive Glasses."

Bonding Glass to Living Tissue—II: B. C. Bunker, discussion leader

T. Kokubo, "Principle and Application of Bonding of Glass Based Materials to Living Bone."

G. Kohler, "Joining of Bioactive and Biocompatible Ceramics."

Bonding Glass to Polymers—III: E. N. Boulos, discussion leader

P. D. Garrett, "Characterization of Polymer/Glass Bond Strength in Laminated."

A. Agarwal, "Applications of Adhesive Materials in Automotive Glazing."

D. T. Rumack, "Polyurethane Automotive Glass-Bonding Adhesives."

P. P. Bimuniak, discussion leader

C. O. Peterson, Jr., "Architectural Glass: A Technological Overview and the Influence of Installation Requirements."

Bonding Glass to Metals: J. Hayden, discussion leader

N. Eustathopoulos, "Physicochemical and Energetical Properties of Metal-Oxide."

R. E. Loehman, "Glass-Metal Reactions and Interfacial Bonding."

H. Paschke, "Surface Modifications of Lead Glass by Cleaning Procedures and the Influence on Diode Sealing Procedure."

Gravitational Effects on Living Systems

Colby-Sawyer College, New London, NH

S. J. Roux, chair; M. J. Correia, vice-chair

17–22 July

Mechanisms of Sensing and Responding to Gravity: P. Todd and A. Sievers, discussion leaders

O. Hamill, "Mechano-Sensitive Channels and Gravity Sensing."

C. Otey, "Structural Links and Signaling Between Integrins and the Cytoskeleton."

M. Staves, "Integrin Role in Gravity Sensing and Response."

K. Hasenstein, "Cytoskeletal Involvement in Graviresponse."

Amplification and Transduction of the Gravity Signal: B. Pickard and P. Wangemann, discussion leaders

S. Assmann, "Plasma Membrane Ion Channels in Signalling."

N. Read, "Calcium Signaling and Imaging in Plants."

D. Corey, "Role of Calcium in Mechano-Electric Transduction and Adaptation in Mechano-Receptors."

Cellular-Molecular Responses to Simulated or Actual Reduced Gravity: F. Booth and M. Tischler, discussion leaders

D. Thomason, "Changes in Protein Synthesis During Muscle Atrophy in Absence of Weight Bearing."

S. Kandarian, "Ca^{2+} Binding Proteins Change During Muscle Atrophy."

R. Turner, "Space Flight and Gene Expression in Bone."

K. Esser, "Signal Transduction to the Gene in Denervation of Muscle."

Analysis of Gravity Responses at Level of Single Cells: R. M. Brown, Jr., and A. Cogoli, discussion leaders

F. Sack, "Gravitropism in Single Cells of Bryophytes."

R. Baird, "Gravity Response of Utricular Hair Cells."

S. Doty, "First Look at Animals Cells Fixed in Flight."

Integration of Gravity Signal at Multicellular Level: L. Feldman and P. Masson, discussion leaders

D. Cosgrove, "Proteins That Catalyze Wall Expansion in Plants."

R. Hangarter, "Light Effects on Gravitropism in *Arabidopsis*."

D. Angelaki, "Spatio-Temporal Response of Brainstem Cells to Gravity."

Evolution/Comparative Physiology of Gravity-Sensing Systems: U. Budelmann and P. Kaufman, discussion leaders

A. Popper, "Phylogenetic Development of Mechanoreceptors in Sensing Gravity."

K. Niklas, "Implications of Cell Wall Biomechanics for Plant Growth and Evolution."

Physiological/Morphological Effects of Altered Gravity: C. Mitchell and J. Sonnenfeld, discussion leaders

T. Baskin, "Mechanism of Differential Growth in Arabidopsis Roots."

N. Lewis, "Cell Wall Changes Induced by Micro-G."

M. Ross, "Changes in Synaptic Morphology in Mammalian Otolith Organs After Periods of Altered G."

K. Chapes, "Microgravity Effects on Inflammatory Cells."

Microgravity Research Opportunities: D. Gaffney and W. Wiesmann, discussion leaders

L. Young, "Integration of Microgravity Experiments into Space Flight—Practical Considerations."

M. Hughes-Fulford, "Doing Cell Biology in Space."

New Frontiers/Challenges in Gravitational Biology Research: E. Morey-Holton and K. Poff, discussion leaders

M. Correia, "Future Directions in Gravitational Cellular Research in Animal Systems."

S. Roux, "Future Directions in Gravitational Cellular Research in Plant Systems."

Hemostasis

Proctor Academy, Andover, NH

S. J. Shattil, chair; P. Tracy, vice-chair

12–17 June

Activation of Genes That Regulate Vessel Wall Growth: T. Deuel, discussion leader

J. Folkman, "Angiogenesis."

D. Steinberg, "Gene Expression in Endothelial Cells and Macrophages in Relation to Fatty Streak Formation."

Molecular Basis of Fibrinolysis: E. Plow, discussion leader

D. Strickland, "Role of LRP in Regulation of Proteinase Activity."

P. Carmeliet, "Gene Inactivation of the Fibrinolytic Enzymes, t-PA, u-PA and PAI-1."

Cell-Cell and Cell-Matrix Interactions in Hemostasis: M. Beckerle, discussion leader

R. McEver, "Regulation of P-Selectin Expression and Function."

T. O'Toole, "Regulation of Integrin Affinity and Cellular Adhesion."

P. Newman, "Recent Advances in PECAM-1 Biology."

Structural Biology of Hemostasis: W. Bode, discussion leader

P. Lollar, "Enzymology of Factor IXa."

H. Brandstetter, "Crystal Structure of the Complete Porcine Factor IXa Complex."

Molecular Basis of Coagulation and Anticoagulation: K. Mann, discussion leader

K. Bauer, "Role of Factor VII in Initiating Coagulation in Humans."

W. Ruf, "Molecular Sites for Assembly of the Tissue Factor Pathway."

P. Fay, "Activation and Inactivation of Factor VIII."

Genetic Disorder of Hemostasis: E. Sadler, discussion leader

R. Kaufman, "Regulation of Factor VIII Activity."

F. Giannelli, "Molecular Genetics of Hemophilia B."

Cell Signaling in Hemostasis: L. Brass, discussion leader

P. Goldschmidt-Clermont, "GP-IIb-IIIa, Signaling and Actin Organization."

B. Neel, "Signal Transduction by Non-Transmembrane Tyrosine Phosphatases."

J. Brugge, "The Pharmacological Blockade of Cell Signaling and Growth for the Treatment of Disease."

Gene Therapy for Disorder of Hemostasis and Thrombosis: A. Thompson, discussion leader

S. Woo, "Gene Therapy for Hemophilia B."

D. Dichek, "Gene Transfer Approaches to Thrombosis."

Heterocyclic Compounds

New Hampton School, New Hampton, NH

S. McCombie, chair; J. Aube, vice-chair

10–15 July

M. Bachi, discussion leader

M. Bachi, "Free Radical Reactions in the Synthesis of Heterocyclic Compounds."

R. Breslow, "Mimics of Enzyme-Coenzyme Systems."

D. Delorme, "Synthesis of Substituted Lignans—Inhibitors of the 5-Lipoxygenase Enzyme."

J. Dittami, discussion leader

J. Dittami, "Intramolecular Addition Reactions of Photochemically Generated Ylide Intermediates."

A. Dondoni, "Heterocycles as Synthetic Auxiliaries. Some Service from Thiazole and Furan in Aminoacid Synthesis."

T. Engler, discussion leader

T. Engler, "New Methods for Enantioselective Synthesis of Biologically Active, Heterocyclic System."

G. Holland, "RO 24-5913: An Orally Effective Peptidoleukotriene Antagonist."

A. Katritzky, "Benzotriazole—a Versatile Synthetic Auxiliary."

J. Konopelski, "Studies Toward the Synthesis of Cytotoxic Natural Products."

D. Liotta, "New Approaches for Controlling Viral Disease."

C. McClure, "Novel Synthetic Routes to Heterocycles via Pentacovalent Phosphorus and Photochemical Methodologies."

A. Meyers, "Aromatic Oxazolines—Useful Templates in Synthesis."

O. Meth-Cohn, "Friedel's Folly Revisited—a Powerful General Method for the Synthesis of Quinolines and Related Systems."

J. Monn, "An Intramolecular Thiazolium Ylide-Based Route to Kainic Acid."

S. Nelson, "Modification of a Novel Indole Alkaloid."

A. Pfaltz, "Chiral Nitrogen Heterocycles as Ligands in Asymmetric Catalysis."

P. Reider, "Synthesis of Pharmaceutically Important Heterocycles."

A. Saksena, "Synthesis and Properties of Novel Agents."

W. Steglich

F. West, "Synthesis of Heterocyclic Compounds Using Cyclic Ylide."

F. Yoneda, "S-Deazaflavin Derivatives as Novel Flavoenzyme Models."

High-Temperature Chemistry

Kimball Union Academy, Meriden, NH

R. H. Hauge, chair; J. Edwards, vice-chair

31 July–5 August

Solid Oxide Fuel Cell Materials: W. Warrell, discussion leader

H. Yokokawa, "Thermodynamic Considerations on Materials Problems in SOFC."

K. Hilpert, "Long-Term Stability of SOFC Materials—High-Temperature Chemical Implications."

S. Singhal

Solid Oxide Fuel Cell Materials: J. Edwards, discussion leader

High-Temperature Superconductors: P. Chu, discussion leader

D. Peterson, "High-Temperature Chemistry Associated with HTSC Materials."

K. Hack, "Modeling of HTSC Materials."

A. Harsta, "Growth of High-T_c Superconductors by CVD."

High-Temperature in Situ Diagnostics: G. Rosenblatt, discussion leader

J. Hastie, "The Pulsed Laser Thin Film Deposition Process."

S. Krishnan, "Thermophysical and Electronic Properties of Liquid Metals."

Nanophase, Clusters and Bucky Tubes: M. Duncan, discussion leader

R. Smalley, "In Search of Fullerene Fibers."

K. Bowen, Jr., "Nanoclusters: Their Generation and Characterization in Beams and the Bulk."

R. W. Siegel, "Nanophase Materials."

Nanophase, Clusters and Bucky Tubes: C. Myers, discussion leader

CVD Materials and Diagnostics: K. Spear, discussion leader

R. Davis, "High Band Gap Materials."

D. Kisher, "Characterization of CVD Processes Using Synchrotron Based X-ray Techniques."

K. Killeen, "In Situ Measurements of Gaseous Species in GaAs CVD."

Key Materials Issues of the Year 2000 and Beyond: P. Gillis, discussion leader

G. Miller, "Using Electronic Structures to Guide the Synthesis of New Materials."

F. Franzen, "Novel Intrinsically High-Temperature Materials."

Hormonal and Neural Peptide Biosynthesis

Plymouth State College, Plymouth, NH

M. Chretien, chair; D. F. Steiner, vice-chair

7–12 August

Convertases: M. Chretien, discussion leader

R. Fuller, "Molecular and Cellular Determinants of Kex2 (Kexin) Specificity."

W .J. M. Van de Ven, "Site-Directed Mutagenesis and Functional Modulation of the Dibasic Proprotein Processing Enzyme Furin."

G. Thomas, "Intracellular Trafficking Activation of the Furin Proprotein Convertases."

Convertases: D. F. Steiner, discussion leader

D. F. Steiner, "Prohormone Convertase Gene Structure, Expression and Specificity."

N. G. Seidah, "Comparative Biology and Function of the Prohormone Convertases."

K. Nakayama, "Furin a Kex2-Like Endoprotease Involved in Proprotein Processing Within the Constitutive Secretory Pathway."

Convertases: H. Akil, discussion leader

I. Lindberg, "Enzymatic and Regulation of PC1/3 and PC2."

A. Rehemtulla, "Structure, Function and Analysis of PACE."

K. Docherty, "The Biosynthesis and Maturation of Prohormone Convertases Belonging to the Subtilisin Family."

P. Loh, "Prohormone Processing by Novel Aspartic Proteases from Mammalian Pituitary and Yeast."

P. Cohen, "Cloning and Functional Properties of *N*-Arginine Dibasic Convertase: A New Corner to the Family of Nonsubtilisin-Like Processing Endopeptidases."

Carboxypeptidases: L. D. Fricker, discussion leader

L. D. Fricker, "Molecular and Cellular Biology of Carboxypeptidase E."

D. Parkinson, "Functions of the Carboxyl-Terminal Domain of Carboxypeptidase H."

R. A. Skidgel, "Structure and Function of Human Carboxypeptidase M."

D. Y. Thomas, "The Yeast Prohormone Processing Carboxypeptidase Kex1p."

Intracellular Sorting: W. B. Huttner, discussion leader

W. B. Huttner, "Biogenesis of Neurosecretory Vesicles."

D. Shields, "Prohormones Processing and Sorting in the Golgi Apparatus—Analysis Using an in Vitro System."

P. Arvan, "Active and Passive Sorting of Proteins Within Immature Secretory Granules."

PAM: B. A. Eipper, discussion leader

B. A. Eipper, "Using PAM as a Tool to Investigate Regulated Secretion."

F. Cuttita, "Peptide Amidation: A Signature of Biological Activity."

D. J. Merkler, "The Enzymology of Peptide Amidation."

Expression and Regulation: R. E. Mains, discussion leader

R. E. Mains, "Sequential Steps in Peptide Biosynthesis."

J. C. Hutton, "Regulation of the Synthesis, Sorting and Activity of the Proinsulin Processing Enzymes."

S. J. Watson, "Anatomical Studies of Propeptide Processing Enzymes in Brain and Endocrine Systems."

Subtilisins and Evolution: M. Inouye, discussion leader

M. Inouye, "Role of the Propeptide as the Intramolecular Chaperone in Protein Folding."

S. J. Chan, "Proprotein Convertases in Primitive Chordates and Invertebrates."

G. R. Marshall, "Protease Inhibitors as Potential Antivirals."

Other Convertases and Inhibitors: J. L. Roberts, discussion leaders

M. Laskowski, Jr., "Protein Inhibitors of Convertases."

J. Massague, "IGF Cleavage Process."

H. D. Klenk, "Activation of Viral Glycoproteins by Subtilisin-Like Eukaryotic Proteases."

Hormone Action

Kimball Union Academy, Meriden, NH

S. McKnight, chair; P. Mellon, vice-chair

14–19 August

R. Lovell-Badge, "SRY and Mammalian Sex Determination."

Membrane Receptor Signaling

C. Carter-Su, "Identification of JAK2 as a Signaling Molecule in GH/Prl Action."

R. Cone, "Molecular Genetics of the Melanocortin Receptors."

R. Williams, "FGF Receptor Signaling."

S. Schreiber, "A Natural Products–Based Approach to Understanding and Controlling Signal Transduction."

Steroid Receptor Function

K. Horwitz, "Progesterone Receptors and Breast Cancer."

D. Toft, "Steroid Receptor Complexes with Heat Shock Proteins and Immunophilins."

D. Robins, "Androgen-Specific Gene Regulation."

Developmental Endocrinology

P. Devreotes, "Molecular Genetics of Signal Transduction in *Dictyostelium*."

R. Firtel, "Signaling Pathways Regulating Multicellular Development in *Dictyostelium*."

J. Rosen, "Mammary Gland Development and Carcinogenesis."

G. Schutz, "Molecular Genetic Analysis of CREB and Glucocorticoid Receptor Function in Development."

Growth Factor in Development

D. Lee, "Transgenic and Mutant Mouse Models for Studies of EGF Receptor Ligands."

A. Efstratiadis, "Disruption of Genes Encoding IGFs and their Receptors."

R. Rosenfeld, "Biological Actions of IGF Binding Proteins."

Phosphorylation and Signaling

M. Greenberg, "Neurotrophin and Neurotransmitter Regulation of Immediate Early Gene Expression."

P. Sassone-Corsi, "Nuclear Response to cAMP: Central Role of CREM."

M. Montminy, "Transcriptional Regulation by the cAMP Pathway."

B. Errede, "Dynamics of Interaction Between MAP Kinase Activation Pathways in Yeast."

Neuroendocrinology

S. Amara, "Molecular Properties of Neurotransmitter Uptake Systems."

M. Birnbaumer, "Cloning and Expression of AVP Receptors."

D. Bredt, "Nitric Oxide Signaling in Neuronal Development."

Intracellular Signaling

R. Tsien, "New Control Mechanisms and Visualization Techniques for Intracellular Messengers."

H. Hamm, "Interactions Between G Proteins and Effector Molecules."

R. Reed, "Genetic Regulation of Olfactory Transduction Pathways."

R. Maurer, "Second Messenger–Regulated Transcription in Pituitary Cells."

Analysis of Signaling from Single Cells to Complex Neural Networks Using Electrophysiological Techniques

B. Hille, "Hormone-Simulated IP3, Calcium Oscillations, and Exocytosis in Pituitary Gonadotropes."

E. Kandel, "Second Messenger and Gene Induction in Memory and Learning."

Steroid Biosynthesis and Action

M. Waterman, "Regulation of Steroid Hormone Biosynthesis Genes."

M. Sanders, "Positive and Negative Response Elements in Steroid Regulation of the Ovalbumin Gene."

D. Shapiro, "DNA Bending and mRNA Stabilization in Steroid Receptor Control of Gene Expression."

Immunochemistry and Immunobiology

New England College, Henniker, NH

C. B. Thompson, chair; D. Raulet, vice-chair

10–15 July

B Cell Development: F. W. Alt, discussion leader

K. Rajewsky, "Immunoglobulin Rearrangement in Single Cells."

D. Baltimore, "Signal Transduction in B Cell Development."

N. Rosenberg, "Role of ABL in B Cell Development."

Receptor Rearrangement: D. Raulet, discussion leader

M. R. Lieber, "Site-Specific Recombination in the Immune System."

T Cell Development: H. von Boehmer, discussion leader

D. Mathis, "CD4/CD8 Lineage Commitment in T Cell Development."

M. J. Bevan, "Peptides Involved in Positive Selection."

M. M. Davis, "T Cell Receptor Affinities in Thymic Selection and Antigen Recognition."

T Cell Costimulation: J. P. Allison, discussion leader

L. Nadler, "Costimulatory Ligands."

J. A. Bluestone, "The Role CTLA-4 in T Cell Activation."

Apoptosis: T. Honjo, discussion leader

S. J. Korsmeyer, "Immune Studies of bcl-2 Knockout Mice."

C. B. Thompson, "bcl-2–Related Genes."

S. Nagata, "Fas and Its Ligand."

B Cell Counter-Receptors: T. Tedder, discussion leader

R. Armitage, "CD40 Ligands and Related Molecules in B Cell Activation."

C. Goodnow, "B Cell Costimulatory Receptors."

Antigen Presentation: P. Cresswell, discussion leader

D. B. Williams, "Influence of Calnexin on MHC Class I Assembly and Transport."

E. D. Mellins, "The Class II Antigen Presentation Pathway: A Genetic Approach."

I. Mellman, "Endosomes in MHC Class II–Restricted Antigen Presentation."

T Cell Subsets: S. L. Swain, discussion leader

K. P. Murphy, "Accessory Cell Regulation of T Cell Phenotype Development."

R. L. Coffman, "Th1 and Th2 Cross-Regulation in Disease."

Signal Transduction/Transcription Regulation: A. Weiss, discussion leader

A. Rao, "Regulation of IL-2 Gene Expression."

D. A. Cantrell, "Role in Ras in Regulating T Cell Activation."

K. L. Kelly, "Phosphatase Regulation of MAP Kinase Pathways."

Inorganic Chemistry

Brewster Academy, Wolfeboro, NH

G. J. Kubas, chair; H. D. Kaesz, vice-chair

31 July–5 August

Organometallic and Cluster Chemistry: H. D. Kaesz, discussion leader

C. P. Casey, "Reactions of Cp* $(Co)_2$ Re=Re $(CO)_2$ Cp*."

J. P. Fackler, Jr., "Clusters of Monovalent Group 11 Compounds with Sulfur Ligands—New M_4, M_6 and M_8 Structures."

R. D. Adams, "The Chemistry of Mixed Metal Cluster-Based Alkyne Hydrogenation Catalyst."

Homogeneous Catalysis: J. S. Bradley, discussion leader

D. Packett, "New Hydroformylations with Rhodium Phosphite Catalysis."

R. T. Baker, "Applications of CFC Alternatives."

Bioinorganic Chemistry: M. Maroney, discussion leader

D. N. Coucouvanis, "New and Old Fe/Mo/S Clusters Catalytically Active in the Reduction of Nitrogenase Substrates."

T. J. Meyer, "Mechanisms of Water Oxidation and Dinitrogen Reduction."

T. V. O'Halloran, "Coordination Chemistry in Control of Gene Expression"

Transition Metal Small Molecule Reactivity: M. Andrews, discussion leader

P. Legzdins, "The Utility of Metal Nitrosyl Complexes."

R. M. Bullock, "Hydride Transfer Reactions of Transition Metal Hydride Complexes."

G. M. Poliakoff, "Photochemistry at High Pressure and Low Temperature."

Surfaces, Films and Devices: D. L. Lichtenberger, discussion leader

M. S. Wrighton, "Coordination Chemistry of Surfaces: Rational Chemistry for Tailoring Surfaces."

J. T. McDevitt, "Molecule/Superconductor Structures and Devices."

C. A. Mirkin, "Chemical Transformations in Self-Assembled Monolayer Films."

B. H. Weiller, "Kinetics and IR Spectroscopy of CVD Reactions."

Metal-Carbon Clusters: D. Thorn, discussion leader

R. N. Grimes, "Metallocarborane Sandwich Complexes in Synthesis and Catalysis."

A. W. Castleman, Jr., "Met-Cars: A New Class of Molecular Clusters."

Coordination Chemistry: C. J. Burns, discussion leader

O. Eisenstein, "Structure and Properties of Electron Deficient Complexes."

S. P. Nolan, "Organoruthenium Thermochemistry: Influence of Steric and Electronic Ligand Effects on Enthalpies of Ligand Substitution Reactions."

B. W. Eichhorn, "Reactions of Soluble Zintl Ions with Transition Metal Complexes."

D. L. Clark, "Actinide Speciation Studies."

Inorganic Chemistry and Catalysis Toward 2000: D. F. Shriver, discussion leader

R. W. Parry, "Perspectives on Inorganic Chemistry."

J. A. Cusumano, "The Role of Catalysis in Achieving Environmentally Sustainable Growth in the 21st Century."

Main Group Chemistry: J. M. Williams, discussion leader

R. T. Paine, "Group 13–15 Chemistry—from Molecules to Rings, Cages and Polymers."

D. M. Roundhill, "From Bakelite to Selective Ligands for Metal Complexes."

D. Loy, "Aerogel Chemistry."

Interaction of Water with Solid Surfaces

Plymouth State College, Plymouth, NH

P. A. Thiel, chair; F. T. Wagner, vice-chair

17–22 July

Structure of Water at Metal Surfaces: T. Ellis, discussion leader

K. Griffith, "Adsorption and Reaction of Water on Stepped Nickel Surfaces."

M. Van Hove, "Structure of Water and Ice Adsorbed on P^+(III): Leed Studies."

Chemistry and Photochemistry of Adsorbed Water: J. M. White, discussion leader

G. Pirug, "Aspects of Water Adsorption on Metal Surfaces."

E. Hasselbrink, "Dynamics of Water Formation and Photolysis on Pd(III)."

Water at Surfaces of Oxides

C. Tripp, "Infrared Spectroscopy Studies of Water Adsorption on Silica."

Solvation at Solid and Liquid Interfaces: J. Hicks, discussion leader

G. Nathanson, "Molecular Beam Studies of Collisions and Reactions of Water Molecules with Liquids."

M. Philpott, "Molecular Dynamics Simulations of the Charged Metal Electrode-Aqueous Electrolyte Interface."

Atmospheric Chemistry at Water and Ice Surfaces: D. Worsnop, discussion leader

M. Molina, "Atmospheric Chemistry on Ice-Like Surfaces."

J. Roberts, "Adsorption and Reaction of Atmospherically Abundant Molecules on Ice."

S. George, "Dynamics, Optical Characterization, and Surface Chemistry of Ice and Nitric Acid Hydrate Films."

Electrochemical Phenomena: D. Harrington, discussion leader

M. Weaver, "Solvation Effects upon Electrochemical Interfacial Structure."

M. Toney, "The Distribution of Water Molecules at Electrode-Electrolyte Interfaces."

Water at Polymer and Protein Surfaces

S. Leikin, "Direct Measurement of Forces Between Self-Assembled Proteins."

R. White, "Hydration of Polymers."

Role of Water in Adhesion and Friction: S. Granick, discussion leader

J. Krim, "Quartz Microbalance and STM Studies of Friction for Molecularly Thin Water Films."

J. Israelachvilli, "Does Water Structure Between Surfaces Ever Give Rise to a Repulsive Hydration Force?"

Intermediate Filaments

Tilton School, Tilton, NH

K. J. Green, chair; M. Klymkowsky, vice-chair

24–29 July

Intermediate Filament Structure and Function: Evolution and Development: R. Oshima, discussion leader

K. Weber, "Intermediate Filaments of Lower Metazoans and Evolution of Intermediate Filament Genes."

M. Klymkowsky, "Intermediate Filament Expression and Function During *Xenopus* Development."

D. Paulin, "Type III if: Essential Genes in Development?"

Structure, Assembly, and Dynamics of Intermediate Filaments: D. Parry, discussion leader

U. Aebi, "Structure and Assembly Properties of Nuclear Lamins and Intermediate Filaments."

P. Steinert, "Modes of Molecular Interaction in Keratin Versus Type III Intermediate Filaments."

R. Goldman, "Regulation and Dynamics of the Intermediate Filament Cytoskeleton and Karyoskeleton."

Intermediate Filament–Cell Surface Interactions: K. Green, discussion leader

W. Franke, "Intermediate Filament Attachment to the Desmosomal Plaque."

G. Wiche, "Function and Regulation of Plectin."

S. Georgatos, "Attachment of Intermediate Filaments to Lens Fiber Cell Membranes."

Intermediate Filaments: Homologue or Analogue?: R. Liem, discussion leader

M. Yaffe, "Is the Yeast Protein MDMI and Intermediate Filament?"

Intermediate Filaments: Pathology and Differentiation: E. B. Lane, discussion leader

E. B. Lane, "Intermediate Filaments in Pathology."

M. Hendrix, "Keratins and Invasion."

R. Evans, "Function for Intermediate Filaments in Lipid Metabolism."

Workshop on Homologous Recombination: Animal Models: H. Baribault, discussion leader

A. Nagy, "Non-Injection Methods for the Production of ES Cell–Embryo Chimaeras."

Epidermal Diseases of Keratin: E. Epstein, discussion leader

E. Epstein, "Human Diseases of the Epidermis."

E. Fuchs, "Genetic Disorders of Keratins."

D. Roop, "Mouse Models of Epidermal Disorders."

Presentations by Winners of Young Scientist Competition J. Compton

P. Coulombe

Pathology and Differentiation II: Neurofilaments: L. Parysek, discussion leader

J-P. Julien, "A Mouse Model of Amyotrophic Lateral Sclerosis (ALS)."

A. Peterson, "Disruption of the Neurofilament Cytoskeleton in Transgenic Mice."

D. Cleveland, "Neurofilament Involvement in Axonal Growth and Motor Neuron Diseases."

Ion Channels

Colby-Sawyer College, New London, NH

F. J. Sigworth, chair; B. P. Bean, vice-chair

19–24 June

Structure and Mechanisms of Ion Permeation: C. Miller, discussion leader

N. Unwin, "Structure of the Acetylcholine Receptor in Closed and Open States."

R. MacKinnon, "Mechanisms of Permeation in Cation Channels."

M. DeBiasi, "Histidine Mutagenesis and Permeation in Potassium Channels."

R. W. Tsien, "What Makes a Calcium Channel a Calcium Channel?"

H. R. Guy, "Structural Models of Na, Ca and K Channels."

B. Roux, "Thermodynamics of Double Occupancy in the Gramicidin Channel: A Molecular Dynamics Study."

W. Nonner, "Ion Permeation in a Chloride Channel: New Ways of Violating the Independence Principle."

Channel Modulation: B. Hille, discussion leader

Y. Kurachi, "G-Protein Control of Cardiac Potassium Channels."

L. Kaczmarek, "Regulation of a Potassium Channel in the Auditory System."

K.-W. Yau, "Modulation of Cyclic Nucleotide Gated Channels by Calcium-Calmodulin."

J. Roper, "Metabolic Modulation of Potassium Channels."

Potassium Channels: A. M. Brown, discussion leader

J. P. Adelman, "Cloning and Expression of Rat and Human K-ATP Channels."

C. Lingle, "Separable Domains Determine Ca and Voltage Sensitivity in BK Channels."

S. H. Heinemann, "Functional Expression of K Channel Beta Subunits."

L. Jan, "Comparative Studies of Voltage-Gated and Inwardly Rectifying Potassium Channels."

Channels and Synaptic Function, M. B. Jackson, discussion leader

C. Jahr, "NMDA Receptor Channel Function in Synaptic Transmission."

L. Trussell, "Time Course of Transmitter Action at a Glutamatergic Synapse."

P. Jonas, "Cellular and Molecular Determinants of Excitatory Postsynaptic Currents in Neurons."

Chloride Channels: H. Lester, discussion leader

T. Jentsch, "Structure and Function of CLC Chloride Channels."

D. Gadsby, "ATP Hydrolysis Gates CFTR Chloride Channels."

Channel Gating Mechanisms

A. Goldin, "Inactive in Na Channels."

R. Horn, "Molecular Studies of Coupling Between Activation and Inactivation in Sodium Channels."

E. Stefani

R. Aldrich

Lasers in Biology and Medicine

Kimball Union Academy, Meriden, NH

B. Wilson, chair; B. Tengroth, vice-chair

3–8 July

Pulsed Laser Tissue Effects and Applications: A. Vogel, discussion leader

A. Doukas, "Biological Responses of Laser-Induced Stress Waves in Vitro."

M. Frenz, "Mechanical and Thermal Effects in UV and IR Laser Ablation at Various Pulse Durations."

A. Vogel, "Minimization of Cavitation in Pulsed Laser Ablation."

Microbeam and Low-Level Laser Effects: D. Sliney, discussion leader

B. Tromberg, "What Do Laser Microbeams Really Do to Cells?"

Photodynamic Therapy: Applications Other Than Solid Tumors: J. Levy, discussion leader

T. Hasan, "The Applications of PDT in the Treatment of Autoimmune Disease."

R. Anderson, "Treatment of Psoriasis with PDT."

Y. Tadir, "Endometrial Ablation and Other Gynecologic Applications of PDT."

M. Vincent, "The Use of Photosensitizers for Treatment of Atherosclerosis and the Prevention of Restenosis."

U. Schmidt, "The Potential of PDT for the Treatment of Macular Degeneration."

Laser Welding of Tissues: R. Anderson, discussion leader

R. Anderson, "Molecular Mechanisms of Thermal Photo Welding."

M. Judy, "Tissue Welding by Photochemistry."

In Vivo Spectroscopy and Imaging: M. Patterson, discussion leader

M. Kaschke, "Frequency-Domain Transillumination Imaging for Breast Cancer Diagnosis: Theoretical and Engineering Problems."

E. Gratton, "A Frequency-Domain Non-Invasive Tissue Oximeter."

A. Kouttle, "High-Resolution Imaging with Low-Coherence Interferometry."

D. Haaland, "Non-Invasive Glucose Monitoring of Diabetic Patients Using Near Infrared Spectroscopy."

D. Benaron, "Imaging Brain Structure and Functional Pathology Using Light."

In Vivo Spectroscopy and Imaging: M. Feld, discussion leader

J. Johansson, "Fluorescence Spectroscopy with Applications to in Vivo Diagnosis."

D. Delpy, "Quantitative Monitoring and Imaging of Tissue Oxygenation and Hemodynamics."

N. Nishioka, "Diagnosis of Burn Depth."

R. Cothren and R. Manoharan, "Diagnosing Colonic Dysplasia Using Fluorescence: Can It Work and Why?"

Lasers in Dentistry

H. Wigdor, "Uses of Lasers on Dental Soft Tissues."

C. Liebow, "Potential Use of Lasers for Treatment of Oral Cancers."

J. Walsh, "Potential Uses of Er.Yag Lasers in Dentistry."

J. Featherstone and D. Fried, "Interactions of Lasers with Dental Enamel, Dentin and Apatite."

New Technologies/Safety: B. Tengroth, discussion leader

M. Wolbarsht, "Advances in Laser Safety."

R. Thompson, "Fluorescence Lifetime-Based Fiber Optic Chemical Sensors."

Free Electron Lasers in Biology and Medicine: M. Marron, discussion leader

S. Boxer, "Dynamics of Macromolecules Using the FEL."

G. Edwards, "What's New in the Infrared: Vibrational Energy Transfer."

D. Straub, "Surgical Uses of the Duke FEL."

Laser Interactions with Surfaces

Colby-Sawyer College, New London, NH

Henry Helvajian, chair

14–19 August

H. Helvajian, T. Dickenson, discussion leaders

N. Itoh, "Photoablation (Theory and Experiment)."

D. Ramaker, "DIET (Theory and Experiments)."

E. Wiedeman, "Low Fluence Laser Photoejection Processes."

R. Haglund, discussion leader

E. Matthias, "Photodesorption (Role of Defects)."

T. Dickenson, "Defect-Induced Laser Desorption."

J. Dubowski, discussion leader

H. Van Driel, "Laser/Surface Excitation Phenomenon."

F. Trager, "Laser Induced Species Desorption."

M. Stuke, "Laser/Surface Photochemistry."

T. Heinz, "Surfaces Processes Induced by Femtosecond Laser Radiation (Experiment and Theory.)"

D. Geohegan, discussion leader

I. Boyd, "Thin Film Synthesis by PLD."

W. Marine, discussion leader

G. Petite, "Ion Surface Interactions."

R. Kelly, "PLD, Plasma, etc. (Theory)."

D. Geohegan, "PLD Visualization."

J. Horwitz, "PLD and Materials Synthesis."

J. Dubowski, discussion leader

W. Marine, "Diatomic Molecules and Nanoparticles Formation During Silicon Ablation in a Reactive Atmosphere."

J. Horwitz, discussion leader

Y. Aoyagi, "Laser-Assisted Digital Etching."

J. Dubowski, "Digital Etching on Surfaces by Laser Irradiation."

L. D. Laude, "Surface Modification."

R. Haglund, "Nonlinear Processes in Imbedded Particals."

H. Helvajian, discussion leader

M. S. Dresselhaus

J. Horwitz, discussion leader

A. Giardini-Guidoni, "Clusters."

W. Husinsky, "Laser Ablation of Tissue."

Panel Discussion, "Laser Material Processing (Nano to Micro Scale)."

Lipid Metabolism

Kimball Union Academy, Meriden, NH

A. Tall, chair

19–24 June

Apolipoprotein B: N. Davidson, discussion leader

N. Davidson, "Cell-Specific and Molecular Regulation of Apolipoprotein B mRNA Editing."

J. Scott, "Molecular Mechanisms for the Control of apoB-Containing Lipoprotein Biosynthesis."

H. Ginsberg, "Regulation of the Targeting of Apolipoprotein B for Secretion from Hep G2 Cells."

E. Rubin, "Studies on ApoB and Lp(a) in Transgenic Mice."

Sterol-Regulated Genes: R. Simoni, discussion leader

X. Wang, "SREBP-1 and -2, a Pair of Sterol-Regulated Transcription Factors."

T. Osborne, "Feedback Regulation of Cholesterol Homeostasis at the Transcriptional Level."

R. Simoni, "Degradation of HMG-CoA Reductase."

Genetics and Lipoprotein Metabolism: J. Breslow, discussion leader

J. Breslow, "Transgenic Mouse Models of Lipoprotein Disorders and Atherosclerosis."

A. Lusis, "Identification of Genetic Loci Contributing to Lipoprotein Metabolism in Mice Using a Complete Linkage Map Approach."

J. Herz, "Genetic Manipulation of LDL Receptor–Related Genes in the Mouse."

J. Dietschy, "Regulation of Hepatic Cholesterol Synthesis and LDL Receptor Activity."

Therapy: S. Grundy, discussion leader

S. Grundy, "Treatment of Atherogenic Dyslipidemia."

S. Woo, "Gene Therapy for Cardiovascular Disorders."

J. Wilson, "Gene Therapy of Inherited Dyslipidemias."

Genetically Manipulated Animal Models: E. Rubin, discussion leader

N. Maeda, "Dietary Effects on Dyslipidemias and Atherosclerosis in Mice Genetically Altered by Gene Targeting."

N. Yamada, "Lipoprotein Metabolism in Trangenic Mice: Effect of Overexpression of Apolipoprotein E and Lipoprotein Lipase."

J. Taylor, "The Gladstone Institute Overexpression of Hepatic Lipase and apoE in Transgenic Rabbits."

P. Denefle, "Human apoA-I Transgenic Rabbits."

Lipoprotein Structure: D. Small, discussion leader

D. Small, "The Structure of apoB and the Assembly of Nascent VLDL."

H. Wong, "The Molecular Architecture of Lipoprotein Lipase."

S. Fojo, "Lipoprotein Lipase and Hepatic Lipase: New Insights into Structure-Function and Mechanism of Action."

Lipoprotein Receptors: I. Tabas, discussion leader

I. Tabas, "Novel Pathways Involving the Interaction of Lipoproteins with Macrophages."

W. Schneider, "The Laying Hen: Lipoprotein Receptors and More."

T. Kodama, "Structure and Function of Macrophage Scavenger Receptors."

T. Yamamoto, "Role of the Very Low Density Lipoprotein Receptor in the Uptake of apoE-Containing Lipoproteins."

ApoE/Alzheimer's Disease: R. Mahley, discussion leader

R. Mahley, "Diverse Functions of Apolipoprotein E in Neurobiology."

D. Price, "Alzheimer's Disease and Animal Models."

W. Strittmatter, "Apolipoprotein E in Alzheimer's Disease."

Lipoprotein(a): H. Hobbs, discussion leader

M. Stampfer, "HDL Subfraction and Lp(a) in the Physicians' Health Study."

H. Hobbs, "Expression of Lp(a) in Transgenic Mice."

H-J. Mueller, "In Vitro Mutagenesis of Recombinant Apolipoprotein(a): The Identification of Functional Domains."

