We simply call it the Nikon C1.*

*** The alternative was the "Superior 3D-high resolution-fluorescent-affordable-mainstream research-confocal imaging system."**

The Nikon C1 Confocal Microscope System is so simple to operate and upgrade, we decided to go with the simple name. But there's so much more. C1's compact, modular design features Nikon's exclusive CFI60™ optical system and advanced bi-directional laser scanning capabilities that deliver confocal images of unprecedented quality.

Best of all, the Nikon C1 is being offered at the lowest price ever for a laser scanning confocal system with so many high-performance features. Now that's really saying a lot. C1 today! For more information, call 1-800-52-NIKON, ext. 393, or visit www.nikonusa.com

Visit MicroscopyU at www.nikonusa.com to learn more about confocal microscopy.

NEW PRODUCTS

ProScope
Bodelin Distribution
$219 with 50× lens and USB Shot; 100× lens, $99; 200× lens, $129
800-441-6877
www.theproscope.com

WANDERING EYE

Microscopes are powerful tools for teaching students about the fine structure of cells and tissues, but they have their drawbacks. They are expensive to purchase and maintain in good working order. Using them in a classroom to point out a feature of interest is problematic: teachers must either spend time assisting each pupil in locating the feature in each microscope's field or, alternatively, use an expensive video projection system for displaying the image to everyone at once.

ProScope provides a simple, economical solution to these problems. Displaying objects with up to 200× magnification (lens available separately), the ProScope system consists of a hand-held imaging wand and a software package called USB Shot. The ProScope image wand connects to a personal computer via a standard USB interface. No additional power is required for the hardware. Gone are the days of squinting into an eyepiece to view a field.

Probably the best feature of the ProScope is its portability, which is restricted only by the length of cable connecting it to the computer. Students are free to scan anything they can put under the wand. Hair becomes an incredible glistening forest. Skin's textures and freckles stand out on the screen. Insects move in real time. Try that on a standard microscope!

USB Shot serves as the interface between the ProScope image wand and a personal computer. Designed for Macintosh and Windows computer systems, the software is a model of power and simplicity. Its easy installation and intuitively designed functions put real-time ProScope images onto a computer screen seconds after one opens the package. Users control the screen magnification; field sizes range from 160 by 120 pixels up to 720 by 480 pixels. USB Shot can capture individual still images at the click of a button or movies at up to 70 frames per second. An intelligent addition to ProScope's former software, Reel Eyes, the USB Shot software allows the user to add sound for narration of the images.

Teachers especially will welcome the price, versatility, and numerous options provided by this well-designed hardware/software package. The standard ProScope package includes a 50× lens system, or users may opt to purchase a standard C-mount connection interface (for $20) to attach their own lenses. ProScope is ruggedly designed and tolerates a lot of abuse, which will relieve instructors of worries over damage by careless students.

There is little to complain about in the ProScope package, one of the best educational values for the dollar to be found and a must for any computer-equipped biology lab.

—Kevin Ahern

Department of Biochemistry and Biophysics, Oregon State University, Corvallis, OR 97331, USA. E-mail: ahernk@onid.orst.edu

Nikon
For more information
800-52-NIKON
www.nikonusa.com
www.scienceproductlink.org

C1 DIGITAL ECLIPSE MODULAR SYSTEM

The C1 Digital Eclipse Modular Confocal Microscope System delivers three-dimensional confocal fluorescent images with excellent resolution and contrast. This compact, lightweight, universal system permits users to achieve a full array of confocal imaging techniques in multiple channels with superior optical performance. The modular design allows researchers who purchase basic systems to upgrade. The compact scanning head fits directly on a variety of microscopes. The detection and laser modules are precalibrated and easily installed, so there is no need for calibration during set-up. The system supports virtually any imaging technique, including simultaneous three-channel confocal fluorescence, time-lapse recording, and spatial analysis. The system also features intuitive software for multifaceted microscopic analysis.

Zeiss
For more information
914-681-7645
www.zeiss.com
www.scienceproductlink.org

LSM 510 META WITH SPECTRA DETECTOR

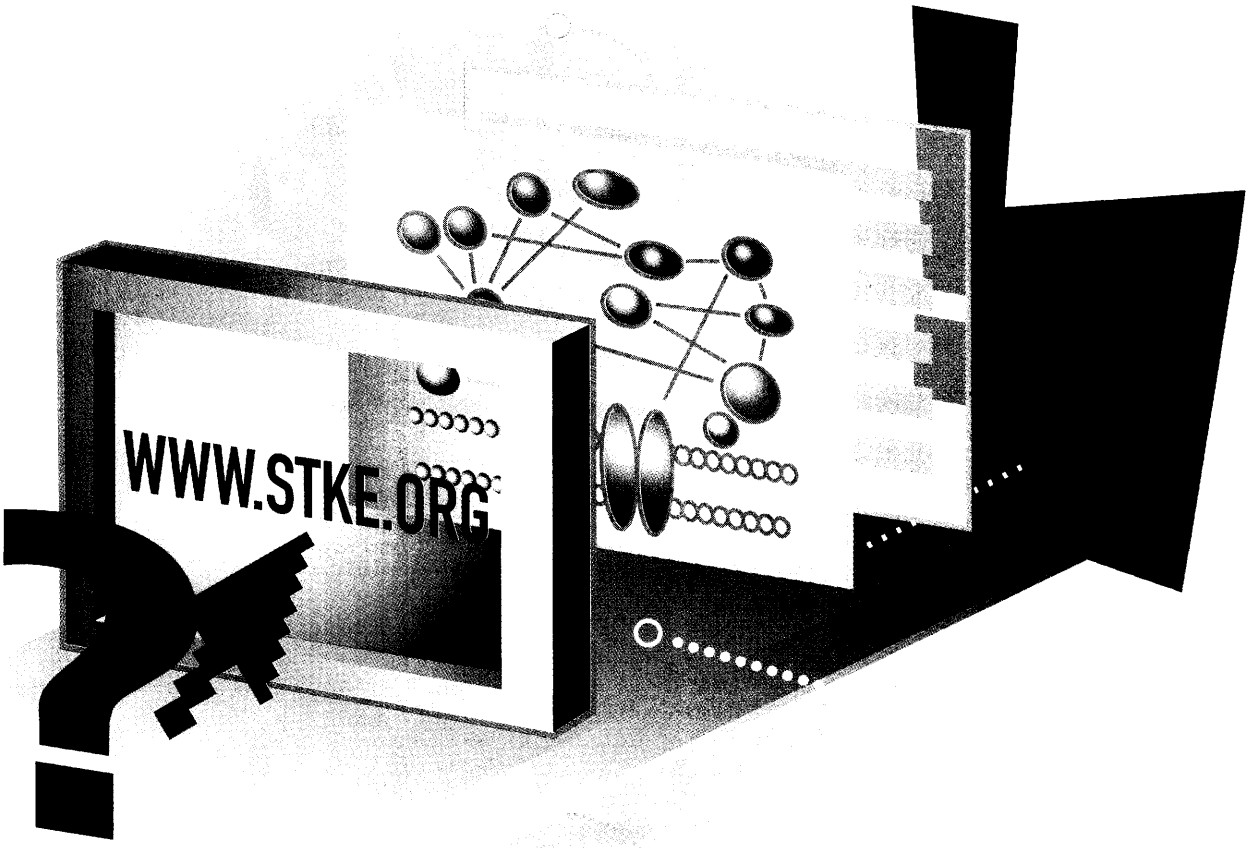
The LSM 510 META is a high-end laser scanning microscope (LSM) for multichannel fluorescence in single and multiphoton microscopy. It features a unique detector that allows many fluorescent markers to be used simultaneously and that separates overlapping fluorescent dyes for sharp, cross talk–free images. By splitting the fluorescent light and projection onto a multichannel detector, the instrument delivers the spectral distribution of the fluorescence signals as a parameter of every pixel in the object under investigation. In a second step, this information can be used for digital separation of the fluorescence emissions in a multifluorescence experiment. The user-friendly software controls all microscope and detector functions. The LSM 510 META combines the intelligent technology and functions pioneered in the LSM 510 model, such as the multiple pinhole concept and the flexible scanning strategies, while offering extended performance capabilities thanks to free selection of the spectral range sensed by the detector and new scanning modes called Step Scan and Spot Scan.

Amersham Biosciences
For more information
800-333-5703
www.mdyn.com
www.scienceproductlink.org

CONFOCAL IMAGING SOFTWARE

ImageSpace is integrated software for confocal imaging with powerful tools that make it easy to display, measure, render, process, and analyze confocal images, or three-dimensional (3D) volumes, and output publication-ready results. New import features support confocal data input from virtually all confocal laser scanning microscope systems. The intuitive user interface simplifies every phase of confocal microscopy, from image acquisition and processing to volume rendering, image/volume analysis, and presentation of results. Quantitation tools from different areas, such as 3D visualization and co-localization, can be combined to bring forth results not previously possible. Eight different volume rendering methods allow optimal visualization of confocal data. With multilabeled specimens, each channel is processed independently and optimized prior to merging. Users can choose the rendering method, viewing angle, and cutting planes that best reveal their specimens. ImageSpace makes it easy to quantitate every aspect of confocal data, including 3D length measurements, 3D automated object counting, volume seeding, and more. ImageSpace runs on Silicon Graphics workstations.

CONTINUED ON PAGE 1325



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Bio-Rad Microscience
For more information
+44 20 8328 2111
www.microscopy.bio-rad.com
www.scienceproductlink.org

RADIANCE2100

The Radiance2100 laser scanning confocal microscope system is fully upgradeable from single-channel confocal to multichannel, multiphoton capability. The Radiance2100 range has a series of upgrade paths, so the user can select those that meet the current and future needs of the laboratory. For example, a single channel system with a single four-line argon laser could be upgraded progressively to multichannel, multiphoton capability, with a HeCd laser, red diode, and green HeNe lasers. It features maintenance-free, fixed alignment optics for reproducible performance.

Olympus
For more information
+49 40 23773-326
www.olympus-europa.com
www.scienceproductlink.org

DIGITAL CAMERA

The Camedia E-10 digital camera features a 4.0 megapixel charge-coupled device. The ultra-sharp 4× F2.0–2.4 optical zoom lens is compact and aberration-free. The E-10 can be fitted to a microscope with a C-mount adapter or used as a stand-alone camera to record other aspects of scientific work, such as field studies or larger specimens. Three light metering systems cope with a variety of sample types—spot metering for fluorescence samples or center-weighted average. Exposure can be chosen manually or with a choice of aperture priority, shutter priority, or totally automated. Exposure compensation can be finely adjusted and auto-bracketing allows three sequential frames to be taken about the mean exposure. Repeated exposure at up to three frames per second and interval shooting from 1 min to 24 hours are other useful features for studies of growth or cell change. Fine resolution adjustment gives a high-resolution image of up to 2240 by 1680 pixels. Images can be stored on up to 64 MB SmartMedia cards or downloaded directly to a personal computer, bypassing the camera's image processing system.

Leica
For more information
800-248-0123
www.leica-microsystems.com
www.scienceproductlink.org

LEICA TCS SP2 RS

The Leica TCS SP2 RS is a high-speed confocal, multiphoton system for live cell imaging and dynamics. This new spectral confocal microscope makes use of a proprietary K resonant scanner scanning at 8000 lines per second, or more than 100 frames per second. This is a unique combination for capturing fast cell events while maintaining the excellent resolution associated with true point-scanning confocal systems. A maximum of quantum efficiency is achieved through the detection principle carried out with the Leica spectrophotometer-typed scan head. The outstanding benefit of this high-resolution spectral detection system is its flexibility; users can "design their own filters," maximize sensitivity, and minimize cross-talk simultaneously.

BioGenex
For more information
800-421-4149
www.biogenex.com
www.scienceproductlink.org

DIGITAL IMAGE ANALYSIS SYSTEM

New *i*VISION is a state-of-the-art, color, high-resolution, high-sensitivity, automated, digital image analysis system. The *i*VISION comes with proprietary digital imaging and automation technologies that assist pathologists and researchers in

CONTINUED ON PAGE 1326

the fields of cellular and molecular pathology, as well as drug discovery and development. The system offers more than four times the resolution and about two orders of magnitude higher detection sensitivity than other image analysis systems on the market, according to the manufacturer. In addition, the system is equipped with automatic slide-loaders that handle random access loading and unloading capabilities for up to 50 bar-coded slides. The system can be used for high-speed scanning and detection, acquisition and archiving, rare cell detection, quantitation, data and image retrieval, and tissue microarray applications.