A. White, "Synthesis, Secretion and Assembly of Lp(a)."

Lysosomes

Proctor Academy, Andover, NH

F. Maxfield, chair; S. Kornfeld, vice-chair

3–8 July

Formation of Coated Membranes and Vesicles: J. Keen, discussion leader

J. Keen, "Clathrin-Associated Proteins."

S. Schmid, "Formation of Coated Vesicles."

R. Vallee, "Dynamin."

F. Brodsky, "Regulation of Clathrin Assembly."

Membrane Traffic in Unicellular Organisms: S. Emr, discussion leader

S. Emr, "Essential Role for P13 Kinase in Lysosomal Protein Sorting."

T. Stevens, "Sorting to the Vacuole."

H. Riezman, "Molecular Requirements for Internalization in Yeast."

Sorting and Vesicle Budding in the Golgi Apparatus: S. Kornfeld, discussion leader

S. Kornfeld, "Assembly of Clathrin-Coated Pits."

S. Pfeffer, "Rab Proteins in Transport from Endosomes to the TGN."

K. Howell, "Vesicle Budding in the Golgi Apparatus."

H. Geuze, "The Formation of MHC Class II Compartments."

Regulated and Constitutive Endocytic Sorting: T. McGraw, discussion leader

T. McGraw, "Cytoplasmic Sorting Signals and Receptor Recycling."

P. DeCamilli, "Membrane Traffic at the Synapse."

S. Cushman, "Cell Biology of Insulin Action on Glucose Transport."

Molecular Control of Vesicle Targeting and Fusion: J. Rothman, discussion leader

J. Rothman, "Biochemical Basis for Vesicle Recognition and Fusion."

R. Scheller, "Molecular Mechanisms of Synaptic Transmission."

J. Gruenberg, "Mechanisms of Endosome Fusion."

I. Mellman

Membrane Traffic in Polarized Cells: A. Hubbard, discussion leader

A. Hubbard, "Membrane Traffic in Hepatocytes."

E. Rodriguez-Boulan, "Sorting in the TGN and Endosomes."

K. Mostov, "Transcytosis and Recycling."

Endocytosis and Processing of Proteins and Infectious Agents: M. Neutra, discussion leader

M. Neutra, "Transport of Antigens and Microorganisms in Intestinal Cells."

S. Pierce, "Antigen Presentation."

S. Younkin, "Endocytic Processing of the Alzheimer B-Amyloid Precursor Protein."

A. Taraboulos, "Processing of Prions."

Alex Novikoff Memorial Lecture

R. Klausner

Endocytic Processes, Signaling and Membrane Transport: R. Anderson, discussion leader

R. Anderson, "Signaling and Caveolae."

J. Swanson, "Endocytic Processes in Macrophages."

D. Clemens, "Properties of Vacuoles Containing Bacteria."

S. Mayor, "Trafficking of Lipids and GPI-Proteins."

Magnetic Resonance in Biology and Medicine

New England College, Henniker, NH

G. Drobny, chair; H. Thompson, vice-chair

17–22 July

Multidimensional NMR Studies of Nucleic Acids: P. B. Moore, discussion leader

A. Pardi, "Heteronuclear Multidimensional NMR Studies of RNA."

B. R. Reid, "2D NMR Studies of Duplex RNA, RNA/DNA Hybrids and Chimeras."

J. Feigon, "Homo- and Heteronuclear NMR Studies of RNA."

High-Resolution NMR Studies of Metallo-Proteins: B. J. Gaffney, discussion leader

M. Summers, "Probing the Metal Coordination Sites of Metallo-Proteins by NMR."

G. N. LaMar, "^{1}H NMR of the Solution Electronic and Molecular Structure of Hyperthermophilic Ferredoxins."

Multidimensional NMR Studies of Protein–Nucleic Acid Interactions: D. Wemmer, discussion leader

R. Kaptein, "Protein-DNA Recognition. A View from NMR."

J. R. Williamson, "NMR of RNA-Peptide Complexes."

G. Mullen, "NMR Structure Determination of the Template-Binding Domain of DNA Polymerase"

Solid-State NMR Studies of Biopolymers: A. McDermott, discussion leader

R. Griffin, "Solid-State NMR Studies of Bacteriorhodopsin and Its Photo Intermediates."

J. Schafer, "REDOR NMR of Protein Binding Sites."

Multidimensional NMR Studies of Protein Structure/Function: S. Campbell-Burke, discussion leader

P. Rajagopal, "Protein-Protein Interaction in the PTS System: A Mechanistic and Structural Approach by NMR."

J. T. Lecomte, "Hemoproteins With and Without the Heme."

G. Wagner, "Relaxation Experiments for Studies of Motions in Proteins."

Time Domain EPR Studies of Biopolymers: B. H. Robinson, discussion leader

D. J. Singel, NO Biology and EPR Spectroscopy."

M. Bowman, "New Dimensions in Pulsed EPR for Bioradicals and Enzymes."

NMR, EPR, and Optical Studies of Biopolymer Dynamics: D. A. Torchia, discussion leader

L. Kay, "Novel NMR Experiments for Studying Protein Structure and Dynamics: Application to SH2 and SH3 Domains."

R. R. Vold, "Solid-State NMR Studies of Protein Dynamics."

E. Hustedt, "EPR and Optical Studies of Membrane-Bound Protein Dynamics."

Magnetic Resonance Studies of Protein Folding and Protein Structural Transitions: J. Baum, discussion leader

C. M. Dobson, "NMR Studies of Protein Folding."

G. Millhauser, "Probing Structure and Dynamics in Helical Peptides with Electron Spin Resonance."

Novel Multidimensional NMR Techniques for the Study of Biopolymer Structure and Dynamics: J. Prestegard, discussion leader

A. Bax, "Stable Isotopes and Protein NMR."

L. Mueller, "Multidimensional NMR Methods for the Study of Proteins."

M. Rance, "Studies of Protein and RNA Dynamics by Heteronuclear Relaxation Measurements."

Mammalian Gametogenesis and Embryogenesis

Colby-Sawyer College, New London, NH

M. Eddy, chair; S. Heyner, vice-chair

31 July–5 August

Primordial Germ Cells: C. Wylie, discussion leader

K. Lawson, "Fate Map Origin of Germ Cell Lineage."

P. Donovan, "Control of PGC Proliferation."

P. Labosky, "Developmental Potential of PGCs."

Developmental Competence: J. Eppig, discussion leader

S. Ward, "Paternal Chromatin Organization."

W. Generoso, "Early Window for Induction of Congenital Anomalies."

Growth Factors: S. Heyner, discussion leader

E. Adamson, "Epidermal Growth Factor Receptors in Embryos."

J. Pollard, "Developmental Effects of CSF-1 Gene Mutation."

T. Bellve, "Seminiferous Growth Factors Regulating Onset of Spermatogenesis."

Controls of Gene Expression: S. Strickland, discussion leader

R. Braun, "Protamine Translation Factors."

J. Cross, "Trophoblast Gene Regulation."

Developmental Cascades: R. Beddington, discussion leader

R. Behringer, "Genetic Analysis of Pattern Formation."

H. Scholer, "Regulation of Oct-4 Gene Expression."

Cell-Cell Interactions: F. Costantini, discussion leader

J. Dean, "Developmental Genetics of *Zona pellucida*."

D. Myles, "Egg Adhesion and Fusion Molecules of Sperm."

A. McLaren, "Development of the Germ Line."

Effects of Gene Mutations: K. Artzt, discussion leader

G. MacGregor, "Gene Traps for Gametogenesis."

R. Woychik, "Insertional Mutagenesis and the Analysis of Development."

S. Pilder, "Hst-6 Effects on Sperm Flagellar Assembly."

Imprinting: A. Surani, discussion leader

H. Cedar, "Methylation of Imprinted Genes."

R. Chaillet, "Mechanisms of Imprinting of Transgenes."

Sex Chromosomes: P. Burgoyne, discussion leader

R. Erickson, "Sex Determination."

C. Brown, "Human X-Chromosome Inactivation."

J. McCarrey, "Xist Gene Expression in Germ Line Development."

Medicinal Chemistry

Colby-Sawyer College, New London, NH

J. Plattner, chair; A. Krantz, vice-chair

7–12 August

Osteoporosis: G. A. Rodan, discussion leader

G. A. Rodan, "Pathophysiology of Osteoporosis and the Use of Bisphosphonates."

J. D. Termine, "Estrogen Analogs in the Treatment and Prevention of Osteoporosis."

T. K. Sampath, "Therapeutic Application of Bone Morphogenetic Proteins."

J. Krstenansky, "Parathyroid Hormone and Analogs for Stimulation of Bone Formation."

Structure-Based Drug Design: I. D. Kuntz, discussion leader

I. D. Kuntz, "Overview of Structure-Based Design."

R. DesJarlais, "Rational Design of HIV Protease Inhibitors."

S. Ealick, "Structure-Based Design of Purine Nucleoside Phosphorylase Inhibitors."

M. Varney, "The Use of Protein Structure-Based Molecular Design as a Tool in Drug Discovery."

Ras-Specific Inhibition: J. F. Hancock, discussion leader

J. F. Hancock, "Ras Signaling Pathways and Biology of Ras Prenylation."

M. Gelb, "Biological Functions of Protein Prenyl Groups and the Enzymology of the Prenylated Protein Maturation Pathway."

A. M. Garcia, "Isoprenyl Transferase Inhibition by Peptide Mimics."

J. B. Gibbs, "Farnesyl-Protein Transferase Inhibitors."

Blockade of Prostatic α_1-Adrenoceptors: J. P. Hieble, discussion leader

J. P. Hieble, "Subclassification of the α_1-Adrenoceptor via Functional, Radioligand Binding and Molecular Techniques."

C. Gluchowski, "Design of Subtype Selective α_1-Adrenoceptor Antagonists as a Therapeutic Approach to BPH."

H. Lepor, "The Role of α_1-Adrenoceptor Antagonists in BPH Therapy: Potential Clinical Benefits from Subtype Selectively."

Tachykinin Receptor Antagonists: J. E. Krause, discussion leader

J. E. Krause, "An Overview of Tachykinin Receptors: From Molecular Biology to Gene Regulation."

W. Schilling, "Approaches for the Design of Nonpeptide Antagonists: Hypothesis versus Reality."

C. J. Swain, "Novel Structural Classes of NK-1 Antagonists: SAR and Modeling Studies."

R. Bell, "From Peptide Leads to Nonpeptide Drugs: GR 159897, a Potent Orally Active Neurokinin NK-2 Receptor Antagonist."

Vascular Biology: F. Gaeta, discussion leader

J. Musser, "Glycomimetics Based on Sialyl Lewis X as Potential Anti-Inflammatory Agents."

W. C. Ripka, "Design and Synthesis of Inhibitors of Coagulation Factor Xa."

Drug Bioavailability: G. Amidon, discussion leader

G. Amidon, "Drug Transport and Transit in the Trolling GI Tract. Factors on Oral Bioavailability."

P. Burton, "Lipophilicity and Hydrogen Bonding in Membrane Transport and Drug Absorption."

B. Anderson, "Structure Transport Relationships in Bilayer Biomembranes: Implications for Analog and Prodrug Design."

W. J. Greenlee, discussion leader

Meiosis

Plymouth State College, Plymouth, NH

R. S. Hawley, chair; S. Roeder, vice-chair

3–8 July

Chromosome Pairing: N. Kleckner, discussion leader

J. Loidl, "Meiotic Chromosome Pairing in Polyploids."

G. Simchen, "Non-Homologous Artificial Chromosomes in Yeast Meiosis."

S. Roeder, "Yeast Genes Involved in Chromosome Pairing and Synopsis."

Synaptonemal Complex Structure and Assembly: P. Moens, discussion leader

B. Byers, "Mechanism of *HOP1* Function in Yeast Chromosome Synapsis."

C. Heyting, "Genes Encoding Major Components of Synaptonemal Complexes of the Rat."

Recommendation Mechanisms: T. Petes, discussion leader

R. Kolodner, "Homologous Pairing of DNA and its Regulation during Meiosis in *S. cerevisiae*."

T. Ogawa, "Function of Rad51 Homologs in Recombination."

M. Lichten, "Factors that Determine Where Meiotic Recombination occurs in *S. cerevisiae*."

Meiotic Recombination: Regulation and Mutants: G. Smith, discussion leader

A. Rose, "Factors Controlling Recombination Frequency in *C. elegans*."

A. Villeneuve, "Pairing and recombination in *C. elegans*."

Chromosome Structure: J. Sedat, discussion leader

Z. Cande, "Changes in Leptotene Chromosome Structure Associated with Chromosome Pairing in Maize."

B. McKee, "Chromosomal Pairing Sites in *Drosophila*."

S. Henikoff, "Chromosome Structure and Position Effects in *Drosophila*."

Centromere Structure and Function: L. Clarke, discussion leader

G. Karpen, "Transmission of a Mini-Chromosome in *Drosophila*."

B. Nicklas, "Centromere in Mitosis and Meiosis."

Meiotic Chromosome Segregation: T. Orr-Weaver, discussion leader

A. Forer, "Coordinated Movement Between Different Chromosomes."

B. Theurkauf, "Chromosome Movement Between Different Chromosomes."

S. Hawley, "Approaches to the Study of Meiotic Pairing in *Drosophila*."

Regulation of Meiosis: S. Esposito, discussion leader

T. Schedl, "*Gld-1*, a Gene Necessary for Progression through Meiotic Prophase and Female Germ CEll Development in *C. elegans*."

Special Aspects of Meiosis: C. Langley, discussion leader

C. Newlon, "Premeiotic DNA Replication and Recombination on Yeast Chromosome III."

C. Laird, "Imprinting in *Drosophila* and Humans."

B. Ganetsky, "Meiotic Drive in *Drosophila*.."

Microbial Stress Response

Plymouth State College, Plymouth, NH

R. Kolter, chair; J. Slonczewski, vice-chair

24–29 July

Environmental Assaults

B. Demple, "Superoxide Stress: A Redox-Sensing Gene Activator."

A. Summers, "Mercury Resistance."

G. Storz, "Peroxide Stress: The OxyR Response."

Extreme Environment

M. Lidstrom, "Methylotrophs: The Stress of Growing on Formaldehyde Acid Tolerance Response of *Salmonella typhimurium*."

Starvation Responses

R. Hengge-Aronis, "Gene Regulation During Early Stationary Phase."

S. Kjelleberg, "Starvation Survival in Vibrio."

M. Cashel, "Guanosine Tetraphosphate and rpoS Induction."

Microbial Development I

L. Shimkets, "Myxococcus Development."

Y. Brun, "Caulobacter Development."

Bacillus Sporulation

A. Grossman, "Phosphorelays in Sporulation."

P. Stragler, "Compartment-Specific Sigma Activation."

R. Losick, "Adenylate Ratios and Cell Type Switching."

Microbial Development II

J. Westphaling, "Streptomyces Development."

R. Haselkorn, "Response of Cyanobacteria to Nitrogen Stress."

DNA Protection

L. Samson, "Alkylation Induced Gene Expression in Yeast."

P. Setlow, "Small Acid Soluble Spore Proteins."

J. Heinemann, "DNA Transfer Under Stress."

Cell-Density Signaling

P. Greenberg, "The LuxR-LuxI Family of Cell Density Responsive Transcription Regulators."

Microbial Toxins and Pathogenesis

Proctor Academy, Andover, NH

R. Curtiss, III, chair; A. O'Brien, vice-chair

17–22 July

Identification of Virulence Determinants: K. E. Sanderson, discussion leader

M. J. Mahan, "Selective for Bacterial Virulence Genes Based on Their Specific Induction in Host Tissues."

J. E. Clark-Curtiss, "Macrophage-Specific Gene Expression."

C. A. Bloch, "Mapping *E. coli* Pathogenesis Determinants with K-12 DNAs."

D. E. Berg, "Search for *Helicobacter pylori* Colonization/Virulence Genes Using an Ordered Cosmid Library."

Mechanisms of Toxin Action: S. H. Leppla, discussion leader

C. Montecucco, "The Molecular Basis of Tetanus and Botulism."

P. C. Hanna, "Anthrax: Pathogen-Assisted Suicide."

H. Fu, "14-3-3 Proteins: Eukaryotic Factors That Activate Exoenzyme S of *Pseudomonas aeruginosa*."

Secretion of Bacterial Virulence Attributes: R. A. Welch, discussion leader

S. Lory, "General Secretory Pathway for Bacterial Virulence Factors."

K. T. Hughes, "Export of an Anti-Sigma Factor in *Salmonella*."

M. P. Sandkvist, "Extracellular Secretion of Cholera Toxin from *Vibrio cholerae*."

Regulation of Virulence Traits: S. B. Calderwood, discussion leader

C. Sasakawa, "Regulation of Virulence Genes in *Shigella*."

P. A. Gulig, "Regulation of Spv Genes of *S. typhimurium* Virulence Plasmid."

M. P. Schmitt, "Characterization of the Diphtheria Toxin Repressor."

Variation, Attachment, Invasion and Growth: P. B. Wyrick, discussion leader

K. Wise, "Adaptive Mutational Diversity in Mycoplasmas."

J. M. Leong, "Two Pathways for Mammalian Cell Binding by *Borrelia burgdorferi*."

A. Labigne, "Identification and Characterization of Helocobacter Determinants Involved in the Colonization of the Gastric Mucosa."

T. Hackstadt, "Role of Histone H1 Homolog in the Chlamydial Developmental Cycle."

Toxin Activities: R. K. Tweten, discussion leader

J. T. Buckley, "The Aeromonas Channel-Forming Toxin Aerolysin."

K. Sandvig, "Entry of Shiga Toxin into Cells."

M. J. Blaser, "*Helicopter pylori* Cytotoxin."

Host Response—Inflammation: C. A. Nacy, discussion leader

M. P. Bevilacqua, "Selectin-Carbohydrate Interations."

S. D. Wright, "Recognition of Endotoxins by Mammals."

P. M. Schlievert, "The Role of Gram-Positive Bacterial Superantigens in Human Diseases."

Communication: E. P. Greenberg, discussion leader

S. K. Farrand, "Autoinducer-Mediated Signaling Among Rhizosphere Microorganisms."

B. H. Iglewski, "Quorum-Sensing Systems in *Pseudomonas aeruginosa*."

Host Defense: B. R. Bloom, discussion leader

G. Bancroft, "Inate Resistance Mechanisms Against Bacterial Infection."

S. H. E. Kaufmann, "Cytokines and T Cells in the Host Response to Intracellular Bacteria: Studies with Knock-Out Mice."

Microstructure Fabrication

Brewster Academy, Wolfeboro, NH

D. M. Tennant, chair; M. B. Stern, co-chair

26 June–1 July

Proximal Probe as a Microfabrication Tool: D. Eigler, discussion leader

D. Eigler, "Atoms Where You Want Them: Exploiting the STM as a Fabrication Tool."

E. Betzig, "Near-Field Optical Characterization of Nanostructures."

D. Rugar, "Prospects for Atomic Resolution NMR with a Scanning Probe System."

Electrochemical and Biomechanical Microstructures: N. C. MacDonald, discussion leader

N. C. MacDonald, "3D Nanomechanisms and Tunneling Tip Arrays."

T. W. Kenny, "Sensors Based on Tunnel Displacement Transducers."

R. Austin, "Microfabricated Arrays: DNA Electrophoresis and Cell Mobility."

S. Block, "Tracking Down Biological Motors Using Optical Tweezers."

Microchemistry and Monolayer Chemistry: T. Deming, discussion leader

T. Deming, "Biocatalytic Synthesis of Polymers of Precisely Defined Structure."

N. Abbott, "Patterning of Self-Assembled Monolayers of Organic Molecules."

J. Heath, "Solution-Phase Synthesis and Spectroscopy of Group IV Nanocrystals."

M. Reed, "Electronic Properties of Conductive Oligomers."

R. Kunz, "DUV Imaging Chemistries for Volume Production of Sub 0.25-μm Devices."

Quantum Effects in Confined Structures: Electronic: R. J. Westervelt, discussion leader

R. J. Westervelt, "Chaos in Small Structures."

H. Sakaki, "Growth and in Situ Processing for Ridge and Edge-Type Quantum Wire Structures."

R. E. Howard, "Systems Issues for the Future of Nanoelectronics: Small Is Not Enough!"

Quantum Effects in Confined Structures: Photonic: A. Forchel, discussion leader

A. Forchel, "Comparison of Quantum Dots and Wires Fabricated by Wet and Dry Etching."

L. Pfeiffer, "Cleaved Edge Overgrowth for Quantum Wire Lasers."

K. Kash, "Application of Cantilevers to Tunable Quantum Wire Exciton Confinement."

Atom and Short Wavelength Photon Optics: J. McClelland, discussion leader

J. McClelland, "Laser-Focused Atomic Beam Deposition of Chromium Nanostructures."

C. Jacobsen, "Nanophotons and Nanostructures: Soft X-ray Optics and Applications."

Mitochondria and Chloroplasts

Volterra, Italy

W. Gruissem, chair; K. Newton, vice-chair; C. Saccone, co-chair

1–6 May

Organellar Genome Structure and Evolution: W. Gruissem, discussion leader

J. Boynton, "Why Do Chloroplasts Retain Processes for Genetic Recombination?"

F. Foury, "The Mitochondrial DNA Polymerase of *Saccharomyces cerevisiae* and Its Role in the Fidelity of mtDNA Replication."

K. Ohyama, "Structure and Expression of Plant Organelle Genomes."

C. Saccone, "Evolutionary Behaviour of Mammalian Mitochondrial DNA."

W. Fangman, "Role of a Holliday Junction Resolving Enzyme in Mitochondrial Genome Segregation in Yeast."

Replication and Expression: F. Foury, discussion leader

D. Clayton, "Common Features of Mitochondrial DNA Replication and Transcription from Yeast to Humans."

E. Sbisa, "Novel Features in Mammalian Mitochondrial Transcription."

D. Stern, "In Vitro Analysis of Complex Plant Mitochondrial Promoters."

S. Lerbs, "Transcriptional Regulation of the Plastid 16*S* rRNA Gene."

RNA Editing and Transport: R. Hallick, discussion leader

R. Benne, "RNA Editing in Mitochondria of Trypanosones, Cis-Acting Elements and Trans-acting Factors."

A. Brennicke, "Expression of the Plant Mitochondrial Genome."

H. Kossel, "Editing of Chloroplasts mRNA: Mechanisms and Implications."

J. Weil, "The Various Genetic Origins of Plant Mitochondrial Transfer RNAs"

M. Gray

Intron Splicing and RNA Modification: A. Barkan, discussion leader

R. Hallick, "Role of the RNA Processing in Chloroplast Gene Expression."

N. Martin, "Biochemical and Genetic Approaches to Understand the Function of RPM2."

A. Lambowitz

Regulation of mRNA Processing and Stability: A. Lambowitz, discussion leader

P. Maliga, "A Transgenic Approach to Dissect the Regulatory Element of Tobacco Plastid Genes."

R. Karwan, "Mammalian Mitochondrial RNA Processing: Nuclear-Mitochondrial Coevolution of Enzyme-Substrate and Function."

P. Bennoun, "Selective Stabilization of *Chlamydomonas* Chloroplasts mRNAs."

W. Gruissem, "Role of RNA-Binding Proteins in Processing and Stabilization of Plastid mRNAs."

Organelle Mutations in Plants: C. Saccone, discussion leader

K. Newton, "Mitochondrial Mutant in Plants."

A. Barkan, "Nuclear Mutations Affecting Chloroplasts RNA Metabolism."

C. Fauron, "Complex Organization and Evolution of the Maiz Mitochondrial Genome."

C. Leaver, "Mitochondrial Biogenesis and Function During Anther Development."

Mitochondrial Diseases and Aging: D. Clayton, discussion leader

E. Shoubridge, "Segregation and Expression of Pathogenic Human mtDNA Mutations."

A. Harding, "Neurological Disease and Mitochondrial DNA Effects: Problems Relating to Pathogenesis."

E. Schon, "Molecular Genetics of Pathological Mitochondrial DNA Mutations."

Y. Wei, "Mitochondrial DNA Mutations and Human Aging."

Import and Assembly of Organellar Proteins: N. Martin, discussion leader

W. Neupert, "Protein Targeting to Mitochondria."

G. Schatz, "Dissection of the Mitochondrial Import Complex."

N. Hoogenraad, "The Import of Proteins into Mitochondria and the Role of Molecular Chaperones in this Process."

Nuclear Control of Organelle Functions: C. Leaver, discussion leader

J. Allen, "Protein Phosphorylation in Redox Homeostasis in Chloroplasts and (Other) Prokaryotes."

S. Kobayashi, "Extra-Mitochondrial Large rRNA in Germ Plasm in *Drosophila* and *Xenopus* Embryos."

R. Scarpulla, "Nuclear Respiratory Factors: A Regulatory Link Between Nuclear and Mitochondrial Gene Expression in Organelle Biogenesis."

R. Herrmann

Modeling of Flow in Permeable Media

Proctor Academy, Andover, NH

J. Trangenstein, chair; M. Celia, vice-chair

7–12 August

Pore-Scale Phenomena—Physico-Chemical Interactions: K. Sorbie, discussion leader

G. Hirasaki, "Mechanisms and Parameters Governing Wetting and Spreading in Petroleum Systems."

S. Fogler, "Transport of Bacteria in Porous Media."

C. Radke, "Pore-Scale Phenomena Underlying Foam Displacement in Porous Media."

Hydrodynamic Transport Phenomena: K. Mohanty, discussion leader

M. Blunt, "Pore Level Mechanisms in Three-Phase Flow."

R. Behringer, "Nuclear Magnetic Resonance and Optical Imaging of Flows in Porous Media."

Meso-Scale Phenomena: Two-Scale Approaches: G. Dagan, discussion leader

B. Gray, "Interface Equation and Averaging."

R. Lenormand, "Tracer and Miscible Displacements in Heterogeneous Porous Media: A Stream Tube Approach."

G. Christakos, "Stochastic Differential Equations of Flow and Transport in Porous Media."

Multi-Scale Approaches: J. Cushman, discussion leader

M. Edwards, "Impact of Renormalization on Numerical Methods for Reservoir Simulation."

H. Omre, "Uncertainties in Production from Petroleum Reserves."

Dispersion and Convective Mixing: J. Waggoner, discussion leader

L. Lake, "Representing Miscible Fronts."

L. Gelhar, "Stochastic Analysis of Field-Scale Transport Processes."

H. Brenner, "Macrotransport Processes in Nonconserved Systems."

Macro-Scale Phenomena: J. Fayers, discussion leader

J. Lucia, "Rock Fabric and Stratigraphic Controls on Fluid Flow in Porous Media."

B. Blackwell, "Rediscovery of the Heterogeneous World of Fluid Flow in Porous Media."

Formation Evaluation: S. Wheatcraft, discussion leader

T. Hewett, "Data Integration and Conditional Simulation of Reservoir Properties for Flow Performance Prediction."

M. Wilt, "Formation Evaluation Using Geophysics: The Case for Electromagnetic Methods."

P. Wierenga, "Site Characterization for Vadose Zone Field Studies."

Process Design: C. Miller, discussion leader

J. Wilson, "Mixed Natural and Forced Gradient Field Tracer Experiments."

D. Lovely, "Bioremediation of Organic and Metal Contaminants with Anaerobic Microorganisms."

Emerging Issues: A. Tompson, discussion leader

B. Travis, "Cellular Automata."

P. Lichtner, "Reactive Transport in Porous Media."

A. Datta-Gupta, "Subsurface Characterization from Ensemble Inference."

Modern Developments in Thermodynamics

Schwaebisches Bildungszentsrum, Irsee, Germany

J. S. Shiner, chair; P. Salamon, vice-chair

2–7 October

Nonequilibrium Statistical Thermodynamics and Dynamical Systems Theory:

B. H. Lavenda, discussion leader

W. Ebeling, "Entropy and Predictability of Nonlinear Processes."

G. Nicolis, "Probabilistic and Thermodynamics Aspects of Complex Systems."

G. Ruppeiner, "Riemannian Geometry in Thermodynamic Fluctuation Theory."

R. Stoop, "Phase Transitions and Diffusion—A New Approach to an Old Problem."

Information-Theoretic Thermodynamics: P. T. Landsberg, discussion leader

W. T. Grandy, "The Probabilistic Foundations of Thermodynamics."

R. S. Ingarden, "Equilibrium Information-Theoretic Thermodynamics & Its Applications."

M. C. Mackey, "Entropy Evolution and Noninvertible Dynamics."

N. Tishby, "Issues in the Statistical Mechanics of Learning and Generalization."

Thermodynamics of Algorithms: B. Lautrup, discussion leader

L. K. Hansen, "Collective Computation in Neural Net Ensembles."

W. P. Reinhardt, "Finite Time Optimization of Irreversible Work: Upper and Lower Bounds to Classical and Quantum Free Energy Differences."

P. Sibani, "Phase Space Structure and Low Temperature Stochastic Relaxation in Optimization Problems."

C. Van Den Broeck, "On the Theory of Learning from Example."

Finite-Time Thermodynamics and Optical Control Theory: R. S. Berry, discussion leader

A. Bejan, "Engineering Advances: Thermodynamics Design and Optimization."

R. Kosloff, "Quantum Thermodynamics in Finite Time."

V. Orlov, "Duality and Finite Time Thermodynamics."

Thermodynamics of Nonequilibrium Coupled Systems: J. Keizer, discussion leader

D. Bedeaux, "Nonequilibrium Thermodynamics of Boundary Conditions: The Inverse Temperature Paradox in Evaporation and Condensation."

H. Farkas, "Theoretical Tools for Investigation of Evolutional Types in Chemical Dynamics."

S. K. Ratkje, "Thermal Effects in Electrochemical Cells: Models and Description."

J. Ross, "Thermodynamics and Stochastic Theories of Chemical and Physical Processes Far From Equilibrium."

Extended and Network Thermodynamics: B. C. Eu, discussion leader

K. R. Diller, "Network Thermodynamic Analysis of Multidomain Biological Transport."

L. S. Garcia-Colin, "Extended Irreversible Thermodynamic: An Unfinished Task."

G. Lebon, "Constitutive Equations in Heat Conduction, Thermal Waves and Extended Irreversible Thermodynamics."

Nonequilibrium Thermodynamics of Living Systems: J. W. Stucki, discussion leader

J. W. Clark, "Steps Toward a Thermodynamics of Artificial and Natural Neural Networks."

S. Kauffman, "Evolution Along the Order-Chaos Axis."

A. M. Khazen, "The Conception of Origin and Evolution of Life and Reason Found on the Principle of Maximum Production of Entropy."

O. Toussaint, "Ageing as a Multi-Step Process Characterized by a Lowering of Entropy Production."

Contributed Presentations: B. Andresen

Summary and Perspectives: S. Sieniutycz, discussion leader

R. S. Berry, "What Can We Do and Where Can We Go Now with Modern Nonequilibrium Thermodynamics?"

H. Haken, "A Connection Between Nonequilibrium Thermodynamics and Synergetics."

P. Salamon, "Reverberations from the Conference."

J. S. Shiner, "Implications of Modern Developments in Thermodynamics for Living Systems."

K-H. Anthony, S. R. Caplan, J. Casas-Vaszque, C. Essex, M. Grmela, K. H. Hoffmann, K. C. Hunt, D. Jou, Y. L. Klimontovich, P. Le Goff, K. Lindenberg, B. Mansson, R. Mrugala, H. Muhlenbein, W. Muschik, I. Oppenheim, F. Schlogl, S. A. Solla, P. Stasezewski, G. R. Welch, L. C. Woods

Molecular Cell Biology

Tilton School, Tilton, NH

L. Gerace and S. Reed, co-chairs

19–24 June

Cell Cycle and Proliferation: J. Ruderman, discussion leader

J. Ruderman, "Protein Kinase Cascades Involved in Emergence from Quiescence."

S. Reed, "Cyclin-Dependent Kinases Controlling the Yeast and Mammalian Cell Cycle."

G. Evan, "c-Myc and Apoptosis."

D. Morgan, "Structure-Function Analysis of Cyclin-Dependent Kinases."

T. Weinert, "Checkpoint Control of Mitosis in Yeast."

Chromosome Structure, Replication and Segregation: B. Earnshaw, discussion leader

B. Earnshaw, "Inner Centromere Proteins and Their Role in Mitosis."

T. Salmon, "Analysis of Mitotic Mechanisms Using Video Microscopy."

T. Hyman, "The Centromere-Kinetochore Complex and Associated Motors."

B. Stillman, "DNA Replication in Mammals and Yeast."

C. Greider, "Organization and Functions of Telomeres."

Determination of Cell Fate and the Differentiated State: B. Wold, discussion leader

B. Wold, "Control of Musculoskeletal Development."

D. Anderson, "Differentiation of Neural Crest Cell Derivatives."

S. Kim, "Determination of Cell Fate in *C. elegans*."

M. Levine, "Pattern Formation in *Drosophila* Embryogenesis."

A. McMahon, "Development of the Mouse Nervous System."

Protein Folding and Assembly: S. Lindquist, discussion leader

S. Lindquist, "Functions of Heat Shock Proteins in Yeast."

E. Craig, "Regulation of the Heat Shock Response."

D. Agard, "Catalyzed Folding of a Bacterial Protease."

U. Hartl, "Mechanisms of Chaperone-Assisted Protein Folding."

A. Helenius, "Protein Folding in the Endoplasmic Reticulum."

Intracellular Compartmentalization: S. Schmid, discussion leader

S. Schmid, "Biochemical Analysis of Endocytosis."

P. Walter, "Transport of Protein Across the Endoplasmic Reticulum Membrane."

L. Gerace, "Analysis of Nuclear Protein Import."

R. Schekman, "Biochemical and Genetic Dissection of ER to Golgi Transport in Yeast."

A. Bender, "Bud Formation in Yeast."

Signal Transduction: R. Firtel, discussion leader

R. Firtel, "Signal Transduction in *Dictyostelium* Development."

H. Hamm, "Structure-Function Analysis of Transducin."

H. Lodish, "TGF-Beta Receptors and Signaling."

D. Levy, "Protein Phosphorylation in Interferon Signal Transduction."

K. Yamamoto, "Steroid Hormone Receptors and the Transcriptional Response."

Cytoskeleton and Motility: J. Spudich, discussion leader

J. Spudich, "Structure and Functions of Myosin II."

L. Cooley, "Cytoskeleton and Transport of Cytoskeleton."

R. Morris, "Molecular Motors in *Aspergillis*."

J. Rosenbaum, "Analysis of Flagellar Assembly in *Chlamydomonas*."

Immune Response: P. Peterson, discussion leader

P. Peterson, "Assembly of MHC I–Antigen Complexes."

I. Mellman, "Analysis of MHC II–Antigen Assembly in Vitro."

H. McDevitt, "Molecular and Cellular Basis of Autoimmunity."

G. Crabtree, "Signaling in Lymphocytes."

Cellular Biology of Development: L. Reichardt, discussion leader

L. Reichardt, "Regulations of Neural Development by Adhesive Interactions."

J. White, "Integrins and Disintegrins in Sperm-Egg Fusion."

B. Errede, "Cell-Cell Interactions in Yeast Mating."

M. Peifer, "Cadherins, Catenins and WNT Signaling."

Molecular Cytogenetics

Holderness School, Plymouth, NH

A. K. Raap, chair; D. C. Ward, vice-chair

13–17 June

Advances in FISH and Cytogenetics Technologies: B. J. Trask, discussion leader

B. Windle, "High-Resolution DNA Mapping by FISH."

D. H. Ledbetter, "FISH and Other Molecular Strategies in Contiguous Gene Syndromes."

J. M. Trent, "Genomic Applications of Chromosome Microdissection."

Advances in Microscopy, Instrumentation and Software: H. J. Tanke, discussion leader

I. T. Young, "Quantitative FISH Microscopy."

Molecular Cytogenetics of Leukemias and Lymphomas: M. M. LeBeau, discussion leader

M. J. Siciliano, "High Resolution Analysis of Cancer Cell Frequency in Different Cellular Compartments and Relationship to Diagnosis and Therapy."

H. Dauwerse, "Molecular Cytogenetics of (Inv)16 in Acute-Nonlymphocytic Leukemia."

Molecular Cytogenetics in Prenatal Diagnosis: M. Ferguson-Smith, discussion leader

K. W. Klinger

Molecular Cytogenetics of Solid Tumors: D. Pinkel, discussion leader

J. W. Gray, "Tumor Genetics: CGH to Positional Cloning."

P. Lichter, "Detection of Chromosome Aberrations in Tumors by CGH and Interphase FISH."

Chromatin Organization and Nuclear Structure: D. Arndt-Jovin, discussion leader

Th. Cremer, "3D Topography of Chromosomes."

S. Selig, "DNA Replication Timing and Gene Imprinting."

RNA Transcription, Processing and Transport: J. B. Lawrence, discussion leader

tba, "Probing Functional Organization of DNA and RNA Within Nuclei."

K. Weis, "Molecular Cell Biology of Sub-Nuclear Domains."

D. Spector, "Dynamics of Transcription and Pre-mRNA Splicing Within the Cell Nucleus."

Detection of Rare Events by Molecular Cytogenetics: J. W. Gray, discussion leader

J. Piper, "Automatic Detection of Rare Events in Fluorescence Microscopy."

A. J. Wyrobek, "Detection of Chromosomally Defective Sperm in Humans and Mice."

Emerging Technologies and Applications: D. C. Ward, discussion leader

P. Heslop-Harrison, "Molecular Cytogenetics of Plants."

Molecular Electronic Spectroscopy

Proctor Academy, Andover, NH

R. Silbey, chair; D. Pratt, vice-chair

14–19 August

R. Whetten

S. Leutwyler

M. Bawendi

E. Heller

R. W. Field

E. Eyler

H. Lefebre-Brion

U. Even

M. Head-Gordon, "New Developments in Ab Initio Calculations of Excited States."

F. Crim

J. Syage

R. Coalson

J. Vanderkooi

J. Friedrich, "Hole Burning and the Solid-State Physics of Proteins."

T. Zwier, "Size and Conformation Specific Spectroscopy of Intra- and Intermolecular Hydrogen Bonds."

J. Cina, "Coherent Optical Excitation: Probing Large Amplitude Motion."

U. Wild, "Single Molecular Spectroscopy."

C. Linenberger

R. Brown

D. Wiersma, "Ultrafast Solvent Dynamics."

P. Sorokin

Molecular Genetics

Colby-Sawyer College, New London, NH

H. R. Horvitz, chair; W. Herr, vice-chair

10–15 July

Chromosome Structure and Function: E. Blackburn, discussion leader

E. Blackburn, "Telomete Synthesis."

J. Gall, "Effect of Snurposomes and Coiled Bodies."

B. Brewer, "Effect of Chromosome Context on Replication Initiation in Yeast."

D. Gottschling, "Position Effect Variegation: The Dynamics of Phenotypic Switching."

Embryogenesis: R. Jaenisch, discussion leader

R. Jaenisch, "DNA Methylation and Mammalian Development."

R. Lehmann, "Axis Determination in *Drosophila*."

B. Bowerman, "Specification of Blastomere Fate in Early *C. elegans* Embryos."

M. Tessier-Lavigne, "Mechanisms of Axon Guidance in the Embryonic Vertebrate Spinal Cord."

Signal Transduction: J. Schlessinger, discussion leader

J. Schlessinger, "Cellular Signaling by Tyrosine Phosphorylation."

M. Wigler, "Ras Signaling Pathways."

P. Sternberg, "Tissue-Specific Action of the Nematode LIN-3 and LET-23 Proteins."

T. Schupbach, "Intercellular Signaling Establishes the Dorsoventral Axis During *Drosophila* Oogenesis."

Neurobiology: L. Jan, disucssion leader

L. Jan, "Potassium Channel Function and Diversity."

L. Buck, "Receptor Diversity and Spatial Patterning in the Mammalian Olfactory System."

C. Bargmann, "Signal Transduction in the *C. elegans* Nervous System."

G. Lemke, "Targeted Disruption of Schwann Cell Differentiation and Myelination in the Mouse."

RNA Processing: T. Blumenthal, discussion leader

T. Blumenthal, "Trans-Splicing Specificity and Polycistronic Transcription in *C. elegans*."

P. Sharp, "Nuclear Matrix and RNA Splicing."

J. Manley, "Mammalian pre-mRNA Processing Proteins."

Programmed Cell Death: S. Korsmeyer, discussion leader

S. Korsmeyer, "Bel-2/Bax and the Regulation of Cell Death."

R. Horvitz, "Genetic Control of Programmed Cell Death During *C. elegans* Development."

E. White, "Regulation of Apoptosis by the Transforming Gene Produces Adenovirus."

G. Evan, "Integration of Cell Growth and Cell Death by Oncogenes."

Cell Cycle: A. Levine, discussion leader

A. Levine, "Functions of the p53 Tumor Suppressor Gene."

E. Harlow, "Regulating the G1-to-S Phase Transition in Mammalian Cells."

P. O'Farrell, "Controlling G1 During Development."

Transcription: S. Hahn, discussion leader

S. Hahn, "Regulation of Yeast RNA Polymerase Initiation."

W. Herr, "Transcriptional Regulatory Mechanisms of Site-Specific Activators."

C. Prives, "Regulation of Transcription by Wild-Type and Mutant p53."

Gene Expression: S. Tilghman, discussion leader

S. Tilghman, "Parental Imprinting: An Allele-Specific Mechanism of Gene Regulation."

G. Rosenfeld, "Transcriptional Control of Proliferation and Cell Phenotype in Mammalian Organogenesis."

M. Levine, "Transcriptional Control of *Drosophila* Embryogenesis and Immunity."

A. Fire, "Specific of Muscle Cell Types in *C. elegans*."

Motile and Contractile Systems

Plymouth State College, Plymouth, NH

J. Condeelis, chair; J. Scholey, vice-chair

10–15 July

Structure of Actin and Associated Proteins: K. Holmes, discussion leader

Structure/Function Relationship of Microtubule Associated Motors: R. Vale, discussion leader

Behavioral Consequences of Motor Function: L. Haimo, discussion leader

Mutant Analysis of Motor Function: J. Hammer, discussion leader

Heterologous Liaisons: T. Schroer, discussion leader

Regulation of Actin and Tubulin Polymerization: H. Yin, discussion leader

Regulation of Actin and Tubulin Polymerization: J. Olmsted, discussion leader

Signal Transduction and Cell Mobility: E. Luna, discussion leader

Cell Division: T. Salmon, discussion leader

Multiphoton Processes

Colby-Sawyer College, New London, NH

R. N. Compton, chair; E. R. Grant, vice-chair

12–17 June

G. Blake, "Pulsed-Field Ionization and Laser-Induced Grating Spectroscopy of PAHs (Polynuclear Aromatic Hydrocarbons)."

P. Corkum, "Coherent Control of High-Field Atomic Processes."

R. Donovan, "A Comparative Study of Multiphoton Ionization via Virtual, Dissociative and Bound Intermediate States and the Role of Autoionization."