Olympus
For more information
+49 40 23773-326
www.olympus-europa.com
www.scienceproductlink.org

COMPACT DIGITAL CAMERA

The DP12 is a compact digital camera for professional digital imaging in microscopy. The 3.34 million pixel charge-coupled device resolution guarantees superb digital images allowing observation of even very fine structures within the specimen. The tilting 3.5-inch LCD monitor, integrated into the control pad, allows adjustable observation at the ideal angle. Users can now view images in the same unit as the camera controls, making work faster and more comfortable. Real-time display of large, easy-to-see images allows faster, more accurate focusing and framing. Up to 16 acquired images can be displayed at one time for on-screen image selection. A calibrated scale bar can be superimposed, then saved and printed with the image.

Zeiss
For more information
914-681-7645
www.zeiss.com
www.scienceproductlink.org

AXIOPLAN 2 IMAGING

The Axioplan 2 imaging system combines high-precision optics, integrated optics, and innovative technology. It offers fluorescence images featuring optimum contrast, improved light transmission of the optics, and maximum stability of the system in multifluorescence applications. It is available in motorized or manual versions. It features patented Light Trap technology that minimizes the interference of stray light and increases contrast in the final image. With eight filter positions in the newly designed turret the full 25-mm field of view is not compromised.

Leica
For more information
800-248-0123
www.leica-microsystems.com
www.scienceproductlink.org

COLOR DIGITAL CAMERA

The Leica DC 500 Color Digital Camera can acquire ultra-resolution images in excess of 12 megapixels at 12 bits per color. The DC 500's integrated Peltier cooling system and heat dissipating metallic casing allow users to acquire stunning images with enhanced dynamic range and reduced signal-to-noise. The camera features a 6-min exposure time, which allows the most challenging low-light applications to be captured with high image quality.

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 of any products or materials mentioned is not implied. Additional information may be obtained from the manufacturer or supplier by visiting www.scienceproductlink.org on the Web, where you can request that the information be sent to you by e-mail, fax, mail, or telephone.

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Massachusetts	$665	$610	$535	$495	$440	$365
Maine	$665	$610	$535	$495	$440	$365
New Hampshire	$665	$610	$535	$495	$440	$365
Rhode Island (Salve Regina)	$715	$655	$535	$545	$485	$365
Rhode Island (Roger Williams)	$665	N/A	$535	$495	N/A	$365
Chem. Phys. Summer School (RI)	$900	N/A	$600	$900	N/A	$600
Hong Kong	$830	$710	$590	$660	$540	$420
The Queen's College, Oxford	$790	N/A	$715	$620	N/A	$545
SPring-8, Japan	$575	N/A	$490	$405	N/A	$320

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Attendance is limited. It is recommended that applicants apply immediately for early consideration by the Chair.

The GRC web site, **www.grc.org,** contains the most up-to-date information we have for any given Conference. Be sure to take a look at the scientific program or any other information that has been posted.

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P.O. Box 984
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E-mail: **grc@grc.org**
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Phone: 401-783-4011, ext. 100

The international Gordon Research Conferences were established with the continuing support of the Serono Foundation for the Advancement of Medical Science.

List of meetings, sessions and speakers:
(discussion leaders, where known, are italicized)

ADHESION, SCIENCE OF
TILTON SCHOOL
TILTON, NH
AUG 11-16, 2002
MANOJ CHAUDHURY, CHAIR
JOHN EMERSON, VICE CHAIR

- **Fundamentals of Adhesion**
  (*A. Gent* / M. Tirrell / A. Pocius)
- **Dissipative Processes in Adhesive Fracture**
  (*M. Rafailovich* / G. McKinley / M. Robbins / K. Shull)
- **Interrogating Adhesion**
  (*J. Genzer* / E. Kramer / C. Ortiz)
- **Biological Adhesion**
  (*J. Stein* / K. Autumn / K. Cooksey / M. Rubinstein)
- **Controlling Adhesion**
  (*A. Ulman* / M. Kent / G. Ferguson)
- **Mechanics Issues and Adhesion Instabilities**
  (*A. Jagota* /T. Russell / H. Hui / V. Shenoy)
- **Short and Long Range Forces in Adhesion**
  (*G. Walker* / D. Prieve / P. Hansma)
- **Adhesion Issues in Electronics and MEMS**
  (*A. Dhinojwala* / D. Allara / Z. Suo / R. Maboudian)
- **Self-Assembly**
  (*J. Emerson* / I. Aksay)

ATOMIC & MOLECULAR INTERACTIONS
ROGER WILLIAMS UNIVERSITY
BRISTOL, RI
JUL 7-12, 2002
ALBERT WAGNER, CHAIR
PAUL DAGDIGIAN, VICE CHAIR

- **Reaction Dynamics and the Potential Energy Surface: Larger Systems**
  (M. Collins / D. Truhlar / T. Martinez / H.F. Davis)
- **Reaction Dynamics and the Potential Energy Surface: Smaller Systems**
  (E. Goldfield / L. Harding / J. Bowman / X. Yang)
- **Half-Collision Dynamics and the Potential Energy Surface**
  (R. Schinke / M. van Hemert / J. Cline / A. Orr-Ewing)
- **Non-Adiabatic Dynamics and the Potential Energy Surface**
  (L. Butler / M. Alexander / D. Yarkony / T. Suzuki / J. Zhang)
- **Inelastic Dynamics and the Potential Energy Surface**
  (I. Oref / F.J. Aoiz / G. Lendvay / A. Mullin)
- **Clusters and the Potential Energy Surface**
  (C. Leforestier / N. Halberstadt / K.B. Whaley / M. Lester / H. Meyer)
- **Clusters Involving Water and the Potential Energy Surface**
  (K. Kleinermanns / S. Xantheas / D. Clary / T. Zwier)
- **Gas/Surface Dynamics and the Potential Energy Surface**
  (W. Hase / G.J. Kroes / A. Wodtke / S. Sibener)
- **After Dinner Talk**
  (A. Wagner / G. Scoles)

BACTERIAL CELL SURFACES
COLBY-SAWYER COLLEGE
NEW LONDON, NH
JUN 23-28, 2002
HAJIME TOKUDA & ANDREW WRIGHT, CO-CHAIRS
MARTINE NGUYEN-DISTECHE &
BARRY ROSEN, CO-VICE CHAIRS

- **Lipid Biogenesis and Trafficking in Bacterial Membranes**
  (*C. Raetz* / G. Chang / B. deKruijff / C. Whitfield)
- **Protein Traffic**
  (*A.J.M. Driessen* / R. Dalbey / M. Muller / T. Palmer)
- **Periplasmic Chaperones and Protein Folding**
  (*J. Beckwith* / M. Ehrmann / P. Metcalf / K. Takeda / L. Thony-Meyer)
- **Protein Secretion**
  (*T. Pugsley* / C. Roy / A. Filloux / H. Wolf-Watz / O. Schneewind / F. Jacob-Dubuisson)
- **Transport ATPases**
  (*A. Davidson* / J. Ma / G. Waksman / J. Hunt)
- **Chemosensing, Chemotaxis**
  (*P. Matsumura* / H.C. Berg / D. Bray / F.W. Dalquist / G. Hazelbauer / J.S. Parkinson)
- **Cell Shape, Cell Polarity and Cell Division**
  (*D. Raychaudhuri* / J. Lutkenhaus / K.D. Young / J. Theriot / J. Errington / J. Lowe)
- **Cell Envelope and Murein Dynamics**
  (*R.F. Young* / K.W. Bayles / P.S. Setlow / J.T. Park / T.J. Silhavy)
- **Cell-Cell Communication**
  (*B. Bassler* / S. Winans / J. Golden / D. Kaiser)

BARRIERS OF THE CNS
TILTON SCHOOL
TILTON, NH
JUN 23-28, 2002
DAVID BEGLEY, CHAIR
MARTHA O'DONNELL, VICE CHAIR

- **Perspective Lectures**
  (*L. Drewes* / R.T. Borchardt / A. Reichel)
- **Cell and Molecular Biology of Blood-Brain Barriers I**
  (*Q. Smith* / R.J. Boado / B. Zlokovic / C. Higgins / I. Blasig)
- **Cell and Molecular Biology of Blood-Brain Barriers II**
  (*H. Jones* / M. Balda / O.P. Ottersen)
- **Physiology, Pharmacology and Biochemistry of Blood-Brain Barriers I**
  (*R. Keep* / A. Seelig / C. Nicholson / T. Abbruscato / R. Sawchuk)
- **Physiology, Pharmacology and Biochemistry of Blood-Brain Barriers II**
  (*B. Banks* / Y. Sugiyama / S. Thomas)
- **Blood-Brain Barriers and Pathology I**
  (*B. Hickey* / B. Engelhardt / W. Zheng / K.D. Zis / I. Romero)
- **Blood-Brain Barriers and Pathology II**
  (*P. Dore-Duffy* / J. Preston)
- **Drug Delivery to the CNS I**
  (*E. Neuwalt* / A. Tsuji / J.-M. Scherrmann / J. Huwyler / J. Kreuter)
- **Drug Delivery to the CNS II**
  (*T. Davis* / S. Kabanov / A. Minn)

BASEMENT MEMBRANES
HOLDERNESS SCHOOL
PLYMOUTH, NH
JUN 9-14, 2002
LEENA BRUCKNER-TUDERMAN, CHAIR
JAMES KRAMER, VICE CHAIR

- **Domain Structures and Assembly of Basement Membrane Proteins**
  (*J. Schwarzbauer* / M. Paulsson / T. Sasaki / E. Hohenester / M. Than)
- **Genetic Analysis of Basement Membranes and Their Ligands**
  (*R. Faessler* / U. Mayer / E. Poeschl)
- **Basement Membranes and Their Ligands in Development**
  (*J. Kramer* / N. Brown / S. Selleck / B. Vogel)
- **Neurobiology and Basement Membranes.**
  (*L.F. Reichardt* / M. Ruegg / U. Mueller / R. Nischt)
- **Receptors, Signal Transduction and Cell-Matrix Interactions**
  (*M. Aumailley* / M. Sarras / M. Glukhova / C. Wu)
- **Basement Membrane and Related Macromolecules in Development and Tissue Remodeling**
  (*Z. Werb* / W. Carter / D. Greenspan)
- **Basement Membranes in Angiogenesis and Vascular Biology**
  (*B. Olsen* / R. Iozzo)
- **Basement Membranes in Human Diseases**
  (*K. Campbell* / K. Tryggvason / Y. Yamada / V. Straub)
- **Hot Topics**
  (*L. Bruckner-Tuderman*)

BIOCATALYSIS
KIMBALL UNION ACADEMY
MERIDEN, NH
JUL 7-12, 2002
JON STEWART & PAUL SWANSON, CO-CHAIRS
ROBERT DICOSIMO &
HERBERT HOLLAND, CO-VICE CHAIRS

- **Industrial Biocatalysis**
  (K. Gray / B. Hauer / L. Ingram / B. Schultz)
- **Biocatalyst Design and Development**
  (S. Benkovic / M. DiStefano)
- **Terpene Cyclases and C-C Bond Formation**
  (D. Cane / S. Masuda)
- **Epoxides**
  (A. Goswami / D. Janssen)
- **Dehydrogenases**
  (D. Rozzell)
- **Applications of Biocatalysis**
  (T. Hudlicky / M. Mikoajczyk / J. Moore / M. Vogel / M. Zarevucka)

BIOELECTROCHEMISTRY
MOUNT HOLYOKE COLLEGE
SOUTH HADLEY, MA
JUL 21-26, 2002
RAPHAEL LEE, CHAIR
RICHARD NUCCITELLI, VICE CHAIR

- **Overview of Important Intermolecular and Intercellular Interactions**
  (T. Tsong / H. Gruler)
- **Electric Field Alteration of Membrane Structures**
  (*J. Gehl* / J. Teissie / K. Schoenbach / L. Mir)
- **Altered Responses Due to Neighboring Cells**
  (*M. Prausnitz* / J. Weaver / D. Miklavcic)
- **Alteration of Membrane Responses Using Polar Polymers**
  (*T.R. Gowrishankar* / R. Raphael / K.Y. Lee / J. Marks)
- **Therapeutic Applications of Surfactants and Highly Polar Polymers**
  (*B. Greenebaum* / M. Sawdey / R. Borgen)
- **Stimulation of Cellular Signal Transduction Pathways**
  (*R. Nuccitelli* /D. Golan / H. Petty)
- **Clinical Applications/Hot Topics**
  (*S. Pollock* / B.D. Boyan / R. Kavet)
- **Electric Field Alteration of Protein Function**
  (*B. Adair* / W. Chen / R.D. Astumian)
- **Cellular Responses To Applied Electrical Fields**
  (M. Cho)

BIOGENIC HYDROCARBONS & THE ATMOSPHERE
THE QUEEN'S COLLEGE
OXFORD, UK
SEP 1-6, 2002
GUENTHER SEUFERT &
RAINER STEINBRECHER, CO-CHAIRS
ALEX GUENTHER &
FRANCESCO LORETO, CO-VICE CHAIRS

- **Function in Atmosphere and Biosphere**
  (*F. Loreto* / W. Stockwell / J. Gershenzon)
- **Biochemical Processes and Environmental Controls**
  (*R. Fall* / N. Brueggemann / F. Rapparini / S. Hayward)
- **Genetic Basis**
  (*W. Zimmer* / B. Miller)
- **Gas-Phase Reactions in the Atmosphere**
  (*I. Barns* / J. Williams / D. Poppe)
- **Gas to Particle Conversion**
  (*T. Hoffmann*)
- **From Leaf to Global Scales**
  (*A. Guenther* / G. Schaab)
- **Early Carrier Papers**
  (*R. Monson*)
- **Integrated Field Studies**
  (*N. Hewitt* / S. Owen)
- **Synthesis and Reflections**
  (*P. Ciccioli* / T.D. Sharkey)

BIOMINERALIZATION
COLBY-SAWYER COLLEGE
NEW LONDON, NH
AUG 11-16, 2002
STEVE WEINER, CHAIR
FRED WILT, VICE CHAIR

- **Mineralized Biological Materials: Structure and Function**
  (*F. Wilt* / J. Aizenberg / S. Mann)
- **Matrix Functions: Biogenic Calcium Carbonate**
  (*A. Veis* / H. Wheeler / K. Endo / H. Nagasawa)
- **Matrix Functions: The Genetic Approach**
  (*A. Boskey* / M. McKee / M. Young)
- **Matrix Functions: Calcium Phosphate and Oxalate**
  (*P. Robey* / M.A. Webb / D. Deutsch / L. Fisher)
- **Structural Analysis in the Hydrated State**
  (P. Hansma / P. Stayton)
- **Biologically Inspired Materials**
  (*L. Hobbs* / G. Wegner / S. Stock / I. Shapiro)
- **Crystal Growth and Inhibition**
  (*G. Nancollas* / P. Davies / J. DeYoreo)
- **Biomechanics**
  (*W.J. Landis* / J. Currey / M. van der Meulen)
- **Stereochemical Approach to Crystal Growth**
  (M. McBride)

BIOORGANIC CHEMISTRY
PROCTOR ACADEMY
ANDOVER, NH
JUN 9-14, 2002
MARK DISTEFANO & ADRIAN WHITTY, CO-CHAIRS
ANDREA COCHRAN &
JOHN KOH, CO-VICE CHAIRS

- **Molecular Recognition**
  (P. Dervan / N. Finney / S. Singleton / M. Starovasnik)
- **Engineering & Design**
  (L. Baltzer / P. Schultz / J. Chmielewski)
- **Combinatorial Approaches**
  (M. Shair / I. Fujii)
- **Catalysis**
  (S. Benkovic / A. Warshel / J. Kirsch / K. Musier-Forsyth / A. Barringer)
- **Frontiers of Small Molecule Action**
  (J. Wells / T. Clackson / M. Murcko / J. Sessler / K. Judice)
- **New Technology/Spectroscopic Approaches**
  (D. Leckband / P. Tonge / N. Kelleher)
- **Evolution of Function**
  (D. Hilvert / P. Patten)

BIOPOLYMERS
SALVE REGINA UNIVERSITY
NEWPORT, RI
JUN 16-21, 2002
DOROTHY ERIE & JONATHAN WIDOM, CO-CHAIRS
VALERIE DAGGETT, VICE CHAIR

- **Large / Complex Systems**
  (*E. Nogales* / J. Cate / J. Frank / J.L. Viovy)
- **Molecular Motors / Machines**
  (*M. Wang* / T. Strick / T. Yanagida)
- **Milieu**
  (*K. Dill* / B. Baird, K. Sharp)
- **Protein Structure, Prediction, Folding**
  (*R. Baldwin* / V. Daggett / A. Matouschek / D. Baker / S. Mayo)
- **Protein-Protein Interactions**
  (*D. Leckband* / J. Wells / G. Pielak)
- **RNA Structure, Folding, Stability**
  (*S. Woodson* / J. Williamson / O. Ulenbeck / I. Tinoco)
- **DNA Structure, Mechanics**
  (*P. Hagerman* / W. Olson / C. Bustamante / A. Ansari / L. Williams)
- **Protein-Nucleic Acid Interactions**
  (*P. von Hippel* / J. Feigon / S. Patel / H. Buc / T. Lohman)
- **Keynote Speaker**
  (H. Scheraga)

CANCER
SALVE REGINA UNIVERSITY
NEWPORT, RI
AUG 4-9, 2002
ERIC FEARON, CHAIR
ASHOK VENKITARAMAN, VICE CHAIR

- **Keynote Talks**
  (D. Livingston)
- **Oncogene Pathways I**
  (L. Chin / P. Sternberg / T. Mak / T. Xu)
- **Oncogene Pathway II**
  (J. Downing / U. Banerjee / P. Pandolfi / L. Zon)
- **Tumor Suppressor Pathways I**
  (J. Lees / N. Dyson / B. Dynlacht / P. Sicinski / I. Harihanan)
- **Tumor Suppressor Pathways II**
  (T. Jacks / Y. Nakamura / W. Derry)
- **Tumor Suppressor Pathways III**
  (S. Aaronson / K. Cadigan / S. Emmons / W. Birchmeier)
- **Tumor Suppressor Pathways IV**
  (W. Kaelin / L. Parada / A. McClatchey / R. Fehon / R. Wechsler-Reya)
- **Epigenetics, DNA Methlylation, Transcriptional Memory**
  (S. Baylin / T. Bestor / R. Shiekhattar)
- **Genetic Instability**
  (C. Lengauer / R. DePinho)

CARDIAC REGULATORY MECHANISMS
CONNECTICUT COLLEGE
NEW LONDON, CT
JUL 28-AUG 2, 2002
R. JOHN SOLARO, CHAIR
STEVEN HOUSER, VICE CHAIR

- **Mechanisms of Hypertrophy and Failure**
  (*J. Gwathmey* / P. Buttrick / G. Dorn / J. Molkentin)
- **Genomics, Proteomics, and Phenotyping**
  (*P. Ping* / L. Kranias / J. Van Eyk)
- **Rescue of the Failed Heart**
  (*R. Hajjar* / M. Endo / L. Field)
- **Metabolism and Gene Expression**
  (*H. Taegtmeyer* / D. Kelly / D. Lewandowski / J. McMillan)
- **Signaling Localization and Scaffolding**
  (*S. Steinberg* / M. Bond / D. Mochley-Rosen)
- **Excitation Contraction Coupling: A Debate**
  (*S. Houser* / D. Eisner / A. Marks/ J. Lederer / B. O'Rourke)
- **Integrative Biology: Mathematical Modeling**
  (*D. Bers* / K. Campbell / J. Rice)
- **Myopathies and Myofilaments**
  (*J. Potter* / L. Tobacman / P. de Tombe)
- **Gender Related Differences**
  (*L. Leinwand* / M. Rosen / C. Grohe / N. Fiset)
- **Keynote Speaker**
  (*J. Robins*)

CATALYSIS
COLBY-SAWYER COLLEGE
NEW LONDON, NH
JUN 23-28, 2002
JINGGUANG CHEN, CHAIR
PETER STAIR, VICE CHAIR

- **Model Catalysts Under In-Situ Conditions**
  (H.-J. Freund)
- **Novel Catalytic Materials**
  (C.M. Friend / J.Y. Ying / S.T. Oyama)
- **Interface of Heterogeneous / Homogeneous Catalysis**
  (T.J. Marks)
- **Theoretical Modeling**
  (J.K. Norskov / S. Harris)
- **Heterogeneous Catalysis**
  (B.C. Gates / E. Iglesia)
- **Chiral Catalysis**
  (A.J. Gellman / Y.-K. Sun)
- **Fuel Cells and DeNOx Technology**
  (K.D. Kourtakis / G.B. Fisher)
- **Environmental Catalysis**
  (J.M. Dysard / C.A. Mims / F.H. Ribeiro)
- **Future Perspectives and Directions**
  (G.A. Somorjai)

CELL BIOLOGY OF THE NEURON
SALVE REGINA UNIVERSITY
NEWPORT, RI
JUN 30-JUL 5, 2002
CORNELIA BARGMANN &
PIETRO DE CAMILLI, CO-CHAIRS
SHELLEY HALPAIN &
ERWIN NEHER, CO-VICE CHAIRS

- **Assembly of the Synapse**
  (G. Davis / Y. Jin / C. Garner / P. Scheiffele)
- **Mechanisms in Exocytosis**
  (R. Jahn / R. Scheller / T. Südhof / E. Jorgensen)
- **Biophysical Analysis of Neurosecretion**
  (T. Ryan / V. Murthy / E. Neher / J. Hudspeth)
- **Membrane Traffic and Neurotransmitter Transporters**
  (L. Brodin / T. Martin / L. Goldstein / S. Amara)
- **Neuronal Plasticity**
  (K. Svoboda / C. Stevens / R. Tsien / K. Martin)
- **Signaling Mechanisms**
  (J. Herz / J. Flanagan / L.-H. Tsai)
- **The Neuronal Cytoskeleton**
  (L. Machesky / S. Halpain / N. Hirokawa / L. Goldstein)
- **Postsynaptic Mechanisms**
  (M. Sheng / M. Kennedy / R. Huganir / J. Kaplan)

CELL DEATH
COLBY COLLEGE
WATERVILLE, ME
JUN 16-21, 2002
SALLY KORNBLUTH, CHAIR
MICHAEL HENGARTNER, VICE CHAIR

- **Keynote Address**
  (D. Vaux)
- **Caspases and Their Regulators**
  (*J. Yuan* / G. Salvesen / C. Duckett / G. Cohen / D. Nicholson / V. Dixit)
- **Death Receptors**
  (*V. Dixit* / M. Lenardo / J. Tschopp / K. Debatin)
- **Bcl-2 Family**
  (*G. Nunez* / M. Hardwick / R. Youle / S. Korsmeyer / C. Thompson / E. White)
- **Signaling Molecules Regulating Cell Death**
  (*K. White* / B. Osborne / A. Kimchi / J. Wang)
- **Genetics of Apoptosis**
  (*M. Hardwick* / J. Abrams / M. Driscoll / T. Mak / R. Flavell / K. White)
- **Mitochondria and Apoptotic Regulation**
  (*D. Green* / D. Newmeyer / G. Kroemer / R. Gottleib)
- **Disease, Inflammation, and Engulfment**
  (*R. Flavell* / S. Lipton / G. Chimini / C. Bleakely / G. Nunez / J. Yuan)
- **p53, Oncogenes, and Cell Death Regulation**
  (*B. Osborne* / D. Green / K. Vousden / G. Evan / M. Jaattela)

CELLULAR & MOLECULAR MYCOLOGY
HOLDERNESS SCHOOL
PLYMOUTH, NH
JUN 16-21, 2002
REGINE KAHMANN &
MATTHEW SACHS, CO-CHAIRS
LOUISE GLASS &
JAMES KRONSTAD, CO-VICE CHAIRS