M. Duncan, "Photodissociation Spectroscopy of Metal-Ion Cluster Complexes."

P. Felker, "Nonlinear Raman Spectroscopy of Molecular Beam Samples."

T. Gallagher, "Excitation and Ionization of Atoms with Pulses."

P. Hackett, "Dissociation and Ionization Dynamics of Small Metal Clusters."

C. Hayden, "Nonlinear Spectroscopies with Femtosecond Laser Pulses."

W. Hill, III, "Exploding Molecules with Intense Light: Do Coulomb Explosions Really Occur?"

K. Kulander, "The Time-Dependent Quantum Dynamics of Nonperturbative Multiphoton Excitation and Ionization."

P. Lambropoulos, "Controlling the Products of Photoabsorption Through the Phase of the Field."

M. Lester, "Double-Resonance Probes of Intermolecular Interactions Involving Free Radicals."

E. McCormick, "Excited-State Spectroscopy and Dynamics Using Transient Gratings."

J. Miller "MPI of 'Magic' Molecular Clusters."

K. Miyazaki, "High-Order Harmonic Generation in the Tunneling Regime with a Femtosecond Ti:Sapphire Laser."

C. Rhodes, "Kilovolt X-ray Generation from Multiphoton Excited Clusters."

E. Schlag, "Mass-Resolved Hole-Burning Spectroscopy of Cluster Isomers."

M. Shapiro, "Coherent and Incoherent Control of Multiphoton Processes in the Weak and Strong Field Regimes."

J. Weisshaar, "Understanding Barriers to Internal Rotation in Neutrals and Cations."

T. Zwier, "Ion-Dip Infrared Spectroscopy of Size-Selected Benzene-Solvent Clusters."

Muscle

Tilton School, Tilton, NH

G. Meissner, chair; E. Rios, vice-chair

3–8 July

Ca^{2+} Homeostasis and Plasmalemmal Ion Permeability in Normal and Diseased Muscle: C. Hidalgo and F. Lehmann-Horn, discussion leaders

T. Jentsch

E. Niggli

Structure and Regulation of the Sarco/Endoplasmic Reticulum Ca^{2+} Pump: G. Inesi and D. Thomas, discussion leaders

J. P. Andersen

Y. Sagara

D. Thomas

Structure and Assembly of E-C Coupling Components: A. Jorgensen and J. Sutko, discussion leaders

K. Campbell

A. Caswell

Voltage Control of Sarcoplasmic Reticulum Ca^{2+} Release: C. Caputo and C. S. Hui, discussion leaders

A. Corbett

A. Gonzalez

Ca^{2+} Control of Sarcoplasmic Reticulum Ca^{2+} Release: M. Fill and M. Schneider, discussion leaders

S. Gyorke

G. Lamb

Regulatory Mechanisms and Putative Effectors of Ca^{2+} Release: S. Donaldson and P. Volpe, discussion leaders H

H. C. Lee

A. Galione

Spatial and Temporal Distributions of Ca^{2+} in Muscle and Other Tissues: F. Fay and J. Vergara, discussion leaders

T. Pozzan

S. Smith

Dihydropyridine Receptor Structure, Function and Expression: K. Beam and E. Stefani, discussion leaders

W. Catterall

F. Hofmann

R. W. Tsien

Ryanodine Receptor Isoforms: Structure Function and Expression: S. Hamilton and D. MacLennan, discussion leaders

F. A. Lai

A. Marks

V. Sorrentino

Mutagenesis

Plymouth State College, Plymouth, NH

J. M. Essigmann, chair; P. C. Hanawalt, vice-chair

26 June–1 July

DNA Polymerases: Their Actions on Damaged and Undamaged Templates: B. S. Strauss and T. Kunkel, discussion leaders

M. Goodman, "Biochemical Basis for DNA Synthesis Fidelity."

K. Dixon, "UV Mutagenesis in Mammalian Extracts."

G. Walker, "SOS Mutagenesis."

How Proteins View and Process DNA Damage: J. Gerlt and B. Demple, discussion leaders

G. L. Verdine, "Recognition and Repair of Aberrantly Methylated DNA."

D. Treiber, "Recognition of Metal-DNA Complexes by HMG-Box Proteins."

Mismatch Repair: J. Jiricny and R. Kolodner, discussion leaders

P. Karran, "Mismatch Recognition, DNA Damage Tolerance and Cancer Susceptibility."

R. Lahue, "Mismatch Repair Proteins in Yeast."

R. Fishel, "Genome Stability and hMSH2."

DNA Repair in Eukaryotic Systems: J. Hoeijimakers and J. Laval, discussion leaders

L. Prakash, "DNA Repair in Yeast."

M. Sekiguchi, "Mammalian Enzymes That Prevent Occurrence of Spontaneous Mutations."

Endogenous Mutagenesis: L. Samson and S. Wallace, discussion leaders

J. Miller, "Spontaneous Mutations and Rearrangements."

L. Loeb, "Mutagenesis by Oxygen-Free Radicals."

M. Meuth, "Mutator Genes in Human Colorectal Carcinoma."

Transcription Coupled Repair and Mutagenesis: P. Hanawalt and A. S. Leadon, discussion leaders

C. Selby, "Mechanistic Studies of the MFD (Mutation Frequency Decline) Protein."

I. Mellon, "Transcription-Dependent Repair in *E. coli*."

B. Donahue, "Transcription of damaged DNA in Vitro."

Lesion Structure and Mutagenesis: R. Fuchs and A. Grollman, discussion leaders

C. Lawrence, "Mutagenic Properties of UV Photoproducts in Vivo."

E. Loechler, "What Controls the Mutagenic Specificity of Carcinogens?"

L. Marnett, "Mutagenesis by Malondialdehyde: From Adduct Structure to Mutation."

Mutational Origins of Genetic Disease: T. Tlsty and R. Monhat, discussion leaders

M. Kastan, "p53 and Other Mediators of the Cellular Response to DNA Damaging Agents."

T. Caskey, "Triplet Amplification—Impact on Gene Function."

Adaptive Mutagenesis: P. Foster and J. Cairns, discussion leaders

S. Jinks-Robertson, "Adaptive Mutagenesis in Yeast."

J. Roth, "Tests of a New Explanation of Selection-Directed Mutagenesis."

Neural Development

Salve Regina University, Newport, RI

S. McConnell, chair

3–8 July

Cortical Neurogenesis: S. McConnell, discussion leader

P. Levitt, "Molecular Control of Cell Fate, Commitment and Circuit Formation in the Cerebral Cortex."

S. McConnell, "Plasticity and Commitment in Developing Cerebral Cortex."

T. Hayes, "Transplantation of Stem Cells into the Mammalian CNS."

Trophism and Tropism: G. Yancopoulos, discussion leader

R. Oppenheim, "Cell Death in the Nervous System."

M. Tessier-Lavigne, "Molecular Mechanisms of Axon Guidance in the Vertebrate Spinal Cord."

G. Yancopoulos, "Neurotrophic Factors and How They Work."

Axon Outgrowth and Neuronal Migration: U. Ruthishauser, discussion leader

C. Goodman, "Genetic Analysis of Growth Cone Guidance and Target Recognition."

F. Bonhoeffer, "Axon Guidance During the Formation of the Retinotectal Projection."

J. Eisen, "Development of Identified Neurons in the Embryonic Zebrafish."

C. Kenyon, "Neuroblast Migration in *C. elegans*."

Retinal Neurogenesis: C. Cepko, discussion leader

C. Cepko, "Vertebrate Retinal Development."

E. Hafen, "Genetic Dissection of Cell Signaling in *Drosophila*."

T. Hafen, "Generation of Neuronal Diversity in the Retina."

R. Cagan, "Eye Development in *Drosophila*."

Development of Chemical Senses: A. Calof, discussion leader

A. Calof, "Neuronal Birth and Death in the Mammalian Olfactory Epithelium."

L. Buck, "Spatial Patterning in the Developing Olfactory System."

C. Bargman, "Axon Outgrowth and Sensory Behavior in *C. elegans*."

Mouse Neurogenesis: A. Joyner, discussion leader

A. Joyner, "Transcription Factors in Brain Development."

P. Gruss, "Functional Analysis of Pax-7."

M. Cappechi, "The Role of Hox Genes in Mammalian Neurogenesis."

Segmentation and Axial Identity in the Hindbrain: M. Bronner-Fraser, discussion leader

D. Wilkinson, "Role of Receptor Tyrosine Kinases in Segmentation of the Hindbrain."

R. Krumlauf, "Factors Influencing the Establishment, Sharpening and Maintenance of Rhombomere Restricted Expression of the Hox Genes in the Vertebrate Hindbrain."

S. Fraser, "Segregation and Violation in the Hindbrain."

C. Nusslein-Volhardt, "Genetic Analysis of Pattern Formation in the Zebrafish."

Synapse Formation and Plasticity: J. Sanes, discussion leader

E. Frank, "Development of Sensory Neurons and Their Projections to the Spinal Cord."

R. Scheller, "Development of the Neuromuscular Junction."

Jeff Lichtman, "Synaptic Competition and Remodeling."

Neuroendocrinimmunology

New England College, Henniker, NH

A. E. Panerai, chair; B. S. McEwen, vice-chair

12–17 June

Immune + Endocrine + Interactions in Programmed Cell Death and Apoptosis: S. M. Hedrick, discussion leader

C. Franceschi, "Apoptosis Transcription Factors and Aging."

S. Burgeois, "Gene Induced by Glucocorticoids in Murine T Cells Undergoing Apoptosis."

J. Ashwell, "Steroids and Thymocyte Apoptosis: Shaping of the Immune System."

Thymus: Immune-Endocrine Interactions: K. Bulloch, discussion leader

V. Geenen, "Cellular and Molecular Evidence for an Evolutionary Continuity of Neuroendocrine-Immune Interaction."

G. Wick, "Autoimmunity Disease: Thymus and the Hypothalamus Pituitary Adrenal Axis."

Peptides in Organ Specific Immunology: Gut and Skin: S. M. O'Dorisio, discussion leader

E. Mezey, "Neurotransmitter Receptors in the Gastrointestinal System."

M. S. O'Dorisio, "Mucosal Immunity."

M. L. Kapsenberg, "Skin and the Immune System."

Novel Immunomodulatory: No and NGF: A. E. Panerai, discussion leader

F. Y. Liew, "Nitric Oxide and the Immune System."

U. Otten, "Nerve Growth Factor and the Immune System."

Signal Transduction in Neuroendocrine-Immune Interactions: E. W. Gelfand, discussion leader

C. Heijnen, "Neuropeptide Transduction in Immune Cells."

M. B. Prystowsky, "Cytokine Transduction."

G. Schettini, "Modulation of Cytokine Production in the Central Nervous System by Second Messengers."

Immune and Neuroendocrine Modulation of Immune Responses: R. Heberman, discussion leader

J. M. Weiss, "Stress, Tumor Metastasis, and Cellular Immune Responses."

R. H. Goldfarb, "Neuroendocrine Modulation of Tumor Metastasis: Hormonal and Immunological Implications."

Cytokine and the Nervous System: N. J. Rothwell, discussion leader

K. Kelley, "Mechanisms of Cytokine-Induced Sickness."

J. M. Krueger, "Cytokines in Physiological and Pathological Regulation of Sleep."

P. Sacerdote, "Cytokines and Stress."

Cell Trafficking: Neuroendocrine-Immune Implications: B. S. McEwen, discussion leader

C. A. Ottaway, "Neuropeptides and Cell Trafficking."

F. Dhabhar, "Stress-Induced Hormonal Changes and Immune Cell Trafficking."

Neuro-Immune-Endocrine Interactions in Pathology: M. Stein, discussion leader

A. Miller, "Neuroendocrine-Immune Interactions in Psychiatric Diseases."

J. Merrill, "The Role of Cytokines and Neurotransmitters in White Matter Pathology in CNS AIDS."

H. O. Basedovsky, "Neuroendocrine-Immune Interactions in Endocrine and Metabolic Diseases."

R. M. MacLeod

New Visualization Technologies for Science Education

Schwaebisches, Bildungszentrum, Irsee, Germany

W. G. Pohl, chair; J. P. Fackler, Jr,, vice-chair

25–30 September

Theory and Practice of Science Education H. Noth Introductory Remarks: A. Gieren, discussion leader

H. Heikkinen, "The ChemCom Curriculum."

N. Ben-Zvi, "Integrated-Media Approach in Science Education."

B. Pederson, "The Present and Possible Future Impact of New Technology on Chemistry Education."

H. Schmidkunz, discussion leader

M. Vrtacnik and S. A. Bonnstetter, "Science Education Reform: The Changing Role of the Teacher."

The Visualization of Molecules and Atoms: W. G. Pohl, discussion leader

G. Binning, "Atomic Force Microscopy."

R. Huber, "Protein Crystallography at the Interface of Chemistry, Physics and Biology."

U. B. Sleytr, "Molecular Nanotechnology with 2D-Protein Crystals."

Didactic Bearing of Graphic Quality in Basic and Applied Research: L. A. Oro, discussion leader

W. Kratschmer, "Fullerence Science and Astrophysics: A Fruitful Interaction."

E. Schwickert, "The Art of Scientific Illustration, The Story of an Industrial Magazine."

Computer-Aided Science Teaching: J. P. Fackler, Jr., discussion leader

N. Muller, "The Application of Molecular Graphics in Undergraduate Chemistry Teaching."

A. Olson, "The Molecular Graphics Laboratory."

H. G. von Schnering, "Molecular Modeling."

Science and the Audiovisual Media: A Payrleitner, discussion leader

A. Vendl, "Teaching and Learning Through Scienctific Talk Shows."

H. Pietschmann, "Is Knowledge or Method the Goal of Scientific Education?"

Writing in Science: W. Gopfert, discussion leader

P. W. Atkins, "The Electronic Book Versus the Printed Book in Science."

E. P. Fischer, "Public Understanding of Science."

Museums and Industry as Places of Scientific Education: H. Fehlhammer, discussion leader

J. Teichmann, "Interactive Media and Demonstrations in the New Exhibition Astronomy-Astrophysics of the German Museum, Munich."

J. de Rosnay, "Teaching and Learning Through Interactive Media Exhibitions at La Cité des Sciences et de La Villette, Paris."

Innovative Teaching Approaches: H. Stork, discussion leader

G. Muller, "The Aquarius Museum, Muhlheim/Ruhr."

R. S. Lamba, "Low Cost Equipment for Developing Countries."

Z. Lerman, "From Ozone to Oil Spills: Incorporating Student's Majors, Interests and Talent into the Curriculum."

Nitrogen Fixation

Colby-Sawyer College, New London, NH

W. H. Orme-Johnson, chair; D. C. Rees, vice-chair

3–8 July

Structure of Nitrogenase Components: W. H. Orme-Johnson, discussion leader

D. C. Rees, "Structures of Nitrogenase Proteins."

J. Bolin, "High Resolution Crystallographic Studies of Nitrogenase MoFe Protein."

K. Hodgson, "Recent EXAFS Studies on Nitrogenase and FeMoco."

B. E. Smith, "Nitrogenase Metalloclusters."

Biophysical Probes of Nitrogenase: S. Cramer, discussion leader

E. Munck, "Mössbauer Effect of Fe in Nitrogenase: They Can Run But Not Hide."

F. Hagen, "P-Cluster EPR: Dissecting a Can of Worms."

B. Hoffman, "ENDOR Studies of Nitrogenase."

S. Cramer

Nitrogenase: Structure and Mechanism I: B. Hoffman, discussion leader

B. Hales, "Metal Clusters in MoFe and VFE Proteins."

R. Eady, "Spectroscopic Studies on *V* and Third Nitrogenases of *Azotobacter*."

D. Lowe, "The MoFe Protein Cycle of Nitrogenase."

Nitrogenase: Mechanism II: E. Stieffel, discussion leader

G. J. Leigh, "What Chemistry Doesn't Tell Us About Nitrogen Fixation."

W. Newton, "Altering Nitrogenase Catalytic Activities by Amino Acid Substitution."

W. H. Orme-Johnson, "Energy Transduction and Substrate Activation."

Nitrogenase: Mechanism III: B. Smith, discussion leader

J. B. Howard

R. Thorneley, "The Fe Protein Cycle of Nitrogenase."

G. Watt

Formation of Nitrogenase Components: T. White, discussion leader

D. Dean, "Nitrogenase Iron-Sulfur Cluster Biosynthesis."

L. C. Davis, "Effects of NiFH Mutations in *Klebsiella pneumoniae*."

V. K. Shah, "In Vitro Synthesis of MoFe Cofactor,"

NIF Gene Functions—Continued, and Chemistry Relevant to Nitrogenase: D. Coucouvannis, discussion leader

G. Roberts, "The Maturation Processes of Dinitrogenase and Nif NE."

R. H. Holm, "Principles of Cluster Synthesis."

R. Henderson "Modeling the Elementary Reactions of Nitrogenase."

Chemistry Relevant to Nitrogenase: R. H. Holm, discussion leader

D. Coucouvannis, "Synthetic Functional Analogs for the FEMO Sulfur Site."

R. Schrock, "Dinitrogen Activation by High Oxidation State Mo Complexes."

Physiological Aspects of Nitrogenase Regulation: Susan Hill, discussion leader

P. E. Bishop, "Regulation of Alternative Nitrogenase in *Azobacter vinelandii*."

R. H. Burris, "Control of Nitrogenase in *Azospirillum* sp."

C. Kennedy, "Novel Mechanisms for Nitrogenase Regulation in *Azobacter vinelandii*."

P. Ludden, "The Nitrogenase of *Rhodospirillum rubrum*."

Nondestructive Evaluation

New England College, Henniker, NH

J. F. Bussiere, chair; C. Fortunko, vice-chair

26 June–1 July

Metals Processing: G. Alers, discussion leader

C. B. Scruby, "In Situ Characterization of Microstructural Changes During Heat Treatment of Steels."

F. R. Dax, "Development of Real Time Solid Fraction Sensor for Semi-Solid Metalworking Process."

G. Dobmann, "On-Line Monitoring of Mechanical Properties of Steel (Magnetic and Ultrasonic Techniques)."

Bonded Structures: R. Reed, discussion leader

R. E. Thomas, "Thermal Wave Imaging for Process Control of Adhesively Bonded Structures."

B. Van der Heiden, "One-Sided NMR for Adhesive Cure and Thickness Monitoring."

Interfering Microstructure from Noise I: C. Fortunko, discussion leader

M. Fink, "Characterization of Scattering Media Through Spatial Coherence of the Ultrasonic Speckle Noise."

B. Thompson, "Microstructure and Backscattered Ultrasonic Noise."

R. Weaver, "Inferring Materials Properties from Analysis of Diffuse Ultrasound."

Composites: K. Amin, discussion leader

T. Miller, "Moving Upstream: Taking Composite Evaluation to the Process."

J. Kinney, "Application of Three-Dimensional X-ray Tomographic Microscopy to the Processing of Ceramic Matrix Composites."

Inferring Microstructure from Noise II: B. Tittman, discussion leader

J. Rose, "Effects of Surface Roughness on Ultrasonic Backscattered Noise."

G. Alers, "Using Electrical 1/*f* Noise to Probe the Microstructure of Metal Thin Films."

J. Chicois, "Probing Microstructure, Damage and Internal Stress with Barkhausen Noise."

Imaging in Scattering Media: J. Wagner, discussion leader

E. Swanson, "High-Resolution Reflectometry and Imaging Using Optical Coherence Tomography."

E. Leith, "Electronic Holography for Imaging Through Scattering Media."

Polymer Processing: J. Rose, discussion leader

L. Hall, "NMR as a Probing Tool for Plastics Processing."

L. Piche', "On Line Ultrasonic Monitoring of Polymer Processing."

C. Thomas, "Ultrasonic Monitoring of Polymer Injection Molding."

J. F. Bussiere, discussion leader

T. Eager, "Increased Productivity Through Process Sensing and Control."

M. Kroning, "NDE as a Key Element in Materials Processing."

Noncontact Techniques: J.-P. Monchalin, discussion leader

H. Ringermacher, "Real-Time Laser Ultrasonic Evaluation of Coating Thickness in an Operating CVD Reactor."

C. Carlhoff, "Industrial Applications of Laser-Induced Breakdown Spectroscopy."

J. Murphy, "Remote Temperature Measurement Using Microwave Thermal Reflectance."

Nuclear Chemistry

Colby-Sawyer College, New London, NH

G. J. Wozniak, chair; W. Nazarewicz, vice-chair

19–24 June

Giant Resonances and Hot Nuclei: D. Morrissey, discussion leader

M. Thoennessen, "Excitation of the GDR Built on Highly Exited States with Inelastic α-Scattering."

Y. Blumenfeld, "Behavior of the Giant Dipole Resonance in Very Hot Nuclei."

M. Kaplan, "New Approaches to Probing the Degrees of Freedom in Very Hot Nuclei: Particle Correlations, Kinematics, and Model Simulations."

Target and Projectile Fragmentation: R. Siemssen, discussion leader

J. Galin, "Hot Nuclei in 2-GeV p- and ^{3}He-Induced Reactions."

K. Kwiatkowski, "Multifragmentation in 1.8- to 4.8-GeV ^{3}He + Ag,Au Reactions."

A. Hirsch, "A Search for the Liquid-Gas Phase Transition in Nuclear Multifragmentation."

Multifragmentation in Asymmetric and Symmetric Systems: U. Schroeder, discussion leader

W. Trautmann, "Fragmentation Studies of Asymmetric Systems with ALADIN."

B. Tsang, "Multifragmentation and Nuclear Vaporization in Kr + Au and Au + Au Reactions."

D. Cussol, "First Results with INDRA."

Multifragmentation: X. Campi, discussion leader

L. Moretto, "Multifragmentation: Statistics or Dynamics?"

D. Gross, "Statistical Multifragmentation in Nuclei and Elsewhere."

Time Scales in Heavy Ion Collisions: D. Bowman, discussion leader

R. Charity, "Determination of the Time Scale for Projectile Disassembly from Post-Breakup Coulomb Accelerations."

D. Durand, "Nuclear Disassembly Time Scales Using Fragment-Fragment Space-Time Correlations."

S. Yennello, "Charge Equilibration in Intermediate Energy Heavy-Ion Collisions."

Hot Hadronic Matter: G. Westfall, discussion leader

W. Llope, "Symmetric Collisions at Intermediate Energies: Nuclear Disassembly Mechanisms."

D. Cebra, "Symmetric Systems—the EOS TPC—and Hot Compressed Nuclear Matter."

D. Kahana, "Flow in Relativistic Heavy Ion Collisions from the Cascade Model."

Correlations, Resonances and Dynamics: S. Steadman, discussion leader

S. Pratt, "Particle-Particle Correlations Studies."

R. Morse, "Transverse and Pair Momentum Dependence of the Source Sizes Inferred from Bose-Einstein Correlations in Ultra-Relativistic Heavy-Ion Collisions."

M. Gonin, "Review of Data from AGS Heavy-Ion Experiments and Their Implications for the Relativistic Cascade Codes."

Time Machines: W. Nazarewicz, discussion leader

"The Climate Time Machine as Revealed from the Greenland Ice Sheet Project 2."

"Results from the 'New' Hubble Space Telescope."

R. Schmitt, discussion leader

F. Wolfs, "Positrons from Heavy-Ion Collisions: Current Status of the Problem."

A. Menchaca-Rocha, "A Liquid Drop Collisions: Fragment Velocity, Mass, Multiplicity and Angular Distributions."

K. Moody, "The Decays of Element 106 Isotopes and the Onset of a New Region of Stability."

Nuclear Proteins, Chromatic Structure and Gene Regulation

Tilton School, Tilton, NH

M. Grunstein, chair; S. Elgin, vice-chair

17–22 July

Nucleosomal Positioning and Gene Activity: G. Felsenfeld, discussion leader

R. Simpson, "A Repressed Chromatin Domain."

A. Wolffe, "Nucleosome Construction and Disruption: Transcriptional Impact in Vivo and in Vitro."

J. Thomas, "Chromatin Structure, HI and HMG1."

Interactions of the Transcription Machinery with Chromatin in Vivo: F. Winston, discussion leader

W. Horz, "How Transcription Factors Overcome a Repressive Chromatin Structure."

C. Peterson, "The Yeast SWI/SNF Protein Complex: Helping Activators Contend With Chromatin."

Interactions of the Transcription Machinery with Chromatin in Vitro: R. Kornberg, discussion leader

J. Kadonaga, "DNA Replication, Chromatin Assembly and Transcription by RNA Polymerase II."

J. Workman, "Mechanisms of Nucleosome Binding, Disruption and Displacement by Transcription Activators."

R. Kingston, "Mechanisms That Regulate Transcription Factor Binding to Nucleosomes."

Chromosomal Assembly, Condensation and Replication: B. Trask, discussion leader

P. Kaufman, "DNA Replication–Dependent Chromatin Assembly in Vitro."

D. Koshland, "Genetic and Cytological Study of Chromosome Structure in Budding Yeast."

Centromeres and Telomeres: E. Blackburn, discussion leader

V. Zakian, "Telomere Position Effect Without a Telomere in *Saccharomyces*."

C. Greider, "Telomerase and Telomere Length Regulation."

J. Langmore, "Telomere-Specific Chromatin."

Heterochromatin, Euchromatin and Chromatin Modifications: A. Bird, discussion leader

B. Turner, "Histone Acetylation, Transcription and Cell Memory."

R. Paro, "Epigenetic mechanisms of Gene Repression During *Drosophila* Development."

Hetrochromatin and the Genetics of Silencing: D. Shore, discussion leader

J. Broach, "Transcriptional Silencing of Mating Type Genes in Yeast."

D. Gottschling, "Position Effect Variegation at Telomeres: The Dynamics of Phenotypic Switching."

R. Sternglanz, "Studies on Transcriptional Silencing in Yeast."

Chromosomal Domains and Nuclear Membranes: J. Newport, discussion leader

L. Gerace, "Nuclear Lamina and Chromatin organization."

J. Sedat, "Three-Dimensional Nuclear Structure and Dynamics."

Chromosomal Domain Boundaries and Nuclear Compartments: S. Gasser, discussion leader

U. Laemmli, "The Structure of Metaphase Chromosome Bands."

P. Schedl, "Chromatin Domains in *Drosophila*."

P. Geyer, "Insulation of chromosomal Position-Effects by the SU(HW) Protein in *Drosophila*."

Nucleic Acids

New Hampton School, New Hampton, NH

M. J. Yarus, co-chair; P. B. Moore, co-chair

12–17 June

Splicing: J. A. Steitz, discussion leader

T. Nilsen, "Trans-Splicing in Vitro."

J. Abelson, "Splicing in Yeast."

C. Guthrie, "Splicing in Yeast."

J. Steitz, "mRNA Processing."

Nucleic Acids and Nucleoprotein Structures: C. Pabo, discussion leader

S. Burley, "X-ray Crystallographic Studies of Eukaryotic Transcription Factors."

C. Pabo, "Structure and Design of DNA-Binding Proteins."

T. Steitz, "Crystallographic Studies of Protein-DNA Complexes."

N. Pavletich, "Structural Studies of the p53-DNA Complex."

RNA Editing: K. Stuart: discussion leader

H. Smith, "Conversion of C to U in Apolipoprotein B mRNA."

M. Hanson, "Editing in Plant Organelles."

J. Gott, "Editing in Physarum."

K. Stuart, "Substitution Editing in Trypanosomatid RNAs."

Translational Control: S. Kustu, discussion leader

R. Losick, "Control of Sigma Factor Activity."

E. O'Shea, "In Vitro Studies of Yeast Regulation."

E. P. Geiduschek, "Control of Late Transcription in Bacteriophage T4."

E. Richet, "Control of *E. coli* Molk Transcription."

Translation: H. Noller, discussion leader

S. White, "Three-Dimensional Structures of Ribosomal Proteins."

F. Fuller-Pace, "Interaction of DEAD Box Protein DbpA with 23*S* rRNA."

R. Parker, "Mechanism of mRNA Turnover in Eukaryotes."

H. Noller, "16*S* rRNA Bases Essential for P-Site Binding."

RNA Catalysis: O. Uhlenbeck, discussion leader

F. Michel, "Long-Range Interactions in Group I and II Introns."

R. Collins, "Neurospora Mitochondrial Self-Cleaving Domains."

O. Uhlenbeck, "RNA Catalysis."

Self-Organization: L. Orgel, discussion leader

J. Szostak, "New RNA Enzymes."

J. Rebek, "Organic Chemicals That Replicate."

A. Eschenmoser

L. Orgel

New Nucleic Acid Functions: L. Gold, discussion leader

M. Green, "Selection of Sequences That Bind to Splicing Proteins."

L. Gold, "Unexpected SELEX Results."

D. Bartel

Comparative Studies of Nucleic Acids: N. Pace, discussion leader

S. Benner, "Phylogeny of Proteins."

G. Stormo, "Computer Identification of Genes."

M. Sogin, "Phylogeny of Eukaryotes."

N. Pace, "Comparative Analysis of RNase P Structue and Function."

Order/Disorder in Solids

Colby-Sawyer College, New London, NH

M. A. White, chair; W. Press, vice-chair

7–12 August

Manifestations of Disorder in Solids: Molecular Crystals and Plastic Phases: M. A. White, discussion leader

E. L. Chronister, "Disorder and Homogeneous Dynamics in Molecular Solids at High Pressure by Picosecond Coherent Raman and Photon Echo Spectroscopy."

M. L. Saboungi, "Enhancement Diffusion by Paddle Wheel in Semiconducting Alloys."

Order and Disorder in Solids: Effects of Tunneling and Stress: S. Trevino, discussion leader

A. Damyanovich, "A Study of Rotational Tunneling Phenomena by NMR in the Rotating Frame."

R. Lynden-Bell, "Numerical Experiments on Order/Disorder Changes in Stretched Crystals."

The Influence of Disorder on Properties of Fullerenes: J. Fischer, discussion leader

W. F. David, "Neutron Powder Diffraction Studies of Order and Disorder in C60 and K3C60."

R. Kiefl, "Muon Spin Relaxation of Endohedral Muonium in A3C60 Superconductors: Electronic Excitations and the Possible Influence of Orientational Disorder."

The Influence of Disorder on Properties of Fullerenes: K. H. Michel, discussion leader

C. Meingast, "Orientational Ordering Transitions in C60 and C70 Single Crystals Studied by High-Resolution Dilatometry."

A. B. Harris, "What Does Landau Theory Tell Us About Fullerenes?"

Order and Disorder on Surfaces: M. L. Klein, discussion leader

A. Pines, "Surface NMR-A–Sensitive Topic."

J. Larese, "Neutron Studies of Surface Layering Phenomena."

K. Liang, "The Structure and Phase Behavior of Self-Assembled Monolayers as Determined by Synchrotron X-ray Scattering."

Disorder in Confined Spaces: Inclusion Compounds: C. Eckhardt, discussion leader

U. Haeberlen, "Inclusion Compounds—Crystals Combining Order and Disorder."

H. Gies, "Structural Disorder in Zeolites."

Phase Transitions: Order from Disorder and Vice Versa: R. Pick, discussion leader

J. Tse, "Pressure-Induced Phase Transformations, Especially Amorphization."

M. Ichikawa, "Appearance and Vanishing of the Low-Temperature Phase Transition in M3H(X04)2-Type Crystals with O-Dimensional H-Bond Network."

A. Huller, "First Order Phase Transitions in the Dynamical Ensemble."

Disorder in Ice: W. Press, discussion leader

H. Dosch, "Surface Melting of Ice Single Crystals by Glancing Angle X-ray Scattering."

A. J. Leadbetter, "30 Years in the Ice Field."

Glasses: Ultimate Disorder?: N. O. Birge, discussion leader

R. L. Orbach, "Vibrational Localization and Transport in Disordered Systems."

H. Eckert, "Quantifying Disorder in Glasses: New Solid State NMR Approaches."

Organic Geochemistry

Holderness School, Plymouth, NH

M. D. Lewan, chair; R. Alexander, vice-chair

14–19 August

Environmental Issues Related to Organic Geochemistry: M. C. Kennicutt II, discussion leader

T. Bence, "Petroleum Exploration Geochemistry Applied to Environmental Studies of the Exxon *Valdez* Oil Spill."

S. Safe, "In Vivo and in Vitro Bioassays for Exposure of Marine Living Systems to Hydrocarbons."

P. H. Pritchard, "Concepts and Directions in Bioremediation: Field and Laboratory Applications."

Petroleum-Rock Water Interactions: S. R. Larter, discussion leader

S. R. Larter, "Petroleum-Rock Water Interactions: Chemical Constraints on Geological Processes."

J. Connan, "Possible Anaerobic Crude Oil Biodegration in Reservoirs: Laboratory and Geological Evidence."

Sediment Microbial Processes and the Organosulfur Cycle: J. Whelan, discussion leader

H. Fossing, "Studies of Sulfur Oxidation Pathways in Anoxic Sediment."

G. Luther, "Inorganic Sulfur Species: Metal Complexes and Mineral Formation Versus Organic Sulfur Formation in Marine Systems."

R. J. Parks, "Distribution and Biogeochemical Significance of Bacteria in Deep Sediment Layers in the Pacific Ocean."

Ancient DNA: M. L. Fogel, discussion leader

B. Sykes, "The Challenge of Ancient DNA: PCR Techniques and Contamination."

N. Tuross, "Molecular Preservation in Bones, Birds and Brachiopods."

Modern Approaches Toward Defining the Macromolecular Structure of Coals:

P. G. Hatcher, discussion leader

R. E. Winans, "Macromolecular Structure of Coals: Cluster Types, Functionalities and Linkages in Large Molecules."

J. W. Larsen, "Macromolecular Structure of Coal: Structural Role of Covalent and Noncovalent Interactions."

J. L. Faulon, "Computer-Aided Molecular Modeling of Coal's Macromolecular Structure."

Comparative Studies of Pyrolysis Methods and Their Relationship to Natural Hydrocarbon Generation: M. D. Lewan, discussion leader

F. Behar, "Mechanisms of Kerogen Cracking During Pyrolysis in Open and Closed (Dry and Hydrous) Pyrolysis: Similarities and Differences."

R. Michels, "Yield and Distributions of Hydrocarbons Generated During Pressurized Pyrolysis of Organic."

Biomarkers as Indicators of Geological Age,, Environment and Thermal History: R. Alexander, discussion leader

J. M. Moldowan, "Novel Triaromatic Steroid Hydrocarbons and Steranes Related to Depositional Environmental and Geological Age."

R. Summons, "New Findings About the Structure and Distribution of Ring Alkylated Steranes."

R. Alexander, "Elimination Reactions of Esters and Their Application to Reconstructing the Thermal History of Sediments."

New Advances in Organic Geochemistry: M. J. Whiticar, discussion leader

R. P. Evershed, "Biomolecular Archaeology—A New Route for Organic Geochemistry."

F. Prahl, "Riverine Organic Matter: Its Sources and Biogeochemical Consequences."

New Developments in Natural Gas Geochemistry: M. Schoell, discussion leader

A. K. Burnham, "Kinetic Mechanisms of Oil Cracking and Gas Generation Determined by Double Isotopic Labels."

M. Rooney, "Effects of Thermochemical Sulfate Reduction on the Molecular and Isotopic Composition of C_1 to C_{10} Hydrocarbons in Oils."

M. Schoell, "Episodic Gas Migration and Multiple Filling of Reservoirs."

Organic Reactions and Processes

New Hampton School, New Hampton, NH

J. M. Takacs, chair; R. J. Pariza, vice-chair

17–22 July

R. Linderman, discussion leader

S. R. Angle, "Benzylic Cation Initiated Cyclization Reactions: Mechanistic Studies and Synthesis Applications."

J. Barluengo, "Aminodienes in Stereoslective Organic Synthesis." M. Bhupathy, "Asymmetric Synthesis of an LTD_4 Antagonist."

M. Andrus, discussion leader

P. H. Dussault, "With Stability to Spare: New Methods for Peroxide Synthesis."

M. Kraft, discussion leader

A. H. Hoveyda, "Metal Catalysisand Enantioselective Carbon-Carbon Bond Formation."

M. C. Kang, "Synthesis of a Water-Soluble Camptothecin Analog."

S. Kobayashi, "Chiral Tin(II) and Lanthanide Catalysts in C-C Bond Forming Reactions."

D. Romo, discussion leader

J. Macor, "Topics in Indole Chemistry Related to the Synthesis of Novel Serotonergics."

J. A. Marshall, "Chiral Allylic Stannanes as Synthetic Reagents."

K. D. Moeller, "Anodic Electrochemistry: New Routes to Carbon-Carbon Bond Formation."

J. Gervay, discussion leader

G. A. Molander, "New Methods for Selective Organic Synthesis."

W. Nugent, "Early Transition Metal Catalysts: Underutilized Tools for Organic Synthesis."

K. A. Parker, "Novel Methods for the Synthesis of C-Aryl Glycoside Natural Products."

M. Sibi, discussion leader

A. Pfaltz, "Asymmetric Catalysis with Readily Available Chiral Metal Complexes."

R. L. Polt, "Glycopeptide Drugs and the Blood-Brain Barrier."

J. M. Takacs, discussion leader

R. R. Schmidt, "New Approaches to Glycoside Bond Formation."

S. E. Thomas, "Sulfoxides and Stereochemical Control in Organometallic Chemistry."

K. Toshima, "Recent Progress in O- and C-Glycosidation in Methods and Its Application to Natural Products Synthesis."

R. J. Pariza, discussion leader

P. Wipf, "Zirconocenes in Organic Synthesis."

J. Wisniewski-Grissom, "The Tandem Enediyne and Eneyne-Allene Radical Cyclizations."

C-H. Wong, "Recent Progress in Enzymatic and Chemical-Enzymatic Organic Synthesis."

Organometallic Chemistry

Holderness School, Plymouth, NH

R. P. Hughes, chair; K. G. Moloy vice-chair

24–29 July

A. P. Sattelberger, discussion leader

R. Eisenberg, "Surveying the Hydride Landscape and Other Adventures with Rhodium and Iridium."

I. Manners, "Ring-Opening Polymerization of Strained, ,Ring-Titled Metallocenophanes: A New Route to Organometallic Polymers."

B. Bosnich, "Transition Metal–Based Lewis Acids and the Mechanisms of the Mukaiyama Reaction."

G. Stanley, "Bimetallic Hydroformylation Catalysis."

J. Canich, discussion leader

B. Goodall, "Driving on the Right: Adventures of a (British) Ziegler Chemist on the 'Wrong' Side of the Periodic Table."

E. Parsons, "Metal Catalyzed Coupling Reactions in Supercritical Water."

A. Hoveyda, "Design and Development of Metal-Catalyzed Enantioselective Processes."

P. Shapiro, discussion leader

K. Theopold, "Open Shells—the Virtues of Unpaired Electrons in Organochromium Chemistry."

P. Power, "Synthesis and Characterization of Novel Organometallic Magnesium and Zinc Reagents."

A. Dembek, "Organometallic Modification Approach to Control of Aromatic Polymer Synthesis and Properties."

C. Schauer, discussion leader

D. Stephan, "Synthesis and Chemistry of Zirconium-Phosphorus Multiple Bonds."

D. Roddick, "Design and Organometallic Applications of Highly Electrophilic Fluoroalkylphosphine Complexes."

A. Goldman, "Reduction of CO of Group 15 Triaryloxides R_3EO (E=N, As, P?) Catalyzed by Transition Metal Carbonyls."

L. Field, discussion leader

C. Bianchini, "HDS Model Systems: Coordination, Opening, Hydrogenation and Desulfurization of Thiophenic Molecules at Rhodium and Iridium."

R. A. Fischer, "Chemistry of Transition Metal Substituted Alanes, Gallanes and Indanes: Single Source Precursors for OMCVD of Intermetallic Films."

F. Joo, "Organometallic Catalysis in Aqueous Solutions. Effects of a Reactive Solvent."

J. Arnold, discussion leader

E. Drent, "Precision Catalysis by Cationic Palladium Complexes."

P. Hofmann, "Carbon-Carbon and Related Bond Activation Chemistry."

D. O'Hare, "Synthesis, Structure and Kinetic Studies of Organometallic Intercalation Compounds."

R. Schrock, discussion leader

R. Perutz, "Keeping Pace with Oxidative Addition and Reductive Elimination."

M. Tilset, "Energetics, Kinetics, and Mechanisms of Metal-Hydrogen Bond Cleavage Reactions in Metal Hydride Cation Radicals."

G. van Koten, "Aryldiamine Pincer Organometallic Chemistry: A Novel Spectator Ligand and Activator in Homogeneous Catalysis."

M. Brookhart, discussion leader

D. H. R. Barton, "The Strange World of Gif Chemistry."

P. Fagan, "Organometallic and Other 'Useless' Chemistry of Fullerenes: An Overview."

R. Livinghouse, discussion leader

J. Bercaw, "New Ligands for Early Transition Metals."

J. Bryan, "Technetium Alkyl, Carbene, and Carbyne Complexes."

I. Horvath, "Molecular Engineering in Homogeneous Catalysis."

Origin of Life

Salve Regina University, Newport, RI

D. J. Des Marais, chair; G. F. Joyce, vice-chair

21–26 August

External Control on the Early Environment: S. Chang, discussion leader

J. Cronin, "Organic Chemistry of the Early Solar System: Recent Molecular and Isotopic Analyses of Meteorites."

V. Oberbeck, "Meteorite Impacts and the Origin and Evolution of Life."

Y. Zhang, "History of Mantle/Crust Exchange of Volatiles."

RNA World: G. Joyce, discussion leader

A. Schwartz, "Testing Candidated for a Pre-RNA World."

R. Green, "Defining the Minimal Requirements for the Peptidyl Transferase Reaction of the Ribosomes."

Iron and Sulfur Transformations: H. Holland, discussion leader

G. Wachterhauser, "The Iron-Sulfur World in Vitro."

K. Stetter, "Hyperthermophilic Communities in Deep Terrestrial and Submarines Environments: The Iron-Sulfur World in Vitro."

D. Canfield, "The Early Geologic Record of Iron and Sulfur Biochemistry."

The Role of Phosphate: D. Canfield, discussion leader

G. Arrhenius, "Phosphate—An Early Choice."

H. Holland, "Marine Phosphate and Atmospheric O_2."

Mars: J. Rummel, discussion leader

J. Farmer, "Exopaleontology and the Search for a Fossil Record on Mars."

J. Wisdom, "Obliquity History of Mars and Earth."

C. McKay, "Earth Analogs to Past Life on Mars."

Early Phylogeny: A. Knoll, discussion leader

A. Lazcano, "Rooting the Tree of Life: What Came Before the Last Common Ancestor?"

S. Barns, "Novel Archaeal Lineages from a Natural Microbial Population."

Photosynthesis: J. Farmer, discussion leader

B. Pierson, "Physiological Ecology and the Evolution of Diversity Among Ancient Photosynthetic Bacteria."

R. Blankenship, "Evolution of Photosynthetic Reaction Centers."

A. Knoll, "The Precambrian Record of Photosynthetic Organisms."

Early Biosphere: The Rock Record: B. Simoneit, discussion leader

D. Lowe, "Life on an Early Warm (Hot) Earth."

R. Summons, "Molecular Fossils: The Nature and Quality of the Record in Archean and Proterozoic Sediments."

Prebiotic Chemistry: Membranes, Microenvironments and Light: S. Miller, discussion leader

A. Pohorille, "Structure and Functions of the Earliest Membrane Systems: Computer Simulations."

D. Deamer, "Membrane Permeability and Encapsulated Catalysts."

P. Braterman, "Photochemistry of Iron (II)–Containing Systems in Prebiotic Reduction and Synthesis."

Oscillations and Dynamic Instabilities

Salve Regina University, Newport, RI

R. Kapral, co-chair; J. Hudson, co-chair

7–12 August

R. Imbihl, discussion leader

G. Ertl, "Formation of Concentration Patterns in Surface Reactions."

D. Luss, "Impact of Global Interactions on Pattern Formation."

I. Kevrekidis, "Catalysis on Microstructured Surfaces."

R. Noyes, discussion leader

J. Ross, " Strategy of Deducing Reaction Mechanisms from Experiments on Oscillatory Reactions."

L. Olsen, "The Peroxidase-Oxidase Reaction: Period Doubling Bifurcation, Chaos and Transient Periodicity."

A. T. Winfree, discussion leader

A. Zhabotinsky, "Wave Propagation and Pattern Formation in Non-Uniform Reaction-Diffusion Systems."

S. Mueller, "Spiral Wave Dynamics Under External Control."

A. Mikhailov, "Complex Dynamics of Spiral Waves and Motion of Curves."

K. Yoshikawa, discussion leader

J. Keener, "The Dynamics of Scroll Waves."

M. Menzinger, "Diffusive-Flow Instabilities."

F. Schneider, discussion leader

C. J. Weijer, "Chemical Waves and Chemotaxis Control Multicellular Morphogenesis in the Cellular Slime Mould *Dictyostelium* Discoideum."

J. Lechleiter, "Calcium Waves, Calcium Pumps and Intracellular Calcium Excitability."

J. Jalife, "High Resolution Video Imaging of Electrical Vortices in the Heart."

J. Tyson, discussion leader

Short Program of Recent Developments in the Field.

I. Epstein, discussion leader

H. Swinney, "Self-Replicating Spots in a Reaction-Diffusion System."

P. Borckmans and G. Dewel, "Competition Among Turing Structures."

P. DeKepper, "Spatio-Temporal Patterns Resulting from Turing/Hoff Interactions."

L. Pismen, discussion leader

O. Rossler, "Attractors to Be Expected in Chemical Reactors."

G. Nicolis, "Microscopic Approaches to Chemical Instabilities and Chaos."

F. Jaeger, discussion leader

K. Showalter, "Stabilizing and Tracking Unstable Stationary States and Periodic Orbits."

M. Gorman, "The Chaotic Dynamics of Premixed Flames."

M. Marek, "Spatiotemporal Patterns in Ionic Reaction Systems with without an External Electric Field."

Oxygen Binding Proteins

Plymouth State College, Plymouth, NH

S. N. Vinogradov, chair; G. N. La Mar, vice-chair

24–29 July

Protein/Gene Structure and Evolution: D. Goldberg, T. Gotoh, L. Moens, A. Riggs and D. Walz, discussion leaders

M. Go, "Molecule-Exon Correspondence in Globin Evolution."

A. Riggs, "Studies of Invertebrate Globin Genes."

R. Poole, "The Flavohemoglobin of *Escherischia coli*."

B. Pohajdak, "Nematode Hemoglobin Genes."

G. Bergtrom, "Linkage, Organization and Evolution of Chironomid Globin Genes."

C. Appleby, "The Natural History of Hemoglobin in Plants."

C. Anderson, "A Nonsymbiotic Hemoglobin Gene in Soybean."

D. Goldberg, "The Molecular Basis of *Ascaris* Hemoglobin Oxygen Avidity."

T. Suzuki, "A Myoglobin Evolved from Indoleamine Oxygenase."

E. Schmidt, "Evolution of Chironomus Globin Genes."

C. Trotman, "The Linked Domains of Artemia Hemoglobin."

M. Gilles-Gonzalez, "*Rhizobium* Hemoprotein Kinase."

M. Guertin, "Chloroplast Hemoglobins in the Green Alga *Chlamydomonas*."

Quaternary Structure/Function, Dissociation and Reassociation: E. Chiancone, E. Daniel and S. Ebina, discussion leaders

J. Wall, "STEM Mass Measurements of Large Globin Complexes."

E. Braswell, "Equilibrium Sedimentation Analysis of Globin Complexes."

A. Riggs, "Stoichiometry of *Lumbricus* Hemoglobin Subunits."

E. Daniel, "Open Questions in the Study of the Subunit Structures of Hemocyanins and Large, Extracellular Invertebrate Hemoglobins."

M. Van Heel, "Three-Dimensional Electron Microscopy of *Lumbricus* Hemoglobin."

K. Matsubara, "Artificial Supramolecules Based on Multisubunit Hemoglobins."

Hemocyanin Structure and Function: J. Bonaventura, J. Lamy and K. Van Holde, discussion leaders

J. Lamy, "Three-Dimensional Reconstruction of Molluscan and Arthropod Hemocyanins."

B. Hazes, "Allosteric Regulation in Limulus Hemocyanin."

C. Bonaventura, "Active-Site Heterogeneity in Hemocyanin Subunits."

H. Decker, "Structure, Function and Evolution of Arthropod Hemocyanins."

K. Magnus, "Three-Dimensional Structure of the Oxy Form of Limulus Hemocyanin."

K. Van Holde, "Octopus Hemocyanin Sequence and Structure."

W. Hendrickson, "Structural Studies of Hemocyanin."

Structure/Function and Active Sites: W. Hendrickson, G. La Mar, W. Love, J. Olson and P. Wright

P. Wright, "Solution Structure and Folding Pathway of Myoglobin."

G. La Mar, "NMR Studies of Globin Active Site Structure."

W. Royer, Jr., "Structural Basis for Cooperativity in the Scapharca Dimer Hemoglobin."

E. Chiancone, "Properties of the Scapharca Homodimer Hemoglobin."

R. Nagel, "Structural/Functional Characteristics of Noetia Hemoglobin."

K. Shikama, "The Soret Absorption and MCD of Ferric High-Spin Myoglobins."

W. Caughey, "Role of Globin in Preventing Reduction of Bound O_2."

Y. Orii, "Interactions of Myoglobins with Superoxide Anion and H_2O_2."

M. Bolognesi, "Crystal Structures of Sulfide-Binding *Lucina* Hemoglobin."

M. Hackert, "Crystal Structures of Molpadia Hemoglobins."

E. Arutyunyan, "Crystal Structure of Liganded States of *Lupinus* Hemoglobin."

J. Satterlee, "NMR and Sequence Stud-

ies of Glycera Monomer Hemoglobins."

Mutant Vertebrate Myoglobins and Hemoglobins: W. Eaton, M. Ikeda-Saito, R. Nagel, J. Olson and T. Yonetani, discussion leaders.

K. Nagai, "Evolution of Hemoglobins Studied by Site-Directed Mutagenesis."

A. Wilkinson, "Structure and Function of Mutant Myoglobins."

S. Sligar, "Expression and Genetic Engineering of Heme Proteins."

P. Ortiz de Montellano, "Oxidative and Free Radical Reactions of Myoglobins."

S. Boxer, "Spectroscopic Studies with Myoglobins Mutants."

W. Eaton, "Transient Kinetics of Hemoglobins and Myoglobins."

R. Elber, "Molecular Dynamics and Mutants."

Q. Gibson, "From Hartridge and Roughton to Picosecond Kinetics and Molecular Dynamics."

M. Brunori, "Hemoglobin and Myoglobin Studies in Rome."

Physiological Function: C. Bonaventura, C. Mangum and J. Wittenberg, discussion leaders

J. Wittenberg, "Interaction of Myoglobin with Mitochondria."

J. P. Truchot, "Modulation of Hemocyanin O_2 Affinity in Decapod Crustaceans."

N. Terwilliger, "Ontogeny and Biosynthesis of Hemocyanin."

A. Toulmond, "Functions of Annelid and Vestimentiferan Hemoglobins."

C. Mangum, "Physiological Adaptation of Invertebrate Oxygen Carriers."

J. Colacino, "Functions of Invertebrate Hemoglobins."

Particle-Solid Interactions

Plymouth State College, Plymouth, NH

W. Heiland, chair; N. Q. Lam, vice-chair

31 July–5 August

Stopping Power: R. H. Ritchie, discussion leader

F. Flores, "Charge States and Stopping Power for Lights Ions in Condensed Matter."

J. U. Andersen, "Energy Loss and Channeling of Nearly Relativistic Particles."

A. Narmann, "Statistical Theory of Energy Loss and Charge Exchange of Penetrating Particles."

Radiation Damage in Biological Matter: M. Inokuti, discussion leader

W. Schimmerling, "Some Aspects of the Interaction of Charged Particles with Living Matter."

J. Loeffler, "Surgery with Heavy Particle Beams."

Positrons and Electrons: N. H. Tolk and P. Zeijlmans van Ernmichoven, discussion leaders

G. Massaoumi, "Interactions of Variable-Energy Positrons with Solids."

R. Bargiola, "Current Problems in Electron Emission from Solids."

H. P. Winter, "Impact of Small Multiparticle Projectiles on Metal Surfaces—Mechanisms for Slow Electron Emission."

N. Stolterfoht, "Electrons from Highly Charged Ion Impact on Metals."

New Phases: W-K. Chu, discussion leader

A. Dunlop, "New Phases Induced in Metals by High Levels of Electronic Energy Deposition."

E. Uggerhoj, "Physics with Rings and Traps."

Highly Charged Ions and Sputtering: P. Varga and D. M. Gruen, discussion leaders

L. Folkerts, "Sub-Surface Processes in Highly Charged Ion-Metal Interactions."

J. Burgdorfer, "Hollow Atoms and the Interaction of Highly Charged Ions with Surfaces."

P. Sigmund, "Alloy and Isotope Sputtering."

T. Michely, "STM View of the Ion-Metal Interaction."

Modelling of the Particle-Solid Interaction: N. Q. Lam, discussion leader

N. V. Doan, "Molecular Dynamics Simulations of Radiation Induced Disorder."

R. S. Averback, "The Modeling of Sputtering."

T. D. de la Rubia, "Molecular Dynamics Simulation Studies of Ion Implantation in Silicon."

Surface Scattering: W. Lennard and I. S. T. Tsong, discussion leaders

Y. Yamazaki, "Strong Charge State Dependence of Proton Sputtering with Very Slow Highly Charged Ions."

V. H. Ponce, "Electron Emission and Resonances in Ion-Surface Grazing Collisions."

B. Cooper, "Interaction of Slow Alkali-Ions with Surfaces: Energy and Charge Transfer Dynamics."

R. Monreal, "The Surface Contribution to the Auger Neutralization of Slow Ions Interacting with Metals."

Hot Topics: J. Mayer, discussion leader

E. Taglauer, "Plasma Wall Interaction in Fusion Experiments."

G. Basbas and H. E. Roosendaal, "The Future of Scientific Communications."

Ions as Tools: H. Atwater, discussion leader

M. Aono, "Time-of-Flight Low and Medium Energy Ion Scattering Spectrometry Applied in Film Growth."

N. Herbots, "Combined Ion and Molecular Deposition."

J. W. Rabalais, "The Chemistry and Physics of Low Energy Ion Beam Film Deposition."

Peptide Growth Factors

Kimball Union Academy, Meriden, NH

G. Carpenter, chair; M. Klagsburn, vice-chair

7–12 August

Receptors: J. Massague, discussion leader

J. Massague, "Hetermeric Kinase Receptors for the TGF-B Family."

P. DiFiore, "Mitogenic Signal Transduction by the erbB-2 and EGF Receptors."

L. Claesson-Welsh, "PDGF Receptors Signal Transduction."

R. Baserga, "The IGF-I Receptor Controls the Transformation of Cells."

Cytokine Signals: J. Ihle, discussion leader

J. Ihle, "Tyrosine Phosphorylation in Signaling Through Receptors of the Cytokine Receptor Super-Family."

J. Pierce, "Essential Elements of Insulin and IL-4 Medicated Signal Transduction."

J. Darnell, "The JAK-STAT Pathway."

Development and Differentiation: E. Fuchs, discussion leader

E. Fuchs, "Growth factors and Their Control of Differentiation in the Epidermis."

P. Sternberg, "The *C. elegans* Lin-3 Growth Factor."

M. Stern, "Signaling Through the FGF Receptor Guides Migrating Cells in *C. elegans*."

B. Hogan, "TGF-B–Related Signaling Molecules in Vertebrate Development."

Phospholipid Signals: G. Carpenter, discussion leader

G. Carpenter, "EGF Receptor Interactions with Other Proteins."

M. Kolesnick, "The Sphingomyelin Pathway Mediates Signaling for TNF and IL1B."

S. Spiegel, "Sphingosine-1–Phosphate, a Novel Messenger Involved in Cell Growth Regulation."

Kinase Signaling: J. Cooper, discussion leader

J. Cooper, "Protein: Protein Interactions in Signal Transduction."

M. Cobb, "Regulation of the erk/MAP Kinase Cascade."

G. Johnson, "Integration of Receptor Signals Regulating MAP Kinase."

J. Blenis, "Ras- and PI 3-Kinase–Dependent Protein Kinase Cascade."

Nuclear Events: J. Wang, discussion leader

J. Wang, "Signaling Through the Nuclear *c*-abl Tyrosine Kinase/RB Complex."

E. Harlow, "GI Decisions."

Newer Growth Factors: M. Klagsbrun, discussion leader

M. Klagsbrun, "Heparin-Binding EGF: A Multifunctional Growth Factor."

W. Risau, "Regulation of Blood Vessel Formation by Vascular Endothelial Growth Factor."

D. Falls, "The ARIA/GGF/NDF/Heregulin Family: Pluripotent Nervous Systems Differentiation Factors."

D. Hanahan, "Functional Involvement of IGF-II and Other Growth Factors in Oncogene Induced Tumorigenesis."

G. Carpenter, discussion leader

J. Schlessinger, "Cellular Signaling by Tyrosine Phosphorylation."

Cytoskeletal Events: T. Parsons, discussion leader

T. Parsons, "Focal Adhesion Associated Tyrosine Kinases and Cell Signaling."

D. Ingber, "Control of Growth Factor Action by Extracellular Matrix: Signal Integration in the Focal Adhesion and Beyond."

A. Hall, "Rho and Rac GTPases Link Receptors to the Actin Cytoskeleton."

Periodontal Diseases

New England College, Henniker, NH

H. Birkedal-Hansen, chair; T. Van Dyke, vice-chair

19–24 June

Environmental Control of Microbial Phenotype: S. C. Holt, discussion leader

C. Genco, "Hemin Regulation of *P. gingivalis* Outer Membrane Protein and Lipoplysachharide Expression."

P. Marsh, "The Effect of Environment Factors on the Physiology and Virulence of *Porphyromonas gingivalis*."

Bacterial Virulence Factors and Cell Phenotype: T. Van Dyke, discussion leader

M. Kilian, "IgAl Protease-Mediated Evasion of Host Immunity: Molecular and Functional Studies."

R. Genco, "Virulence Factors of Periodontal Pathogens."

Mediator Systems in Host Cell Responses: R. C. Page, discussion leader

S. Wahl, "Immune Dysregulation in TGF-β Knockout Mice."

M. Bickel, "Mechanisms of Regulation of Cytokine Gene Expression."

S. Offenbacher, "Role of Periodontitis-Induced Cytokines in Pregnancy Complications."

Genetics: Implications for Neutrophil Function Abnormalities and LJP: H. Schenkein, discussion leader

P. M. Conneally, "Molecular Approaches to Mapping Genes Involved in Periodontal Diseases."

T. Hart, "HLA Class II Antigens in Periodontal Diseases."

Lymphocyte Phenotypes in Host Responses: M. Taubman, discussion leader

R. L. Coffman, "Regulatory Interactions Between Helper T Cell Subsets."

H. Kiyono, "Type 1 and 2 Helper Cells in Periodontal Disease Specific Immune Responses."

S. Murakami, "Lymphocytes and Their Interactions with Neighboring Cells in Inflammatory Periodontal Lesions."

Macrophage Phenotypes in Host Responses: J. McGhee, discussion leader

P. Polverini, "Genetic Control of Macrophage-Mediated Angiogenic Responses."

L. Shapira, "Molecular Aspects of Macrophage Response to *P. gingivalis* Lipopolysachharide."

Keratinocyte/Stromal Cell Phenotypes in Host Responses: H. Birkedal-Hansen, discussion leader

H. Welgus, "Role of Matrix Metalloproteinases in Wound Healing and in Ulcer Formation."

R. Phipps, "Characterization of Fibroblast Subsets from Periodontal and Other Tissues."

R. R. Ranney, discussion leader

Bone Cell Phenotypes in Host Responses: B. Boyan, discussion leader

J. Aubin, "Identifying Discrete Stages in the Osteoblast Lineage."

E. Puzas, "Alveolar Bone Loss in Periodontal Disease: Role of Mannose and Mannose-6-Phosphate Receptors."

Phase Transitions in Non-Metallic Solids

Volterra, Italy

K. Schwarz, chair; G. Van Tendeloo, vice-chair

8–13 May

Phase Transitions: Equilibrium and Kinetics: H. Schmalzried, discussion leader

J. Krumhansl, "Driving Forces, Disorder, and Hysteresis in Martrensitic Transformation."

E. Salje, "Phase Transitions in Framework Structures: Equilibrium and Non-Equilibrium Behavior."

Symmetry Consideration in Phase Transitions: J. Lajzerowicz, discussion leader

J. M. Perez-Mato, "Superspace Description of Incommensurate Structures."

T. Jansen, "Incommensurate Structures and Quasi-Crystals."

V. Janovec, "Symmetry Aspects of Structural Phase Transitions."

Quantum Mechanical Calculations: K. Schwarz, discussion leader

R. Wentzcovitch, "Ab Initio Molecular Dynamics with Phase Transitions."

R. Dovesi, "Ab Initio Quantum Mechan-

ical Study of Phase Transitions in Silicates."

P. Blaha, "Density Functional Calculations."

Phase Transitions: Equilibrium: G. Martin, discussion leader

M. Moss, "Recent X-ray and Neutron Studies of Precursor Effects Associated with Phase Transitions."

New Material Classes with Phase Transitions: G. Van Tendeloo, discussion leader

G. Meijer, "Phase Transition in C_{60} and C_{70} Fullerenes."

Y. Ishibashi, "Domain Walls in Crystals with Incommensurate Phases."

J. Rouxel, "Phase Transitions in Low Dimensional Structures."

Temperature-Induced Phase Transitions: E. Kaldis, discussion leader

B. Raveau, "Phase Transition in Ceramic Superconductors."

S. Amelinckx, "In Situ Study of Phase Transitions by Electron Microscopy."

Experimental Studies of Phase Transitions: G. Martin, discussion leader

C. Forte, "Magnetic Resonance as a Tool for Investigation of Structural Phase Transitions."

J. Pannetier, "In Situ Neutron Powder Diffraction."

G. Artioli, "Time- and Angular-Resolved Powder Diffraction Study of Phase Transitions: Application to Kaolinite and Zeolite Materials."

High-Pressure Phase Transitions: A. Preisinger, discussion leader

G. Demazeau, "Pressure-Induced Phase Transitions."

Optics at Phase Transitions and Glassy States: J. C. Toledano, discussion leader

A. M. Glazer, "Phase Transition and the Study of Birefringence."

W. Kleemann, "Glassy and Domain States in Random Dipolar Systems."

S. Moss, "Overview in Phase Transitions."

Photonuclear Reactions

Tilton School, Tilton, NH

A. Sandorfi, chair; T. S. H. Lee, vice-chair

31 July–5 August

N. Isgur, "The Structure of Baryons."

V. Vento, "When Can One See Quarks in Nuclei?"

P. Sauer, "The Δ in Nuclei: Reaction Mechanism and Nuclear Constituent."

Nucleon Properties

F. Klein, "The Electric Form Factor of the Neutron."

L. Murphy, "P_{11} and D_{13} Excitation in Double π-Production."

P. Morsch, "The Structure of the P_{11} from (α,p) Reactions."

W. Schwille, "Kaon Photoproduction from the Nucleon: New Results from SAPHIR."

Nucleon Properties

N. Mukhopadhyay, "Photo- and Electro-Excitation of Baryon Resonances."

M. Khandaker, "π-Production and Compton Scattering from the Proton: the $N \rightarrow \Delta$ Transition."

J-P. Didelez, "η-Production Through the S_{11} Resonance."

N. deBotton, "The Spin-Structure of the Nucleon."

The Δ in Nuclei

A. D'Angelo, "Polarized Photon Scattering from ^{4}He."

E. Hallin, "Elastic and Inelastic Photon Scattering from ^{12}C."

T. Sato, "The Role of the Δ in (γ,π), (e,e') and η,π) Rections."

R. Gilman, "Spin-Longitudinal Δ-Hole Interactions from $^{12}C(p,n\pi^6)$."

Multi-Nucleon Physics

P. Debevec, "Signature of Three-Body Effects in ^{3}He: The DAPHNE, LEGS, SALAD and TAGX Experiments."

W. Gloeckle, "Realistic Non-Local Potential Calculations for $^3He(e,e'p)$."

B. Wojtsekhowski, "LT-Separation in $^3He(e,e'd)$."

H. Blok, "$^4He(e,e'x)$ Cluster Knockout Reactions."

Multi-Nucleon Physics

P. Grabmayr, "Kinematically Complete (γ,NN) Experiments on Light Nuclei."

J. Ryckebusch, "Interpretations of Photo-Induced Two-Nucleon Emission Results."

W. Bertozzi, "Nucleon Correlations in Complex Nuclei from (e,$e'X$) and Related Reactions."

C. Giusti, "Two-Nucleon Knockout by Real and Virtual Photons."

MEC and Relativistic Effects

H. Arenhoevel, "Relativistic Effects in d(γ,p) and d(e,e'p)."

J. van den Brand, "$d(e,e'p)$–LT Interference Results at High Q^2."

D. Riska, "A Relativistic Approach to Exchange Currents."

R. Holt, "New Measurements of T_{20} and MEC Effects."

γ-Ray Astronomy

C. Fichtel, "Recent Results from the EGRET γ-Ray Telescope on Board the Satellite Observatory."

Symmetries

U-G. Meissner, "On LET's and NO-LET's."

W. Alberico, "Parity Violating Effects in Electromagnetic Interactions."

G. Alexander, "Two-Photon Physics and γγ→Hadrons at DAøNE."

B. Schoch, "Trends in E&M Physics—Predictions for 1996."

Photosynthesis

New Hampton School, New Hampton, NH

A. Thurnauer, chair; C. Yocum, vice-chair

7–12 August

Reaction Center Structure—Crystallography/Spectroscopy: M. Gunner, F. Reiss-Husson J. P. Allen, discussion leaders

H. Michel, "Structure-Function Relationships in Photosynthetic Reaction Centers from *Rhodopseudomonas viridis* and *Rhodobacter sphaeroides*: Recent Progress."

G. Feher

W. Lubitz, "Endor and Eseem Studies of Single Crystals of Photosystem I."

Towards Crystals of Membrane Proteins: R. Nechushtai, discussion leader

P. Gast, "Determination of the Number of Detergent Molecules Associated with the Reaction Center."

D. M. Tiede, "Aggregation States of Bacterial Reaction Centers and Antenna Complexes Determined by Small Angle Neutron Scattering."

R. M. Stroud, "Design and Function of Peptitergents."

Protein Dynamics (Experimental) and Proton Movement: W. Mantele, discussion leader

R. M. Hochstrasser, "Ultrafast Infrared Spectroscopy of the Primary Steps in Electron Transfer."

H. J. M. deGroot, "Magic Angle Spinning NMR of Selectively Enriched."

C. Wraight, "Protonation States in Reaction Center Function."

Coherent Phenomena-Function/Structure: J. Morris, discussion leader

G. Kothe, "Quantum Beats as Probes of the Spin Dynamics in Photosynthesis."

M. C. W. Evans, "Transient Radical in Photosystem I."

M. H. Vos, "Vibrational Coherence in Bacterial Reaction Centers."

Primary Electron Transfer—Theory: M. Newton, M. Bixon and M. E. Michel-Beyerle, discussion leaders

D. Chandler, "The Mechanism of the Primary Charge Transfer in Photosynthesis."

A. Warshel, "Computer Simulations of the Electron Transfer Processes Treatments of Electrostatic Energies in Solvated Macromolecules."

R. Friesner

Antenna and Energy Transfer: W. Struve, R. Knox and R. Blankenship, discussion leaders

S. Volker, "Antenna Complexes Studied by Hole Burning."

V. Sundstrom, "Femtosecond Energy Transfer and Relaxation Processes in Purple Bacterial Light-Harvesting Pigments."

Photosystem II—Structure and Protein Assembly: D. Britt and B. Diner, discussion leaders

B. Barry, "Difference FT-IR Studies of the Donor Side of Photosystem II."

Sun Un, "Probing the Structure of Photosystem II Using High Field EPR."

A. Scherz, "Factors That Control the Protein Matrix Assembly in Isolated Photosystem II Reaction Centers."

Tribute to Gerhard Closs/Principles of PhotoSynthetic Design and Construction: S. Boxer, discussion leader

D. Zhang, "Triplet Energy Transfer in Organic Model Compounds: Relationship to Electron Transfer."

A. McDermott, "Solid-State NMR Studies of Photosynthesis: Chemically Induced Polarization."

P. L. Dutton, "Principles of Photosynthetic Design and Construction."

Beyond Photosynthesis: D. Beratan, T. Moore and W. H. Armstrong, discussion leaders

A. Osuka, "Modeling the Sequential Electron-Transfer Relay in Photosynthesis by Synthetic Porphyrin Arrays."

T. M. Cotton, "Enhanced Photochemistry at Surfaces."

V. Pecoraro, "Probing the Function of Mn in Photosystem II: Reactivity of Mn Dimers with Protons and Peroxide."

Plant Molecular Biology

New Hampton School, New Hampton, NH

V. L. Chandler, chair; S. Theologis, vice-chair

24–29 July

Transcriptional Control I: S. Theologis, discussion leader

Z. Schwarz-Sommer, "MADS-Box Transcription Factors and Control of *A. majus* Floral Development."

M. Sainz, "Interaction of B and C1, Two Classes of Transcriptional Regulators of the Maize Anthocyanin Pathway."

E. Grotewold, "Transcriptional Regulation by the Maize Myb Homologs P and C1."

S. Theologis, "Auxin-Regulated Gene Expression."

Transcriptional Control II: W. Thompson, discussion leader

W. Thompson, "Scaffold Attachment Sites and Transcriptional Regulation."

P. Meyer, "Inactivation of Transgenes in *Petunia*: Role of DNA Methylation and Chromatin Structure."

V. Chandler, "Paramutation, an Allelic Interaction That Causes Heritage Changes in Transcription."

Posttranscriptional Control I: P. Green, discussion leader

M. Schular, "Pre-mRNA Splicing in Plant Nuclei."

P. Green, "Determines of mRNA Instability in Plants."

R. Meagher, "In Vitro Studies of RNA Turnover."

J.-D. Rochaix, "Posttranscriptional Steps in the Expression of Chloroplast Genes in *Chlamydomonas reinhardtii*."

Posttranscriptional/Translational Control II: S. Wessler, discussion leader

A. Barkan, "Nuclear Genes in Maize That Modulate Chloroplast RNA Processing and Translation."

T. Hohn, "Leaky Scanning, Shunt and Second Cistron Activation Controlling Translation in Plant Pararetroviruses."

S. Wessler, "Postranscriptional Control of r in Maize and Rice."

Posttranslational Control: G. Coruzzi, discussion leader

G. Coruzzi, "Feedback Regulation of Amino Acid Biosynthesis."

R. Zielinski, "Posttranslational Regulation of/by Calmodulin."

S. Scofield, "Negative Dosage Effect: Control of Ac-Transposable Element Activity."

R. Vierstra, "Protein Degradation in Plants: Role of the Ubiquitin Pathway."

Protein Targeting: N. Raikhel, discussion leader

N. Raikhel, "Plant Nuclear Targeting Machinery."

J. Denecke, "Protein Transport in the Endomembrane System: Soluble Versus Membrane Bound Proteins."

K. Keegstra, "Envelope Membrane Components of the Chloroplastic Protein Transport Apparatus."

Signalling, Cell-Cell Communication: J. Chory. discussion leader

J. Chory, "Molecular Genetic Analysis of Photomorphogenesis in *Arabidopsis*."

C. Chang, "ETR1 and Its Role in Ethylene Signal Transduction."

B. Staskawicz, "Signaling in Plant/Pathogen Interactions."

T.-H. Kao, "The Role of *Petunia S*-Ribonuclease in Self-Incompatibility Interactions Between Pollen and Pistal."

J. Nasarallah, "Cell-Cell Signaling in Pollen-Stigma Interactions."

Development Regulation: R. Meeks-Wagner, discussion leader

R. Meeks-Wagner, "Regulation of Meristem Development During the Vegetative-to-Floral Transition."

K. Roberts

R. Schmidt, "Floral Homeotic Genes in Maize."

S. Dellaporta, "Sex Determination: Regulation by Cell Death."

Point Defects, Line Defects, and Interfaces in Semiconductors

Plymouth State College, Plymouth, NH

M. Stavola, chair; L. C. Feldman, vice-chair

31 July–5 August

Lattice Location of Impurities

J. Northrup, "Si Doping and Diffusion in GaAs."

P. Citrin, "EXAFS and NEXAFS Studio of Point Defects in Semiconductors."

R. C. Newman, "The Dynamics of H-Cas Pairs in GabAs and AlAs Deduced from LVM Spectroscopy."

Advances in Structure Sensitive Techniques: W. Jantsch, discussion leader

C. Corbel, "Position Annihilation Studies of Charge States and Metastability of Defects in Semiconductors."

J.-M. Spaeth, "Electrical Detection of Electron Paramogenetic Resonance: New Possibilities for the Study of Point Defects."

II–VI Semiconductors: Defects and Devices: C. G. Van de Walle, discussion leader

J. Chadi, "DX Centers in II-VI Semiconductors."

B. K. Meyer, "ODMR of Defects in Cd Zn Te."

Wide-Band Gap Semiconductors

P. Boguslawski, "Impurities and Defects in Wide-Gap Nitrides."

Hydrogen in Semiconductors: J. Weber, discussion leader

N. M. Johnson, "Diffusion and Charge States of Isolated Hydrogen in Si and GaAs."

S. K. Estreicher, "States and Diffusion Properties of Hydrogen in Semiconductors: A View from Theory."

E. Cartier, "Interaction of Atomic H with the Si/Si O_2 Interface."

Dislocations: E. Weber, discussion leader

R. Jones, "Impurity-Dislocation Interaction in Si and GaAs."

B. Farber, "A New Approach for Studying Kink Dynamics on Dislocations in Semiconductors."

Heteroepitaxy: E. Fitzgerald, discussion leader

K. Kavanagh, "Strain Relaxation of InGaAs/GaAs."

F. LeGoues, "Strain Relief in SiGe on Si."

Diffusion: U. Gosele, discussion leader

N. Moriya, "B Diffusion in SiGe Epitaxial Layers."

A. Nylandsted, "Enhanced Diffusion of High Concentration Impurities in Si: A Collective Phenomenon."

Interfaces, Defects, and Epitaxy: M. Scheffler, discussion leader

B. Bennett, "Interfacial Characterization and Control in Arsenide/Antimonide Heterostructures."

H. J. Osten, "The Role of Foreign Atoms in Epitaxy."

J. Tersoff, "Interactions of Defects with Surfaces and Interfaces."

Polymer Physics

Salve Regina University, Newport, RI

C. Han, chair; K. Freed, vice-chair

31 July–5 August

Order-Disorder Transition of Block Copolymers: M. Olvera de la Cruz, discussion leader

T. Hashimoto, "Ordered Structure and Order-Disorder Transition of Block Copolymers."

F. Bates, "On the Origins of Complexity in Diblock Copolymer Phase Behavior."

Theory and Experiments on Phase Transition: J. Lipson, discussion leader

K. Freed, "Towards a Molecular Theory of Polymer Blends."

K. Schweizer, "Integral Equation Theory of Polymer Alloys."

Continue on Phase Transition: T. Lodge, discussion leader

M. Doi, "Dynamic Coupling Between Stress and Phase Transition."

B. Hammouda, "SANS from Polymers: An Evaluation of RPA Approach."

Polyelectrolyte, Networks, and Gels: B. Chu, discussion leader

M. Muthukumar, "Pattern Selection in Polyelectrolyte."

E. Amis, "Dynamics of Polyelectrolytes in Salt-Free Solutions."

D. Schaefer, "Design and Structure of in Situ–Filled Polymer-Ceramic Composites."

Continue on Polyelectrolyte, Networks and Gels: G. McKenna, discussion leader

J. Bastide, "Thermal and Quenched Fluctuations of Polymer Concentrations in Gels."

Y. Rabine, "Mesoscopic Physics of Polymer Gels."

Structure Characterization and Simulation: E. Thomas, discussion leader

A. Lovinger, "Structure, Defects, and Morphology of Syndio-Tectic Polypropylene."

A. Balazs, "Modeling the Behavior of Comb Copolymers in Blends and at Interfaces."

J. Kornfield, "Rheo-Optical Studies of Dynamics of Polymer Melts, and Liquid Crystalline Polymers."

Past and Future of Polymer Physics: C. Han, discussion leader

W. Stockmayer, "Polymer Physics Then, Now and Maybe Later."

M. Nagasawa, "Study on Molecular Conformation: Its Development Toward Condense Systems, Material Properties and Processing."

Nonlinear Fluctuations and Pattern Formation: K. Freed, discussion leader

J. Maher, "Patterns at Driven Interfaces in Simple and Complex Liquids."

J. Sengers, "Fluctuations in Fluid Systems in Stationary Non-equilibrium States."

Polymers

Brewster Academy, Wolfeboro, NH

M. E. Galvin, chair; D. Y. Sogah, vice-chair

3–8 July

Polymers with Defined Architecture: J. DeSimone, discussion leader

S. Stupp, "Synthesis of Two-Dimensional Polymers."

V. Percec, "Molecular Recognition Directed Self-Assembly of Supramolecular Architectures."

J. Lipson, "Polymers Having Interesting Architectures Generalities on the Field and Specifics on Monte Carlo Simulations of Stars and Combs."

Polymer Architecture: S. Penczek, discussion leader

J. Moore, "Nonlinear Repetitive Synthesis for the Preparation of Structure-Controlled Macromolecules."

P. Bianconi, "Poly(Phenylcarbine): A Polymer Precursor to Diamond."

Inorganic-Polymer Composites

S. Tripathy, "Organic/Inorganic Composites as Ordered NLO Materials."

C. Ober, "Inorganic-Organic Hybrids as Optical Devices."

C. Quinn, "Chemistry Processing and Properties of Low Temperature Glass/Polymer Blends."

Polymer Synthesis: T. Smith, discussion leader

I. Manners, "Ring-Opening Polymerization of Strained Ring-Titted Metallocenophanes: A New Route to Transition Metal Based Polymers."

T. Neenan, "Photodefinable Hybrid Poly(Phenylene-Imides)."

Biopolymers: D. Tirrell, discussion leader

K. Dill, "How the Structures of Proteins Are Encoded in Their Monomer Sequences."

T. Handel, "Experimental and Computational Approaches to Protein Design and Characterization."

D. Urry, "Design of Protein-Based Polymers for Diverse Energy Conversions."

Liquid Crystal Polymers: M. Green, discussion leader

R. Stein

G. Berry

Polymer Blends: P. Green, discussion leader

E. Pearce, "Synthesis and Characterization of Novel Silanol-Containing Polymers and Copolymers and Their Polymer Blend."

D. Theodorou, "Molecular Modeling of Amorphous Polymer Properties."

D. Sogah, discussion leader

G. Wegner, "A Novel Concept to Construct Organic Solids from Shape-Persistent Macromolecules for Photonic and Electric Applications."

Optically Active Polymers: H. Katz, discussion leader

G. Hadziioannou, "Generation of Light from Semiconducting Polymer Materials."

R. Gaudiana, "Control of Emission Wavelength in Electroluminescent Polymers."

P Burn, "The Synthetic and Characterization of Polymers and Their Use in Optoelectronic Devices."

Postharvest Physiology

Holderness School, Plymouth, NH

J. D. Anderson, chair; D. Grierson, vice-chair

10–15 July

Molecular Biology of Fruit Ripening: A. B. Bennett, discussion leader

D. Grierson, "Expression and Control of Ripening Associated Genes."

H. Klee, "Gene Expression in Nonclimateric Fruit."

J. Beckman, "Ethylene-Responsive Genetic Elements."

J. Giovannoni, "Genetic Regulation of Fruit Ripening."

D. Brummell, "Antagonistic Hormonal Regulation of Cellulase Gene Family Members."

Biology of Flower Senescence: W. R. Woodson, discussion leader

M. Reid, "Molecular Analysis of Ethylene-Insensitive Flower Senescence."

K. Evensen, "Ethylene-Regulated Gene Expression in Geranium Flowers."

T. Stead, "Proteolysis in Petals: A Possible Role for Protein Ubiquitination."

Texture Changes and Softening: D. Huber, discussion leader

R. Jackman, "Fruit Texture and Its Measurement."

K. Gross, "The Enzymology of Fruit Softening."

R. Redgwell, "Composition and Structure of Fruit Cell Walls."

Protection During Postharvest Handling and Storage: M. Knee, discussion leader

A. Kanellis, "Biochemical and Molecular Basis for Effects of Controlled and Modified Atmospheres."

A. Cameron, "Modified Atmosphere Packaging: Risks and Rewards."

N. Banks, "Achieving Optimized Internal Atmosphere with Surface Coatings."

J. Rosen, "Industry Perspective: Packaged Vegetable Systems."

Etheylene Biosynthesis and Action: A. Mattoo, discussion leader

H. Imaseki, "ACC Synthase Genes: Characterization and Biochemistry."

J.-C. Pech, "ACC Oxidase: Purification and Localization."

D. R. Dilley, "ACC Oxidase: Characterization and Regulation."

A. Bleecker, "Genetics of Ethylene Responses."

M. Rothenberg, "*EIN3*, a Gene Involved in Ethylene Signal Transduction in *Arabidopsis*."

Stress Responses of Fruits and Vegetables: R. Shewfeld, discussion leader

M. Cantwell, "Physiology of Lightly Processed Fruits and Vegetables."

S. Lurie, "Changes in Gene Expression in Fruit During and After Heat Treatment."

G. King, "Regulation of Gene Expression in Harvested Asparagus: Implication for Studies in Postharvest Physiology."

Controlling Postharvest Diseases: E. Chalutz, discussion leader

D. Prusky, "Constitutive Resistance in Harvested and Its Manipulation."

A. El Ghaouth, "Manipulation of Induced Resistance in Harvested Commodities."

A. B. Bennett, "Genetic Manipulation of Postharvest Resistance: Modulating Pathogen Responses in Fruits."

Applications and Needs of Postharvest Physiology in the Tropics: R. Paull, discussion leader

J. Siriphanich, "Postharvest Physiology and Technology."

C. A. Campbell, "Commercial Aspects of Importing Tropical Products."

Future Challenges in Postharvest: A. Watada, discussion leader

E. J. Mitcham, "Quarantine of Horticultural Crops."

J. K. Fellman, "Regulation of Flavor Development."

B. L. Upchurch, "Nondestructive Measurement of Quality."

Proteoglycans

Proctor Academy, Andover, NH

M. Hook, chair; B. Toole, vice-chair

10–15 July

Gene Structure and Regulation: K. Dodge, discussion leader

R. Iozzo, "Decorin Gene: Structure and Transcriptional Regulation."

M. Bernfield, "Genetics of Syndecan."

T. Shinomura, "Multiforms of PG-M

Generated by Tissue-Specific Alternative Splicing."

Structure of Proteoglycans: V. C. Hassell, discussion leader

J. R. Hassell, "Structure and Interaction of Perlican."

H. Kresse, "Functional Domains of Small Proteoglycans."

R. Linhardt, "Structure and Sequence Determination of Heparin Peptidoglycan and Decorin Proteoglycan."

Part-Time Proteoglycans

B. Olsen

J. Miller, "MHC Class II Associated Invariant Chain: Regulation and Function of the Chondroitin Sulfate Form."

B. Spiro

Metabolism of Proteoglycans: J. Sandy, discussion leader

K. Lindholt, "Biosynthesis of Heparin/Haparan Sulfate."

A. Fosang, "Aggrecan Degradation by Metalloproteinases."

A. Oldberg, "Role of the Decorin 'Propeptide' in the Biosynthesis of the GAG Chain."

GAG Binding Proteins: U. Lindahl, discussion leader

A. Varki, "Novel HS Ligands for Selections."

J. Lesley, "Regulation of the Hyaluronan Binding Function of CD44."

W. Knudson, "Hyaluronan Receptors Mediate Pericellular Matrix Assembly and Catabolims."

GAG's and Microbes: J. Esko, discussion leader

R. Stephens, "Glycosaminoglycan Mediated Invasion of Epithelial by *Chlamydia*."

V. Nussenzgweig, "Hepatocyte Receptors for Malaria Sporozoites."

P. Weigel, "Cloning of the HA Synthesase Gene Needed for Capsul Formation in Group A *Streptococcus pyogenes*."

Proteoglycan Neurobiology: R. Margolis, discussion leader

A. Lander, "GPI-Anchored Heparan Sulfate Proteoglycans of the Nervous System."

G. Cole, "Characterization of HSPG That Interface with N-Cam."

S. Carlson, "ECM Proteoglycans of the Adult Nervous System."

Biology of Proteoglycans

D. Carson, "Heparan Sulfate Proteoglycan-Dependent Processes in Embryo Attachment."

K. Kimata, "Proteoglycans with Anti-Adhesion Activity: Studies Using Neoproteoglycans (Lipid-Derivatized Glycosaminoglycans)."

Proteolytic Enzymes and Their Inhibitors

Colby-Sawyer College, New London, NH

B. M.Dunn, chair; G. Salvesen, vice-chair

24–29 July

Structure and Mutation of Proteinases: A. Barrett, discussion leader

A. Storer, "Site-Directed Mutagenesis of Cysteine Proteinases."

K. Breddam, "Carboxypeptidase Y."

C. Craik, "Substrate Specificity of Trypsin."

Structure of Mechanism of Proteinases: B. M. Dunn, discussion leader

P. E. Scarborough, "Active Site Interactions in Aspartic Proteinases."

W. Bode, "Structural Analysis of MetZincins."

M. Z. Atassi, "Models for Enzyme Catalysis."

Protein Proteinase Inhibitors: M. Laskowski, discussion leader

M. Laskowski, "Thermodynamics of Inhibitor Interactions."

D. Christianson, "Serpins: Structural Analysis."

M. N. G. James, "Protein Proteinase Inhibitors."

M. McGrath, "Proteinase Inhibitors: Ecotin."

Inhibitors: Diversity and Mechanism: J. Powers, discussion leader

J. Wells, "Biological/Chemical Diversity."

W. Bachovchin, "Mechanisms of Enzyme Inhibition."

B. Knight, "Mechanisms of Covalent Inhibition of Serine Proteinases."

Development/Activation: G. Salvesen, discussion leader

P. Carmeliet, "Gene Inactivation of the Fibrinolytic Enzymes."

B. Furie, "Control by Assembly."

M. Bissell, "Mammary Gland Development."

C. Bleakly, "Granzymes."

MMPs: H. Nagase, discussion leader

H. Nagase, "Activation of MMPs."

K. Appelt, "New Crystal Structures of MMPs."

J. Spurlino, "Novel Features of Human Collagenases."

J. Bond, "Control of Meprin Activity."

Invasion of Foreign Species: J. Travis, discussion leader

J. McKerrow, "Parasite Proteinases."

S. Founding, "Candida Proteinases."

W. Gibson, "Herpes Virus Proteinase."

D. Goldberg, "Plasmodium Proteinases."

Invasion of Foreign Species—II: C. Craik, discussion leader

S. Kent, "Chemical Synthesis of Proteinases."

J. Kay, "Analysis of Mutant HIV PR Species."

Processing: J. Kay, discussion leader

R. Dalby, "Leader Peptidase."

D. Wolff, "Protein Degradation in Yeast."

D. Ringe, "Crystallography of Kex-2 PR."

L. Juliano, "Activity of Peptides."

Physical Metallurgy

Holderness School, Plymouth, NH

R. P. Gangloff, chair; C. L. Briant, co-chair

26 June–2 July

Microstructure Grain Coarsening Under Stress and Strain: E. L. Hall and E. A. Holm, discussion leaders

H. J. Frost, "Grain Growth and Stress in Thin Films."

G. J. Shiflet, "Grain Boundary Thickness and Resulting Diffusivities with Respect to Time Misorientation and Stress."

Microstructure Particle Coarsening Under Stress and Strain: M. E. Fine and R. D. Doherty, discussion leader

A. Khachaturyan, "Stress Induced Coarsening."

D. Y. Yoon, "Observations of the Morphological Evolution of Coherent Precipitates."

Creep and Fatigue Deformation-Based Mechanisms of Damage: J. R. Weertman and R. H. Van Stone, discussion leaders

S. Suresh, "High-Temperature Crack Growth in Brittle Matrix Composites Under Static and Cyclic Loads."

J. F. Knott, "Combinations of Monotonic and Cyclic Crack Growths at High-Temperature."

M. A. Sutton, "Micro, Milli and Macro Measurements in High Temperature Fracture."

Creep and Fatigue Environment-Based Mechanisms for Damage: D. A. Woodford and R. M. Pelloux, discussion leaders

B. F. Dyson, "Physically Based Modeling of Creep-Environment Interactions."

E. Andrieu, "Oxidation Interactions Effects on the Fatigue Crack Growth in Nickel-Based Superalloys."

Solute Effects on Deformation and Fracture: R. Gibala and D. J. Skinner, discussion leaders

W. W. Gerberich, "Hydrogen Embrittlement: Strain Gradients—Good and Bad."

C. J. McMahon, Jr., "Dynamic Embrittlement: Diffusion Controlled Interfacial Decohesion."

Y. Estrin, "Dynamic Strain Ageing: From the Phenomenology to a Theory."

Environmental Cracking—Electrochemical Processes: F. P. Ford and T. M. Devine, discussion leader

R. C. Newman, "Crack Growth by Dissolution or Microcleavage in Stress Corrosion Systems Without Hydrogen."

A. Turnbull, "Crack Tip Chemistry and Crack Growth Kinetics."

Environmental Cracking—Hydrogen Embrittlement: H. K. Birnbaum and R. H. Jones, discussion leaders

J. E. Hack, "Prediction of Hydrogen Redistribution at Loaded Crack Tips and Crack Growth."

N. R. Moody, "Kinetics and Trapping of Hydrogen in FCC Superalloys."

P. Sofronis, "Micromechanics of Hydrogen Transport and Embrittlement in Metals."

Supporting Materials Research for Improved Education and Competitiveness: The University-Industry-Government Partnership: A. D. Romig and C. R. Crowe, discussion leaders

L. H. Schwartz, "The Role of Materials in Support of Civilian Technology."

R. J. Reynik, "Materials Research in a Rapidly Changing Environment."

Localized Corrosion Under Stress and Strain: P. M. Scott and J. B. Lumsden, discussion leaders

J. R. Scully, "Electrochemical, Chaos, and Bond Percolation Models of Pitting and Dissolution Path Connectivity."

D. D. MacDonald, "New Perspectives on the Growth and Breakdown of Thin oxide Films."

Radiation Chemistry

Salve Regina University, Newport, RI

C. D. Jonah, chair; J. Warman, vice-chair

17–22 July

Early Processes in Energy Degradation of Electrons: P. Rossky, discussion leader

P. Rossky, "Electronic Relaxation in Aqueous Solution."

P. Barbara, "Energy Disposal, Relaxation Dynamics, and Photochemistry of the 'p state' of the Solvated Electron in Water and Alcohols."