- **Comparative Genomics**
  (M.A. Nelson)
- **Functional Genomics**
  (L. Hamer)
- **Fungal Pathogens of Animals**
  (K.J. Kwon-Chung)
- **Fungal Pathogens of Plants**
  (A.E. Osbourn)
- **Fungi as Biocontrol and Bioterror Agents**
  (R.J. St. Leger)
- **Fungal Molecular Ecology**
  (T.D. Bruns)
- **Gene Regulation and Development**
  (M.A. Peñalva)
- **Hyphal Growth**
  (G. Steinberg)

CERAMICS, SOLID STATE STUDIES IN
KIMBALL UNION ACADEMY
MERIDEN, NH
AUG 11-16, 2002
RAJENDRA BORDIA, CHAIR
JUERGEN ROEDEL, VICE CHAIR

- **Colloidal Processing at Nano and Micro Scale**
  (*G.L. Messing* / W. Sigmund / J.A. Lewis)

- **Consolidation of Green Bodies and Densification**
  (*S. Baik* / F.F. Lange / L.J. Gauckler)
- **Electrical and Magnetic Properties**
  (Y.-M. Chiang / I-W. Chen)
- **Theory and Simulations**
  (*W.C. Carter* / J.W. Cahn / V. Tikare)
- **Ionic/Protonic Conduction**
  (*C.B. Carter* / S.M. Haile / R. Dieckmann)
- **Polymer Derived Ceramics**
  (*B. Derby* / R. Raj / P. Greil)
- **Emerging Research Areas**
  (*R.M. Cannon* / R.H. French / V.P. Dravid)
- **Interaction of Ceramics with Ice**
  (*M.P. Harmer* / G.W. Scherer)

CHEMICAL OCEANOGRAPHY
THE QUEEN'S COLLEGE
OXFORD, UK
AUG 11-16, 2002
HENRY ELDERFIELD, CHAIR

- **Gases in the Oceans**
  (*B. Luz* / R. Keeling)
- **Redfield Revisited**
  (*P. Tortell* / J. Raven / T. Tyrell)
- **Oceanic Carbon Sequestration**
  (*A. Watson* / P. Brewer / A. Ridgwell / A. Watson)
- **Metal Isotopes in Ocean Cycles**
  (*A. Galy* / X. Zhu / S. Pichat / J. Gaillardet)
- **Trace Metal Uptake by Marine Biota**
  (*A. Butler*)
- **Marine Calcification**
  (*R. Rickaby* / J. Erez / J. Bijma / R. Rickaby)
- **Carbonate Dissolution**
  (*B. Martin* / R. Jahnke / P. Lohmann)
- **Chemical Transformations by Bacteria**
  (*M. Boettcher* / C. Arnosti / H.-P. Grossart / B. Thamdrup)
- **Novel Organic Proxies**
  (*Tim Herbert*)

CHEMICAL PHYSICS SUMMER SCHOOL
ROGER WILLIAMS UNIVERSITY
BRISTOL, RI
JUN 16-28, 2002
SHAUL MUKAMEL, CHAIR

- **Time Dependent Density Functional Theory, Density Matrices, Linear Response**
  (M. Cohen / H. Gross / C. Valdemoro)
- **Quantum Kinetics,Transport and Ultrafast Spectroscopy of Semiconductors**
  (H. Haug / A. Nitzan)
- **Classical and Quantum Monte Carlo Methods**
  (J. Doll)
- **Aggregates (Disorder, Statistics, Multi-Particle States, Multi-Particle Localization)**
  (J. Knoester)
- **Dielectric Properties and Integral Equation Theories of Liquid Structure**
  (B. Ladanyi)
- **Polymers Structure and Dynamics**
  (Karl Freed)
- **Protein Folding and Quantum Interference in Electron Tunneling**
  (J. Onuchic)
- **Slow Processes in Molecular Biophysics**
  (R. Elber)
- **Molecular Biological Physics**
  (E. Shaknovich)
- **Mode Coupling, Projection Operators, Reduced Equations of Motion**
  (I. Oppenheim / Y. Tanimura / D.R. Reichman)

CHEMOTACTIC CYTOKINES
MOUNT HOLYOKE COLLEGE
SOUTH HADLEY, MA
JUL 7-12, 2002
PHILIP MURPHY, CHAIR
BARRETT ROLLINS, VICE CHAIR

- **Keynote**
  (*P. Murphy* / R. Lefkowitz)
- **Chemokine Signaling Mechanisms I**
  (*K. Bacon* / A. Proudfoot / A. Richmond / G. Graham)
- **Chemokine Signaling Mechanisms II**
  (*J. Westwick* / M. Thelen / R. Alon / D. Patel / S. Silverstein)
- **Chemokine Regulation of Innate Immunity**
  (*J. Oppenheim* / H. Broxmeyer / D. Fremont)
- **Chemokine Regulation of Adaptive Immunity I**
  (*R. Ransohoff* / M. Lipp / K. Matsushima / A. Lanzavecchia)
- **Chemokine Regulation of Adaptive Immunity II**
  (*A. Rot* / A. Luster / G. Randolph / B. Rollins)
- **Roles in Pathogenesis I**
  (*A. Mantovani* / I. Charo / Z. Howard / D. Schlondorff)
- **Roles in Pathogenesis II**
  (*S. Lira* / W. Hancock / A. Zlotnik / F. Balkwill / G. Diaz)
- **Translation to the Clinic**
  (*J. DeMartino* / N. Karin / R. Pierson / J. Strizki / R. Horuk / G. LaRosa)

CHEMOTHERAPY OF EXPERIMENTAL/CLINICAL CANCER
COLBY-SAWYER COLLEGE
NEW LONDON, NH
JUL 14-19, 2002
ROBERT KRAMER, CHAIR
MARY-ANN BJORNSTI, VICE CHAIR

- **Oncogenomics**
  (*N. Dracopoli*)
- **Growth Factor Receptors and Kinase Inhibitors**
  (J. Baselga / P. Trail)
- **Prostate Cancer, Future Strategies**
  (*M. Gottardis* / H. Scher / J. Isaccs)
- **Targeting Tumor Suppressor Pathways**
  (*M. Morin* / F. McCormick / J. Duyck)
- **Regulatory Challenges for the Cancer Drugs of Tomorrow**
  (*S. Arbuck* / R. Pazdur)
- **Targeting Chaperones and the Cell Cycle**
  (J. Adams / N. Rosen / W. Kaelin)
- **Tubulin and Motor Proteins**
  (*M.A. Jordan* / P. Giannakakou)
- **Tumor Host Interactions: Therapeutic Implications**
  (*B. Teicher* / L. Coussens)

CHROMATIN STRUCTURE & FUNCTION
TILTON SCHOOL
TILTON, NH
JUL 7-12, 2002
C. DAVID ALLIS, CHAIR
JERRY WORKMAN, VICE CHAIR

- **Structure**
  (*T. Richmond* / C. Woodcock / A. Belmont / D. Spector)
- **Silencing/Heterochromatin**
  (*S. Gasser* / S. Dent / J. Broach / B. Simpson)
- **Histone Modifications**
  (*L. Pillus* / R. Sternglanz / M. Grunstein / Craig Peterson)
- **Chromosome Dynamics/Cell Cycle**
  (*M. Smith* / S. Henikoff / R. Allshire / S. Bell)
- **Transcription Factors and Expression**
  (*S. Berger* / R. Young / B. Roeder / D. Reinberg)
- **Epigenetic and Developmental Regulation**
  (*L. Wallrath* / B. Emerson / M. Kuroda / T. Jenuwein)
- **Chromatin Remodeling**
  (*F. Winston* / B. Kingston / Y. Nakatani / C. Wu)
- **Long-Range Chromatin Organization and Effects**
  (*G. Felsenfeld* / M. Groudine / P. Geyer)
- **Disease Links/Signaling**
  (*L. Guarente* / T. Kouzarides / P. Sassone-Corsi / F. Urnov)

CO_2 FIXATION & METABOLISM IN GREEN PLANTS
MOUNT HOLYOKE COLLEGE
SOUTH HADLEY, MA
AUG 11-16, 2002
RAYMOND CHOLLET &
CHRISTINE FOYER, CO-CHAIRS
GEORGE BOWES &
SUSANNE VON CAEMMERER, CO-VICE CHAIRS

- **Photosynthesis in the Ecosystem**
  (*J.A. Berry* / P.G. Falkowski / B.G. Drake)
- **CO_2-Assimilating Enzymes & Their Regulation I**
  (*G. Bowes* / S.M. Whitney / M.E. Salvucci / M. Miginiac-Maslow)
- **CO_2-Assimilating Enzymes & Their Regulation II**
  (*R.C. Leegood* / K. Izui / H.G. Nimmo)
- **CO_2-Concentrating Mechanisms**
  (*M.R. Badger* / H. Fukuzawa / J.R. Reinfelder / A.M. Borland)
- **Sucrose and Starch Metabolism**
  (*S.C. Huber* / J.E. Lunn / A. Weber)
- **C- and N-Signaling**
  (*K.E. Koch* / N.G. Halford / S.C. Smeekens / A. Krapp)
- **Early-Career Scientist & "Hot-Off-The-Press" Short-Talks**
  (*S. von Caemmerer*)
- **Chloroplast-Mitochondrial Interactions**
  (*D.A. Day* / G. Peltier / P. Gardeström / A.H. Millar)
- **After-Banquet Featured Speaker**
  (*C. Foyer* / T.D. Sharkey)

COMBINATORIAL & HIGH THROUGHPUT MATERIALS SCIENCE (NEW)
KIMBALL UNION ACADEMY
MERIDEN, NH
JUN 30-JUL 5, 2002
ERIC AMIS & RADISLAV POTYRAILO, CO-CHAIRS

- **The Right Time and Right Space for High Throughput Discoveries**
  (W. Meier / H. Weinberg)
- **Simplicity and Complexity in Experimental Design**
  (H. Bach / L. Harmon / R. Iden)
- **Intelligent Library Fabrication**
  (D. Walt)
- **Discoveries in Structural Materials**
  (A. Cassell / J.-C. Zhao / J. Gilman)
- **Discoveries in Functional Materials**
  (W. Flanagan / C. Meredith / P. Baeuerle)
- **Shrinking Time and Space in Materials Analysis**
  (H. Koinuma / E. Yeung)
- **Survival Tactics in Data Mining**
  (K. Rajan / T. Lundstedt)
- **Scaling Up and Real Applications**
  (J. Holmgren)
- **From Data to Knowledge to Understanding - I Never Knew How Much I Didn't Know**
  (A. Karim / I. Takeuchi)

COMBINATORIAL CHEMISTRY
THE QUEEN'S COLLEGE
OXFORD, UK
JUL 7-12, 2002
KEVIN BURGESS, CHAIR
THOMAS SOWIN, VICE CHAIR

- **Medicinal Chemistry**
  (*S. Gerritz* / D. Heyer / R. Carr / J. Giles)
- **Self Assembled Libraries**
  (*P. Breton* / J.-M. Lehn / A.V. Eliseev / B.L. Miller)
- **Synthetic Methodologies I**
  (*M. Ohlmeyer* / M. Bradley / C. Abell / T. Doi)
- **Polymers and Luminescent Materials**
  (*A.J. Sutherland* / G. Coates / H. Fenniri / C.A. Mirkin / M. Adamczyk)
- **Synthetic Methodologies II**
  (*A. Ganesan* / R. Larock / S. Balasubramanian / A. Golebiowski)
- **Homogeneous Catalysis**
  (*M. Bradley* / K. Mikami / J. Sutherland / D. Sames / G. Li)
- **Factorial Design in Process Chemistry**
  (*C. Brotherton-Pleiss* / R. Carlson / M.R. Owen / G. Proehl)
- **Peptidomimetics**
  (*K. Burgess* / A. Hamilton / K. Guy / V. Hruby)
- **New Combinatorial Techniques**
  (*T. Sowin* / D. Singleton / S. Fesik)