Radiation in Chemistry of Biological Systems: In Vitro and in Vivo: M. Sevilla, discussion leader

M. Sevilla, "Early Free Radical Processes in Radiation Damage to DNA."

M. Dizdaraglu, "DNA Damage in Mammalian Cells."

Primary Processes in Liquids: T. Goulet, discussion leader

T. Goulet, "Electron Thermalization Distances in Water: Reliability and Revelance."

K. Luther and J. Troe, "Subpicosecond Photoionization Studies of Liquids."

Radiation Chemistry in Gases and in Outer Space: F. Cacace, discussion leader

F. Cacace, "Mechanistic and Kinetic Studies Based on the Radiation Chemistry of Gases."

R. Johnson and R. Baragiola, "Irradiation Effects in Ices: Revelance to the Outer Solar System and Interstellar Medium."

Primary Processes in Hydrocarbon Radiolysis: A. Hummel and W. Bartczak, discussion leaders

A. Hummel and W. Bartczak, "Charge Recombination in Charged Particle Tracks."

M. Sauer, "Solute-Excited States and Solvent Cation Chemistry in Radiolysis of Alkane Liquids."

Synchrotron Radiation and Supercritical Fluids: K. Hieda, discussion leader

K. Hieda, "Wavelength-Dependent Chemistry Using Synchrotron Radiation with Biomolecules."

J. Chateauneuf, "Spectroscopic Investigations of Superficial Fluid Solvent Dynamics."

Radical Reactions—Applied and Basic: T. Waite and W. Cooper, discussion leaders

T. Waite and W. Cooper, "Application of Radiation Chemistry for Hazardous Waste Site Remediation."

P. Neta, "Solvent Effects on Radical Reactions."

New Applications of Radiation Chemsitry to the Biomedical World: G. Bakale, discussion leader

G. Bakale, "Attachment of Excess Electrons to Chemical Carcinogens."

P. Wardman, "Radiation Chemistry Applied to Drug Design."

Reproductive Tract Biology

Plymouth State College, Plymouth, NH

G. Stancel, chair; L. Chung, vice-chair

10–15 July

Regulation of Gonadal Function: M. Hunzicker-Dunn, discussion leader

G. Gibori, "PRL Regulated Phosphorylation and Gene Expression in the CL."

M. Skinner, "Mesenchymal-Epithelial Interactions in the Testes and Ovary."

M. Griswold, "The FSH Receptor Gene: Structure and Expression in the Testes."

Active Cell Death in the Reproductive Tract: M. Tenniswood, discussion leader

N. Kyprianou, "Apoptosis in Prostate Tumor Cells."

J. Tilly, "Apoptosis and Regulation of the Ovarian Germ Cell Pool."

Steroid Receptors: Structure, Function and Regulation: C. Watson, discussion leader

K. Korach, "Estrogen Receptor: Effects of Overexpression and Gene Knockout."

M. McPhaul, "Androgen Receptor Mutations and Phenotypes."

F. Bazer, "Regulation of Estrogen and Progesterone Receptors by IFN-tau During Pregnancy."

Estrogen and Androgen Receptors During Embryogenesis and Development: J. McLachlan, discussion leader

T. Greco, "Estrogen Receptor and Aromatase Expression in Embryonic and Fetal Mice."

G. Prins, "Androgen Receptor and Responsiveness: Hormonal and Development Regulation."

Growth Factors and Cytokines in Uterine Biology: K. Henrikson, discussion leader

R. Lyttle, "Hormonal Regulation of Complement Components."

S. K. Dey, "EGF-Related Growth Factors in Uterine Biology and Implantation."

S. Charnock-Jones, "Vascular Endothelial Growth Factor (VEGF) Interactions in Endometrium and Placenta."

HIV Transmission Via the Reproductive Tract: C. Wira, discussion leader

D. Anderson, "The Male Reproductive System and HIV Transmission."

C. Miller, "The Female Reproductive System and HIV Transmission."

Cell Biology of Implantation: S. Fisher, discussion leader

J. Aplin, "Adhesion and Antiadhesion Molecules in the Endometrium."

C. Stewart, "LIF Regulation of Preimplantation Development."

H. Beier, "Effects of Progesterone Antagonists on Implantation."

State of the Art Lectures: S. Glasser and G. Cunha, discussion leader

J. Strauss, "The LDL Receptor Family in Implantation, Placentation and Fetal Nutrition."

P. Donahoe, "Factors Controlling Reproductive Tract Development."

Soluble Growth Factors Mediating Stromal-Epithelial Interactions: L. Chung, discussion leader

J. Rubin, "Sex Steroid Induction of KGF in the Reproductive Tract."

R. Brenner, "Progesterone Control of KGF Expression in the Primate Endometrium."

W. McKeehan, "Heparin Sulfate-FGF and TGF-beta Receptor Complexes in the Prostate."

Research at High Pressure

Kimball Union Academy, Meriden, NH

J. M. Brown, chair; H. D. Hochheimer, vice-chair

26 June–1 July

High T_c Superconductors: N. Ashcroft, discussion leader

P.H. Her, "High-Pressure Studies of Cuprous and Other Layered High T_c Superconductors."

J. Schilling, "Pressure-Induced Oxygen Ordering Effects in High T_c Superconductors."

J. Schirber, "Pressure Dependence of Superconduction in Alkaline Earth and Rare Earth Doped Fullerenes."

Shock Waves and Superlattices: J. Shaner, discussion leader

B. Weinstein, "Effect of Pressure on Highly Mismatched Semiconductor Superlattices."

W. Nellis, "Recent Results in Shock Compression Studies."

I. V. Lomonosov, "Semiempirical Wide-Range Equations of State for Matter at High Pressure."

Giant Planetary Impacts: M. Furnish, discussion leader

J. Melosh, "Large Impacts and Planetary Evolution."

T. J. Ahrens, "Impact Confirmed Death of the Dinosaurs: Freezing or Cooking?"

Molecular Systems: G. Samara, discussion leader

L. J. Slutsky, "The Interaction Between Theory and Recent Experimental Results."

H. E. King, "High-Pressure Viscosity Studies of Simple and Polymeric Liquids."

A. Chopelas, "What Does Vibrational Spectroscopy at High Pressure Buy Us?"

Planetary Interiors: R. Liebermann, discussion leader

G. Gwanmesia, "Elasticity of Silicate Minerals and the Composition of Earth's Transition Zone."

D. Sherman, "Chemical Bonding at High Pressure and Temperature in Iron Oxides and Sulfides."

High-Pressure Challenges: R. Hemley, discussion leader

D. Schiferl, "Diamond Cells, What Next?—A Provocative Look into the Crystal Ball."

D. J. Weidner, "Multi-Anvil Approach to High Pressure: Status Problems, and Hopes."

R. Cohen, "The Computer Cell: Probing High Pressure with Theory."

High-Pressure Research: Past and Present: J. M. Brown, discussion leader

R. Hazen, "From Diamond to Stishovite—Episodes in the History of High-Pressure Synthesis."

Metals and Semiconductors Under Pressure: A. Ruoff, discussion leader

M. J. Aziz, "Pressure and Non-Hydrostatic Effects on Atomic and Ionic Mobilities."

N. Hamaya, "Precise Determination of High-Pressure Crystal Structures of Lanthanide Metals."

V. Struzhin, "Pressure Effects on Superexchange Interaction in Transition Metal Compounds."

Salinity Tolerance in Plants

Tilton School, Tilton, NH

M. A. Bisson, chair; F. DuPont, vice-chair

14–19 August

Breeding, Genetics, and Whole Plant Aspects of Salt Tolerance: E. Epstein, discussion leader

J. Dvorak

T. J. Flowers

R. Munns

Metabolic Responses to Salinity: J. A. C. Smith, discussion leader

H. J. Bohnert

M. Popp

Osmoprotectants: D. Rhodes, discussion leader

A. Hanson

W. Loescher

L. N. Csonka

Co-Transport Systems: F. M. DuPont, discussion leader

B. Barkla

L. Counillon

Channels: M. A. Bisson, discussion leader

E. Blumwald

S. Tyerman

C. Kung

ATPases: L. Taiz, discussion leader

L. Wimmers

M. Binzel

Salt-Induced Gene Expression: R. M. Bressan, discussion leader

P. M. Hasegawa

J. Cushman

D. Ho

Cell Walls and Growth Responses: J. Dainty, discussion leader

G. Cramer

A. D. Tomos

Hormones: H. J. Bohnert, discussion leader

M. Guiltinan

E. Bray

M. A. Bisson, "Summation."

Second Messengers and Protein Phosphorylation

Kimball Union Academy, Meriden, NH

J. Avruch, chair; H. Hamm, vice-chair

12–17 June

Tyrosine Kinases: J. Schlessinger, discussion leader

J. Schlessinger

H. Hanafusa

J. Brugge

J. Wang

Protein Phosphatases: J. Dixon, discussion leader

J. Dixon

D. Brautigan

M. Mumby

Cell Cycle Regulation: E. Harlow, discussion leader

E. Harlow

D. Beach

H. Pinwica-Worms

J. Maller

Mitogenic Pathways: J. Avruch, discussion leader

J. Avruch

L. Cantley

M. Wigler

T. Sturgill

Insulin Regulation: P. Cohen, discussion leader

P. Cohen

M. Czech

V. Manganiello

M. White

Emerging Pathways: J. Massague, discussion leader

J. Massague

L. Witters

J. Kyriakis

J. Moscat

Heterotrimeric G Proteins: E. Neer, discussion leader

E. Neer

H. Hamm

G. Johnson

I. Nishimoto

E. Kandel

Regulation of Gene Expression: J. Darnell, discussion leader

J. Darnell

J. Woodgett

M. Alexander-Bridges

Separation and Purification

Colby-Sawyer College, New London, NH

F. G. Helfferich, chair; A. L. Myers, vice-chair

31 July–5 August

Distillation Control: Y.-L. Hwang, discussion chair

J. B. Riggs, "Comparison of Advanced Distillation Control Techniques."

T. F. Edgar, "Batch Distillation Column Dynamics and Control."

Melt Crystallization: S. Jancic, discussion leader

M. Moritoki, "Use of High Pressure in Melt Crystallization and Other Separation Techniques."

G. J. Sloan, "Using Eutectics in Separation by Melt Crystallization."

Preparative Separations of Large Molecules: S. M. Cramer, discussion leader

W. H. Velander, "How Biosynthesis of Recombinant Proteins Affects Downstream Processing."

C. F. Ivory, "New Techniques for Preparative and Large-Scale Electrophoresis."

R. G. Carbonell, "Affinity Methods for Protein Purification."

Structured Packages in Separations: J. R. Fair, discussion leader

Z. Olujic, "Mechanism of Vapor-Liquid Contacting on Structured Packings."

J. L. Bravo, "Efficiency, Pressure Drop, and Capacity of Commercial Structured Packings."

Computer-Aided Synthesis of Complex Separations, I.: M. F. Doherty, discussion leader

T. Moktar-Zadeh, "Process Synthesis of Reactive Distillation Systems in Industry."

A. W. Westerberg; "Synthesis of Complex Distillation-Based Separation."

Computer-Aided Synthesis of Complex Separation Systems, II: A. W. Westerberg, discussion leader

M. F. Doherty, "Synthesis of Distillation Systems with Multiple Reactions."

K. Lien, "Membrane-Based Separation Systems."

Membrane Separations: J. Henis, discussion leader

S. Sircar, "Nanoporous Membrane for Separation of Gaseous Mixtures."

J. Pellegrino, "Measurement Techniques for Membranes Gas Sorption with Conducting Polymer."

J. R. Fair, "Separation Then and Now."

Unconventional Techniques: G. L. Hubred, discussion leader

R. Klimpel, "New Chemistry and Engineering in Froth Flotation."

G. A. Young, "Parametric Study of Hydroclones in Oil/Water and Liquid/Solid Separations."

Solar Terrestrial Physics

Brewster Academy, Wolfeboro, NH

M. A. Lee, chair; D. N. Baker, vice-chair

19–24 June

The Dynamic Corona

E. N. Parker, "Collisionless Dissipation of Kinetic and Magnetic Energy."

Collisionless Dissipation in the Solar Wind

E. Marsch, "Observations and Transport of Turbulence in the Solar Wind."

M. L. Goldstein, "Small-Scale Structures in MHD Turbulence."

Collisionless Shocks

C. T. Russell

M. Scholer, "Collisionless Dissipation in Quasi-Parallel Shocks."

Particle Acceleration

T. Terasawa, "Non-Duffusive Effects in the Acceleration Process of Perpendicular/Quasi-Perpendicular Shocks."

Substorms and the Magnetotail

D. Papadopoulos

A. Nishida, "Observations on GEOTAIL."

R. L. McPherron

Magnetic Reconnection in the Magnetotail

K. Schindler, "Transition from Ideal to Dissipative States."

M. Hesse

Frontside Reconnection and the Auroral Region I

R. L. Arnoldy, "The Small-Scale Structure of Auroral Electron and Ion Acceleration."

Frontside Reconnection and the Auroral Region II

Maximum Entropy

D. C. Montgomery

H. Ziegler, "Collisionless Relaxation."

Solid-State Chemistry

Brewster Academy, Wolfeboro, NH

L. F. Schneemeyer, chair; K. R. Poeppelmeier, vice-chair

17–22 July

Transition Metal Compounds: S. Lee, discussion leader

J. Corbett, "Chemistry in Intermetallic Systems, Interstitials, Clusters, and Zintl Phases."

A. Simon, "Guest-Host Interactions of Interstitial Hydrogen."

A. Stacy, "Low-Temperature Synthesis of New Compounds."

Transition Metal Chalcogenides: G. Meyer, discussion leader

S. J. Hwu, "Complex Chalcogenides Containing Rare-Earth Elements."

J. A. Ibers, "Ternary and Quaternary Chalcogenides, Especially Tellurides."

Catalytic Materials: J. Johnson, discussion leader

A. Jacobson, "Mixed Metal Oxide Catalysts."

C. Kresge, "A New Family of Mesoporous Molecular Sieves Prepared with Liquid Crystal Template."

S. Soled, "Problems and Opportunities for Solid State Chemistry in Fischer-Tropsch and Solid Acid Catalysis."

Novel Materials: R. J. Cava, discussion leader

D. Mitzi, "Conducting Layered Organic/Inorganic Perovskite Structures."

T. Vanderah, "Phase Equilibria Studies of Electronic Ceramics."

Optical Materials: A. Ellis, discussion leader

D. Keszler, "Crystal-Chemical Development of New Frequency Converters and Laser Crystal."

S. Issler, "X-ray Phosphors in Medical Radiography."

L. Brus, "Luminescent Silicon Materials."

Solids Containing Mobile Ions: T. Hughbanks, discussion leader

S. Whittingham, "Synthesis for Fast Ionic Motion."

H. Z. Love, "New Oxygen Ion Conductors with Intrinsic Vacancies."

Mircoporous Solids: C. Torardi, discussion leader

G. Ferey, "ULM-n: A New Family of Oxyfluorinated Microporous Compounds."

G. Pez, "New Organometallic Solid-State Oxygen Carriers."

M. Ratner, "Coulomb Interactions, Clustering, and Transport in Order and Disorder Materials."

Solids Under Extreme Conditions: J. Badding, discussion leader

R. Hemley, "Solid-State Chemistry of Planetary Interiors."

Unusual Phases and New Developments: K. Poeppelmeier, discussion leader

T. Mallouk, "Layer-By-Layer Assembly of Inorganic Compounds and Heterostructures."

T. Siegrist, "Intermetallics and Quantum Structural Diagrams: What Can We Learn?"

Solid-State Ionics

Colby-Sawyer College, New London, NH

J. O. Thomas, chair; S. W. Martin, vice-chair

26 June–1 July

Industrial Applications: G. A. Nazri, discussion leader

R. D. Rauh, "Some Applications of SSIs to Critical Technologies."

O. Yamamoto, "The Materials for New Battery-Types in Japan."

F. Shokoohi, "Rechargeable Batteries on a Chip: A Reality Check."

Polymer Electrolytes: M. Armand, discussion leader

P. G. Bruce, "Aspects of Polymer Electrolyte Structure and Electrochemistry."

G. C. Farrington, "Electrochemical Material Studied Using AFM."

Protonics, Foel-Cells and Membranes: P. Colomban, discussion leader

K. D. Kreuer, "Proton Conductivity: A Phenomenon Between Classical and Quantom Mechanics."

S. Gottesfeld, "Proton Conducting Membranes—The Fuel Cell Perspective."

D. Edmonds, "Active and Passive Ion Channels."

Microstructure and Interfaces: S. J. Visco, discussion leader

M. Kleitz, "Solid Electrolyte Microstructure: A New Field of Application for Impedance Spectroscopy."

B. Sapoval, "Irregular, Porous and Rough Interface Impedances as Modeled by Fractal Geometry."

Gels and Composites: M. Schreiber, discussion leader

B. Dunn, "Solid-State Ionic Materials by Sol-Gel Methods."

C. A. Angell, "Cation-Conducting Ionic Rubbers, and Composites of Comparable Performance."

E. P. Giannelis, "Design, Synthesis and Properties of Polymer Nanocomposites."

Glasses: S. W. Martin, discussion leader

M. Mehetrier, "Ionic conduction in Sulfide Glasses: A Structural Viewpoint."

L. Borjesson, "Structure of Superionic Glasses: Neutron Scattering and Computer Simulation."

Oxides and SOFCs: M. Greenblatt, discussion leader

M. S. Whittingham, "Where Insertion Oxides are at."

J. R. Dahn, "In Situ X-ray Diffraction Studies of the Intercalation Process."

H. U. Anderson, "SOFCs: Their Status and Materials."

Zeolites and Catalysis: K. Funke, discussion leader

D. R. Rolison, "Liquid-Phase Catalysis with Electrified Zeolite Dispersions."

C. R. A. Catlow, "Ion Transport in Catalytic Systems."

Sensors and Closing Discussion: M. Ratner, discussion leader

M. J. Scholten, "High-Temperature Hydrogen Sensors."

J. Maier, "The Use of Acid-Base Interactions for the Sensing of Complex Gases."

Solid-State Studies in Ceramics

New Hampton School, New Hampton, NH

D. J. Green, chair; Y. M. Chiang, vice-chair

14–19 August

Theoretical Aspects of Structure-Property Relationships: E. R. Fuller, discussion leader

S. Torquato, "Microstructure-Property Relations for Composite Materials."

M. P. Anderson, "Computer Simulations of Structure-Property Relationships."

Processing of Novel Ceramic Structures: M. P. Harmer, discussion leader

I. A. Aksay, "Processing Techniques for Design of Novel Microstructures."

A. Pyzik, "Processing and Properties of Self-Reinforced Silicon Nitride."

Nanoscale Effects on Properties: D. A. Bonnell, discussion leader

R. Raj, "Design of Grain Boundary Phases for Optimum Mechanical Performance."

W. Pompe, "The Role of Microscopic Residual Stresses in the Design of Ceramic Structures."

Challenges in Property Evaluation: H. M. Chan, discussion leader

G. M. Pharr, "Evaluation of Mechanical Properties at the Micro- and Nanoscale."

Microstructure Effects on Mechanical Behavior: B. R. Lawn, discussion leader

M. V. Swain, "Mechanical Behavior of Thin Films and Small Volumes of Materials."

Z. Suo, "Fracture and Breakdown in Dielectric Ceramics."

Microstructural Effects on Mechanical Behavior: D. B. Marshall, discussion leader

D. K. Shetty, "Role of Dispersed Al_2O_3 on Strength and Toughness in Ce- and Y-TZP."

J. Lamon, "Interface Design in Composite Materials."

Design of Fiber Composites: W. Curtin, discussion leader

S. L. Phoenix, "Stochastic Effects in the Failure of Fiber Composites."

B. Cox, "Optimization of Fiber Architecture in Fiber Composites."

D. J. Green, discussion leader

H. Kroto, "C_6: Buckminsterfullerence, the Celestial Star That Fell to Earth."

Macrostructural Effects on Mechanical Behavior: D. S. Wilkinson, discussion leader

R. F. Cook, "Effects of Macroscopic Residual Stresses on Fracture."

T. F. Wong, "Fracture Mechanisms in Geological Structures."

Statistics in Chemistry and Chemical Engineering

New Hampton School, New Hampton, NH

S. Wold, chair; B. Wise, vice-chair

1–5 August

W. Hill, discussion leader

G. E. P. Box, "The Disastrous Effect of Mathematical Leadership on Statistics—Scientific Thinking Must Drive our Subject."

G. J. Hahn

S. Bisgaard, discussion leader

P. Miller and R. Swanson, "Multivariate Process Modeling and Design."

D. W. Bacon

L. Ricker, discussion leader

L. Ljung, "System Identification: Modeling and Parameter Estimation from a Control Perspective."

J. F. MacGregor

D. Duewer, discussion leader

D. Schnur, "Design of Series of Molecules."

S. S. Young

T. MacAvoy, discussion leader

V-M. Taavitsainen, "Nonlinear Modeling with Latent Variables."

M. Stone

E. Baughman, discussion leader

E. Sanchez, "Recalibration of On-Line Instruments."

C. H. Spiegelman

P. W. M. John, discussion leader

D. K. J. Lin, "Supersaturated Designs."

N. Kettaneh

S. Neal, discussion leader

D. Weiniger, "Molecular Discovery by Genetic Algorithms."

B. Wilson

B. Wise, discussion leader

A. Phatak and C. Heckler, "The Latent Variable."

M. B. Seasholtz

Stereochemistry

Salve Regina University, Newport, RI

E. Vedejs, chair; S. E. Kelly, vice-chair

19–24 June

K. B. Sharpless, "Osmium Tetroxide's Dance with Olefins: Is It a Two-Step?"

R. W. Hoffmann, "Configurationally Labile Organolithium Compounds: Aspect of Their Use in Stereoselective Synthesis."

N. S. Simpkins, "New Enantioselective Chemistry Using Chiral Lithium Amide Bases."

W. R. Roush, "Stereochemical Studies of Fragments Assembly Aldol Reactions."

J. K. Whitesell, "Stereochemistry in Materials Science: From Molecular Crystals to Polymer Monolayers."

Y. Ohashi, "Generation of Chirality in Crystalline-State Isomerization."

H. J. Gais, "Stereochemistry of Configurationally Stable Chiral, Nonracemic Lithiosulfones."

M. J. Burk, "Asymmetric Catalytic Routes to Novel Amino Acids, Amines, and Hydrazines."

D. J. Mathre, "The Optimization of Ox-

azaborolidine Catalyzed Enantioselective Reductions."

S. Rychnovsky, "The Structure Elucidation and Synthesis of a Polyene Macrolide Antibiotic."

F. J. Urban, "Synthesis of Trans-Bis-Azabicyclic CNS Agents."

E. Keinan, "Antibody Catalysis from an Organic Chemist's Perspective."

J. Stubbe, "Bleomycin's Interaction with DNA: Structure and Function."

D. Kahne, "Chromomycin as a Blueprint for Designed Metal Complexes."

B. Ernst, "The Oviposition-Deterring Pheromone of *Rhagoletis cerasi*: Chemistry and Biology."

C. R. Johnson, "Total Synthesis of Carbohydrates with Enzymes."

P. L. Fuchs, "Highly Oxygenated Spiroketals: Application to Total Synthesis of Members of the Cephalostatin Family."

G. H. Posner, "Asymmetric Diels-Alder Cycloadditions: Total Synthesis of Vitamin D_3 Analogs."

Theoretical Biology and Biomathematics

Tilton School, Tilton, NH

A. Sherman & C. Wofsy, co-chairs

12–17 June

Mechanisms of Fibrillation and De-Fibrillation in *Myocardium*: A. Winfree, discussion leader

W. Krassowska, "Continue Model of Cardiac Muscle."

L. Frame, "Dynamics of Reentrant Cardiac Arrhythmias."

J. Davidenko, "Spiral Waves: A Possible Mechanism for Ventricular Tachycardias."

Physiological Neural Networks: N. Kopell, discussion leader

L. Abbott, "Modeling Neurons and Neural Networks."

E. Marder, "Dynamic Modulation of Neurons and Networks."

Calcium Oscillations and Waves: J. Rinzel, discussions leader

J. Sneyd and M. Sanderson, "Intercellular and Intracellular Waves."

J. Keizer, "The Roles of Diffusion in IP3-Induced Ca^{2+} Waves."

Y.-X. Li, "Coupled Oscillations in Membrane Potential and Calcium in Pituitary Gonadotrphs."

Pattern Formation and Development: L. Edelstein-Keshet, discussion leader

P. Maini, "Modified Turing Systems for Skeletal Limb Patterning: The Role of Boundary Conditions and Spatial Inhomogeneity."

Auditory Neurophysiology: C. Smith, discussion leader

D. Johnson, "Single Neuron Modeling Constrained by Point Process Measurements."

C. Carr, "Time Coding in the Central Nervous System."

R. Winslow, "Accoustic Signal Processing by Stellate Cells in the Auditory Cochlear Nucleus."

Population Biology: Evolution: F. Hunt, discussion leader

S. Ellner, "How Fluctuating Selection Maintains Genetic Variation and Sex (the Kids Are Discrete But They're Mating)."

R. Nisbet, "Individual-Based Predator-Prey Models."

Population Biology: Ecology: C. Castillo-Chavez, discussion leader

M. Lewis, "Modeling Territoriality and Wolf-Deer Interactions."

D. Ludwig, "A Delay Equation in the Theory of Sustainable Harvesting."

S. Gueron, "Different Approaches for Modeling Animal Aggregation."

Genetic Algorithms and Immunology: L. Segel, discussion leader

S. Forrest, "Genetic Algorithms: Principals of Neural Selection Applied to Computation."

Receptor-Meditated Cellular Events: D. Lauffenburger, discussion leader

D. Hammer, "Dynamics of Receptor-Meditated Cell Adhesion."

J. Linderman, "Monte Carlo Simulation of Membranes Signal Transduction Events."

T. DeBoer, "Models of the Immune Network."

Thermosetting High-Performance Polymers

Plymouth State College, Plymouth, NH

W. J. Schultz, chair; R. Farris, vice-chair

3–8 July

Evolving Applications for Thermosetting Resin: B. Jordan, discussion leader

C. Feger, "Polymers in Environmental Sensors."

I. Goldfarb, discussion leader

R. Twieg, "The Role of Polymers in Nonlinear Optics: Fact or Fiction."

New Thermosetting Resin Technologies: M. Vallance, discussion leader

J. Burnier, "High Performance Thermosets Based on Novel Silicon-Carbon Resins."

D. Babb, discussion leader

R. Hefner, "Liquid Crystal Thermosets: New Ordered Polymers for High Performance."

Ceramic/Organic Networks: K. Riew, discussion leader

E. Giannelis, "Epoxy-Mica (Nano)Laminates."

R. Bauer, discussion leader

B. Novak, "Mutually Interpenetrating Organic-Inorganic Networks: The Effect of Domain Size, Shape, and Interfacial Interactions on Properties."

Mechanical Properties of Networks: D. Parker, discussion leader

A. Yee, "Fracture and Toughening of Epoxy Alloys as Structural Adhesives and Matrices for Composites."

W. Bradley, discussion leader

F. McGarry, "Molecular Network Systems: Crosslinked Polyester-Epoxy-Rubber Networks."

Characterization and Monitoring of the Cure Process: S. Corley, discussion leader

R. Lyon, "In Situ Cure Monitoring of Thermoset Resins Using Fiber Optic Raman Spectroscopy."

M. Rakas, discussion leader

H. Winter, "Time Resolved Rheology During the Curing of Polymers."

J. Gillham, discussion leader

M. DeMeuse, "Application of Cure/Property Diagrams to a Complex Isocyanate/Epoxy System."

Characterization of Network Properties: G. Martin, discussion leader

R. Pethrick, "Application of Dielectric Analysis and Positron Annhilation Measurements for the Characterization of Cure Morphology and Water Permeation in Thermoset High-Performance Polymers."

H. Bair, discussion leader

S. A. Bidstrup, "Optical, Electrical and Mechanical Anisotrophy in Spin-Coated Polymer Dielectrics."

Chemistries and Processes for High-Performance Networks: C. May, discussion leader

B. Goodall, "Tailor-Made Catalyst Systems: The Organometallic Switches That Control the Formation and Properties of High-Performance DCPD-Based Thermosets."

R. Parnas, discussion leader

J. Stanford, "Processing/Structure/Property Relationships in Novel Thermosets for Use in Structural RIM-Composites."

S. Ezzell, discussion leader

D. Martin, "Thermosetting Thermoplastic and Liquid Crystalline Polymers."

Directions in Electronic Materials: J. Gotro, discussion leader

J. Labadie, "Polymers in Microelectronics: Transition in the 90's."

Advanced Structural Thermosetting Resins: N. Johnson, discussion leader

P. Hergenrother, "Chemistry and Properties of Phenyl Ethynyl Imide Oligomers."

R. Farris, discussion leader

J. McGrath, "Recent Efforts in New Toughened Structural Adhesive and Matrix Resins."

Tribology

Holderness School, Plymouth, NH

T. E. Fischer, chair; J. Larsen-Basse, vice-chair

3–8 July

Fundamentals of Friction: J. Sokolov, discussion leader

M. Robbins, "Basic Theory of Friction."

M. Hirano and K. Shinjo, "Atomic Theory of Friction."

J. Krim, "Basic Experiments in Low Friction."

Fundamentals of Friction: I. Singer, discussion leader

E. Meyer, "Atomic Force Experiments in Friction."

J. M. Georges, "Fundamentals of Boundary Lubrication."

Lubrication Chemistry: J. L. Lauer, discussion leader

R. S. Polizzotti, "Novel Techniques for the Study of the Adoption of Additives."

S. V. Didziulis, "Advances Lubricants for Space Applications."

Q. Xue, "Tribochemistry of Ceramics Lubrication."

Applications of Tribology: M. Gardos, discussion leader

F. Talke, "Tribology in Computers."

B. Bhushan, "Atomic Scale Friction in Magnetic Media."

Theories of Contact in Brittle Materials: K. Ludema, discussion leader

J. Greenwood, "Advances in the Theory of Mechanical Contact."

I. G. Goryacheva, "Contact of Rough Surfaces."

J. J. Kalker, "Mechanical Contact of Brittle Materials."

Tribology of Brittle Materials: K. Kato, discussion leader

S. Jahanmir, "Tribology of Ceramic Machining."

K. H. Z. Gahr, "Effect of Microstructure on the Wear of Ceramics."

Friction in Prostheses: M. Jasty, discussion leader

D. Dowson, "Novel Lubrication Schemes in Prostheses."

R. Poggie, "Materials and Surface Considerations in Orthopaedic Prostheses."

M. Semlitsch, "CoCrMoC Metal-Metal Pairing, A Solution to the Problem of Wear in Hip-Joint Replacements."

Ceremonial Session: T. E. Fischer, discussion leader

R. Parsons, "Lubrication and Wear in the Human Body."

Novel Materials: P. Blau, discussion leader

B. Kear, "Wear Resistance of Nanocomposite Materials"

Y. W. Chung, "Tribology of Carbon Nitride."

N. Myshkin, "Advances in the Tribology of Polymers."

Vascular Cell Biology

Colby-Sawyer College, New London, NH

M. Reidy, chair; M. Ginsberg, vice-chair

12–17 June

Growth Regulation: P. Libby, discussion leader

T. Maciag, "FGF Activation."

M. Schwartz, "Adhesion, Growth and Programmed Death."

J. Pouyssegur, "Regulation and Role of MAP Kinase Oascades in the Control of Cell Proliferation."

Cell Adhesion: T. Springer, discussion leader

J. Madri, "Matrix and Growth Factors."

E. Burcher, "Lymphocyte Homing."

Vascular Biology-Hemostasis Interface: D. Stern, discussion leader

L. Williams, "Platelets and Vessel Growth."

R. Hynes, "Matrix and Integrins."

R. Rosenberg, "Making Sense of Restenosis."

Proteases and Their Inhibitors: D. Loskutoff, discussion leader

D. Collen, "Knocking Out Fibrinolysis."

D. Rifkin, "Proteases as Activators of Growth."

Gene Regulation: P. DeCorleto, discussion leader

T. Collins, "Transcriptional Regulation."

K. Chien, "Cardiac Muscle Specific Gene Regulation."

S. Young, "Accessory Genes in Atherosclerosis."

Novel Therapeutic Approaches: V. Dzau, discussion leader

E. Topol, "Restenosis Problem."

S. Epstein, "Antisense."

Growth Regulation II: D. Bowen-Pope, discussion leader

M. Majesky, "Focal Adhesions and SMC Growth."

N. Ferrara, "VEGF."

I. Charo, "MCP-1."

What Is Vascular Biology?: S. Schwartz and M. Gimbrone, discussion leaders

Signal Transduction: S. Coughlin, discussion leader

M. Schaller, "Tyrosine Kinases."

W. McKeehan, "FGF Receptor."

Vibrational Spectroscopy

Brewster Academy, Wolfeboro, NH

A. Campion, chair; A. Myers, vice-chair

14–19 August

Solids: B. Swanson, discussion leader

M. Fayer, "Vibrational Dynamics in Glasses and Liquids Probed with Picosecond Infrared Photon Echos and Other Picosecond Techniques."

E. Chronister, "Pseudolocal Phonon Dynamics Probed by Photon Echo Measurements at High Pressures."

Solids: J. Rabolt, discussion leader

H. Strauss, "The Dynamics of H_2 in Water and Ice."

D. Coker, "Vibrational Nonadiabaticity in the Condensed Phase."

Solids: S. Krimm, discussion leader

K. Nelson, "Single Pulse and Multiple Pulse Time-Resolved Vibrational Spectroscopy."

D. Dlott, "Picosecond CARS Studies of Laser Thin-Film Microchemistry."

A. Myers, discussion leader

Surfaces: A. Harris, discussion leader

J. Stephenson, "Energy Transfer Between Vibrations of Adsorbed Molecules and Surfaces Studies by Ultrafast Infrared Spectroscopy."

J. Tully, "Vibrational Energy Transfer at Metal Surfaces."

Surfaces: T. Heilweil, discussion leader

A. Bradshaw, "Surface Structural Studies Using Vibrational Spectroscopy: Comparison with More Quantitative Techniques."

M. Hines, "Understanding the Structure of Etched Silicon Surfaces Using Raman Spectroscopy."

Clusters

D. Neumark, "Studies of the Vibrational Spectroscopy of Clusters Using Negative Ion Photodetachment."

P. Alivasatos, "Vibrational Spectroscopy of Semiconductor Nanocrystals."

A. Campion, discussion leader

New Regimes

G. McClelland, "Real-Time Observation of the Motion of Individual Adsorbed Atoms and Molecules with Picosecond and Nanometer Resolution."

Water and Aqueous Solutions

Holderness School, Plymouth, NH

V. A. Parsegian, chair; G. Walrafen, vice-chair

7–12 August

Metastable of Liquid Water: H. E. Stanley, discussion leader

P. Poole

F. Sciortino

K. Ludwig

P. Debenedetti

Water in Confined Geometries: S. H. Chen, discussion leader

M. C. Bellissent-Funel

Glassy States: C. A. Angel, discussion leader

R. J. Speedy

P. Devlin

D. Klug

M. Mayer

Clathrates and Clusters: D. Sloane, discussion leader

J. Ripmeester

Hydrophobia, Water Stressed by Non-Polar Materials: L. Pratt, discussion leader

P. Rossky

D. Smith

M. Paulaitis

B. Honig

Solutions at Non-Polar Interfaces: A. Pohorille, discussion leader

R. K. Thomas, "Neutron Reflection from Water/Air Interfaces."

P. Kekicheff, "Forces Between Non-Polar Surfaces."

Water Near Biological Macromolecules: R. P. Rand, discussion leader

S. Leikin, "Protein Solvation Forces."

K. Wuthrich, "NMR Probe of Water Near Proteins."

W. Doster, "Neutron Scattering of Proximal Water."

Ice in Outer Space: V. A. Parsegian, discussion leader

L. Allamandola

The Stress of the Real World: New Directions for Water Research: P. Caro, discussion leader

P. Wiggins, "Water in Biological Cells."

S. Buelow, "Hydrothermal Processing of Wastes."

H. Levine, "Food Preservation."

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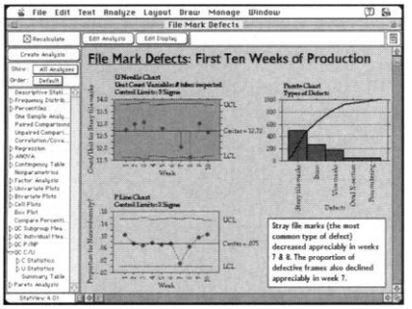

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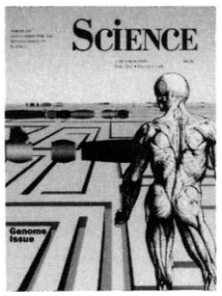

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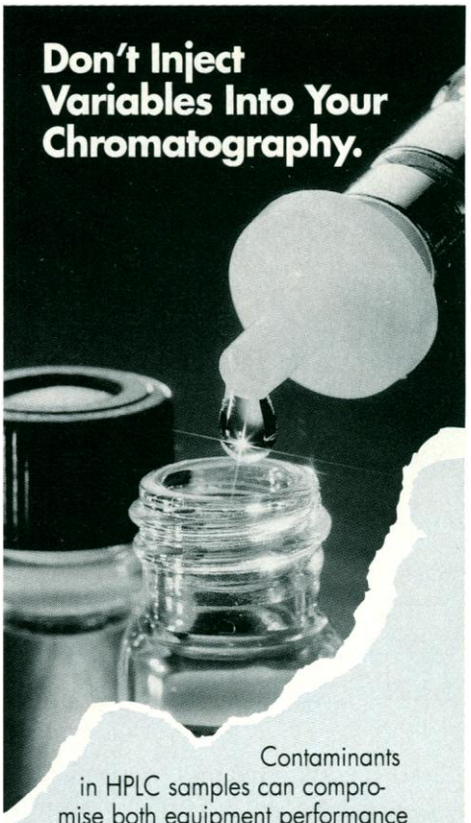

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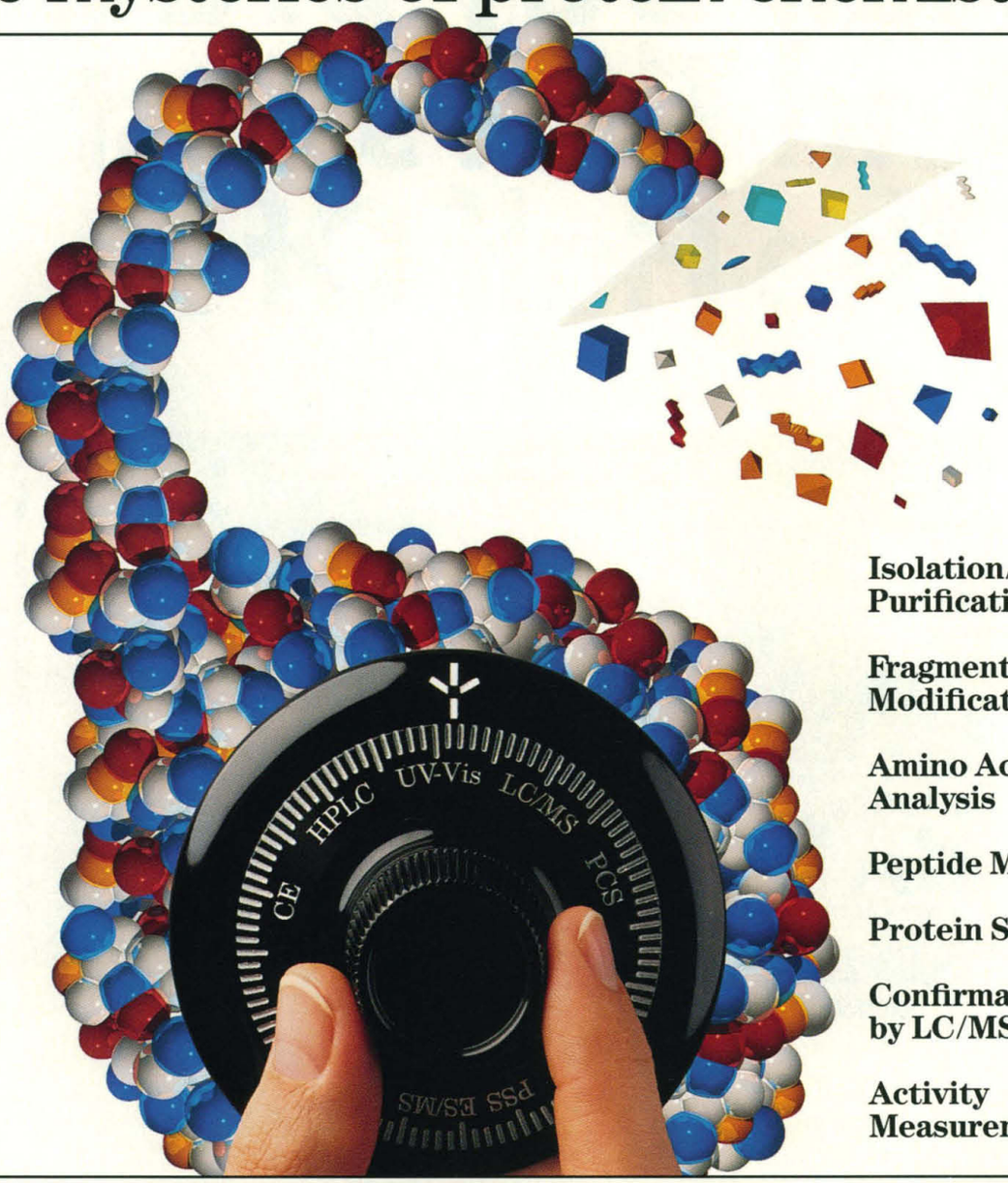

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ProDil is a formulation for the aqueous storage of proteins, antibodies, and small molecules. EnzDil is a formulation for aqueous storage of enzymes and enzyme conjugates. Most of these compounds are unstable in liquid form, except in these unique formulations. ProDil allows proteins and antibodies to remain in solution, but prevents their adsorption to the surface of glass or plastic containers. It also contains preservatives that protect its disintegration by bacteria and other contaminants. EnzDil functions in a similar fashion for enzymes and conjugates. **Creative Scientific Technology. Circle 141.**

■

Sequencing Kit

The SequiTherm Long-Read Kit is designed for use with automated DNA sequencing machines. The kit features SequiTherm DNA polymerase, noted for producing more uniform band intensities and fewer dropouts than other thermostable polymerases. When SequiTherm is used in combination with the specially formulated Long-Read nucleotide mixes, runs of greater than 1000 bases can be obtained with superior base-calling accuracy. For example, the Long-Read Kit has been used with the LI-COR 4000L system to generate more than 1000 bases of sequence with an accuracy of greater than 99% through base 800. **Epicentre Technologies. Circle 142.**

■

Gel Documentation

The SPEEDLIGHT Gel Documentation System relies on a high resolution charge-coupled device camera to produce very low cost thermal prints, nearly eliminating instant photography operating costs. New upgrades to the system include dramatic improvement to the on-chip integration device, extending its capabilities to 399 frames of integration. Because on-chip integration preferentially increases signal over noise, this allows greater sensitivity for ethidium bromide–stained DNA with the added benefit of a greater working range of input intensities. **B/T Scientific Technologies. Circle 143.**

Protein Sequence Software

A major upgrade of the Cameleon protein sequence alignment and analysis software package integrates the work of molecular biologists with that of molecular modelers. Cameleon allows scientists to create protein sequence alignments and then analyze them to predict a protein's structure. This version can read an unlimited number of sequences and automatically produces quality alignments by using the fastest commercially available algorithm of its kind. Expert users can further refine the alignments on their own. **Oxford Molecular. Circle 144.**

■

Unit Conversion and Calculation Software

UNICALC, which runs under Microsoft Windows, is a scientific calculator that understands and converts units of measure. It simplifies problem-solving by allowing you to calculate directly with data having inconsistent units. You enter parameters with the units you know and get results in the units you want. All internationally recognized units are supported, along with hundreds of common and esoteric units. **Calchemy Software. Circle 145.**

■

Antibodies

An extensive line of antibodies to detect markers on both resting and active platelets can be used to study platelet dysfunction, cardiovascular disease, and other subjects. Resting platelet markers include CD9, CD16, CD29, CD31, CD36, CD41(a), CD41(b), CD42a, CD42b, CD49b, CD49e, CD49f, CD51, and CD61. Activated platelet markers include CD63, activated GPIIbIIIa, and thrombospondin. **AMAC. Circle 146.**

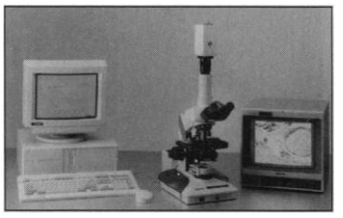

Image Analysis System

The Videometric 150 is a personal computer–based true color, real-time image analysis system. The system has several novel features, including a unique color analysis technology for the accurate identification of cell and tissue types for various applications. Applications include the analysis and quantification of immunohistochemistry, stained tissue morphology, fluorescent marker identification and analysis, in situ hybridization autoradiography studies, and general morphological measurements. **Oncor Instrument Systems. Circle 147.**

■

Literature

Büchi Rotary Evaporation Systems Catalog introduces a line of evaporators and accessories. **Brinkmann Instruments. Circle 148.**

ATCC Catalogue of Recombinant DNA Materials, 1993 is a 150-page listing of cloning vectors; hosts for transformation and transfection; clones from animal, bacterial, fungal, yeast, plant, viral, and viroid genomes; libraries; *Saccharomyces cerevisiae* genomic clone maps; and constructs with special applications. **American Type Culture Collection. Circle 149.**

Phenomenex for Chromatography is a catalog on a full line of high-performance liquid chromatography columns and accessories, including microbore, minibore, analytical, preparative, rapid analysis, and guard columns. Specialized columns for basic drugs, nonaqueous gel permeation chromatography, environmental analysis, proteins, carbohydrates, and chiral separations are described in detail. **Phenomenex. Circle 150.**

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.

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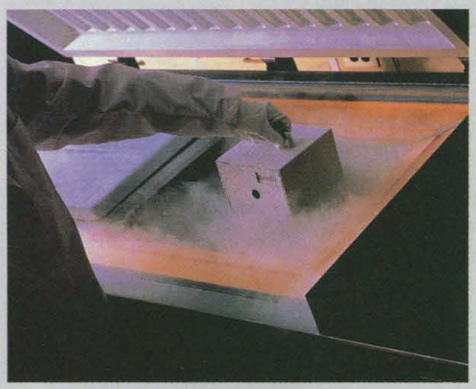

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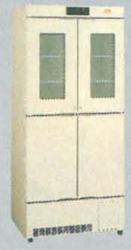

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POSITIONS OPEN

ASSISTANT PROFESSOR—BIOLOGY: The Biology Department of La Salle University seeks applicants for a tenure-track Assistant Professor position to begin fall 1994. La Salle (located in northwest Philadelphia) is a private, Catholic affiliated, liberal arts, primarily undergraduate university committed to excellence in teaching. **REQUIREMENTS**: Ph.D. in Biology; ability and interest to teach two or more of the following: Comparative Anatomy, Physiology, Human Anatomy & Physiology, Histology, Developmental Biology; ability and interest to teach introductory courses for majors and/or non-majors; proven experience in teaching and advising undergraduates. Committee work, student advisement, active participation in department activities and continued professional development are expected. Apply by March 17, 1994, with letter of application, curriculum vitae, statement of professional goals, transcripts of all college work and three letters of recommendation that address teaching potential to: **SEARCH COMMITTEE, Biology Department, La Salle University, 1900 West Olney Avenue, Philadelphia, PA 19141–1199.** *La Salle is an Equal Opportunity/Affirmative Action Employer and Educator. Women and minorities are encouraged to apply.*

MOLECULAR MICROBIOLOGIST
BAYLOR UNIVERSITY

Tenure-track, **ASSISTANT** or **ASSOCIATE PROFESSOR** position beginning August 1994. We seek an individual with the ability to apply tools of molecular biology to fundamental questions in genetics, ecology, or evolutionary biology. Baylor University is committed to excellence in undergraduate education; the person filling this position must have strong interests in teaching and interacting with undergraduate students as well as graduate students. **Duties**: Develop courses in molecular biology, biotechnology, and area of specialty; participate in general biology sequence; maintain a strong research program utilizing molecular approaches and involving graduate and undergraduate students; contribute to growing graduate program in genetics, ecology, and evolution. Ph.D. required, postdoctoral experience preferred. Send letter of application, curriculum vitae, 3 letters of recommendation, graduate and undergraduate transcripts, description of research interests, and a brief statement of teaching philosophy to: **Dr. Ben Pierce, Search Committee Chair, Department of Biology, Baylor University, Waco, TX 76798–7388. Telephone: 817-755-2911. FAX: 817-755-2969. E-mail: BEN_PIERCE@BAYLOR.EDU.** The deadline for receipt of applications is March 31, 1994. *Baylor University is a Baptist University affiliated with the Baptist General Convention of Texas. As an Affirmative Action/Equal Opportunity Employer, Baylor University encourages minorities, women, and persons with disabilities to apply.*

Biological Science, ASSISTANT PROFESSOR, Ph.D., tenure-track, to teach general education courses in Biological Science, September 1994. Research required. Deadline 11 March 1994. Send letter, statement of teaching philosophy, curriculum vitae and three current letters of recommendation to: **Professor Peter E. Busher, Chairman, Division of Science and Mathematics, College of General Studies, Boston University, 871 Commonwealth Avenue, Boston, MA 02215.** *An Equal Opportunity/Affirmative Action Employer.*

MOLECULAR TOXICOLOGIST

The Department of Community and Environmental Medicine at the College of Medicine, University of California, Irvine, seeks, subject to funding, to fill a **POSITION IN MOLECULAR TOXICOLOGY**. Applicants should have a Ph.D. in biochemistry/molecular biology with postdoctoral training in toxicology, and should have a strong interest in conducting research in molecular toxicology with special emphasis on cloning genes for protein biomarkers for early detection of ovarian cancer in humans. The position to be filled is **ASSISTANT ADJUNCT PROFESSOR** and is to be funded by the applicant's own research grant(s). In addition to conducting basic research, academic duties include teaching in the Graduate Program in Environmental Toxicology and in the College of Medicine. Qualified applicants should send their applications including curriculum vitae, summary of research and teaching plans, and the names and addresses of three references to: **Daniel B. Menzel, Ph.D., Chair, Department of Community and Environmental Medicine, University of California, Irvine, Irvine, CA 92717–1825.** *UCI: Rooted in education; enriched by diversity.*

ASSISTANT/ASSOCIATE PROFESSOR. The Department of Microbiology and Immunology of the University of North Texas Health Science Center at Fort Worth (UNTHSC-FW) is seeking applicants for a faculty position at the level of Assistant or Associate Professor. Applicants must develop or already have established an independent research program in the molecular biology of microorganisms or in molecular immunology. Candidates with expertise in virology or immunology are especially encouraged to apply. Selected candidates must also have outstanding teaching skills and will participate in a team-taught course in medical microbiology and immunology for medical students as well as in teaching graduate students. UNTHSC-FW is a state-supported medical school housed in new, well-equipped facilities, and is affiliated with the University of North Texas. Send curriculum vitae, a summary of research interests and goals, and three references by May 31, 1994, to: **Dr. Paula Sundstrom, Search Committee Chairman, Department of Microbiology and Immunology, University of North Texas Health Science Center, 3500 Camp Bowie Boulevard, Ft. Worth, TX 76107–2699.** *An Equal Opportunity/Affirmative Action Employer and Educator.*

BIOLOGY TENURE-TRACK ASSISTANT PROFESSOR. Population Biologist or Microbial Ecologist/Generalist—Required to teach intro courses for majors and non-majors and Anatomy and Physiology. Expected to develop upper-division course(s) for majors. Ph.D. is required, computer experience desirable. Send application, curriculum vitae, statement of teaching philosophy, summary of research goals and three letters of recommendation by March 18, 1994, to: **Dr. William Tramontano, Chair, Biology Department, College of Mount Saint Vincent/Manhattan College, 6301 Riverdale Avenue, Riverdale, NY 10471–1093.** *Minorities are encouraged to apply. Equal Opportunity Employer/M/F/Affirmative Action.*

BOTANICAL SCIENCE, ASSISTANT PROFESSOR OF BIOLOGY. The Biology Department at Moorhead State University invites applications for a tenure-track position (pending funding) in botanical science beginning September 1994. Teaching responsibilities will include introductory botany for undergraduate science majors and other areas appropriate to the needs of the department. The successful candidate will be required to maintain a research program that encourages participation by undergraduate students. Candidates must be broadly trained in botanical science with research experience in structural, developmental, or physiological areas. A Ph.D. in a botanical science is required. Salary is dependent on qualifications and experience. Contact: **Dr. Mary Shimabukuro, Department of Biology, Moorhead State University, Moorhead, MN 56563; Telephone: (218) 236-2359 or shima@mhd1.moorhead.msus.edu** for application materials and additional information. Screening of completed applications will begin March 25, 1994, and continue until the position is filled. *Moorhead State University is an Equal Opportunity/Affirmative Action Educator and Employer.*

Physical Science, ASSISTANT PROFESSOR, Ph.D., tenure-track, to teach general education courses in Physical Science, September 1994. Research required. Deadline 11 March 1994. Send letter, statement of teaching philosophy, curriculum vitae and three current letters of recommendation to: **Professor Peter E. Busher, Chairman, Division of Science and Mathematics, College of General Studies, Boston University, 871 Commonwealth Avenue, Boston, MA 02215.** *An Equal Opportunity, Affirmative Action Employer.*

The Department of Biology at Northeastern Illinois University seeks a tenure-track **ASSISTANT PROFESSOR**, beginning fall 1994. Earned doctorate required. Training in biochemistry, biotechnology, immunology, or molecular biology desirable. Teaching undergraduate and graduate courses in biochemistry and instruction in general biology courses expected. Research and service are encouraged and expected. Send curriculum vitae, letter of application, and three letters of reference, at least one concerning teaching effectiveness to: **Dr. Simon Chung, Chair, Department of Biology, Northeastern Illinois University, 5500 North St. Louis Avenue, Chicago, IL 60625**. Review of applications will begin March 14, 1994. *An Affirmative Action/Equal Opportunity Employer.*

POSITIONS OPEN

HAMPDEN-SYDNEY COLLEGE

The Biology Department invites applications for a non-continuing one-year appointment as **VISITING ASSISTANT PROFESSOR** beginning August 15, 1994. The successful applicant will teach Introductory Biology lectures and laboratories and will offer an advanced course in his or her area of interest. Fields presently represented in the department are Microbiology/Botany, Ecology, Cellular/Developmental, Vertebrate Anatomy and Physiology, Molecular/Genetics and Paleobiology/Invertebrate Zoology. Candidates must demonstrate interest or have experience in undergraduate teaching and have a Ph.D. expected by August 1994. A letter of application stating educational philosophy (no longer than one page), a résumé and three letters of reference should be sent to: **William A. Shear, Chairman, Department of Biology, Hampden-Sydney College, Hampden-Sydney, VA 23943** by March 10, 1994. Application materials received after this date will not be considered. **FAX: (804) 223-6374.** *Equal Opportunity Employer/Affirmative Action.*

ASSISTANT PROFESSOR, PLANT PATHOLOGY. Applications are invited for a position that will emphasize work on the genetics of fungal plant pathogens. A Ph.D. with strong background in Plant Pathology and Genetics is required. The position is a joint research (70%) and teaching (30%), 12-month tenure-track faculty position in the Department of Plant Pathology, University of Georgia, Athens. Teaching responsibilities will include Introductory Genetics, advising graduate students and the opportunity to develop a course in a specialty area. The successful candidate is expected to develop a research program that will involve genetic approaches to study fungal plant pathogens and host-pathogen interactions. This position will be available July 1, 1994. Applicants should submit by May 1, 1994, a letter that includes research interests, curriculum vitae, transcripts, four letters of reference and reprints of last five years publications to: **Dr. Wiley N. Garrett, Department of Plant Pathology, University of Georgia, Athens, GA 30602–7274.** *The University of Georgia is an Equal Opportunity/Affirmative Action Institution.*

ASSISTANT/ASSOCIATE PROFESSOR: The Department of Pathology, Medical College of Georgia, is seeking a Ph.D. with postdoctoral experience in molecular pathology and a commitment to scholarly achievement. The individual will have primary responsibility in the Section of Anatomic Pathology for overall operation of molecular diagnostics, particularly gene rearrangements and PCR assays. The successful applicant will complement research in the department and develop a productive research program. Salary and benefits will be commensurate with experience and rank. Candidates should send curriculum vitae and 3 references to: **Dr. F. W. Chandler, Department of Pathology, Medical College of Georgia, Augusta, GA 30912–3605; FAX: (706) 721-2358.**

MCG IS AN EQUAL-OPPORTUNITY EMPLOYER. WOMEN, MINORITIES AND THE DISABLED ARE ENCOURAGED TO APPLY.

FACULTY POSITION IN IMMUNOBIOLOGY

Applications are invited for a full-time tenure-track position at the **ASSISTANT/ASSOCIATE PROFESSOR** level in the Department of Biological Sciences starting August 18, 1994. The candidate will be expected to develop a vigorous basic research program in immunobiology and to teach undergraduate/graduate-level immunology. Applicants utilizing cellular and molecular research approaches will be preferred. This position requires two years of postdoctoral training, a record of productive research, and the ability to interact collegially. Appointment at the Associate level requires a record of funded research activity and a currently funded research program. The Department of Biological Sciences has three new state-of-the-art Core Facilities in Molecular Biology, Cell Culture, and Protein Analysis. Deadline for applications is March 15, 1994, or the first of the month until the position is filled. Applicants should submit curriculum vitae, reprints of key publications, a statement of current and future research plans, and three names of references to: **Chairperson, Immunobiologist Search Committee, Department of Biological Sciences, The Wichita State University, Campus Box 26, Wichita, KS 67260–0026.** *Affirmative Action/Equal Opportunity Employer.* **TTY:** *316-689-3067.*

FACULTY POSITION
Human Gene Therapy

A tenure-track faculty position at the Assistant Professor level is available for an individual with an M.D. and/or Ph.D. degree who has a strong interest in/commitment to the clinical application of Human Gene Therapy. The position will involve joint appointments in the General Clinical Research Center (GCRC), the Human Gene Therapy Center, and in the appropriate department in the School of Medicine. The successful applicant will be expected to: (a) direct an independent research program in mammalian genetics and/or human gene therapy; (b) facilitate the development of a GCRC-based, production-level gene therapy lab; and (c) assist in the human application of the numerous gene therapy research programs currently ongoing in the Medical Center. Interested applicants are asked to submit a cover letter, curriculum vitae, and names of three references. Please send responses to:

Drs. Eugene P. Orringer and Richard J. Samulski
Gene Therapy Center
c/o General Clinical Research Center
Room 3005 Main Building, UNC Hospitals
CB #7600, School of Medicine
Chapel Hill, NC 27599—7600
FAX: 919-966-1576.

The University of North Carolina at Chapel Hill is an Equal Opportunity/Affirmative Action Employer. Women and minorities are encouraged to apply.

University of Hawaii at Hilo
FACULTY POSITION

ASSISTANT PROFESSOR OF MARINE SCIENCE; Position Number 83187; Pay Range I3, College of Arts and Sciences; University of Hawaii at Hilo; general funds; tenure-track; nine-month type appointment; to begin approximately August 1994. **DUTIES**: Teach undergraduate courses in marine biology, oceanography, marine botany, and area of specialty; conduct research and publish results; counsel and advise students; participate in marine science summer program for additional compensation; participate in the academic function of the Kalakaua Marine Education Center and the College; perform service to the community. **MINIMUM QUALIFICATIONS**: Doctorate in one of the biological sciences, certified SCUBA diver with scientific experience. **DESIRED QUALIFICATIONS**: Marine botanist; previous undergraduate teaching experience; background in phytoplankton, evolution/paleontology and/or microbiology; computer experience. **MONTHLY SALARY RANGE**: $2669 to $3950. **APPLICATIONS**: Send letter of application, current curriculum vitae, and three letters of reference to: **Dr. Brian N. Tissot, Kalakaua Marine Education Center, College of Arts and Sciences, 200 West Kawili Street, University of Hawaii at Hilo, Hilo, HI 96720–4091; Telephone: (808) 933-3732. APPLICATION DEADLINE**: postmarked no later than March 16, 1994.

AN EQUAL EMPLOYMENT OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER.

FACULTY POSITION IN FOREST GENETICS
MICHIGAN STATE UNIVERSITY

The Department of Forestry is seeking applicants for a tenure-track **ASSISTANT PROFESSOR** of forest genetics position (70% research, 30% teaching). The successful applicant is expected to build a scholarly research program in population, molecular, physiological, or ecological genetics, teach one-semester courses in forest genetics at the graduate and undergraduate level, be actively involved in graduate-student advising, and contribute to the interdepartmental Plant Breeding and Genetics Program. Candidates must have a Ph.D. in plant or forest genetics and one degree in forestry. A commitment to excellence in teaching and research, an interest in working with woody plants, and knowledge of current research technologies in plant genetics are primary search criteria. Submit a letter of intent, curriculum vitae, and four letters of reference before March 31, 1994, to: **Dr. Donald I. Dickmann, Forest Genetics Search Committee, Department of Forestry, Michigan State University, East Lansing, MI 48824–1222.** *Michigan State University is an Affirmative Action/Equal Opportunity Employer and encourages applications from women and minority candidates.*

ASSISTANT PROFESSOR OF BIOLOGY
SCHOOL OF SCIENCE AND ENGINEERING TECHNOLOGY

The University of Southern Indiana invites applications for a tenure-track faculty position beginning in August 1994. Individual must have abilities to teach in one or more of the following areas: plant physiology, general botany, aquatic biology or environmental science. Other duties include student advising and community service.

The successful candidate will have a Ph.D. by August 1994; preference will be given to candidates with demonstrated abilities and interest in undergraduate teaching and student-oriented research. Submit curriculum vitae and statement of teaching philosophy and research interest by March 15, 1994: **Dr. Jackson L. Marr, Chair, Department of Biology, University of Southern Indiana, 8600 University Boulevard, Evansville, IN 47712.** *Affirmative Action/Equal Opportunity Employer.*

VIROLOGY/MICROBIOLOGY—The Department of Microbiology and Immunology at the Uniformed Services University of the Health Sciences invites applications for appointment as a full-time, tenure-track **ASSISTANT PROFESSOR**. Review of applications will begin in February 1994 and continue until the position is filled. The position is available starting in July 1994. Doctoral degree and postdoctoral research experience in Virology are required. Responsibilities include development of a productive research program in Virology plus team teaching in departmental medical and graduate courses. Research facilities, start-up support, and environment for professional development are excellent. Salary is negotiable and commensurate with training and experience. Submit curriculum vitae and bibliography, description of research interests and proposed research program, reprints of major publications, and names of three professional references to: **Randall K. Holmes, M.D., Ph.D., Professor and Chair, Department of Microbiology and Immunology, c/o Civilian Human Resources Management Division, Uniformed Services University of the Health Sciences, 4301 Jones Bridge Road, Bethesda, MD 20814–4799.** *Foreign nationals will be considered only if qualified United States citizens are not available. Final appointment to this position is subject to the completion of a background investigation and appropriate clearance, and successfully passing the applicant drug test with negative results. The USUHS is an Equal Opportunity/Affirmative Action Employer with a strong commitment to racial, cultural and ethnic diversity.*

NEUROBIOLOGIST

The Department of Anatomy and Neurobiology, College of Medicine, the University of Tennessee, Memphis, is seeking applications to fill an **ASSISTANT PROFESSOR, ineligible for tenure-track position**. Candidate must show evidence of strong research achievement in neuroscience. In addition to a minimum of three years of postdoctoral training, candidate should have experience in intracellular recording, patch clamp recording, immunocytochemistry, and intracellular labelling. Preference will be given to those who have research experience in the basal ganglia and its related structures. Candidate must be able to develop an independent research program and coordinate postdoctoral fellows and staff in a large lab setting. Rank and salary will be commensurate with qualifications. Please submit curriculum vitae, statement of research interests, and names of three references to: **S. T. Kitai, Department of Anatomy and Neurobiology, UT Memphis, 855 Monroe Avenue, Memphis, TN 38163.** Review of applications will begin March 1, 1994, and continue until the position is filled.

The University of Tennessee is an Equal Employment Opportunity/Affirmative Action/Title IX/Section 504/ADA Employer.

FORESTRY/NATURAL RESOURCES
ASSISTANT/ASSOCIATE PROFESSOR

A tenure-track position is available in forest management/economics/natural resources policy, Ohio State University in Columbus. Ph.D. in natural resources management, economics, policy or suitable discipline required. Preference given to applicants with at least one degree in forest management. Submit résumé, letter of interest, transcripts, and names of three references before April 1, 1994, to: **Dr. Merlyn Larson, Search Chair, School of Natural Resources, 1680 Madison Avenue, Wooster, OH 44691. Telephone: (216) 263-3785.** *Ohio State University is an Equal Opportunity/Affirmative Action Employer.*

The New York Academy of Sciences

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The New York Academy of Sciences has been at the forefront in encouraging the interactions of scientists and engineers by sponsoring conferences, workshops, and lectures. Our reputation for producing comprehensive conferences of quality is unsurpassed. We manage the administration and promotion of your conference, help you to obtain funding, and publish the proceedings in the *Annals of the New York Academy of Sciences*, which are distributed to libraries and professionals worldwide. The New York Academy of Sciences invites you to submit your proposal for a conference to be scheduled in 1995 or later. The proposal should consist of a two-page description of the conference including title, focus, topics, and an initial list of primary speakers. The Academy will contact you regarding the status of your proposal within a month from the receipt of the preliminary outline.

1994 CONFERENCE SCHEDULE

BCR **Brain Corticosteroid Receptors: Studies on the Mechanism, Function and Neurotoxicity of Corticosteroid Action**
March 2-5, 1994 Arlington, Virginia

HAD **T-Cell Receptor Use in Human Autoimmune Diseases**
Co-sponsored by the *Arthritis Foundation*
April 17-20, 1994 San Diego, California

PPS **The Post-Polio Syndrome: Advances in the Pathogenesis and Treatment**
April 27-30, 1994 Bethesda, Maryland

FDN **Functional Diversity of Interacting Receptors**
May 25-28, 1994 Washington, D.C.

QTH **Fundamental Problems in Quantum Theory**
June 18-22, 1994 Baltimore, Maryland

ILC **Interleukin-6-type Cytokines**
Co-sponsored by
The State Committee for Scientific Research, Warsaw
June 19-22, 1994 Poznan, Poland

ANT **Immunoglobulin Gene Expression in Development and Disease**
July 13-17, 1994 Montreal, Quebec, Canada

SRA **Steroid Receptors and Antihormones**
September 20-23, 1994 Dallas, Texas

OST **Osteopontin**
October 21-23, 1994 New Brunswick, New Jersey

REC **Receptor Activation by Antigens, Cytokines, Hormones and Growth Factors**
October 21-25, 1994 Orlando, Florida

ECO **Forest Canopies: Ecology, Biodiversity and Conservation**
November 10-13, 1994 Sarasota, Florida

NYE ***** The Economy of the New York Metropolitan Region: Science, Technology, and Alternative Futures *****
*** Fall, 1994 *** New York, New York

*** ***VERIFY*** **DATES** and VENUE - Subject to change

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BUILD ON OUR RESEARCH EXCELLENCE

Since 1929, The Jackson Laboratory has been one of the world's foremost centers for mammalian genetics research. As the genetic horizon continues to expand, our potential for scientific contributions has never been more promising.

In 1993, we completed a $16 million research facility — adding more than a dozen state-of-the-art laboratories. We were also awarded nearly $1.5 million from a host of national health care agencies and institutions to become the world resource for the production and distribution of engineered mouse mutants.

SR. RESEARCH SUPPORT TECHNICIANS

EVA M. EICHER, Ph.D.
Program to identify and clone genes involved in sex determination. Applicants need to be skilled in molecular techniques, including DNA and RNA isolation, library construction and screening, Southern blotting, PCR and RT-PCT analysis, handling and analysis of YACs, and DNA sequencing.

LESLIE P. KOZAK, Ph.D.
Program in analyzing genes in energy metabolism that have impact on obesity. Required techniques include: *in vitro* transient expression analysis or gene function, deletion analysis or regulatory motifs, and site-directed metagenesis.

ELIZABETH M. SIMPSON, Ph.D.
Program to study the mammalian Y chromosome, sex determination, and sexual development, using transgenic DNA or ES cell derived transgenic mice and focusing on a gene family of zinc finger transcription factors.

JUERGEN NAGGERT, Ph.D.
Program to study genetic factors influencing lipoproteins and non-insulin dependent diabetes mellitus in humans and mice. Positional cloning of single gene obesity mouse mutations. We're looking for two kinds of support staff. One with training in classical biochemistry - protein biochemistry, column chromatography, enzymology, etc. The second trained in molecular biology - DNA isolation, PCR, Southern and Northern analysis, cloning, etc.

Please respond to: Harold R. Wheeler, The Jackson Laboratory, 600 Main Street, Bar Harbor, ME 04609-1500, (207) 288-3371, FAX (207) 288-3371, ext. 1082, Internet hrw@jax.org

Located in Bar Harbor, Maine, adjacent to Acadia National Park, **The Jackson Laboratory** *offers a lifestyle where mountains, ocean, forests, lakes and trails are all within walking distance. Challenging opportunities now exist for dedicated professionals to help foster our research excellence.*

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The Jackson Laboratory

Université de Montréal
Faculté de médecine

FACULTY POSITION IN MOLECULAR BIOLOGY

The Département de biochimie, Faculté de médecine, Université de Montréal invites applications for a tenure track position, at the professor level. The Department has excellent research facilities and strong ongoing programs in cell and molecular biology. **Functions:** Candidates are expected to develop a vigorous research program in various areas of gene regulation, including development and signal transduction. Preference will be given to candidates using a genetically well characterized system. **Requirements:** Applicants should hold a Ph.D. degree or equivalent and demonstrate capacity for independent research. The candidate should be prepared to teach in French one year after arrival. **Starting date:** in 1994. Please send CV, a statement of research interests, representative reprints and three letters of reference ***before April 15, 1994 to:*** Doctor Normand Brisson, Search Committee Chairman, Département de biochimie, Université de Montréal, C.P. 6128, succursale centre-ville, Montréal (Québec), H3C 3J7. In accordance with Canadian immigration requirements, priority will be given to Canadian citizens and permanent residents of Canada. The University is committed to equal employment opportunity for women.

(0381)

NOTICE OF POSITION OPENING

Head, Department of Biology
University of Northern Iowa

Appointment: Professor; tenure appointment for the academic year (9 months) plus the summer session (2 months). The position is available August, 1994.

Responsibilities: 1) Serve as Head of the Department of Biology within the College of Natural Sciences. 2) Administer department budget and programs. 3) Supervise and evaluate faculty and staff. 4) Assist in establishing program priorities and goals based upon the undergraduate and graduate missions of the department, college and university. 5) Encourage and support innovation in teaching, research and service. 6) Assist the department in seeking extramural resources to support and advance the instructional and scholarly activities. 7) Engage in some teaching and research. 8) Promote a collegial and scholarly atmosphere.

Qualifications: 1) Ph.D. in biology; 2) credentials commensurate with an appointment as tenured full professor; 3) exhibited leadership reflected in philosophy of shared governance; 4) demonstrated service and record in teaching, research, and excellent interpersonal and communication skills. Applicants with success in obtaining extramural funding are preferred.

Salary: Competitive, commensurate with experience and qualifications. Excellent benefits include TIAA/CREF retirement, group life, medical, and dental insurance.

Applicants: To ensure full consideration, applicants must submit a current vita; the names, addresses and telephone numbers of four referees who may be contacted; and a letter of application describing professional interests and qualifications for the position. The Department encourages applications from minority persons, women, disabled persons and Vietnam era veterans. Review of applications will begin March 15, 1994. Address inquiries, applications, and nominations to:

Dr. Alan R. Orr, Chairperson
Head Search Committee
College of Natural Sciences
University of Northern Iowa
Cedar Falls, Iowa 50614-0181
(319) 273-2585
FAX (319) 273-2893

General Information: The University serves a student population of 13,000, and is one of three state universities governed by the Board of Regents. The University is located in the metropolitan area of Cedar Falls (population 35,000) and Waterloo (population 75,000) which together from the commercial, cultural, and political hub of northeast Iowa. The Department of Biology is one of seven departments in the College of Natural Sciences. The Department has 20 faculty members with diverse interests and offers program leading to B.A., B.S. and M.A. degrees. The Department has available a preserve system, The Martin L. Grant Herbarium, an electron microscope facility, greenhouses and a controlled environment facility. A summer field station, located in northwest Iowa, is operated jointly by the three state universities.

THE UNIVERSITY OF NORTHERN IOWA IS AN EQUAL OPPORTUNITY EDUCATOR AND EMPLOYER WITH A COMPREHENSIVE PLAN FOR AFFIRMATIVE ACTION

DEVELOPMENTAL GENETICIST

Assistant Professor in the Departments of Animal Science and Avian Sciences and Assistant Geneticist in the Agricultural Experiment Station, University of California, Davis. Eleven-month, tenure-track position. The successful candidate will be expected to establish an independent, extramurally funded research program in the area of developmental genetics employing suitable avian or mammalian models. The candidate will be expected to teach an upper-division course in vertebrate developmental genetics including a laboratory emphasizing avian development, participate in other undergraduate and graduate teaching in genetics or developmental biology, and train and advise undergraduate, M.S.and Ph.D. students. Candidates should have a Ph.D. in developmental genetics or a related area, a solid background in research and teaching and demonstrated research productivity and/or potential. Applicants should submit a curriculum vitae, transcripts (official transcripts are required if Ph.D. was granted in the past five years), a detailed description of his/her research accomplishments, teaching experience and expertise, and future plans. Applicants should provide names, addresses and FAX numbers of three to five individuals familiar with the applicant's teaching *and* research abilities. Applications should be submitted to Recruitment Committee, Department of Avian Sciences, University of California, Davis, CA 95616-8532. ***Closing date:*** Open until filled, but all application materials must be received before March 31, 1994 to be assured of full consideration.

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

Human Genome Sciences, Inc.

Human Genome Sciences, Inc.'s mission is to identify and develop drugs and diagnostic products based on its leadership position in the discovery and expression of novel genes from human, animal, plant and microbial origin. HGS has openings in the following areas:

HUMAN GENE MAPPING

HGS is initiating a program to locate all expressed genes on a physical map of the human genome. Our gene discovery efforts have identified over 40,000 unique human genes that are expressed in normal and diseased states. We are seeking a Director for the genome mapping program. The successful candidate will have an outstanding record of achievement in genome analysis as well as organization and management skills. We are also seeking M.D. and Ph.D. scientists with skills relevant to gene mapping, including epidemiology of inherited disease, expertise in construction of physical maps and computer skills relevant to genome mapping and analysis.
Reference Job Code 6-10-46.

DRUG DEVELOPMENT in HEMATOPOIESIS & IMMUNOLOGY

HGS has identified many new members of the interleukin, cytokine, and chemokine gene families. We are seeking specialists in the area of immunology, hematopoiesis and tissue repair. The successful candidates will hold an M.D. or Ph.D. with at least 5 years experience in pharmaceutical development or programs in therapeutic proteins, interferons, interleukins, or colony-stimulating factors. Experience in the pharmaceutical industry is a firm prerequisite.
Reference Job Code 6-10-48.

INFECTIOUS DISEASE

HGS has initiated a program to create new classes of anti-microbial therapeutics based on novel targets discovered by sequence analysis of virulence genes. We are seeking M.D.s and Ph.D.s with at least 5 years of pharmaceutical company experience in the development of anti-microbial or anti-fungal therapeutics. *Reference Job Code 6-10-49.*

PROTEIN BIOCHEMISTRY & PURIFICATION

Candidates will possess a Ph.D. or M.D. in a relevant discipline and have 3-4 years of industrial experience in protein isolation and characterization. Familiarity with HPLC, FPLC, and affinity chromatography is required. *Reference Job Code 6-10-50.*

***Human Genome Sciences, Inc.** is located in Rockville, Maryland in a region of intense scientific and biotechnological activity. The company encourages the pursuit of academic excellence and offers a comprehensive benefits package including medical/dental insurance, 401(K), and tuition reimbursement. For immediate consideration, please forward your curriculum vitae along with three references to: (please reference the appropriate Job Code number)*

HGS
An Equal Opportunity Employer

Dr. William A. Haseltine, CEO
HUMAN GENOME SCIENCES, INC.
9620 Medical Center Drive, #300
Rockville, MD 20850

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announces

Postdoctoral & Senior Research Associateship Awards

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EPA PACIFIC ECOSYSTEMS BRANCH

Newport, OR

The NRC is accepting applications for Research Associateship awards at the EPA Pacific Ecosystems Branch.

Research opportunities involve investigating the effects of ultraviolet-B (UV-B) radiation on marine ecosystems. The overall goals of the research are to develop models predicting the effects of enhanced UV-B radiation on the structure of phytoplankton assemblages, the rates of primary production, associated effects on higher trophic levels, and biogeochemical cycles of carbon, DMS, and other RITS gases. Experimental research is conducted under controlled laboratory conditions with both single and multiple phytoplankton species, using both static and chemostat exposures, and in the field or in mesocosms using natural assemblages of plankton.

Duration of each award is 1 year renewable to 3 years maximum.

Stipends begin at $35,000 per annum for recent Ph.D. recipients; are appropriately higher for experienced researchers.

Support is available for relocation and professional travel; a comprehensive health insurance program is offered.

For further information contact:
Dr. Henry Lee, II
U.S. EPA, ERL-N
Pacific Ecosystems Branch
Hatfield Marine Science Center
Newport, OR 97365
TEL: (503) 867-4042
FAX: (503) 867-4049

* * * * * * * * * * * *

Applications, submitted directly to the NRC, are accepted on a continuous basis throughout the year. Those postmarked: by April 15, will be reviewed in June ; by August 15, in October; and by January 15, in February.

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FOR APPLICATION MATERIALS CONTACT:

The National Research Council
The Associateship Programs
(TJ-2094/EC)
2101 Constitution Avenue
Washington, DC 20418
FAX: (202) 334-2759

POSITIONS OPEN

CARDIAC MOLECULAR BIOLOGY/BIOCHEMISTRY

Department of Medicine, University of Pittsburgh Medical Center, seeks well-qualified applicants with a Ph.D., M.D., or M.D./Ph.D. degree and an interest in cardiac molecular biology, cell biology and biochemistry for two openings in the Division of Cardiology. Candidates should have completed a relevant postdoctoral position and be prepared to conduct an independent program of molecular cardiac research. Positions are tenure-track and will be at the **ASSISTANT** or **ASSOCIATE PROFESSOR** level depending upon experience. The position involves opportunities for participating in either the teaching or clinical activities of the Department of Medicine. Areas of interest include, but are not limited to, myocardial gene transfer, myocyte growth and differentiation, and regulation of cardiac gene expression. Applicants should send curriculum vitae, a statement of research interests, and the names of three references to: **Arthur M. Feldman, M.D., Ph.D., Harry S. Tack Professor of Medicine, Chief of Cardiology, 5th Floor Scaife Hall, 3550 Terrace Street, The University of Pittsburgh School of Medicine, Pittsburgh, PA 15213–2500.** *The University of Pittsburgh is an Affirmative Action/Equal Opportunity Employer.*

FACULTY POSITION— Burn Wound and Vascular Biology

The Texas A&M University Health Science Center invites applications for a tenure-track **ASSISTANT PROFESSOR** position in Burn Wound Physiology and Vascular Biology. This initiative is jointly sponsored by the Departments of Surgery and Medical Physiology. Applicants should hold the M.D. or Ph.D. degree and have substantial postdoctoral training in molecular and cell biology. The successful candidate is expected to develop a strong, grant-supported research program and participate in the training of medical students, residents, graduate students and postdoctoral fellows. He/she will join a multidisciplinary cardiovascular faculty consisting of scientists from the Colleges of Medicine, Agriculture, Engineering and Veterinary Medicine. Send curriculum vitae, statement of career goals, and summary of research interests to: **Dennis J. Lynch, M.D., Chairman, Department of Surgery, Texas A&M University Health Science Center, Temple, TX 76508.** *Texas A&M University is an Affirmative Action/Equal Opportunity Employer.*

MOLECULAR BIOLOGY JOINT SCIENCE DEPARTMENT THE CLAREMONT COLLEGES

ASSISTANT PROFESSOR, tenure-track, starting fall 1994, with expertise in biochemistry, developmental biology or endocrinology. Teaching majors in these areas, as well as nonmajors, in a highly selective liberal arts college environment. Research with undergraduates expected and encouraged. Superb new facilities. Send résumé, letter outlining educational philosophy and teaching experience, research interests and needs, and three reference letters to: **Dr. David Sadava, W.M. Keck Science Center, 925 North Mills Avenue, Claremont, CA 91711. Telephone: 909-621-8298**. Applicant review begins March 10, 1994. *An Affirmative Action/Equal Employment Opportunity Employer.*

John Carroll University, Chemistry Department seeks Ph.D. in **BIOCHEMISTRY**, with strong support in Analytical Chemistry for tenure-track **ASSISTANT PROFESSOR** position beginning August 1994. Experience in protein chemistry and DNA manipulation a plus. Teaching duties include undergraduate and graduate biochemistry, analytical and general chemistry. The department has a small but active M.S. program. The Biology and Chemistry departments anticipate developing a joint concentration in biochemistry/molecular biology. The incumbent is expected and encouraged to establish a productive research program. Instrumentation includes FT-IR, FT-NMR, ICP-MS, HPLC, Spectrofluorimeter, Electrophoresis, Liquid Scintillation and Ultracentrifuge. John Carroll University is a Catholic, Jesuit, coeducational university located in the eastern suburbs of Cleveland. Send résumé, graduate and undergraduate transcripts, three letters of recommendation, publication list, teaching philosophy, research plans and start-up needs to: **Dr. Richard Gaul, Chairperson, Department of Chemistry, John Carroll University, University Heights, OH 44118**. Applicant review will begin immediately and continue until the position is filled. *Affirmative Action/Equal Opportunity Employer.*

POSITIONS OPEN

ASSISTANT PROFESSOR ACADEMIC INVESTIGATIVE DERMATOLOGIST

Department of Dermatology
Stanford University School of Medicine

The Department of Dermatology at Stanford University invites nominations and applications for an assistant professor position on the tenure-track, full-time faculty of the Stanford University School of Medicine.