COMPLEX FLUIDS
THE QUEEN'S COLLEGE
OXFORD, UK
JUN 30-JUL 5, 2002
ARMAND AJDARI, CHAIR
DAVID PINE, VICE CHAIR

- **Templating with Organic Materials**
  (*D. Pine* / V. Colvin / T. Russell)
- **Flow Properties of Complex Systems**
  (*D. Roux* / P. Olmsted / M.O. Robbins)
- **Polymers**
  (*T. Witten* / V. Ponsinet)
- **Manipulating and Observing with Light**
  (*F. Lequeux* / F. Scheffold / D. Grier)
- **Liquid Crystals**
  (S. Fraden)
- **Numerical Methods for Out of Equilibrium Properties**
  (D. Frenkel / P. Warren)
- **Microfluidics**
  (*H.A. Stone* / S. Quake)
- **Composite Systems**
  (*P. Pincus* / P. Poulin / D. Durian)
- **Topics from the Posters**
  (*A. Ajdari*)

COMPUTATIONAL CHEMISTRY
COLBY-SAWYER COLLEGE
NEW LONDON, NH
JUN 30-JUL 5, 2002
BERNARD BROOKS, CHAIR
WILLIAM SWOPE, VICE CHAIR

- **Session in Remembrance of Michael Zerner**
  (J. McKelvey / W. Thiel / S. Tretiak / S. Grimme)
- **Session in Remembrance of Peter Kollman**
  (D. Case / C. Simmerllingng / T. Cheatham / D. Pearlman)
- **Drug Design**
  (D. Boyd)
- **Quantum Mechanics and QM/MM Methods**
  (R. Friesner / S. Hammes-Schiffer / Q. Cui)
- **Advances in Simulation Methods**
  (J. Ponder / G. Hummer / M. Tuckerman)
- **Simulating Large Systems**
  (W. Jorgensen / C. Post / S. Marrink / E. Tajkhorshid)
- **High Performance Computing Advances**
  (TBA)

CORRELATED ELECTRON SYSTEMS
COLBY COLLEGE
WATERVILLE, ME
JUN 29-JUL 3, 2002
MEIGAN ARONSON &
ALLAN MACDONALD, CO-CHAIRS
LEONID GLAZMAN &
JOSEPH ORENSTEIN, CO-VICE CHAIRS

- **One Dimensional Systems**
  (*S. Nagler* / I. Affleck / A. Tsvelik / T. Imai)
- **Cuprates and Magnetic Fields**
  (*S. Sachdev* / E. Demler / H. Schoen / B. Lake / W. Halperin / S. Davis)
- **Copper Oxides and Sulfates**
  (*G. Sawatzky* / J. Hill / Z.X. Shen / S.-W. Cheong)
- **Novel Superconductors and Realistic Theories**
  (*L. Greene* / B. Batlogg / S. Kivelson / D. Mao / G. Kotliar / S. Moukouri)
- **Quantum Critical Phenomena**
  (*P. Coleman* / Q. Si / T. Rosenbaum / F. Steglich)
- **Magnetism in Low Carrier Density Systems**
  (*Z. Fisk* / E. Dagotto / P. Pagliuso / T. Dietl / N. Samarth / T. Makarova)
- **New Developments**
  (*A. MacDonald* / A. Millis)
- **Nanostructured Systems**
  (*S. Girvin* / R. Schoelkopf / L. Glazman / W. de Heer / X.-G. Wen)

CORROSION - AQUEOUS
COLBY-SAWYER COLLEGE
NEW LONDON, NH
JUL 14-19, 2002
PATRICK MORAN, CHAIR
JOHN SCULLY, VICE CHAIR

- **Opening Session**
  (*P. Moran* / P. Marcus)
- **Recent Developments in Localized Corrosion**
  (*B. Shaw* / M. Rohwerder / M. Edwards)
- **Advances in Environmentally Assisted Fracture**
  (*R. Staehle* / E. Han / L. Thomas)
- **Recent Developments in Protective Coatings**
  (*R. Taylor* / R. Buchheit / G. Grundmeier)
- **Predicting Corrosion Behavior**
  (*P. Moran* / A. Anderko / R. Kelly)
- **Microorganisms and Corrosion**
  (F. Mansfeld / S. Dexter)
- **Synchrotron Methods**
  (*H. Isaacs* / I. Robinson / P. Natishan)
- **Passivity and Localized Corrosion**
  (M. Edwards / S. Virtanen)
- **Corrosion and Magnetic Fields**
  (*J. Scully* / A. Davenport)

CYCLIC NUCLEOTIDE PHOSPHODIESTERASES
MOUNT HOLYOKE COLLEGE
SOUTH HADLEY, MA
JUN 23-28, 2002
EVA DEGERMAN &
SHARRON FRANCIS, CO-CHAIRS
MARY BARNETTE &
DONALD MAURICE, CO-VICE CHAIRS

- **Cyclic Nucleotides & Regulation of Energy Metabolism**
  (*J. Corbin* / *M. Houslay* / A. Zhao / H. Makino / S. Enerback / E. Degerman / V. Manganiello / T. Michaeli / H. Liu)
- **GAF Domains in PDEs & Other Proteins**
  (*N. Artemyev* / *R. Cote* / L. Aravind / J. Beavo / R. Cote / A. Yamazaki)
- **Cyclic Nucleotides & PDEs: Proliferation, Apoptosis & Differentiation**
  (*M. Conti* / *C. Lugnier* / L. Forte / J. Thompson / T. Lincoln / C. Lugnier / D. Dettmer)
- **Selective Expression of PDEs: Regulation & Function**
  (*C. Jin* / M. Conti / D. Maurice / C. Smith / C. Yan / C. Lin)
- **Compartmentalization of Cyclic Nucleotides & Their Intracellular Targets**
  (*D. Maurice* / *C. Smith* / J. Karpen / L. Brunton / M. Houslay / R. Fischmeister / W. Dostmann / K. Tasken / M. Zaccolo)
- **Pharmacological Advances in Therapeutic Use of PDE Inhibitors**
  (*M. Barnette* / *D. Dettmer* / N. Mount / J. Kambayashi)
- **Insights into Structure & Function of PDEs**
  (*J. Beavo* / *J. Thompson* / N. Artemyev / H. Ke / T. Wensel / J. Corbin / S. Francis / R. Colman / K. Omori)
- **Selected PDEs: Specificity in Catalysis, Regulation & Function**
  (*V. Manganiello* / *T. Michaeli* / Z. Huang / S. Phillips / G. Bolger / K. Murthy / D. Koesling)

DIFFRACTION METHODS IN STRUCTURAL BIOLOGY
CONNECTICUT COLLEGE
NEW LONDON, CT
JUL 14-19, 2002
MICHAEL CHAPMAN, CHAIR
THOMAS TERWILLIGER, VICE CHAIR

- **X-Ray Detectors - New Technologies**
  (*A. Howard* / R. Durst / J. Hendrix)
- **Phasing**
  (*W. Hendrickson* / B.-C. Wang / G. Bricogne / T. Terwilliger / V. Lamzin)
- **Tough Samples to Fast Data - Membrane Proteins to Automated Data Collection**
  (*B.-C. Wang* / S. Muchmore / A. Fu / P. Loll)
- **Ribosomes & Large Complexes**
  (*J. Doudna* / A. Yonath / J. Cate / V. Ramakrishnan / T. Steitz / R. Burnett)
- **More Than Intuition - Theoretical Analysis of Structure in Understanding Function**
  (*A. MacKerell* / J. Gao / J. Evanseck / M. Gilson)
- **Integrating Sequence and Structural Analysis**
  (*D. Eisenberg* / J. Thornton / A. Sali / S. Burley)
- **Structure Visualization & Analysis**
  (*A. Olson* / M. Sanner)
- **Enzyme Mechanism**
  (*G. Petsko* / D. Ringe)
- **What's New in Averaging? - 25th Anniversary of the CECAM Workshop**
  (*A. Olson* / S. Harrison / F. Winkler / J.E. Johnson)

DRUG METABOLISM
HOLDERNESS SCHOOL
PLYMOUTH, NH
JUL 14-19, 2002
JACK UETRECHT, CHAIR
DEBORAH NICOLL-GRIFFITH, VICE CHAIR

- **Keynote Lecture: The History of Drug Metabolism - A Semipersonal View**
  (*F.P. Guengerich*)
- **DNA Microarrays: Analysis of Gene Expression in Drug Metabolism, Cancer Biology & Toxicology**
  (*T. Rushmore* / S. Friend / K. Chin)
- **New Directions in Proteomics**
  (*D. Liebler* / G. MacBeath)
- **Regulation and Function of Hepatic Transporters**
  (*R Kim* / J. Schuetz / M. Vore)
- **Recent Developments in Oxidative Pathways and Mechanisms**
  (*B Hanzlik* / A. Vaz / N. Vermeulen)
- **Metabolite-Induced Adverse Drug Reactions**
  (*M. Bourdi* / D. Pessayre / D. Aster / C. Ju)
- **Selected Abstracts for Oral Presentation**
  (*H. Strobel*)
- **Novel Biotransformation Pathways**
  (*L. Klunk* / W. Adams / S. Castellino / W. Chang / R. Dianallo / A. Mutlib / C. Prakash)
- **Metabolism in Drug Discovery: Have We Really Made a Difference?**
  (*D. Nicoll-Griffith* / K. Cox / N. Chauret / J. Lee)

ELECTRODEPOSITION
COLBY-SAWYER COLLEGE
NEW LONDON, NH
AUG 11-16, 2002
DANIEL SCHWARTZ, CHAIR
WALTHER SCHWARZACHER, VICE CHAIR

- **Electrochemical Nano- and Micro-Fabrication I**
  (R. Janek / G. Zhang)
- **Electrochemical Nano- and Micro-Fabrication II**
  (E. Delamarche / R. Schuster / D. Routkevitch)
- **Fundamentals**
  (*A. Gewirth* / S. Morin / O. Magnussen)
- **Metallization for Microelectronics and MEMS**
  (*J. Reid* / R. Alkire / T. Moffat / C. Carraro)
- **Recent News: Short Talks and Poster Summaries**
  (*W. Schwarzacher*)
- **Compound Semiconductors**
  (*J. Switzer* / L. Foresti / G. Hodes / T. Yoshida)
- **Materials by Anodic Processes**
  (*K. Hebert* / L. Toppare / Y. Tak)
- **Magnetic Materials and Phenomena**
  (*N. Myung* / G. Zangari / P. Searson / J.M.D. Coey)
- **Nanostructures**
  (*W. Schwarzacher* / N. Tao / R. Penner)

ELECTRON DONOR ACCEPTOR INTERACTIONS
SALVE REGINA UNIVERSITY
NEWPORT, RI
AUG 11-16, 2002
DEVENS GUST, ANA MOORE &
THOMAS MOORE, CO-CHAIRS
GUILFORD JONES &
MARK RATNER, CO-VICE CHAIRS

- **Molecular Electronic Components**
  (*M. Wasielewski* / F. Stoddart / L. De Cola)
- **Molecular Circuits and Devices**
  (*M. Rampi* / C. Kagan / C. Mirkin / C. Kubiak / S. Lindsay)
- **Theory of Electron Transfer**
  (*M. Ratner* / G. Voth / D. Beratan / V. Mujica)
- **Molecular Donor-Acceptor Systems I**
  (*M. Therien* / I. Hamachi / L. Kelly / T. Goodson)
- **Molecular Donor-Acceptor Systems II**
  (*N. Frank* / B. Albinsson / E. Gallopini / R. Schmehl)
- **Solar-Electric Energy Conversion**
  (*N. Armstrong* / G. Meyer / D. Fitzmaurice / K. Hummelen)
- **Organized Assembies and Nanosatructures**
  (*S. Braslavsky* / K. Eisenthal / J. Hurst / A. Bezryadin)
- **Electron Transfer in Biological and Biomimetic Systems**
  (*M. Thurnauer* / G. Brudvig / A. McDermott / A. Holzwarth / A. Rutherford)
- **Electron Transfer in Biological Systems**
  (*J. Verhoeven* / P. Fromme / H. Gray)

ELECTRONIC PROCESSES IN ORGANIC MATERIALS
SALVE REGINA UNIVERSITY
NEWPORT, RI
JUL 21-26, 2002
GERALD SMALL, CHAIR
JOSEPH KLAFTER, VICE CHAIR