Candidates should hold the M.D. or M.D./Ph.D. degree and be Board-eligible or Board-certified in dermatology. In addition, candidates should have a major interest in basic laboratory investigation in connective tissue biology and present evidence of training and/or accomplishments in laboratory investigation. Applicants should be committed to clinical patient care and teaching. *Stanford University is committed to increasing the representation of women and members of minority groups on its faculty and particularly encourages applications from such candidates.*

Individual candidates should submit curriculum vitae and direct correspondence to:

Eugene A. Bauer, M.D.
Stanford University School of Medicine
Department of Dermatology
Room W0071 Blake Wilbur Building
Stanford, CA 94304

FACULTY POSITION: Department of Biology, Kutztown University. Tenure-track position at the **INSTRUCTOR** or **ASSISTANT PROFESSOR** level to begin in August 1994. Coordinator of non-majors introductory biology laboratory program. Teach non-majors biology courses and other courses as needed. Teach microbiology to nursing students in an affiliated off-campus hospital nursing program. Background in biotechnology preferred. Ph.D. preferred, Master's and programs towards the Ph.D. required. Must show substantial additional progress towards the completion of the Ph.D. during the first four years, with all coursework towards the Ph.D. completed by the end of the fall semester of the fourth year. At least two years of college-level teaching experience required, including experience teaching non-majors and/or nursing students. Experience teaching large lecture sections required. Send letter of application, curriculum vitae, official graduate and undergraduate transcripts, and three letters of reference by March 8, 1994, to: **Dr. Carol C. Mapes, Chair of the Search Committee, Biology Department, Kutztown University, Kutztown, PA 19530.** *SINCE THE BIOLOGY DEPARTMENT IS COMMITTED TO ACHIEVING RACIAL AND ETHNIC DIVERSITY IN ITS FACULTY, KUTZTOWN UNIVERSITY ENCOURAGES APPLICATIONS FROM QUALIFIED INDIVIDUALS WHO WOULD CONTRIBUTE TO SUCH DIVERSITY.*

ECOLOGIST/EVOLUTIONARY BIOLOGIST

We seek a broadly trained organismal biologist to fill an anticipated tenure-track position at the **ASSISTANT PROFESSOR** level. Applicants should be capable of participating in courses in ecology/evolutionary biology and contributing to offerings in conservation biology. Faculty are expected to develop an active research program and participate in the training of graduate students. Candidates with postdoctoral experience are preferred. Applicants should mail curriculum vitae (including a statement of research interests), representative recent reprints and have three letters of recommendation sent to: **Search Committee, Department of Biological Sciences, University of New Orleans, New Orleans, LA 70148**. Review of applications will begin on 14 March 1994 and continue until the position is filled. *The University of New Orleans is an Equal Opportunity/Affirmative Action Employer.*

The Department of Physiology at Nova Southeastern University invites applications for a full-time **ASSISTANT PROFESSOR** position. Candidates must have a doctoral degree in physiology and a commitment to excellence in teaching. Preference will be given to individuals with primary interest in endocrinology. Please send curriculum vitae and list of three references by March 11, 1994, to: **H. Jay Lyons, Ph.D., Department of Physiology, Nova Southeastern University, 1750 N.E. 167th Street, North Miami Beach, FL 33162.**

THE RESULTS OF COLLABORATION.

COLLABORATIVE RESEARCH, INC. is a leader in human genetics research. We have been a major contributor to the Human Genome Project and we seek to translate the discoveries of this project into significant commercial breakthroughs in human medicine. Our research expertise in physical and genetic mapping, large-scale sequencing, and bio-informatics is focused on such core areas as tuberculosis and related pathogens, mental illness, and cancer.

MOLECULAR BIOLOGIST

Needed to work with existing teams in the following areas —methods for efficient isolation of YAC DNA; large-scale, high resolution mapping of cDNAs to human chromosomes; identification and isolation of genes in human genomic DNA; heterologous gene expression in microbial and mammalian hosts. Requires a Ph.D. in molecular biology, biochemistry, or related field. Experience with molecular genetics/DNA manipulation and DNA affinity capture methods is desirable. Post-graduate and/or previous supervisory experience in related areas is a plus.

MOLECULAR GENETICIST

Will play a lead role in efforts to map and clone gene(s) responsible for human disorders. Requires a Ph.D. with experience in molecular biology or genetics. Expertise in genetic and physical mapping, as well as gene identification, preferred. Previous supervisory responsibility a plus.

MICROBIAL MOLECULAR BIOLOGIST

A unique opportunity to help identify and study the function of target genes, identified by large scale genome sequencing for the development of new M. tuberculosis anti-infectives. Requires a Ph.D. in biochemistry or molecular biology, at least 2 years' experience in working with mycobacteria or related organisms, and an ability to interact with a coalition of top scientists in mycobacterial sequencing, biochemistry and molecular genetics.

MOLECULAR BIOLOGIST/GENE ANALYST

Help lead an exciting project to apply state-of-the-art genome sequencing techniques and computer analysis tools toward understanding the genomes of micro-organisms with key significance for energy research and medical science. Requires a Ph.D. with at least 2 years' experience in molecular biology or genetics, good management and communication skills, and an interest in computer analysis of large-scale DNA sequencing information.

At CRI we offer a comprehensive salary and benefits package. Interested candidates should send a resume or a curriculum vitae to: **Human Resources, Collaborative Research, Inc., 100 Beaver St., Waltham, MA 02154.** An Equal Opportunity Employer M/F/V/H.

Collaborative Research Incorporated

Structural Biology Research Assistant

Join the Growth. Join the Success.

Pfizer, a Fortune 100 company, one of the largest pharmaceutical companies in the world and a multi-million dollar industry leader, can offer you a world of challenge, opportunity and achievement where you can make a significant contribution to the research and development of exciting new products to be introduced in the coming decade...and the new century.

Pfizer Central Research Laboratories in Groton, Connecticut are the company's primary U.S. research facilities committed to creating a healthier world population. In addition, the Central Research Laboratories represent one of only a handful of R&D organizations with a budget over $1 billion to support continued advances in science. To accomplish that goal we are actively recruiting the following positions in laboratory research towards the discovery of new human medicinal therapeutics.

Currently, we are seeking a highly motivated research assistant in our Protein Crystallography Laboratory.

The successful candidate will be involved in several ongoing projects to determine the three-dimensional structures of proteins of pharmaceutical interest. Responsibilities include routine protein purification, setting up and monitoring protein crystallization experiments, screening for heavy atom derivatives, and assisting with x-ray diffraction data collection. This position requires a BA/BS or MA/MS in biochemistry or molecular biology. Prior experience in protein purification, use of HPLC and FPLC equipment is desirable.

We offer competitive salaries and a full range of benefits including medical and dental insurance, paid holidays and vacations, educational assistance, savings and investment plan, pension plan, relocation assistance and more. Our R&D facility located in a southeastern Connecticut shore community, gives access to the well known academic and cultural centers of the Northeast, and offers the attractions of a New England lifestyle.

To learn how you can be part of the future of Pfizer, send your resume to: **Mr. Kym Goddu, Assistant Manager, Employee Resources, Pfizer Inc, Central Research Division, Eastern Point Road, Groton, CT 06340.** An equal opportunity employer.

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Central Research
Bringing science to life.

POSITIONS OPEN

DIRECTOR—MOLECULAR BIOLOGY

Academia Sinica, Taipei, Taiwan, ROC, is seeking nominations and applications of scientists qualified to serve as Director of the Institute of Molecular Biology (IMB). IMB currently has over 20 principal investigators and about 100 scientific staff. It is well-supported by stable funding and has potential for growth. Research programs include gene regulation immunology, RNA processing, and analyses of the structures by a variety of methods including X-ray crystallography. The 70,000-square foot building is well-designed and equipped with modern instruments and facilities. A new building (100,000 square feet) is under construction with a projected completion date of June 1994. Requirements for the position include a doctoral degree, demonstrated outstanding research in molecular biology, working experience as a full professor or equivalent for at least 3 years, and evidence of administrative ability and familiarity with the Taiwan environment. Applications or nominations should include a cover letter and complete curriculum vitae, as well as the names, addresses and telephone numbers of six references. Review of applications and nominations will begin on April 5, 1994, and continue until a suitable candidate is recruited. Applications and nominations should be sent to: **Dr. Shu Chien, Institute for Biomedical Engineering, University of California, San Diego, La Jolla, CA 92093–0412. (Telephone: 619-534-5195; FAX: 619-534-5722).**

The Department of Mechanical Engineering at the Massachusetts Institute of Technology invites applications for a tenure-track position in the area of **THERMO-FLUID SCIENCES**. Areas of interest include, but are not limited to, studies in the fundamentals of molecular and interfacial phenomena, multiscale transport processes in simple and complex fluids, and advanced diagnostics. The appointee is expected to contribute to teaching and curriculum development at the undergraduate and graduate levels, and to develop a sponsored graduate research program in his/her field of interest.

Candidates should have a Ph.D. in mechanical engineering or a related field, and have a demonstrated interest and exceptional ability in teaching and research. Individuals with industrial-related experience are particularly encouraged to apply. Preference will be given to appointments at the junior level (untenured assistant/associate professor). Senior candidates with outstanding credentials may be considered for appointments at advanced levels. Applicants should send curriculum vitae (with citizenship and/or visa status), including a 1 to 2 page statement of current and future research interests, publications list, and the names and addresses of at least four references to: **Thermofluid Sciences Faculty Search Chair, Department of Mechanical Engineering, Room 3-173, Massachusetts Institute of Technology, Cambridge, MA 02139–4307.** Résumés received after **April 30, 1994**, may not be given full consideration. *MIT is an Equal Employment Opportunity/Affirmative Action Employer. Women and members of minority groups are strongly urged to apply.*

RESEARCH-TRACK FACULTY POSITION

A research-track faculty position in tracer kinetics and modeling is available. Candidates should have either a Ph.D. or an M.D. degree with experience in *in vivo* imaging. Knowledge of tracer kinetics is helpful but not necessary. The scientist will participate as a team member in developing tracers for functional imaging of CNS neuroreceptors with PET and SPECT. The scientist is expected to develop extramural research support. Academic rank and salary commensurate with experience. Send résumé to: **Dr. Hank F. Kung, Department of Radiology, University of Pennsylvania, Room 305, 3700 Market Street, Philadelphia, PA 19104. (Internet: kunghf@pobox.upenn.edu).** *Equal Opportunity Employer.*

RESEARCH INSTRUCTOR: Position available for a recent Ph.D. graduate in Biochemistry with an extensive background in the purification and characterization of human matrix metalloproteinases. Demonstrated expertise and experience in protein chemistry, in large-scale fermentation of bacteria, and in the use of molecular genetic tools are essential prerequisites for the successful candidate. Send curriculum vitae and three letters of reference to: **Dr. J.A. Engler, Department of Biochemistry and Molecular Genetics, University of Alabama at Birmingham, Birmingham, AL 35294–0005**. Deadline for applications is March 31, 1994.

UAB is an Equal Opportunity/Affirmative Action Employer.

DIRECTOR, DIVISION OF ANIMAL AND VETERINARY SCIENCES
COLLEGE OF AGRICULTURE AND FORESTRY
WEST VIRGINIA UNIVERSITY, MORGANTOWN, WEST VIRGINIA

West Virginia University College of Agriculture and Forestry invites applications and nominations for the position of Director of the Division of Animal and Veterinary Sciences. The Division has facilities, including 3 farms, for teaching and research in dairy, livestock, poultry, and food science and currently has 17 faculty, 50 staff and 265 undergraduate and graduate students. The Director will provide leadership and guidance in the teaching, research and public service programs of the division. Qualifications for the position include: a Ph.D. in Animal Science or related field; an established reputation in research, teaching and service in the Land-Grant University System; ability to effectively communicate with college and university administrators, faculty, staff, students, clientele groups and others involved in the state's animal industries; evidence of ability to collaborate with appropriate entities; and a record of commitment to social justice. The successful applicant must qualify for tenure in the Division. Administrative experience is highly desirable. The position is currently available. Closing date for receipt of applications is April 30, 1994, or until a suitable candidate is identified. Send letter of application, and career résumé and names, addresses, and telephone numbers of at least four persons qualified to provide professional references to: **Alfred L. Barr, Chairman, Search Committee, College of Agriculture & Forestry, West Virginia University, Morgantown, WV 26506–6108.** *West Virginia University is committed to diversity and encourages applications and nominations from women and minorities.*

CHAIR—DEPARTMENT OF PHYSIOLOGY MIDWESTERN UNIVERSITY

Applications are invited from senior faculty to assume the position of chair of the Department of Physiology. Midwestern University is comprised of the Chicago College of Medicine, the Chicago College of Pharmacy and the College of Allied Health Professions. The successful candidate is expected to have an established reputation as a teacher, researcher, and leader in education. Applicants are asked to send a résumé and statement of teaching and research interests to: **Mark Cummings, Ph.D., Associate Dean for Academic Affairs, Midwestern University, 555 31st Street, Downers Grove, IL 60515.** *An Affirmative Action/Equal Opportunity Employer.*

Florida International University (FIU), the State University of Florida at Miami, seeks two permanent, full-time **LECTURER** positions: one in **HUMAN ANATOMY** and one in **BIOLOGY**. The Anatomist's responsibilities include Gross Anatomy lecture and labs with cadaver dissection, and Human Anatomy lecture and labs using prosected cadavers. Ph.D. preferred, gross anatomy teaching experience required; start June 1994. The Biologist's responsibilities include teaching general biology to majors, as well as introductory courses for non-majors and health-related disciplines at our North Miami campus. Ph.D. and teaching experience required; start August 1994. To apply, send curriculum vitae and three letters of reference to: **Chairperson, Anatomist Search and Screen Committee *or* Biologist Search and Screen Committee, Department of Biological Sciences, Florida International University, Miami, FL 33199**. Applications must be postmarked on or before March 24, 1994. *FIU is an Equal Access/Affirmative Action/Equal Opportunity Employer and a member of the State University System of Florida.*

POSTDOCTORAL POSITION is available in the Division of Gastroenterology at our 591-bed major teaching hospital affiliated with SUNY-Stony Brook School of Medicine. Primary focus of research is the study of mechanisms and control of epithelial and muscle function in animal models of inflammatory bowel disease. Candidate should have a Ph.D. with experience in cell biology, molecular biology and/or immunology. The position is funded for at least two years. Send curriculum vitae and the names of three references to: **Employment Specialist, Human Resources, Winthrop-University Hospital, 259 First Street, Mineola, Long Island, NY 11501.** *Equal Opportunity Employer/Minorities/Females/Disabled/Veterans.*

TWO POSITIONS IN BIOLOGICAL SCIENCES FOR ACADEMIC YEAR 1994-95

ANTICIPATED TENURE-TRACK ASSISTANT PROFESSOR, structural and metabolic biochemistry. Teach introductory biology, introductory biochemistry, macromolecular biochemistry, intermediate metabolism and associated laboratories and seminars. Undergraduate research collaboration is expected.

NON-TENURE-TRACK RENEWABLE ASSISTANT PROFESSOR, invertebrate ecology. Teach introductory biology, ecology, invertebrate biology and specialty.

Centre is a small, selective liberal arts college with a strong tradition of excellence in science education. Send letter of application, curriculum vitae, transcripts and three letters of recommendation to: **Dean John Ward, Centre College, 600 West Walnut, Danville, KY 40422.** *Equal Opportunity Employer. Women and minorities are encouraged to apply.*

THE HEBREW UNIVERSITY—HADASSAH MEDICAL SCHOOL
THE HEBREW UNIVERSITY—HADASSAH FACULTY OF DENTAL MEDICINE
JERUSALEM, ISRAEL
FACULTY POSITION

Applications are invited for a tenure-track position in the division of anatomy and embryology.

Ph.D. and/or D.M.D. degrees and postdoctoral training are required. Excellence in research and teaching will be of prime importance. Candidates are expected to develop independent research in dental-related areas.

Curriculum vitae, list of publications, 3 to 5 selected reprints, research plans and three letters of recommendation addressed to: **Dean of the Dental Faculty, Prof. Adam Stabholz**, should reach the office of the Dean **(P.O. Box 12272, Jerusalem 91120, Israel)**, not later than April 15, 1994.

POSTDOCTORAL POSITION MOLECULAR BIOLOGY OF ERYTHROPOIESIS is available immediately for NIH-funded identification and isolation of genes active in signalling the maturation, cytokine responses, and/or apoptosis of murine erythroid colony forming units. Applicants should send curriculum vitae and names of three references to: **Dr. Samuel Boyer, The Johns Hopkins University School of Medicine, 1125 Ross Building, Baltimore, MD 21205;** *An Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL POSITION, INTERFERONS RECEPTORS AND INTERFERONS, available immediately or early spring. Interactions of cloned and genetically engineered alpha interferon receptors with interferons will be studied. Background in recombinant DNA is essential. Experience with proteins and tissue culture is helpful. Send curriculum vitae and names of three references to: **Dr. Jerome A. Langer, Department of Molecular Genetics & Microbiology, UMDNJ–Robert Wood Johnson Medical School, 675 Hoes Lane, Piscataway, NJ 08854.** *Affirmative Action/Equal Employment Opportunity, m/f/d/v, and member of the University Health System of New Jersey.*

POSTDOCTORAL POSITION IN DEVELOPMENTAL NEUROBIOLOGY. Research involves the morphological and biochemical analysis of cerebellar and brainstem development in normal mice and murine mutations characterized by abnormal cerebellar development. Position available immediately. Please submit curriculum vitae and three letters of reference to: **L.M. Eisenman, Ph.D., Department of Anatomy and Developmental Biology, Thomas Jefferson University, Philadelphia, PA 19107.** *Equal Opportunity Employer.*

POSTDOCTORAL POSITION to study the molecular genetics of human DNA replication. Epstein-Barr and papilloma virus sequences and immunoglobulin, globin, and *myc* gene families are being used as model systems both *in vivo* and *in vitro* to study cell cycle regulation of DNA replication. Other projects include the role of cell cycle checkpoints in regulating DNA replication and the purification of replication proteins. Apply by mail and a FAX copy to: **Dr. Carl Schildkraut, CH 416, Albert Einstein College of Medicine, Jack and Pearl Resnick Campus, 1300 Morris Park Avenue, Bronx, NY 10461. FAX: (718) 829-7619.** *Equal Opportunity Employer.*

BIOLOGY FACULTY POSITIONS UNIVERSITY OF ALASKA ANCHORAGE

The Department of Biological Sciences is currently expanding and seeks qualified candidates for two full-time tenure-track (9 mo) assistant professorships beginning 8/14/94. Requirements common to both positions include: Ph.D. degree, postdoctoral research experience, potential to obtain extramural funding, and ability to teach both general biology and upper-division and graduate courses in specialty area. Teaching experience preferred. **Vertebrate zoologist, Position #301356**: This is a full-time position in Biological Sciences. Teaching responsibilities include comparative vertebrate anatomy and mammalogy. Research expertise in field vertebrate zoology applicable to Alaskan environment is sought. **Soil/environment microbiologist, Position #300315**: This is a joint position with the Environment & Natural Resources Institute (ENRI). Teaching responsibilities include general microbiology and microbiology for health sciences. Research emphasis in soil or environmental microbiology, trace gas fluxes, aquatic microbiology, bioremediation, or other areas important to Alaska is sought. Successful candidate will be expected to participate in multidisciplinary research programs at ENRI.

Obtain complete job announcement from UAA Personnel Office, 3890 University Lake Dr, Anchorage AK 99508. Voice - (907) 786-4608, TTY - (907) 786-1420, FAX (907) 786-4727. Submit letter of application indicating position number, with vita, statements of teaching philosophy and research goals, reprints, and other supporting documents plus the name, address, and telephone number of three referees. Search will remain open until the position is filled; however, the screening committee will begin reviewing applications on 3/10/94. UAA is an AA/EO Employer and Educational Institution. Women and Minorities are especially encouraged to apply. Must be eligible for employment under the Immigration Reform and Control Act of 1986.

IN IT FOR LIFE.

Good science is born of creative freedom.

At Genetics Institute, we provide a work environment which many have described as entrepreneurial. Ideas flow freely, open discussion is encouraged. We attract top people, and provide them with the kind of culture that keeps them here. All this we do, because good science leads to good products. And when we give our people the room to improve science, we can truly improve lives.

DISCOVERY RESEARCH

Cellular Immunology/Cytokine Discovery (4 Positions)

Our Department is seeking two Ph.D-level and two BS/BA-level scientists to carry out various functions.

One Ph.D must have 3-5 years' postdoctoral experience in T-cell function studies (including T-cell activation, proliferation, lymphokine production and cytolytic activity) to work in our cytokine discovery group. An interest in establishing novel cellular assays is essential; experience with molecular biology is a plus. The other Ph.D must have several years' postdoctoral experience in immunology and molecular biology, along with a strong interest in cytokines and cytokine receptor signalling. **Job Code: 94-001-S**

The desired BS/BA scientists must both be experienced in cellular immunology. The first individual will be highly motivated, able to perform a variety of T lymphocyte assays and have extensive experience in the cloning and long-term culturing of T lymphocytes. The second individual will have experience with T-cell function studies, cloning and long-term culturing, along with some experience and/or interest in molecular biology. **Job Code: 94-002-S**

Please forward your resume, specifying position of interest and corresponding job code, to Human Resources Department, Genetics Institute, Inc., 87 CambridgePark Drive, Cambridge, MA 02140. Genetics Institute is dedicated to building strength through diversity.

GENETICS INSTITUTE®

Harnessing the Body's Power to Heal™

ENZON, Inc.

Enzon's core technology enhances the delivery of protein-based drugs and provides vides a unique opportunity for the innovative and imaginative professionals who participate in the development.

Real Life: ACHIEVEMENTS

CARDIOVASCULAR PHARMACOLOGIST

The successful candidate will manage and work within an established research group to utilize new or existing models to evaluate the pharmacological activity and potential efficacy of novel oxygen-delivery agents derived from Enzon's proprietary technology research. Supervision of degreed research scientists and technicians will be required. Ph.D., M.D., or D.V.M. 8-10 years. ***Dept. CP***

TUMOR BIOLOGIST

The successful candidate will manage and work within an established research group to develop a set of in vitro and in vivo tumor models to evaluate the potential efficacy of novel anticancer therapies using biotechnology compounds derived from Enzon's proprietary technology research. Supervision of degreed research scientists and technicians will be required. Ph.D., M.D., or D.V.M. 6-8 years. ***Dept. TB***

Helping to shape Enzon's future directions through close interaction with other disciplines within Research and Development and corporate business units will be expected. With a high value on creativity, we're prepared to offer you a competitive compensation and benefits package. Please send your resume, indicating department and salary history, to: ***Human Resources, Enzon, Inc., 40 Kingsbridge Road, Piscataway, NJ 08854.*** *EOE.*

Faculty Position in the Bone Marrow Transplantation and Gene Therapy Programs

St. Jude Children's Research Hospital

St. Jude Children's Research Hospital, a private research institute, is engaged in a major expansion of its clinical and scientific activities in gene therapy. The Division of Bone Marrow Transplantation in the Department of Hematology/Oncology, forms a major component of the program in gene therapy and now has available a faculty position at the level of Assistant/Associate Member (Assistant/Associate Professor). The BMT division currently undertakes 50 allogeneic and autologous transplants per year and has an active, externally funded research interest in gene therapy and immunobiology. The individual appointed would be expected to participate in the clinical program and establish a research program related to the interests of the division. Candidates should have completed fellowship training in hematology/oncology, preferably have post-fellowship clinical experience in allogeneic and autologous bone marrow transplantation, a research record and be Board certified or equivalent. The candidate will be encouraged to form collaborative interactions with other members of the gene therapy program in Hematology/Oncology, Biochemistry, Tumor Cell Biology, Virology and Molecular Biology, Immunology and Pharmacology. In addition to new facilities and excellent start-up funds, salaries are nationally competitive and a generous benefits package is included. A strong institutional commitment to its faculty ensures stability in program development and continuity of research activities. Reply with curriculum vitae to: **Malcolm K. Brenner, MB, PhD, FRCP, MRCPath or William M. Crist, MD, Department of Hematology/Oncology, 332 N. Lauderdale, Memphis, TN 38101.**

Equal Opportunity/Affirmative Action Employer

Life Science Opportunities

Bio-Rad Laboratories, a leading biotechnology company located in the San Francisco Bay Area has an opening for an experienced professional in our process chromatography group.

Marketing Specialist

We require a BS/MS in life sciences with previous industrial experience in either transfer of techniques from R&D into process or in process development/scale chromatography. GMP and regulatory experience a plus. Excellent communication and presentation skills a must. Some travel required.

For consideration, please send your resume and salary history to: Bio-Rad Laboratories, 2000 Alfred Nobel Dr., Dept. 080, Hercules, CA 94547. An Equal Opportunity Employer MFDV.

BIO-RAD

Bio-Rad Laboratories

EXECUTIVE DIRECTOR

The California Academy of Sciences invites applications and nominations for the position of Executive Director.

The Academy, founded in 1853, is a natural history museum, planetarium, aquarium and research institute located in Golden Gate Park, San Francisco. The Academy's budget is $13 million, with a full and part-time staff of over 350 and an extensive volunteer program. Research, staff and collections focus in the areas of Anthropology, Aquatic Biology, Botany, Diatoms, Entomology, Geology, Herpetology, History of Science, Ichthyology, Invertebrate Zoology, Mammalogy, Ornithology and Paleontology. The Academy has an extensive library, as well as permanent and temporary exhibits. A wide spectrum of educational and outreach programs are offered for all age groups, attracting over 1.3 million visitors per year.

The Executive Director, who reports directly to the Chairman of the Board of Trustees, must possess the highest personal integrity and be able to lead the Academy with vision, creativity and decisiveness. Involvement with worldwide and local communities, as well as close interaction with Trustees and Staff will be required in defining and articulating the Academy's public image, programs and outreach. Leadership is required in the areas of large scale project planning and funding.

Qualifications include: Successful management of a similar size budget and staff, a proven track record in funding development in the public and private sectors, ability to lead an institution creatively and successfully in changing times, to communicate effectively internally and externally and to provide clear direction to Trustees and Staff. The successful candidate, who may have a similar non-profit, scientific or business background, must be committed to the articulation and advancement of scientific education and research.

Applications, including letter of interest and resume, should be sent to: **Dept. CAS/CF, P.O. Box 2330, San Francisco, CA 94126.** The California Academy of Sciences is an equal opportunity employer.

POSITIONS OPEN

POSTDOCTORAL RESEARCH ASSOCIATE

Available spring 1994 to study regulation of transcript abundance in developmental stages of the protozoan parasite *Leishmania*. Candidates should have a related Ph.D. and experience with pathogenic organisms and/or molecular biology preferred. Send curriculum vitae, names of three references, and copies of recent publications to: **Dr. John C. Meade, Department of Microbiology, University of Mississippi Medical Center, 2500 North State Street, Jackson, MS 39216–4505.** Applications will be accepted until April 15, 1994. *Equal Opportunity Employer, M/F/D/V.*

HISTOLOGIST FOR ALZHEIMER RESEARCH PROGRAM

Department of Neurology, University of Kuopio, Kuopio, Finland, is seeking a postdoctoral fellow with experience in histology of human or nonhuman primate brain. We need an innovative scientist with skills in immunohistochemistry and *in situ* hybridization techniques in our Alzheimer Research Program supported by the Academy of Finland. The Neuroscience Center of 50 people in Kuopio has excellent facilities, up-to-date equipment, and experience of 15 years in Alzheimer research. Send curriculum vitae, statement of your research interests, list of publications, three letters of reference, by March 31, 1994, to: **Professor Paavo Riekkinen, Department of Neurology, University of Kuopio, P.O. Box 1627, 70211 Kuopio, Finland.**

POSTDOCTORAL POSITION

Large pharmaceutical company offers to an English-speaking Ph.D. a one to two-year postdoctoral position, in Montpellier, France, to develop the Patch Clamp Technique in cardiac and vascular cells.

The candidate should have a background in Physiology, Pharmacology and good experience in Patch Clamping, in the Cardiovascular Field, and preferably Single Channel Recording. A knowledge of cell culture will be an advantage but is not essential. Mastery of the French language would be useful but is not mandatory.

Send applications, including a detailed résumé, a list of publications and the name of two possible references to:

Beatrice Kimmel
1899 L Street, N.W., Suite 500
Washington, D.C. 20036

BIOCHEMISTRY POSTDOCTORAL POSITION available immediately to study the structure and function of mast cell proteinases. Experience with protein purification, HPLC, UV/Vis spectroscopy, protein characterization and protein chemistry desired. Well-equipped laboratory in an active department, located in beautiful, mountainous northeastern Tennessee. Send curriculum vitae including 3 references that can be reached by telephone and FAX to: **Dr. David A. Johnson, Professor and Interim Chair, Department of Biochemistry, College of Medicine, East Tennessee State University, Johnson City, TN 37614–0581. Telephone: (615) 929-6273; FAX: (615) 461-7040.** *East Tennessee State University is an Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL POSITION in lung toxicology/cell biology available immediately to study cellular and subcellular events involved in the inflammatory and permeability changes in the airways following exposure to air pollutants. The studies utilize innovative *in vivo* and *in vitro* approaches to examine biological effects. Participation in studies aimed at analyzing cytokines, cell adhesion molecules, cytoskeleton and epithelial injury is expected. Experience can be drawn from immunocytochemical, morphological and biochemical procedures. This position is funded by a grant from NIEHS, with a starting stipend of $25,000. Send curriculum vitae and names of three references to: **Deepak K. Bhalla, Ph.D., Department of Community and Environmental Medicine, University of California, Irvine, Irvine, CA 92717–1825. FAX: (714) 856-4763; Telephone: (714) 856-4761.** *UCI: Rooted in education, enriched by diversity.*

POSITIONS OPEN

POSTDOCTORAL POSITION: Transport and Delivery of Antisense Oligonucleotides. A position is available to work on the development of antisense oligonucleotides as anti-tumor drugs. Experience in cell biology/drug transport/endocytosis or in pharmaceutics/drug delivery is essential. Send curriculum vitae and names of three references to: **Dr. R.L. Juliano, Department of Pharmacology, UNC-CH, Chapel Hill, NC 27599–7365.** *An Equal Opportunity/Affirmative Action Employer.*

Karolinska Institute
Department of Medical Biochemistry and Biophysics

POSTDOCTORAL POSITION
5-Lipoxygenase, Regulation of Gene Expression and Enzyme Activity

Leukotrienes are mediators of inflammation, particularly recognized regarding hypersensitivity reactions as asthma. 5-lipoxygenase, catalyzing two steps in the biosynthesis of this group of eicosanoidsis, is an enzyme of key interest. We pursue further studies of the regulation of 5-lipoxygenase at two levels, the gene expression and the enzyme activity. The applicant should emphasize one of these aspects.

A position as postdoctoral fellow is available, for two years with the possibility of extension, starting in the fall of 1994. Send your curriculum vitae, representative reprints and the names of two referees to: **Prof. Bengt Samuelsson or Assistant Prof. Olof Rådmark, Department of Medical Biochemistry and Biophysics, Karolinska Institute, S-17177 Stockholm, Sweden.**

POSTDOCTORAL POSITION—Available January 1994 in the Department of Cell Biology & Anatomy, Texas Tech University Health Sciences Center (TTUHSC). Projects involve molecular and cell biological analysis of β-galactoside binding proteins in implantation of mammalian embryos. Experience in protein chemistry, cell adhesion molecules, or immunochemical techniques are desired. Please send curriculum vitae to: **Texas Tech University Health Sciences Center, Office of Human Resources, 3601 4th Street, Lubbock, TX 79430.** *TTUHSC is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL POSITION IN BIOPHYSICAL CHEMISTRY

A postdoctoral position is available in an AT&T Bell Labs/Princeton University collaboration employing chemically patterned surfaces to study biological self-assembly, e.g., of microtubules and protein crystals. Experience in surface and/or protein chemistry is desirable. Please send curriculum vitae and references to: **Dr. M. Seul, AT&T Bell Laboratories, 600 Mountain Avenue, 1D-470, Murray Hill, NJ 07974** or **Prof. S. Leibler, Department of Molecular Biology, Princeton University, Princeton, NJ 08544.**

POSTDOCTORAL POSITION

Position available in the laboratory of Dr. John Krupinski at the Weis Center for Research in Danville, Pennsylvania. The successful applicant will have a Ph.D. in biochemistry, cell biology, or pharmacology with experience in molecular biology. The project will involve the expression and characterization of novel forms of adenylyl cyclase (see *J. Biol. Chem.* **267**:24858–24862). Emphasis will be placed on determining those structural features of the adenylyl cyclases responsible for mediating unique physiological effects. The Weis Center is a well-equipped, modern research facility in a semi-rural environment. Competitive salary and fringe benefits are available. Please send curriculum vitae with the names and telephone numbers of three references to: **Geisinger Human Resources (JK), 100 North Academy Avenue, Danville, PA 17822–1529.** *Equal Opportunity Employer, M/F/H/V.*

The Netherlands Organization for Scientific Research (NWO) has been established by act of law. The organization's objective is to promote scientific research. It employs approximately 4.000 researchers. Most of these work at Dutch universities, the rest at institutes of the NWO-foundations. One of these foundations is the Netherlands Foundation for Research in Astronomy (NFRA).

The NFRA is searching for the right individual to fill the position of

Head of Research and Development Laboratory

The organisation: NFRA is a non-profit research organisation dedicated to the study of structure, evolution and the physics of matter in the Cosmos.

We are based at our own institute located outside the village of Dwingeloo in the north-central Netherlands.
In total we have 105 employees. The R&D laboratory itself consists of 30 people, most of whom work in specific project teams.

Our program involves a mix of activities:
- We operate modern observational facilities for the national and international astronomical communities. Our primary facility is the large synthesis radio telescope located at Westerbork. This telescope is one of the largest of its kind in the world, and observes the radio sky both stand-alone and as part of the European Very Long Baseline Interferometry Network. We also participate via international collaborations in operating optical telescopes on the island of La Palma, Canary Islands, and a 15-m sub-millimeter radio telescope on the island of Hawaii, USA.

- We apply technology to create new observational capabilities for our telescopes. Our primary strategy for competing in the international astronomical arena is continually to develop innovative instruments and observing techniques. We specialize in the following technologies:
  (i) low-noise receiver systems at HF and microwave frequencies;
  (ii) high speed massively parallel, digital signal processing systems, incorporating ASIC VLSI chips of our own design; and
  (iii) data reduction and analysis algorithms implemented using the techniques of modern software engineering.

- We support specific research projects, generally in collaboration with astronomers at Dutch universities.

We are currently engaged in a major upgrade of the synthesis radio telescope at Westerbork that is scheduled to be completed in 1997. It is our ambition to play a leading role in the development of the next generation of radio telescope, with as primary scientific motivation the observation of material during the earliest epochs of the Universe.

Requirements:
The succesful candidate will have:
- proven expertise in one of the main fields of technical R&D at NFRA, or in a closely related field;
- the ambition to make a significant contribution to fundamental science through application of technology;
- proven leadership skills in the management of people;
- experience with modern techniques of project management; and
- the potential to grow into an effective manager of high profile international projects.

He/she will of course:
- have a university degree, preferably a PhD, in electrical engineering, physics or other relevant area, or the equivalent in experience;
- be a good organizer, communicator and motivator of people;
- be a team player, especially in his/her role as member of the Management Team of the Foundation; and
- speak and write in the Dutch and English language.

Salary and conditions:
Remuneration and conditions of employment will be based on age and experience according to Dutch civil service regulations. The appointment will be with the Netherlands Organization for Scientific Research. Location of work will be the NFRA Institute's Dwingeloo laboratory. Following an initial probationary period, employment will become permanent. Appointment as Head of R&D Laboratory, however, will be for a period of five years with the possibility of extension.

Further information:
For additional information concerning the NFRA in general and this position in particular, please contact either professor dr. Harvey R. Butcher, Director, Netherlands Foundation for Research in Astronomy, P.O. Box 2,
7990 AA Dwingeloo, email HButcher@nfra.nl;
or dr. Wilfried Boland, Deputy Director, same address,
email Boland@nfra.nl; telephone (31)(0)5219-7244.

Application:
Written application for this position should be made before 1 April 1994 to Personnel Department, Netherlands Foundation for Research in Astronomy, P.O. Box 2,
7990 AA Dwingeloo, the Netherlands. Please refer to
Head of Research and Development Laboratory,
Vacancy "ASTRON 94/01".

Women in particular are invited to apply.

NWO

POSITIONS OPEN

POSTDOCTORAL POSITION

A postdoctoral position in Pharmacology is available. Candidates should have a Ph.D. in either medicinal chemistry, biochemistry, or pharmacology to join a research team to study new CNS receptor tracers for functional imaging with PET and SPECT. Major emphasis will be on using products of molecular biology to characterize new ligands. Experience in *in vitro* receptor binding assays, autoradiography, neuroanatomy and radiochemistry will be helpful. Send résumé to: **Dr. Hank F. Kung, Department of Radiology and Pharmacology, University of Pennsylvania, Room 305, 3700 Market Street, Philadelphia, PA 19104. (Internet: kunghf@pobox.upenn.edu).** *Equal Opportunity Employer.*

POSTDOCTORAL POSITION (AVAILABLE MAY 1994)

The Kellogg Biological Station (KBS) Long Term Ecological Research (LTER) project seeks a postdoctoral associate to join the LTER to examine patterns and consequences of biological diversity on ecosystem-processes in an agricultural landscape. The focus will be on linking, through GIS and modeling, ecosystem processes and community-level studies at the site to local, landscape and regional patterns of biological diversity. Applicants should hold a Ph.D. in ecology, soils science, forestry or related field. Experience with GIS and ecosystem models is desirable. This position will be funded by the KBS LTER though the candidate will be encouraged to develop additional collaborative projects.

Send curriculum vitae, statement of research interests, names, addresses and telephone numbers of three references by March 15, 1994, to: **Dr. Katherine L. Gross, Acting PI, KBS LTER, Kellogg Biological Station, Michigan State University, 3700 East Gull Lake Drive, Hickory Corners, MI 49060. (616) 671-2235 (Telephone), (616) 671-2104 (FAX), KGross@kbs.msu.edu.**

Michigan State University's Kellogg Biological Station is an Equal Opportunity Employer and encourages applications from women and minorities.

POSTDOCTORAL FELLOWSHIPS

Two positions available in laboratory investigating the molecular basis of interactions between enteropathogenic *E. coli* and epithelial cells. Strong background in molecular cloning techniques required. Experience in protein purification and mammalian cell transfection preferred. Send curriculum vitae and names of three references to: **Dr. Michael Donnenberg, Division of Infectious Diseases, University of Maryland School of Medicine, 10 South Pine Street, Baltimore, MD 21201.** *An Affirmative Action/Equal Opportunity Employer.*

U.S. DEPARTMENT OF AGRICULTURE SCIENCE FELLOW POSITION IN MOLECULAR BIOLOGY WITH D.V.M. AND/OR Ph.D.

The U.S. Department of Agriculture, Animal and Plant Health Inspection Service announces a unique scientific fellowship dedicated to recombinant expression and utilization of diagnostically useful proteins derived from animal disease pathogens of international importance.

Requirements: Candidate will have competence in all standard molecular biological techniques of nucleic acid and protein analysis and specific experience with bacterial, insect, yeast, and/or mammalian gene expression systems. Outstanding candidate will have a D.V.M. and/or Ph.D. degree in the biological sciences with specific experience in recombinant protein expression.

Work Environment: The science fellow will work with teams of classical and molecularly oriented animal health professionals at USDA's National Veterinary Services Laboratories located at Orient Point, New York and Ames, Iowa. World class facilities, equipment, and support will be provided, as will the opportunity for interaction with USDA's Agricultural Research personnel and nearby university scientists at both locations. Publication will be supported and expected.

Position Tenure: Position funded for 2 years with possibility extending additional 2 years.

Application Information: Call (612) 370-2200 for **Announcement #AG-VS-062** and necessary application forms. Applications **must be postmarked by March 18, 1994**. For general information on the Science Fellows Program call 1-800-762-2738. *U.S. Citizenship is REQUIRED. The Federal Government is an Equal Opportunity Employer.*

POSTDOCTORAL FELLOW

Postdoctoral molecular biologist or biochemist position is available to study molecular mechanisms of angiogenesis, or heat shock gene expression. Experience in gene cloning, vector construction, and DNA sequencing required. Send curriculum vitae and names of three references to: **Yong J. Lee, Ph.D., Radiation Oncology Research Laboratories, William Beaumont Hospital, 3601 West Thirteen Mile Road, Royal Oak, MI 48073–6769.** *William Beaumont Hospital is an Equal Opportunity Employer.*

GRADUATE ASSISTANTSHIPS IN MOLECULAR BIOLOGY, BIOCHEMISTRY AND BIOPHYSICS. Several positions are available in the Department of Molecular Biology and Biochemistry, Wesleyan University, Middletown, Connecticut. Departmental research interests emphasize regulation of gene expression in embryogenesis and development; heat-shock response and cellular regulation of iron metabolism; biophysics of protein–nucleic acid interactions; tissue differentiation and regulation of collagen gene expression; molecular genetics and regulation of protein secretion; DNA replication; structure and function of chromosomal proteins, yeast genes homologous to protein kinase oncogenes; mechanisms of action of thiamine and ascorbic acid; nuclear magnetic resonance spectroscopy and computer modeling. All students receive 12-month stipends, tuition remission, good fringe benefits and dependency allowance, if applicable. Opportunities to teach. Write: **Director of Graduate Admissions, Department of Molecular Biology and Biochemistry, Wesleyan University, Middletown, CT 06459–0175** or call **(203) 344-8544, extension 2796**.