- **Organic Crystals and Materials**
  (*V. Kenkre* / B. Batlogg / D. Haarer)
- **Charge/Exciton Transport and Dynamics in Organic Materials**
  (*M. Abkowitz* / D. Moses / P. Parris / S. Heun / F. Spano)
- **Ultrafast Spectroscopy and Nonlinear Phenomena**
  (*C. Bardeen* / M. Wasielewski / T. Kobayashi / S. Marder)
- **Biological Systems: Photosynthetic Systems and DNA**
  (*R. Silbey* / J. Schmidt / J. Wrachtrup / D. Braun / C. Mirkin)
- **Nanosystems and Architectronics**
  (*M. Ratner* / C. Lieber / J. Gimzewski / M. Aono)
- **Organic Metals, Magnets, Conductors and Transistors**
  (A. Epstein / D. Yaron / A. Dodabalapur / H. Kobayashi)
- **New Materials and Organic Conductors**
  (S. Bent / R. Haddon)
- **Light-Harvesting, Energy Transfer and Nuclear Dynamics in Multichromophoric Systems**
  (*J. Klafter* / P. Barbara / T. Goodson III / J. Lindsey / R. Dickson)
- **Applications of Nonlinear Optical Effects**
  (*V. Chernyak* / S. Ermer / J. Perry)

ENERGETIC MATERIALS
TILTON SCHOOL
TILTON, NH
JUN 16-21, 2002
THOMAS RUSSELL, CHAIR
LAURENCE FRIED, VICE CHAIR

- **Future Directions for Energetic Materials Research**
  (*R. Doherty* / G. Ulrich / R. Hemley)
- **Synthesis of High Nitrogen and All Nitrogen Materials**
  (R. Bartlet / B. Koppes / J. Batarro / K. Kristie)
- **Synthesis and Production of Nano Materials**
  (J. Satcher / Y. Puszynski)
- **Decomposition and Combustion of Traditional and Nano Energetic Materials**
  (C. Wight / K. Kuo / S. Son / B. Henson)
- **Crystallization of Energetic Materials**
  (A. Vanderstien / B. Wilson)
- **Molecular Dynamic Modeling**
  (*C. White* / T.C. Germann / M. Ellert / P. Vashista)
- **Probing the Early Reaction Chemistry of Detonations**
  (*D. Dlott* / R. Miller / K. Nelson / D. Moore)
- **Characterization and Chemistry of Materials at High Pressure**
  (S. Peiris / G. Pangilinan / J. Zaug / J. Forbes)
- **Mesoscale Modeling of Energetic Materials**
  (*M. Baer* / T. Sewell / J. Shepard / D. Frost / A. Milne)

ENVIRONMENTAL BIOINORGANIC CHEMISTRY (NEW)
PROCTOR ACADEMY
ANDOVER, NH
JUN 16-21, 2002
FRANCOIS MOREL &
EDWARD STIEFEL, CO-CHAIRS

- **Overviews**
  (*E.I. Stiefel / F.M.M. Morel* / R.C. Prince)
- **Metal Speciation in the Environment and in Cells**
  (*W.G. Sunda* / K.W. Bruland / T.V. O'Halloran / A. Butler / J.W. Moffett)
- **Anaerobic Environments**
  (*J.G. Ferry* / M.W.W. Adams / R. Thauer)
- **Carbon in the Environment**
  (*L.Y. Young* / S.J. Lippard / J.T. Groves / D.R. Lovley / M.A. Saito)
- **Sulfur Cycles**
  (*A. Xavier* / J.J.G. Moura / A. McEwan)
- **Biominerals in the Environment**
  (*M. Hoffmann* / B.M. Tebo / D.K. Newman / J.F. Banfield / N. Kröger)
- **Nitrogen Cycle**
  (*B.B. Ward* / R.N.F. Thorneley / P. Kroneck)
- **Cycles of Toxic Elements**
  (*A.O. Summers* / M. Neu / R.S. Oremland / S. Silver / H.A. Godwin)
- **Origins of Life and the Environment**
  (*T.G. Spiro* / K. Nealson)

ENVIRONMENTAL ENDOCRINE DISRUPTORS
MOUNT HOLYOKE COLLEGE
SOUTH HADLEY, MA
JUL 14-19, 2002
ANA SOTO, CHAIR
DANIEL SHEEHAN, VICE CHAIR

- **Panel Discussion: Evolution, Development and Endocrine Disruptors**
  (*C. Sonnenschein* / S. Gilbert / J. Thornton)
- **Dioxins and Development**
  (*P. Mocarelli* / J.A. Flaws / L. Birnbaum / S. Petersen)
- **Perspectives on Endocrine Disruptor Research**
  (*D.M. Sheehan* / J. Heindel / W. Owens)
- **Impact of Endocrine Disruptors on the Male Genital Tract**
  (*B. Jegou* / N. Skakkebaeck / L.F. Parada)
- **Mechanisms Underlying the Effects of Xenoestrogens: Receptors and Homeobox Genes**
  (*G. Stancel* / J.-A. Gustafsson / T. Kurita / D. Sassoon)
- **Chemical Mixtures in Endocrine Disruption in Wildlife and Human Populations**
  (M. Fernandez / J.W. Brock / A. Kortenkamp)
- **Endocrine Disruptors, Development and Neoplasia**
  (*A. Sasco* / C. Markey / R. Newbold)
- **Endocrine Disruption in Wildlife**
  (J.G. Burkhart / J. Oehlmann / G. Ankley)
- **Disruptors of Thyroid Function**
  (*T. Zoeller* / D. Pfaff / A. Brouwer)

ENVIRONMENTAL SCIENCES: WATER
HOLDERNESS SCHOOL
PLYMOUTH, NH
JUN 23-28, 2002
DOMINIC DITORO, CHAIR
DEBORAH SWACKHAMER, VICE CHAIR

- **Chemical Reactivity and Bioavailability**
  (A. Zehnder / J. Schnoor)
- **Reaction Mechanisms**
  (*R. Swartzenbach* / W. Arnold / M. Scherer / D. Sedlak)
- **Heterogeneous Particles**
  (*C. O'Melia* / M. Elimelech / R. Kretzschmar)
- **Arsenic and Selenium Cycling**
  (*G. Helz* / K. Farley / W. Adams)
- **Mercury Cycling**
  (*T. Atkeson* / C. Gilmore)
- **Frontiers in Biogeochemistry**
  (B. Wehrli / B. Voelker / J. Tossell)
- **PAHs Exposure and Effects**
  (*P. Gschwend* / D. Mount / R. Dickhut)
- **Emerging Chemicals of Concern**
  (*S. Eisenrich* / D. Muir / J. Hermens)

ENZYMES, COENZYMES & METABOLIC PATHWAYS
KIMBALL UNION ACADEMY
MERIDEN, NH
JUL 21-26, 2002
KAREN ALLEN & PAUL FITZPATRICK, CO-CHAIRS
PATRICIA BABBITT &
TADHG BEGLEY, CO-VICE CHAIRS

- **Protein Crystals in Action**
  (*B. Bahnson* / S. Burley / M. Navia)
- **Cofactors and Metabolic Pathways**
  (*S. Copley* / R. White / H.-W. Liu / G. Reinhart / L. Wackett)
- **Signal Transduction**
  (A. Stock / J. Denu / P. Cole)
- **Enzyme Mechanisms**
  (*T. Begley* / E. Furfine / V. Anderson / S. Withers / J. Marcinkeviciene)
- **Protein Dynamics**
  (*C. Mattos* / D. Kern / I. Schlichting / J. Dyson)
- **Metalloenzymes**
  (G. McLendon / D. Ash)
- **Enzymes**
  (*P. Frey* / D. Quinn / P. Cook / J. Stivers)
- **New Approaches**
  (*P. Babbitt* / P. Carey / F. Perler / B. Cravatt)
- **New Frontiers**
  (*J. Villafranca* / A. Mildvan / M. Karplus)

FLOW & TRANSPORT IN PERMEABLE MEDIA
PROCTOR ACADEMY
ANDOVER, NH
AUG 4-9, 2002
KISHORE MOHANTY, CHAIR
MAJID HASSANIZADEH, VICE CHAIR

- **Broad Perspectives**
  (*S. Tyler* / F. Orr, Jr. / J. Wilson)
- **Structure & Transport**
  (*G. Fogg* / *M. Honarpour* / J. Davis / M. Celia / K. Sorbie)
- **Micro-Scale Transport**
  (*J. Buckley* / R. Seright / C. Montemagno)
- **Numerical Methods**
  (*H. Tchelepi* / *J. Nolen* / D. Zhang / M. Blunt / T. Hou)
- **Scale-Up**
  (*M. Christie* / P. Adler / R. Lenormand)
- **Recovery & Remediation I**
  (*G. Teusch* / *G. Hirasaki* / G. Pope / A. Firoozabadi / R. Enick)
- **Recovery & Remediation II**
  (*J. Barker* / *W. Rossen* / P. Kitanidis / A. Sahni)
- **Parameter Estimation & Uncertainty**
  (*J. Gomez-Hernandez* / J. Carrera / J. Hopmans / A. Datta-Gupta)
- **Monitoring & Integration**
  (*M. Hassanizadeh* / *A. Mayer* / S. Carle / J. Jansen)

FRONTIERS OF US SCIENCE & TECHNOLOGY POLICY
CONNECTICUT COLLEGE
NEW LONDON, CT
JUL 28-AUG 2, 2002
DARYL CHUBIN & JOHN ELTER, CO-CHAIRS
JANE MAIENSCHEIN, VICE CHAIR

- **S&T Policy in a Post-911 World: For What? For Whom?**
  (*J. Maienschein* / H. Shapiro / J. Sideman)
- **Science & Technology Priorities and Stakeholder Politics**
  (*S. Draggan* / D. Wince-Smith / D. Guston)
- **Environment and Global Development**
  (*C. Berger* / N. Choucri / S. Donnelly)
- **Knowledge as Public Good: Putting "Publics" into Public Policy**
  (*W. Lepkowski* / C. Marrett / E.Augenbraun)
- **Biomedicine, Health and Life: Policy Lags**
  (*M. Apple* / S. Malcom)
- **Policy and the New "Techs": Bio, Info and Nano**
  (*S. Fitzpatrick* / A. Romig / D. Magnus)
- **Energy Futures: What are the Alternatives?**
  (*J. Wallace* / S. Ovshinsky / M. Krebs)
- **Science for Policy: Waning Influence of Research on the Process?**
  (*W. Stiles* / J. Stoffel / D. Fossum)
- **New Models and the Next Generation of S&T Policy**
  (*M. Chertow* / W. Pearson / S. Skemp)

FUEL CELLS
ROGER WILLIAMS UNIVERSITY
BRISTOL, RI
JUL 28-AUG 2, 2002
ANDREA RUSSELL &
THOMAS ZAWODZINSKI, CO-CHAIRS
MARK MATHIAS &
BRANT PEPPLEY, CO-VICE CHAIRS

- **Entrepreneurial Activities and the Transition from Science to Industry**
  (D. Williams / S. Gottesfeld)
- **New Polymer Membranes**
  (J. Kerres / J. Roziere / D. Perahia)
- **Direct Methanol Fuel Cells**
  (P. Zelenay / J. McGrath)
- **Advanced Characterization**
  (S. Greenbaum / A. Hillier)
- **Electrocatalysis Experimental**
  (B. Hayden / J. Behm / C. Korzeniewski)
- **Electrocatalysis Theory**
  (A. Anderson / J. Norskov)
- **Composite Electrodes**
  (A. Kucernak / G. Hoogers / P. Pickup)
- **Fuel Cell History**
  (H. Wallace)

GENOMICS & STRUCTURAL/EVOLUTIONARY BIOINFORMATICS (NEW)
MOUNT HOLYOKE COLLEGE
SOUTH HADLEY, MA
JUL 28-AUG 2, 2002
CONRAD GILLIAM, TAKASHI GOJOBORI &
ANDREY RZHETSKY, CO-CHAIRS

- **Bioinformatics of Molecular Networks I**
  (*A. Califano* / A. Arkin / G. Church / M. Tomita)
- **Bioinformatics of Molecular Networks II**
  (*K. White* / D. Eisenberg / T. Kazic / M. Kanehisa)

- **Comparative Genomics I / Paragenomics**
  (*W.-H. Li* / G. Bernardi / S. Edward / K. Wolfe / Y. Sakaki)
- **Comparative Genomics II / Orthogenomics**
  (*T. Gojobori* / M. Long / C.-I. Wu / S. Paabo / K. Ikeo / L. Rieseberg)
- **Population Genomics**
  (*N. Takahata* / J. Terwilliger / M. Ashburner / R. Chakroborty)
- **Structural Genomics**
  (*M. Go* / B. Honig / K. Nishikawa / J. Thorne / S. Eddy)
- **Functional Genomics**
  (*C. Gilliam* / R. Axel / S. Yokoyama / M. Riley / J. Doebley)
- **Phylogenetic Genomics**
  (*M. Nei* / S. Naruya / T. Miyata / B. Martin / N. Goldman / W. Fitch)

GRANULAR & GRANULAR-FLUID FLOW (NEW)
HOLDERNESS SCHOOL
PLYMOUTH, NH
JUN 30-JUL 5, 2002
BENJAMIN GLASSER, TROY SHINBROT &
LEV TSIMRING, CO-CHAIRS

- **Open Issues in Granular-Fluid Flows**
  (*G. Metcalfe* / J. Ooi / J. Gollub)
- **Progress in Numerical Methods**
  (*H. Herrmann* / S. Luding / T. Pöschel / F. Radjai)
- **Geophysical Granular Flows**
  (*J. Jenkins* / R. Iverson / D. Rothman)
- **Suspension Dynamics**
  (*R. Behringer* / A. Hosoi / N.-H. Duong / A. Kudrolli / S. Morris)
- **Supersonic Granular Flows**
  (*H. Swinney* / E. Rericha / S. Sundaresan)
- **Theory Developments**
  (*L. Kadanoff* / I. Aranson / J.M.N.T. Gray / S. Douady)
- **Colloids vs. Grains I: Phenomena**
  (*S. Coppersmith* / A. Dinsmore / D. Grier)
- **Colloids vs. Grains II: Thermodynamics**
  (*H. Stanley* / M. Dijkstra / J. Brady / A. Yodh)
- **Granular Shear Response**
  (*I. Goldhirsch* / H. Jaeger / M. Louge)

GREEN CHEMISTRY
THE QUEEN'S COLLEGE
OXFORD, UK
SEP 8-13, 2002
JAMES BASHKIN & ADRIAN KYBETT, CO-CHAIRS
ROBIN ROGERS &
JOHN WARNER, CO-VICE CHAIRS

- **Catalytic Oxidation**
  (*J. Ashby* / T.J. Collins / R.A. Sheldon)
- **Catalysis I**
  (*E. Carreira* / A. Whiting / D.J. Cole-Hamilton / P.B. Webb)
- **Heterogeneous Catalysis**
  (*J.H. Clark* / A. Corma / A. Bhattacharyya)
- **Green by Design & Early Indicators of Toxicity**
  (*T.J. Collins* / J. Ashby / C. Fisher)
- **Biphasic & Fluorous Systems**
  (*R.H. Crabtree* / D.E. Bergbreiter / J.A. Gladysz)
- **Metals in Catalysis & Synthesis**
  (*J.A. Gladysz* / R.H. Grubbs / P.H. Dixneuf)
- **Asymmetric Catalysis**
  (*R.H. Grubbs* / V.K. Aggarwal / E.M. Carreira)
- **Green Processes and Reactions**
  (*W. Hölderich* / M. Poliakoff / T.M. Klapötke)
- **Polyoxometalate Oxidation & Green Carbanion Chemistry**
  (*I.T. Horvath* / R. Neumann / C.-J. Li)
- **Ionic Liquid & Solvent-Free Systems**
  (*R.D. Rogers* / J.F. Brennecke / J.L. Scott)
- **Asymmetric Biocatalysis & Pharmaceuticals**
  (*R.A. Sheldon* / K. Faber / P.G. Wuts / S.M. Gorun)
- **Synthesis I**
  (*G.N. Sheldrake* / S.E. Denmark / J.D. White)
- **Catalysis II**
  (*L. Wong* / R.H. Crabtree / B.L. Feringa)
- **Synthesis II**
  (*P.G. Wuts* / C.L. Raston / P.G. Steel)

HEMOSTASIS
COLBY COLLEGE
WATERVILLE, ME
JUL 7-12, 2002
DAVID GINSBURG, CHAIR
EDWARD PLOW, VICE CHAIR

- **Platelets and Megakaryocytopoiesis**
  (*P. Newman* / K. Kaushansky / R. Shivdasani / R. Handin)
- **VWF and TTP**
  (*E. Sadler* / B. Laemmle / H. Tsai / J. Lopez / Z. Ruggeri)
- **Platelet Receptors and Signaling I**
  (*M. Ginsberg* / S. Shattil / M. Kahn / P. Conley)
- **Platelet Receptors and Signaling II**
  (*L. Brass* / D. Phillips / G. White / J. Fox / L. Parese)
- **Hemostasis and the Vessel Wall**
  (*D. Wagner* / R. Rosenberg / C. Esmon / T. Byzova)
- **Coagulation Protein Biosynthesis and Function**
  (*R. Kaufman* / P. Tracy / B. Furie / K. Mann / W. Ruf)
- **Of Mice and Men (And Late-Breaking Topics)**
  (*J. Degen* / H. Weiler / V. Ploplis / S. Coughlin)
- **Genomics and New Approaches to Therapy**
  (*G. Fitzgerald* / L. Peters / R. Flaumenhaft / M. Kay)
- **Late-Breaking Topics and Selected Abstract Presentations**
  (*D. Ginsburg* / *E. Plow*)

HETEROCYCLIC COMPOUNDS
SALVE REGINA UNIVERSITY
NEWPORT, RI
JUL 7-12, 2002
WILLIAM MURRAY, CHAIR
TIMOTHY GALLAGHER, VICE CHAIR

- **Assembly Strategies for Complex Heterocyclic Molecules**
  (*J. Porco* / D. Austin / M. Kort / J. Panek)
- **Annulation Approaches to Heterocyclic Synthesis**
  (*T. Jamison* / P.A. Evans / P. Devine / F. Terrier / D. Comins)
- **Assembly Strategies for Natural Products**
  (*W. Lubell* / R. Danheiser / M. Hirama)
- **Heterocycles in Catalysis**
  (*M. Kritsche* / D. MacMillan / B. Stoltz)
- **Metal Catalysis in Heterocyclic Synthesis**
  (*K. Brummond* / A. Pearson / J. Montgomery / J. Barluenga)
- **Asymmetric Heterocyclic Synthesis**
  (*T. Jones* / E. Carreira / I. Ojima / J. Cossy)
- **Synthesis of Alkaloids and Related Compounds**
  (*S. Stahl* / J. Cook / J. Coe / Z. Sui)
- **Heterocycles of Biological Relevance I**
  (*J. Johnson* / N. Murugesan / K. Briner / P. Ting)
- **Heterocycles of Biological Relevance II**
  (*G. Sheppard* / M. Schnute / D. Yamashita / H. Wasserman)

HIGH PRESSURE, RESEARCH AT
KIMBALL UNION ACADEMY
MERIDEN, NH
JUN 23-28, 2002
PAUL MCMILLAN, CHAIR
ANASTASIA CHOPELAS, VICE CHAIR

- **New Frontiers in High Pressure Research**
  (*R. Nelmes* / R. Hemley / P. Loubeyre)
- **Shock Waves, Giant Planets and Brown Dwarfs**
  (*W. Nellis* / R. Chau / M. Knudson / T. Guillot)
- **New Geophysics and Geochemistry**
  (*M. Brown* / D. Andrault / B. Harte / J. Holloway)
- **High Pressure Biochemistry and Nanomaterials**
  (*J. Schilling* / R. Winter / R. Fourme / S. Tolbert)
- **Liquids at High Pressure**
  (*V. Brazhkin* / Y. Katayama / M. Mezouar / P. Poole)
- **Superhard Materials**
  (*R. Boehler* / M. Akaishi / V. Solozhenko / A. Zerr)
- **Molecular-Solid State Chemistry at High Pressure**
  (*S. Tozer* / J. Dong / R. Bini)
- **Metals, Superconductivity and Neutrons**
  (*K. Syassen* / M. McMahon / K. Shimizu / W. Bao)
- **New Challenges and Opportunities**
  (*A. Chopelas* / G. Galli / H.-K. Mao)

HIGH TEMPERATURE MATERIALS, PROCESSES & DIAGNOSTICS
COLBY COLLEGE
WATERVILLE, ME
AUG 4-9, 2002
THEODORE BESMANN, CHAIR
KLAUS HILPERT, VICE CHAIR

- **Computational Modeling of Materials Processes and Properties**
  (*M. Allendorf* / L. Chen / A. Korkin)
- **High Temperature Electronic and Electrochemical Materials**
  (*T. Armstrong* / M. Martin / H. Verweij / P. Chalker)
- **Gas-Solid Interactions**
  (*F. Armanet* / D. Butt / D. Gozzi)
- **Probing High Temperature Systems**
  (*R. Weber* / A. Payzant / D. Aspnes)
- **CVD Kinetics and Growth Behavior**
  (*T. Starr* / D. Srolovitz / M. Ritala / R.G. Gordon)
- **Novel High Temperature Processes**
  (*W. Petuskey* / M. Pons / C. Blue / W. Fahrenholtz)

- **Thermochemical Databases and Phase Relations**
  (*M. Stan* / S. Fries / L. Cook)
- **Chemistry and Mechanics of Oxide Coatings**
  (*B. Sheldon* / E. Carter / W.Y. Lee / K. Lee)
- **Flame Synthesis and Processing of Stable Nonoxide Nanoparticles**
  (*M.R. Zachariah* / R. Axelbaum)

HORMONAL & NEURAL PEPTIDE BIOSYNTHESIS
COLBY-SAWYER COLLEGE
NEW LONDON, NH
JUL 21-26, 2002
GARY THOMAS, CHAIR
IRIS LINDBERG, VICE CHAIR

- **Genetics and Physiology of Hormonal and Neural Peptide Synthesis and Processing**
  (*B. Eipper* / D. Steiner / G. Ruvkun / J. Pintar / U. Hochgeschwender)
- **Role of Processing Enzymes in Human Physiology and Disease**
  (*J. Christian* / N. Seidah / M. Wolfe / H.M. Tsai / M. Blackman)
- **Biochemistry and Structural Analysis of Proprotein Processing Enzymes**
  (*M. Chrétien* / U. Shinde / R. Fuller / I. Lindberg)
- **Structure and Regulation in Protein Sorting and Localization**
  (*T. Martin* / B. Balch / F. Brodsky / J. Bonifacino / A. Blagoveshchenskaya / J. Klumperman / M. Stamnes)
- **Golgi Structure, Dynamics and Sorting**
  (*S. Tooze* / K. Howell / V. Bankaitis / A. De Matteis / D. Shields)
- **Formation of Stimulus-Responsive Compartments**
  (*K. Howell* / M. Marks / R. Mains / N. Hirokawa / H.H. Gerdes / K. Joiner)
- **Targeting to Secretory Granules and Synaptic Vesicles**
  (*J. Hutton* / P. Arvan / Y.P. Loh / R. Edwards / S. Tooze)
- **New Approaches to Peptide Diversity**
  (*N. Seidah* / P. Taghert / L. Fricker / M. Yanigasawa / C. Li / O. Civelli)
- **Mechanisms and Regulation of Exocytosis**
  (*P. Arvan* / T. Martin / S. Bajjeilieh / E. Levitan / J. Richmond)

HOST-PARASITE INTERACTIONS, BIOLOGY OF
SALVE REGINA UNIVERSITY
NEWPORT, RI
JUN 16-21, 2002
NORMA ANDREWS, CHAIR
DAVID ROOS, VICE CHAIR