POSTDOCTORAL RESEARCH POSITION IN MOLECULAR BIOLOGY/ PROTEIN CRYSTALLOGRAPHY

Position is available immediately to work on high level of expression of an array of enzymes involved protein/lipid interactions, specifically lipases and thioesterases. Genes coding for these enzymes have already been cloned, sequenced and subcloned. In some cases the X-ray structures of the respective proteins have been solved. The project is aimed at systematic study of structure/function relationships using combined techniques of molecular biology and crystallography. We require a self-motivated person with a Ph.D. in molecular biology and a maximum of two years of productive postdoctoral experience. Expertise in expression systems, mutagenesis techniques and protein purification is essential. Excellent opportunities exist for an intensive introduction to protein crystallization and structure analysis, as well as for interactions with other scientists of the MRC Group in Protein Structure and Function and the Protein Engineering Center of Excellence. No prior experience in crystallography is necessary. Excellent facilities including dedicated technical assistance are available. Send résumé and names, addresses and FAX numbers of three referees to: **Dr. Zygmunt S. Derewenda, Department of Biochemistry, University of Alberta, Edmonton T6G 2H7; FAX: (403) 492-0886; Telephone: (403) 492-2136.** *The University of Alberta is committed to the principle of equity in employment. The University encourages applications from aboriginal persons, disabled persons, members of visible minorities and women.*

POSTDOCTORAL ASSOCIATE

Postdoctoral position available June 1994 to study signal transduction in the epithelial cell tight junction. Molecular biology, cell culture, immuno-techniques and microscopy experience desirable. To apply please send curriculum vitae and references to: **James M. Anderson, M.D., Ph.D., Internal Medicine and Cell Biology, 1080 LMP, Yale School of Medicine, 333 Cedar Street, New Haven, CT 06520–8019**.

RESEARCH/PLANT GENETICS: RESEARCH ASSOCIATE. Position immediately available for Ph.D. in Plant Sciences or related area with experience in successful transformation of any maize genotype using any gene. Responsibilities will be to collaborate with scientists at MSU and in Costa Rica in genetic transformation of maize. Salary: $25,000 per year. **Position Number AG-1383**. Apply to: **Dr. Mariam Sticklen, 206 Pesticide Research Center, Michigan State University, East Lansing, MI 48824–1311; FAX: (517) 353-5598, Telephone: (517) 353-9140** by March 1, 1994. Late submissions considered if suitable candidate pool is not identified by deadline.

RESEARCH ASSOCIATE

Develop techniques to study seismic source, propagation path and site effects. Develop methods for validating the coda method for estimating the weak motion amplification factor. Develop methods to calculate the nonlinear site response for soil characterized by the shear wave velocity distribution. Requirement: Ph.D. in Geological Sciences. Ability to program on VMS and UNIX systems using FORTRAN, PASCAL and C. Background in interpreting and analyzing seismic data and ability to install and operate portable seismic instrument REFTEK. Salary: $605.76 per week; 40 hours per week, Job/Interview site: Los Angeles, California. Send this advertisement and a résumé to: **Job # JP33679, P.O. Box 269065, Sacramento, CA 95826–9065.**

RESEARCH POSITION DEPARTMENT OF PSYCHIATRY

Mount Sinai School of Medicine seeks an individual with an interest in molecular genetics of psychiatric disease. The successful candidate will possess a Ph.D. and/or M.D. degree and documented experience in YAC construction and positional cloning. The ability to function independently within a large interactive group of both basic and clinical scientists is essential. Faculty rank and salary commensurate with experience.

Interested individuals should send curriculum vitae, a brief letter describing research interests and three letters of recommendation to: **Larry D. Altstiel, M.D., Ph.D., Department of Psychiatry, Mount Sinai School of Medicine, Box 1229, One Gustave L. Levy Place, New York, NY 10029–6574. FAX: (212) 831-1947.** *An Equal Opportunity Employer.*

PULMONARY PHARMACOLOGIST

A **PULMONARY PHARMACOLOGIST** is required who will be responsible for the development of novel anti-asthma drugs from the early research stage to clinical trials. The candidate should have several years of experience in the pharmaceutical industry in the area of anti-asthma drug development. Experience and knowledge of drug filing for IND and NDA with FDA is required. Salary will be $50,000 to $70,000 per annum plus benefits depending on experience. Please send résumé with the names of three references to: **Personnel Department, InflaZyme Pharmaceuticals Ltd., 800-777 West Broadway, Vancouver, B.C., Canada V5Z 4J7.**

BIOCHEMIST/MOLECULAR BIOLOGIST. The National Heart, Lung, and Blood Institute is recruiting for a senior postdoctorate (salary range $37,500 to $46,500, depending on experience) to study ADP-ribosylation reactions in mammalian cells. The candidate should have broad experience in molecular biology, biochemistry and cell biology. Contact: **Dr. Joel Moss, Laboratory of Cellular Metabolism, Building 10, Room 5N307, 9000 Rockville Pike, National Institutes of Health, Bethesda, MD 20892.** *U.S. citizenship is required. NIH IS AN EQUAL OPPORTUNITY EMPLOYER.*

SENIOR SCIENTIST— COAGULATION REAGENT DEVELOPMENT

An immediate growth opportunity exists for an experienced person in the area of product development of coagulation reagents. The incumbent should have three to five years of industrial experience in IVD product development and be a self-starter. Knowledge of FDA cGMP and 510(k) regulations is required. The firm offers competitive salaries and benefits and enjoys an attractive midwestern location with good housing and schools. All inquiries will be held in confidence and should be addressed to: **Box 46, Science Classified Advertising, 1333 H Street N.W., Room 814, Washington, DC 20005**.

ASSISTANT RESEARCH SCIENTIST—to study effects of post-translational modification on signal transduction by fatty acid binding and sterol carrier proteins, protein structure, and protein-lipid interactions. Ph.D. or equivalent in Biochemistry, Pharmacology, or related field. Experience in phosphorylation and cell culture desirable. Send curriculum vitae and 3 letters of reference to: **Dr. F. Schroeder, Department of Physiology and Pharmacology, Texas Veterans Medical Center, Texas A&M University, College Station, TX 77843–4466.** *An Equal Opportunity/Affirmative Action Employer.*

ANNUAL REPORT OF MIZUTANI FOUNDATION RESEARCH GRANT FOR GLYCOSCIENCE

In 1993, Mizutani Foundation for Glycoscience received 326 research grant applications from 31 countries. After a careful evaluation for scientific merit, potentiality, and feasibility, the foundation selected 22 of the applications (in which two* are collaborative studies) and awarded them a total of 150,000,000 yen. The winners of this year's grants are (in alphabetical order):

1) Dr. Bremer, Eric G.; Chicago Inst. for Neurosurgery & Neuroresearch, USA; "Ganglioside GM3 inhibition of the EGF receptor"
2) Dr. Crocker, Paul R.; University of Oxford, John Radcliffe Hospital, UK; "Molecular characterization of sialoadhesins and their carbohydrate ligands"*
3) Dr. Eichinger, Daniel J.; New York University Medical Ctr., USA; "Structure/function study of trypanosome trans-sialidase"
4) Dr. Endo, Masahiko; Hirosaki University, Japan; "Glycotechnological studies on the elongation of glycosaminoglycan chains"
5) Dr. Falck, John Russell; Univ. Texas Southwestern Medical Ctr. at Dallas, USA; "Synthesis of inositol phosphates, glycosides, and phospholipids"
6) Dr. Freeze, Hudson H.; La Jolla Cancer Research Foundation, USA; "Mapping glycosyl transferases in the functional Golgi"
7) Dr. Fukuda, Minoru; La Jolla Cancer Research Foundation, USA; "Molecular identification of L-selectin ligands"
8) Dr. Furukawa, Koichi; Nagasaki University, Japan; "Regulatory mechanism of the GM2/GD2 synthase gene expression"
9) Dr. Galili, Uri; The Medical College of Pennsylvania, USA; "Reactive sites and regulation of primate alpha 1, 3 galactosyltransferase"
10) Dr. Gross, Kenneth C.; USDA, Agricultural Research Service, Beltsville, MD, USA; "Biological activity of unconjugated N-glycans in ripening tomato fruit"
11) Dr. Inoue, Yasuo; University of Tokyo, Japan; "Commonality and function of N-glycanase-catalyzed de-N-glycosylation of glycoproteins"
12) Dr. Ito, Makoto; Kyushu University, Japan; "Homeostatic regulation of cell-surface glycosphingolipids"
13) Dr. Joziasse, David H.; Vrije Univ., The Netherlands; "Fucosyltransferases: Three-dimensional structure and substrate specificity"
14) Dr. Kelm, Soerge; Christian Albrechts University at Kiel, Germany; "Molecular characterisation of sialoadhesins and their carbohydrate ligands"*
15) Dr. Kornfeld, Stuart A.; Washington University School of Medicine, USA; "Phosphotransferase recognition domain on the lysosomal hydrolase cathepsin H"
16) Dr. Kreibich, Gert; New York University Medical Ctr., USA; "Function and structural organization of the subunits of the oligosaccharyl transferase"
17) Dr. Lindahl, Ulf; Uppsala University, Sweden; "Enzymes with dual catalytic activities in the biosynthesis of heparin/heparan sulfate"
18) Dr. Linhardt, Robert J.; University of Iowa, USA; "Chemo-enzymatic synthesis of heparin and oligosaccharides from chiral synthons"
19) Dr. Marcus, Donald M.; Baylor College of Medicine, USA; "Antibodies against gangliosides in motor neuron diseases"
20) Dr. Nyholm, Per-Georg; University of Göteborg, Sweden; "Conformation and recognition of carbohydrates at the cell surface"
21) Dr. Olwin, Bradley Bruce; Purdue University, USA; "Role of FGF receptor heparan sulfate binding domain in FGF signaling"
22) Dr. Suzuki, Yasuo; University of Shizuoka, Japan; "Sialyl-sugar chain recognition by influenza viruses during their evolution"

Mizutani Foundation for Glycoscience: Sen-i Kaikan, 1-11, Nihonbashi-honcho 3-chome, Chuo-ku, Tokyo 103, Japan. The method of application for the next year grants will be announced in this Journal in March, 1994.

Executive Director

GLOBAL CHANGE IGBP

International Geosphere-Biosphere Programme (IGBP)

ICSU

The International Council of Scientific Unions (ICSU) invites applications for the position of Executive Director of the International Geosphere-Biosphere Programme. The IGBP is a non-governmental international research programme, organized under the aegis of ICSU, dealing with the causes and effects of global environmental change. There are currently about 70 IGBP National Committees and the national research expenditure for component parts of the programme is estimated to reach ca. US$500 million annually. The IGBP, together with the World Climate Research Programme (WCRP) and the Human Dimensions of Global Environment Change Programme (HDP) provide the focused international scientific effort needed to reduce uncertainties relating to natural and man-made global changes.

Under the direction of the Scientific Committee for the IGBP (SC-IGBP) and its Officers, the Executive Director will be responsible for guiding the development and implementation of the programme. In particular, the Executive Director will:

- facilitate achievement of IGBP's mandate by the international scientific community
- collaborate with the IGBP Core Projects and Framework Activities to achieve maximum integration of the component parts
- ensure effective links between IGBP and other relevant research programmes,especially HDP and WCRP, as well as further strengthening links to the international policy community
- supervise the scientific, administrative and financial staff of the Secretariat (8-10 persons)

The successful candidate will

- have a distinguished international research reputation in a relevant natural science discipline
- be knowledgeable about the international global change research effort
- have experience of international scientific collaboration including both governmental and non-governmental organizations
- be prepared to conduct extensive travels to all parts of the world
- possess a complete command of written and spoken English; knowledge of other languages is an advantage

The Executive Director, appointed by ICSU for a 3-year period, renewable, will be an employee of the Royal Swedish Academy of Sciences in Stockholm, where the IGBP Secretariat is located. The position should be filled on 1 July, 1994 or as soon as possible thereafter. The salary is negotiable and will take due account of the experience and qualifications of the candidate and the costs and benefits of living in Stockholm.

Letters of application with a curriculum vitae and the names of three referees, should be received no later than 25 March 1994 by the Executive Director of ICSU, 51 boulevard de Montmorency, F-75016 Paris 16, France, Fax. +33-1-4288 8431. Further information on the IGBP and its Secretariat can be provided by either Professor Peter S. Liss, Chairman SC-IGBP, Tel. +44-603-59 25 63, Fax. +44-603-50 77 14 or Professor Thomas Rosswall, the current Executive Director, Tel. +46-8-16 64 48, Fax. +46-8-16 64 05.

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POST-DOCTORAL POSITIONS FOR CARDIOVASCULAR AND PULMONARY RESEARCH

Our Pharmaceutical Research Center has 2 post-doctoral training positions for scientific researchers having a PhD degree in the following fields :

☐ **Molecular and Cellular Biology-Pathophysiology of the vascular wall** (endothelial dysfunction, proliferation of vascular smooth muscle cells)

☐ **Electrophysiology of vascular smooth muscle,** in particular in the field of pulmonary circulation (function of the endothelial cells, interaction endothelium/smooth muscle, patch clamp).

If you are interested in one of these positions, for an expected 18 months duration, please write to **PUBLIVAL/1038**, 27 route des Gardes - 92190 MEUDON - FRANCE and add your CV and a photo

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CBT CENTRUM FÖR BIOTEKNIK

KAROLINSKA INSTITUTE
CENTER FOR BIOTECHNOLOGY (CBT)
NOVUM

Postdoctoral research positions in molecular biology of steroid/thyroid hormone recoptors

A couple of postdoctoral positions for work on the structure and function of steroid/thyroid hormone receptors as well as orphan receptors belonging to the same superfamily are available at the Center for Biotechnology, Novum, Karolinska Institute. The project involves state-of-the-art biochemical, molecular biological and cell biological approaches to understand the structure and function of these transcription factors.

The Center for Biotechnology (CBT) is situated at the South Campus of the Karolinska Institute, encompassing the Novum Research Center and Huddinge University Hospital. CBT has a staff of some 100 persons. Novum Research Center also contains the Center for Nutrition and Toxicology as well as the Center for Structural Biochemistry (with facilities for X-ray crystallography, NMR-spectroscopy, EM and molecular modelling).

The positions as postdoctors/research associates are initially for two years with possibilities for extension for up to four years. Preference is given to applicants with experience in molecular biology. Adequate laboratory resources will be provided.

Applications should be sent to Professor Jan-Åke Gustafsson, Center for Biotechnology, Karolinska Institute, Huddinge University Hospital, Novum, S-141 57 Huddinge, Sweden, together with CV, relevant publications and two recommendation letters.

GLAXO INSTITUTE FOR MOLECULAR BIOLOGY

Research at the Glaxo Institute in Geneva is directed towards the discovery of novel molecular mechanisms that can be used as drug targets to treat serious diseases. In particular, research is focused on the CNS, allergies and inflammatory conditions. We have an outstanding opportunity for a postdoctoral position as a

CELL CULTURE SCIENTIST

to work on large scale recombinant protein production.

The successful applicant will work in an interdisciplinary environment of molecular biologists, protein chemists and cell biologists, participating in different research projects requiring recombinant proteins. His primary duties will cover cell culture fermentations with emphasis on process optimization and development. Informal enquiries should be directed to Dr. Alain Bernard (arb0575@ggr.co.uk) or (++41 22 706 9642).

The Institute has a strong publication record, which the appointee will be expected to maintain. Attendance and presentation at scientific meetings is encouraged, as well as collaborative research with academic groups.

We offer an excellent compensation and benefits package and significant opportunities for career development. Geneva, situated in a very attractive part of Europe, has many advantages as a place to live. The Institute for Molecular Biology is part of the Glaxo group, one of the world's most successful healthcare companies which has an outstanding reputation for the quality of both its research and products.

If you are interested in this position, please send your curriculum vitae with a list of publications and the names of three referees to : Rita Gloor, Personnel Manager, Glaxo Institute for Molecular Biology S.A., 14, chemin des Aulx, 1228 Plan-les-Ouates, Switzerland.

EXPLORATION OF THE UNIVERSE
a challenge for Europe and its best scientists

The European Southern Observatory (ESO) is an intergovernmental organisation responsible for the most advanced astronomical research in the southern hemisphere. The eight Member States of the ESO are Belgium, Denmark, France, Germany, Italy, the Netherlands, Sweden and Switzerland.

As the prime European astronomical centre, ESO occupies a leading position in the world's scientific community. Its research work is of great value to many areas of science and industry. The Very Large Telescope (VLT) is a 400 MDM programme expected to be completed by the year 2000. It consists of four 8-metre telescopes to be built by European industry and installed in Chile. ESO is responsible for the conceptual design, engineering design and construction of some essential parts, as well as for the overall programme management.

These are exceptional opportunities for those seeking creative involvements in an international scientific environment. Applications are invited for the following positions, all initially based at the ESO headquarters in Garching near Munich, Germany. Transfer or extended stays at the observatory in La Silla, Chile, will be required at a later stage.

ASTRONOMER (GERMANY) (ref. ESD206)

Profile: applicants should have a Ph.D in Astronomy or its equivalent and several years experience in quantitative analysis of high-quality imagery and/or spectroscopy. An excellent publication record will reflect their achievements in this field. The ability to provide scientific input to the work of technical staff is essential and knowledge of optical instrument design and/or CCDs will be an asset.

Responsibilities: ESO is currently forming the team which will be responsible for the operation of the New Technology Telescope (NTT) and the upgrade of its control system to Very Large Telescope (VLT) standards.The successful candidate will be an NTT team member whilst spending 50% of his/her time on a significant programme of personal research. In close collaboration with other NTT team members, the MIDAS group and the ESO science archive, he/she will develop and implement a calibration plan and on-line calibration utilities for the ESO Multi-Mode Instrument (EMMI) and the Superb Seeing Imager (SUSI) as well as supervising their remote observing activities. He/she will assist the NTT team leader in all matters, especially coordination between Garching and La Silla.

Location and duration: the position is based at Garching near Munich in Germany with regular visits to the La Silla Observatory in Chile. This is a tenure track position which is normally offered for a period of 3 years, renewable for a second 3 year period. Tenure may be granted during the second term of the contract.

ASTRONOMER (CHILE) (ref. CAS201)

Profile: applicants should have a Ph.D in Astronomy or its equivalent and several years experience in quantitative analysis of high-quality imagery and/or spectroscopy. An excellent publication record will reflect their achievements in this field. The ability to provide scientific input to the work of technical maintenance staff is essential and knowledge of optical instrument design and/or CCDs will be an asset.

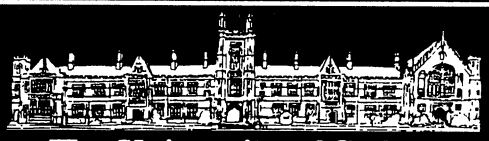
Responsibilities: ESO is currently forming the team which will be responsible for the operation of the New Technology Telescope (NTT) and the upgrade of its control system to Very Large Telescope (VLT) standards. The successful candidate will be an NTT team member whilst spending 50% of his/her time on a significant programme of personal research. He/she will regularly check the performance and quantitative calibration of the NTT, the ESO Multi-Mode Instrument (EMMI) and the Superb Seeing Imager (SUSI), provide meaningful feedback to the technical maintenance staff and assist visiting astronomers with their use.

Location and duration: the position is based at the La Silla Observatory, Chile. This is a tenure track position which is normally offered for a period of 3 years, renewable for a second period of 3 years. Tenure may be granted during the second term of the contract.

Remuneration for all these posts will be commensurate with background, experience and family status. It will be compatible with the salaries paid by intergovernmental organisations.

Although preference will be given to nationals of ESO Member States, this should not discourage suitably qualified applicants from other countries from applying. Positions are open to suitably qualified women and men. It is essential that all candidates have an excellent command of English. A knowledge of French or German would be an asset.

Applications with a brief c.v., including 3 letters of reference (no supporting documentation unless requested) should specify the job reference and be submitted before March 15, 1994 to: Personnel Administration and General Services, European Southern Observatory, Karl-Schwarzschild-Strasse 2, D-85748 Garching near Munich, Germany. Tel: (89)320.06.219 or (89)320.06.438.



The University of Sydney
AUSTRALIA

Faculty of Science

Quantitative Fisheries Training Unit

SENIOR RESEARCH FELLOW

Fisheries Population Dynamics
(Fixed-term)

Reference. No: A48/01

An experienced fisheries scientist with PhD in relevant area is needed for a three year contract position (funded by Fisheries Research Development Corporation) to develop curricula and interactive teaching programs in population dynamics stock assessment, quantitative research and problem-solving techniques for Australian fisheries laboratories. Applicants must have experience in research in fisheries dynamics and skills in teaching and course-development. This exciting project is with the Institute of Marine Ecology. Appointment is subject to funding.

Salary: A$50,225 - A$57,913 per annum

POSTDOCTORAL FELLOW

Computing & Data Analysis
(Fixed-term)

24269

Reference. No: A48/02

A skilled statistician or computer scientist with PhD in relevant area is needed to develop software, data-bases and data-analyses for development of training courses in quantitative fisheries biology. This three year-position is funded by the Fisheries Research Development Corporation in association with the Institute of Marine Ecology. Appointment is subject to funding.

Salary: A$36,285 - A$38,950 per annum.

Membership of a superannuation scheme is a condition of employment for new appointees. If you are interested in applying and for further details about both positions please contact Professor A J Underwood on telephone (612) 692 2590, or fax (612) 692 0612.

Applications, quoting Reference No, including curriculum vitae and the names, addresses and phone nos of two referees to The Personnel Officer, Personnel Services (Team A)(K07), The University of Sydney, Australia NSW 2006 by **4 March 1994. Expressions of interest may be FAXED to Personnel Services on (612) 692 4316 by the closing date with the full application to follow by mail.**

Equal employment opportunity and no smoking in the workplace are University policies. The University reserves the right not to proceed with any appointment for financial or other reasons.

UNIVERSITY OF LEICESTER — MEDICAL RESEARCH COUNCIL

CENTRE FOR MECHANISMS OF HUMAN TOXICITY

Research Fellowships

Opportunities for Young Independent Scientists

The Centre for Mechanisms of Human Toxicity is an interdisciplinary research centre comprising the MRC Toxicology Unit and groups led by members of University staff. The remit of the Centre includes the investigation of specific toxicological problems, studies of underlying biochemical mechanisms of toxicity, and research in basic biology and chemistry that has the potential to contribute to studies of human toxicity. Our overall goal is to contribute to human health by improving risk assessment. Current work is concentrated in the following broad areas:

Chemical carcinogenesis; toxicology of cancer chemotherapeutic agents; mechanisms of cell death, neurotoxicology; immunotoxicology; metabolism.

There are two full-time research positions, available immediately for a fixed period of five years, intended to provide exceptional young scientists with the opportunity to establish their own research group for the first time. Salary will be on the Research and Analogous Grade IA or II scales (£12,828-£25,107). Some 'start-up' funds will be provided, but the successful applicants will be expected to obtain grant funding to support their work. The Centre is exceptionally well-equipped for work across a wide range of biology. Applications are invited from people with interests in any of the above areas. We are particularly keen to attract applications from people with interests in **Chemical toxicology/Biological chemistry** (Ref: RF94/1) or **Immunotoxicology/Immunology** (Ref: RF94/2).

Applications, including a curriculum vitae, list of publications and a short (2 page) research proposal, should be sent to **Professor G. C. K. Roberts, Director, Centre for Mechanisms of Human Toxicity, University of Leicester, Hodgkin Building, PO Box 138, Lancaster Road, Leicester LE1 9HN, UK,** to arrive by 18 March 1994. Preliminary enquiries are encouraged, and should be made to Professor Roberts (0533-525533, email: nmr@leicester.ac.uk) or Dr Simon Dyer (Resources Manager, 0533-525566, email: shd2@leicester.ac.uk).

Medical University of South Carolina

Vice President for Academic Affairs and Provost

The Medical University of South Carolina invites nominations and applications for the position of Vice President for Academic Affairs and Provost.

The Vice President for Academic Affairs is administratively responsible to the President for all academic matters. The position is responsible for the coordination of planning for education, research and clinical services. The deans of the six colleges, the directors of the academic support units and the Executive Director of the Medical Center report through this office to the President of the University. In the absence of the President, this individual acts as the chief executive officer.

The Medical University of South Carolina comprising six colleges, Dental Medicine, Graduate Studies, Health Professions, Medicine, Nursing, and Pharmacy, as well as the University Medical Center, is the core of the state's largest medical complex. The campus, located in the heart of Charleston, occupies over 50 acres and 65 buildings. MUSC has a $700 million operating budget, over 8,000 employees, over 800 faculty members, and enrolls 2,300 students with 800 interns and residents.

Through affiliations and special programs, the Medical University coordinates the health education activities of numerous regional hospitals and provides opportunities for its students to acquire training in various community settings.

Qualifications preferred. Advanced degree. Demonstrated achievement in a scholarly field. Record of accomplishment in a leadership position at an academic health sciences center. Awareness and appreciation of academic values that are central to such an institution. Ability to represent the university effectively in external forums.

The Vice President for Academic Affairs will be an active leader in the development and advancement of the MUSC mission. It is expected that the candidate will be a visionary leader who is committed to the ideals of collegiality. In doing so this individual will have the capacity to value the importance of all six colleges and each unit of the University.

Applicants should submit a current curriculum vitae and a letter addressing their interest and suitability for the position. The position is available beginning July 1, 1994. Applications will be accepted until a candidate is chosen.

Dr. Thomas G. Basler, Chair
Search Committee for the Vice President for Academic Affairs
Medical University of South Carolina
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RESEARCH UPDATE

Cyanamid now ranks sixth largest global crop protection company.

American Cyanamid Company's recent acquisition of Shell's international crop protection business has enhanced our standing in the global agricultural market raising our status from 10th to 6th largest. This development promises a significant increase in earnings and in the research and development of new products.

Research Microbiologist

Using the latest technology, you will plan and execute microbiological assays on antibiotics in formulated matrices and animal tissues. Your work will involve writing standard operating procedures, methods, validation plans and formal reports and interpreting results; calibrating and maintaining analytical instrumentation; supervising technical staff as assigned, and observing safe laboratory practices and good housekeeping.

We require a PhD in microbiology or related field with a background in microbiological technical principles and techniques or equivalent. A fundamental grounding in microbiology, plate assay experience and regulatory/FDA exposure are critical. Strong oral and written communication skills and PC familiarity are needed.

American Cyanamid Company offers an excellent compensation and benefits package which includes 401(k) savings plan, flex-time work schedules and a convenient location one hour from New York City or Philadelphia. To explore this opportunity SEE US AT PITTCON, or forward your resume to: Employment Office, Dept. SJC, American Cyanamid Company, Agricultural Research Division, P.O. Box 400, Princeton, NJ 08543-0400. An Equal Opportunity Employer.

CYANAMID

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Analytical Sciences

SmithKline Beecham Pharmaceuticals, a worldwide leader in pharmaceutical research, has an opportunity for a Bioanalytical Chemist to join its Analytical Sciences Department. The selected individual will develop methodology for the assay of biopharmaceuticals by immunochemical and electrophoretic techniques. The individual will perform SDS-PAGE, IEF, Western blotting ELISA and other immunoassays.

The selected candidate will have a Ph.D. in biochemistry or immunology or related discipline with at least 2 years of experience in immunochemical assay development or an MS in the same areas with a minimum of 6 years of experience. Additional experience in preparing immunoreagents and assay of mid-process samples and drug products for identity and impurities would be highly desirable.

Located in our state-of-the-art research facility in suburban Philadelphia, SmithKline Beecham offers a competitive compensation package. Interested applicants should forward resumes to: SmithKline Beecham Pharmaceuticals, Employment Administrator, #H0319, PO Box 1539, King of Prussia, PA 19406-0939. We are an Equal Opportunity Employer, M/F/D/V.

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POSTDOCTORAL FELLOWSHIP

Cell Adhesion Biology

Boehringer Ingelheim Pharmaceuticals has developed a world-renowned program in Cell Adhesion biology. We currently have an opening for a Postdoctoral Fellow with graduate research training in Leukocyte/Endothelial Cell Biology or Receptor Biochemistry. Familiarity with cell adhesion biology and molecular biology is helpful. This fellowship will involve basic research on leukocyte-endothelial cell interactions and structure/function relationships of cell adhesion receptors. Individuals who are highly motivated and have strong interpersonal and communication skills are desired.

Located on a campus-like setting in a beautiful area in Western Connecticut, we offer state-of-the-art resources, an abiding commitment to research and a dynamic team-oriented environment where individuals give life to their visions.

For consideration, send c.v. and a brief cover letter to: **Dept. JC-1S, Boehringer Ingelheim Pharmaceuticals, Inc., 900 Ridgebury Road, P.O. Box 368, Ridgefield, CT 06877.** We are an equal opportunity employer m/f/d/v. As a progressive healthcare company, we have a no-smoking environment.

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PHARMACEUTICAL SCIENCES

As part of an expansion resulting from the recently implemented entry level Pharm.D. curriculum, six Assistant Professor or higher level positions are immediately available in the Department of Pharmaceutical Sciences at the University of Maryland School of Pharmacy:

BIOTECHNOLOGY-DERIVED PRODUCTS - Chemical and/or formulation approaches to the design, delivery and/or targeting of peptides, peptidomimetics, proteins or oligonucleotides.

IMMUNOLOGY - Receptors, cell signaling, cell adhesion, drug design related to immune function and modulation, or catalytic antibodies.

MEDICINAL CHEMISTRY - Organic synthesis related to medicinal agents. A focus on cancer, immunology, neurochemistry or peptidomimetics is especially desirable.

MOLECULAR PHARMACOLOGY - Molecular aspects of neuropharmacology or cancer. Eucaryotic expression expertise preferred. Cell signaling, oncogenes, and molecular biology of receptor systems.

SOLIDS FORMULATION - Design, formulation, manufacture, and evaluation of solid dosage forms with access to our registered GMP manufacturing facility.

BIOCHEMICAL PHARMACOLOGY - Signal transduction mechanisms fundamental to cell processes such as secretion, cell adhesion or endogenous mechanisms of cell injury.

Teaching requirements are in biotechnology, clinical chemistry, immunology, nutrition, medicinal chemistry, pharmaceutics, pharmacology, and graduate courses for the Ph.D. program areas of biomedicinal chemistry, pharmaceutics, and pharmacology.

Postdoctoral experience is desired. Applicants should submit an indication of which position they are applying for, their CV, and research plan to Dr. Patrick Callery, Pharmaceutical Sciences Department, University of Maryland, 20 North Pine St., Baltimore, MD 21201. Review of applicants will begin April 1, 1994. Applications will continue to be received until the positions are filled.

The University of Maryland is an AA/EEO/ADA employer.

POSITION ANNOUNCEMENT #918010-Revised

TITLE: DEAN FOR RESEARCH AND DIRECTOR, FLORIDA AGRICULTURAL EXPERIMENT STATION

LOCATION: INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES
UNIVERSITY OF FLORIDA
GAINESVILLE, FLORIDA

SALARY: COMMENSURATE WITH QUALIFICATIONS AND EXPERIENCE

POSITION OPEN TO: June 1, 1994

The Dean for Research administers and provides statewide leadership for the food, agricultural and human and natural resources research programs of the University of Florida's (UF) Institute of Food and Agricultural Sciences (IFAS). UF/IFAS encompasses 20 departments and a School of Forest Resources and Conservation on the Gainesville campus and 13 Research and Education Centers located throughout the state. The problems and opportunities associated with Florida's unique environment, diverse food and agricultural systems, sensitive nature ecosystems of natural resources, and rapidly expanding human population and urbanization require a programmatic leader who can work with UF administrators and faculty, state leaders in agricultural and natural resource industries and government agencies. Because most faculty in UF/IFAS hold joint appointments in research, teaching and/or extension, the Dean for Research must work closely with the Deans for Extension, Academic Programs and College of Veterinary Medicine. In addition to programmatic leadership, specific responsibilities include the hiring, placement and tenure and promotion of research faculty and staff; decisions on budget and salaries; and implementation of the Affirmative Action Program in the Florida Agricultural Experiment Station.

Applicants for the position should have an exemplary record of leadership and administrative skills, as well as a commitment to lead UF/IFAS research to national prominence and committed service to the State of Florida. Ph.D. in food, agricultural, natural resources or closely related scientific field required. Outstanding research background and demonstrated competency in program leadership, fiscal planning, and personnel management including affirmative action and work force diversity.

Applicants for this position are asked to submit a resume of education, experience and publications, and the names and addresses of five (5) references. Those wishing to nominate candidates should do so by contacting the Search and Screen Committee Chair by May 2, 1994. Women and minorities are encouraged to apply.

REFER TO POSITION # 918010-Revised

SUBMIT APPLICATIONS, NOMINATIONS AND INQUIRIES TO:
Dr. Charles A. Conover, Chair
Search Committee for the Dean for Research
University of Florida
P.O. Box 110180
Gainesville, FL 32611

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POSTDOCTORAL RESEARCH OPPORTUNITIES

The Lankenau Medical Research Center, composed of interactive research groups in the areas of molecular, cellular and developmental biology, is housed in a new building designed to conduct state-of-the-art biomedical research. We currently have openings in our Postdoctoral Fellowship Program in the following areas:

- **EPITHELIAL BIOLOGY**–Rebecca Morris, Ph.D. is investigating the stem cell model of cellular replacement in normal epidermis and in cutaneous hyperplasia, neoplasia, and aging. Approaches include flow cytometry, epidermal cell culture, and light microscopic autoradiography. Applicants with experience in epithelial cell biology are preferred.

- **CELL ADHESION**–Karen Knudsen, Ph.D. is investigating the role of cadherins and catenins in cell-cell adhesion, membrane attachment to the cytoskeleton, and intracellular signaling. Applicants must have a strong background in molecular biology.

- **DEVELOPMENTAL GENETICS**–Janet Sawicki, Ph.D. is actively studying the regulation of oncogene expression during mammalian development. Approaches include immunocytochemistry, transfection with reporter gene constructs, transgenic mice, and ES cell knock-outs. Applicants with experience in molecular biology, cell culture and cell biology are preferred.

- **MOLECULAR CARCINOGENESIS**–Susan Gilmour, Ph.D. is investigating the regulation of ornithine decarboxylase gene expression during mouse epidermal carcinogenesis as well as the effect of polyamines on the modulation of DNA-protein interactions in epithelial cells. Candidates will have expertise in molecular biology as well as cell culture related to mammalian gene expression.

We are located in suburban Philadelphia on the campus of The Lankenau Hospital, a member of the Main Line Health System. Please submit CV, 3 letters of recommendation and a brief sketch of research interests and experience to: **Thomas O'Brien, Ph.D., Chairman, Postdoctoral Fellowship Committee, The Lankenau Medical Research Center, 100 Lancaster Avenue, West of City Line, Wynnewood, PA 19096, (610) 645-3475.** EOE M/F/D/V.

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Université de Montréal
Faculté des arts et des sciences

PLANT SYSTEMATICS

The Département de sciences biologiques, Faculté des arts et des sciences, Université de Montréal is opening a tenure-track position in vascular plant molecular systematics within the Institut de recherche en biologie végétale (I.R.B.V.). **Functions:** Teaching of plant genetics and molecular systematics, in French, at the undergraduate and graduate levels. Supervising M.Sc. and Ph.D. students. Research: the successful candidate will have to develop an autonomous research program within the phylogeny and development axis of I.R.B.V., where he will contribute to the development of a common laboratory of molecular systematics, of which the candidate must master all major approaches. He will also collaborate to the development of the Marie-Victorin Herbarium. Research fields judged most important are molecular phylogeny and molecular population genetics applied to systematic problems. **Requirements:** Candidates should have a relevant field and, preferably, postdoctoral or equivalent experience. Those susceptible to use the resources of the Montreal Botanical Garden and interested in biodiversity will receive priority. **Salary:** According to the collective agreement. **Starting date:** January 1st, 1995. Applicants must send their curriculum vitae with a statement as to the orientation they would give their research if they were hired, two copies of five reprints, or pre-publications of papers in press, representing their most significant contributions or most representative of their research, and three letters of recommendation, ***before August 1st, 1994 to:*** M. Raymond McNeil, directeur, Département de sciences biologiques, Université de Montréal, C.P. 6128, succursale centre-ville, Montréal (Québec), H3C 3J7. In accordance with Canadian immigration requirements, priority will be given to Canadian citizens and permanent residents of Canada. The University is committed to equal employment opportunity for women.

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Position in wound healing research. Candidate will lead an R&D project focusing on the use of drugs and biologics to speed healing and prevent infection and for designing experiments to evaluate the effects of local delivery of drugs and biologics. Ph.D. or M.D. required with proven track record of successful research in the area of wound healing. Postdoctoral training and experience in growth factors and in product development a plus. Submit curriculum vitae with three references and addresses to: **Dr. William Drohan, HOLLAND LABORATORY, American Red Cross, 15601 Crabbs Branch Way, Rockville, MD 20855.** *An Equal Opportunity Employer, M/F/D/V.*

MOLECULAR BIOLOGISTS

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RESEARCH SCIENTIST: Isolate and characterize bone cells; evaluate interaction between bone cell types; establish co-culture assays; biochemical analysis of unknown protein factors produced by bone cells. Required: Ph.D. or D.M.Sc. in Biology or related. Expertise in: cell biology and biochemistry of bone; primary bone cell cultures with emphasis on long-term bone marrow cultures; co-culture assays with progenitors and cloned stromal cell lines using novel techniques; light and electron microscopy including scanning electron microscopy; enzyme histochemistry and resorption assays pertaining to bone cells; hematological assays including CFU-C's colony assays and proliferation assays; histology, histomorphometry and enzymatic assays in bone cell biology. Full-time; $50,000 per year. Job site and interview in San Diego, California. Send this ad and résumé to: **Job Number DC-16851, P.O. Box 269065, Sacramento, CA 95826–9065.**

ANNOUNCEMENTS

BURROUGHS WELLCOME FUND AWARDS

Hitchings–Elion Fellowships provide postdoctoral research opportunities for U.S. Scientists to work in the United Kingdom. Each award provides 3 years of support—2 years in the U.K. and 3rd year in the United States. Annual stipend of $35,000, research expenses of $7,500 per year, travel, and up to $3,000 annual meeting allowance. All areas of biomedical, behavioral and clinical research eligible. Application Deadlines are March 10 and September 10, 1994.

Wellcome Research Travel Grants provide short-term travel to the U.K. (2 weeks to 3 months) for U.S. citizens who are full-time, doctoral degree researchers in biomedical sciences. No deadline.

Contact:

The Burroughs Wellcome Fund
4709 Creekstone Drive, Suite 100
Morrisville, NC 27560–9771
(919) 991-5100 Telephone
(919) 941-5884 FAX

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MOLECULAR TECHNIQUES IN AQUATIC RESEARCH
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An intensive workshop utilizing aquatic model organisms to demonstrate molecular biological techniques. Cost: $1600. Contact: **Barbara Wimpee, NIEHS Marine and Freshwater Biomedical Core Center, Great Lakes Research Facility, 600 East Greenfield Avenue, Milwaukee, WI 53204. Telephone: (414) 382-1726. FAX: (414) 382-1705. Dr. Charles Wimpee, Course Director, Telephone: (414) 229-6881, Internet: cwimpee@csd4.csd.uwm.edu.**

MEETINGS

SCIENTIFIC (MIS)CONDUCT AND SOCIAL (IR)RESPONSIBILITY

May 27, 1994. A conference at Indiana University–Bloomington intended to foster discussion between scientists and ethicists on issues of the proper conduct of scientific research and the responsibilities of scientists to society. Keynote address: **Rosemary Chalk, Senior Program Officer, National Academy of Sciences.** Also "Science as a Socially Responsible Community," **Mark S. Frankel, Director, AAAS Scientific Freedom, Responsibility, and Law Program**; and a panel discussion on "Teaching Responsible Science." No conference fee; pre-register by April 15, 1994. **Poynter Center, 410 North Park Avenue, Bloomington, IN 47405; Telephone: 812/855-0261; FAX: 812/855-3315; POYNTER@INDIANA.EDU.**

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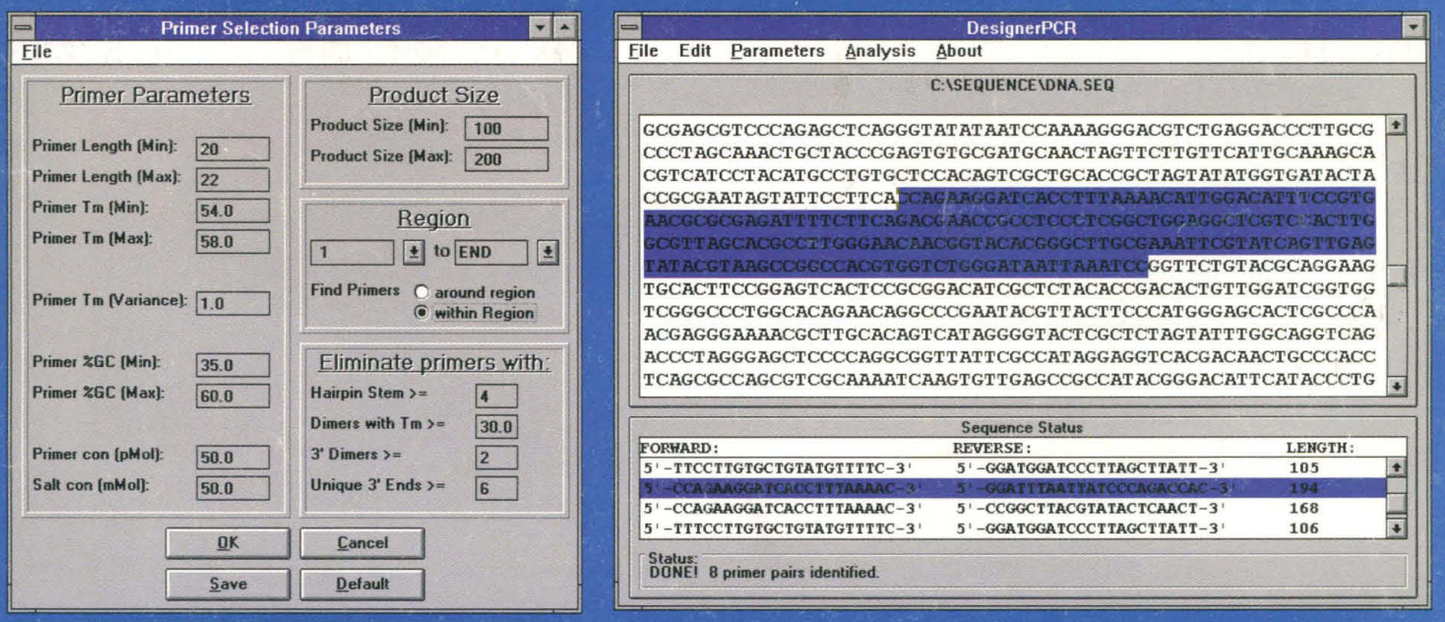

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