- **Cell and Developmental Biology**
  (*K. Gull* / C. Beckers / S. Beverley / T. Doering / K. Mensa-Wilmot)
- **Host Cell Attachment, Invasion and Modification**
  (*D. Sibley* / B. Klein / C. Newbold / M.J.M. Alves / G. Ward)
- **Intracellular Survival Strategies**
  (*W. Goldman* / B. Burleigh / D. Goldberg / A. Casadevall / A. Sinai)
- **Parasite/Vector/Host Interactions**
  (*D. Sacks* / C. Barillas-Murry / A. James / I. Roditi / D. Schneider)
- **Signalling and Innate Immunity**
  (*R. Gazzinelli* / E. Denkers / M. Desjardins / D. Dobbelaere / S. Grinstein)
- **Chemotherapy Targets and Resistance**
  (*M. Ferguson* / R. Donald / P. Englund / S. Moreno / T. White)
- **Transporters in Intracellular Parasitism**
  (*J. Blackwell* / S. Desai / K. Kirk / S. Landfear / P. Roepe)
- **Progress Towards a Malaria Vaccine**
  (*V. Nussenzweig* / P. Duffy / A. Holder / E. Nardin)
- **Functional Genomics**
  (*K. Stuart* / N. Agabian / J. Boothroyd / A. Cruz / M. Gardner)

ILLICIT SUBSTANCE DETECTION: DRUGS
THE QUEEN'S COLLEGE
OXFORD, UK
JUL 21-26, 2002
ANDRE LAWRENCE & HARRY MARTZ, CO-CHAIRS

- **Policy**
  (*R. Minz* / A. Brandenstein / I.O. Curilla / M. Connoly)
- **Photon Detection Technologies I**
  (*L. Malotky* / J. Pannella / L. Grozdin / P. Bjorkholm / V. Orphan)
- **Photon Detection Technologies II**
  (*M. Langford* / R. Lindquist / P. Rothschild)
- **Trace Detection Technologies I**
  (*S. Hallowell* / K. Walker / J. McCready / F. Aberl)
- **Trace Detection Technologies II**
  (*T. Kunz* / T. De Persia / P. Mansson / F. Kuja)
- **Nuclear / Emerging Detection Technologies I**
  (P. Griffin / T. Gazani)
- **Nuclear / Emerging Detection Technologies II**
  (G. Vourvopoulos / G. Gallant / C. Bell)
- **Emerging Technologies and Policy I**
  (*E. Bower* / T. Howell / G. Gallant / E. Hussein / H. Strecker)
- **Emerging Technologies and Policy II**
  (T. Rayner / N. Washburn)

IMMUNOCHEMISTRY & IMMUNOBIOLOGY
PROCTOR ACADEMY
ANDOVER, NH
AUG 18-23, 2002
MARC JENKINS, CHAIR
ANNE O'GARRA, VICE CHAIR

- **Innate Immunity**
  (*L. Lanier* / A. Aderem / S. Akira / M. Colonna)
- **Antigen Receptors**
  (*M. Schlissel* / H. von Boehmer / B. Sleckman / J. Kappler)
- **Lymphocyte Development**
  (*K. Hogquist* / G. Hollander / H. Petrie / C. Guidos / B. Kyewski)
- **Signal Transduction in Lymphocytes**
  (*G. Koretzky* / J. Monroe / S. Pierce / K. Siminovitch)
- **B Cell Activation/Memory**
  (*J. Stavnezer* / J. Kearney / M. McHeyzer-Williams / F.N. Papavasiliou)
- **Lymphocyte Migration**
  (*M. Gunn* / L. LeFrancois / S. Lira / T. Springer)
- **Intravital Imaging**
  (*C. Contag* / S. Fraser / P. Allen / J. Mountz)
- **T Cell Activation/Memory**
  (*P. Marrack* / R. Ahmed / S. Swain / K. Murphy)
- **Immune Regulation and Tolerance**
  (*A. O'Garra* / F. Powrie / E. Shevach / B. Stockinger)

IN VIVO MAGNETIC RESONANCE
COLBY-SAWYER COLLEGE
NEW LONDON, NH
JUL 28-AUG 2, 2002
CHRISTOPHER SOTAK, CHAIR
CHARLES SPRINGER, VICE CHAIR

- **Implications of Diffusion Tensor Imaging**
  (*P.J. Basser* / V.J. Wedeen / C. Pierpaoli)
- **Faster MRI: Reduced k-Space vs. Reduced Image-Space**
  (*R. Turner* / M. Griswold / K.P. Pruessmann / R. Ordidge)
- **High Field Exclusives**
  (*T.F. Budinger* / K. Ugurbil / W.D. Rooney)
- **"Molecular" Imaging: Contrast Reagent Design**
  (*C.S. Springer, Jr.* / R.B. Lauffer / A.D. Sherry / T.J. Meade)
- **Contrast Optimization for Molecular Imaging and Genetic Expression**
  (*A.P. Koretsky* / Z. Bhujwalla)
- **Multi-Component Water Diffusion in Biological Tissue**
  (*D. LeBihan* / S.J. Blackband / Y. Cohen / G.J. Stanisz)
- **Emerging Developments**
  (*C.H. Sotak* / R.K. Butts / K. Golman)
- **NMR Assessment of Tissue Viability**
  (*J.F. Dunn* / K.-A. Hossmann / S.M. Ronen / R. Kauppinen)
- **Perfusion by MRI: Contrast Reagent Bolus-Tracking vs. Arterial Spin Labeling**
  (*R.M. Weisskoff* / D. Alsop / L. Østergaard)

INDUSTRIAL ECOLOGY
COLBY-SAWYER COLLEGE
NEW LONDON, NH
JUN 9-14, 2002
DAVID ALLEN, CHAIR
MARINA FISCHER-KOWALSKI, VICE CHAIR

- **Material Flows at National and Regional Scales**
  (*D. Allen* / M. Fischer-Kowalski / Y. Moriguchi)
- **Material Flows at National and Regional Scales: Metabolic Transitions**
  (*M. Fischer-Kowalski* / R. Ayres / H. Schandl / C. Rapera / N. Lasmarias / S. Giljum)
- **Case Studies of Metabolic Transitions**
  (*H. Schandl* / P.M.C. Ferrjo / X. Chen / S. Singh / J. da Costa Machado)
- **Material Flows at National and Regional Scales: Substance Flows in Industrialized Economies**
  (*R. Ayres* / T. Graedel / R. Kleijn / M. Chertow / S. Boehme)
- **Material Flows in Products and Services Sectors**
  (*R. Lifset* / C. Binder / C. Ryan / S. Levine / T. Votta)
- **Tools of Industrial Ecology**
  (*R. Kleijn* / H. Rechberger / A. Horvath / M.A. Curran / Y. Moriguchi / H. Weisz)
- **Material Flows in Industrial Sectors**
  (*B. Allenby* / H. Klee / R. Pfahl / D. Rejeski)
- **Education and Interfaces With Other Disciplines**
  (*K. Cockerill* / E. van der Voet / D. Allen / H. Bratteb)
- **Future Directions**
  (*T. Graedel* / V. Thomas / M. Fischer-Kowalski / J. Ehrenfeld)

INNOVATIONS IN COLLEGE CHEMISTRY TEACHING
CONNECTICUT COLLEGE
NEW LONDON, CT
JUN 23-28, 2002
MELANIE COOPER, CHAIR
G. EARL PEACE, VICE CHAIR

- **Bringing Chemistry Research into the Classroom**
  (A. Ellis / J. Meinwald)
- **Research in Chemistry Education**
  (G. Weaver / D. Wink)
- **New Directions in Laboratory Education**
  (J. Reeves / J. Hutchinson)
- **The Future of Student Assessment**
  (D. Eubanks / L. Eubanks / T. Holme)
- **Teaching Chemistry in a Real World Context**
  (R. Glaser / C. Middlecamp)
- **What Can We Learn from Other Disciplines?**
  (L. McDermott / R. Leamnson)
- **New Directions in Teaching and Visualizing Chemistry**
  (J. Bell / R. Tasker)
- **Preparing Students to Teach Chemistry**
  (A. Stacey / S. Lowery Bretz / M. Nakhleh)
- **Teaching a Diverse Population**
  (C. Ney / B. Watford)

INORGANIC CHEMISTRY
SALVE REGINA UNIVERSITY
NEWPORT, RI
JUL 28-AUG 2, 2002
RICHARD KEMP, CHAIR
STEPHEN KOCH, VICE CHAIR

- **Nanotechnology**
  (*W. Buhro* / T. Mallouk / P. Yang / C. Brinker)
- **Organometallic Chemistry and Catalysis I**
  (*J. Briggs* / C. Casey / P. Sobota / J. Pelati / S. Scott)
- **Solid State and Materials**
  (*D. Hoffman* / T. Ren / S. Ching / T. Marks)
- **Main Group Chemistry**
  (*M. Lattman* / A. Cowley / I. Manners / F. Gabbaï / T. Tilley)
- **Transition Metals and Heavier Elements I**
  (*D. Roundhill* / J. Eglin / S. Stoll / M. Scott)
- **Organometallic Chemistry and Catalysis II**
  (*W. Geiger* / G. Coates / K. Goldberg / M. Bullock / D. Astruc)
- **Transition Metals and Heavier Elements II**
  (*W. Evans* / B. Bursten / C. Raymond / J. Gordon)
- **Bio-Inorganic Chemistry**
  (*S. Koch* / V. Pecoraro / M. Harding / B. Moasser / M. Kirk)
- **Glassy Metals**
  (*R. Kemp* / W. Johnson)

INTERFACES, CHEMISTRY AT
CONNECTICUT COLLEGE
NEW LONDON, CT
JUL 7-12, 2002
DENNIS PRIEVE, CHAIR
GABOR SOMORJAI, VICE CHAIR

- **Combinatorial Approaches to Biointerfacial Chemistry**
  (C.A. Mirkin / *M. Longo* / P.S. Cremer / *M. Trau*)
- **Biomolecular Materials**
  (D. Leckband / *E. Mann* / J. Hoh / J.W. Schneider / *D. Discher*)
- **Interfacial Aspects of Biosensing**
  (N.D. Spencer / *M. Santore* / M. Tarlov / *N. Dan*)
- **Self-Assembly of Colloidal Particles on Surfaces**
  (D. Weitz / *D. Marr* / C. Bechinger / *J. Walz* / J.L. Anderson / *E. Kaler*)
- **Self-Assembly of Nano Particles on Surfaces**
  (C.M. Lieber / *N. Ise* / S.A. Majetich / *E. Ruckenstein*)
- **Colloidal Forces: New Insights I**
  (H.-J. Butt / *W. Ducker* / D. Grier / *E. Sevick-Muraca* / K. Vanderlick / *M. Gee*)
- **Colloidal Forces: New Insights II**
  (S. Biggs / *O. Vinogradova* / D. Williams / *C. Radke*)
- **Charge Effects in Nonaqueous Media I**
  (I. Morrison / *M. Hair* / R. Horn / *J. Green* / J. Czarnecki / *M. Bevan*)
- **Charge Effects in Nonaqueous Media II**
  (R. Kornbrekke / *R. Webber* / L. White)

INTERMEDIATE FILAMENTS
ROGER WILLIAMS UNIVERSITY
BRISTOL, RI
JUN 30-JUL 5, 2002
PIERRE COULOMBE, CHAIR
UELI AEBI, VICE CHAIR

- **Perspectives on Cytoskeletal Assemblies**
  (N. Hirokawa / M. Stewart / D. Ingber / *G. Borisy*)
- **IF Structure, Assembly and Dynamics: From Atoms to Cells**
  (P. Burkhard / P. Steinert / S. Shoelson / U. Aebi / *H. Herrmann*)
- **Function of IFs in C. Elegans, in Muscle and in Neurons**
  (K. Weber / D. Paulin / Y. Capetanaki / J.P. Julien / *D. Cleveland*)
- **Laminopathies, Lamin Functions and the Nuclear Envelope**
  (Y. Gruenbaum / G. Bonne / C. Stewart / R. Foisner / K. Wilson / *R. Goldman*)
- **Role of IFs Toward Cell and Tissue Mechanics**
  (P. Janmey / P. Davies / N. Wang / L. Kreplak / *D. Wirtz*)
- **IF-Associated Cytolinkers: Mechanical Integration and Other Functions**
  (K. Green / M. Hatzfeld / Y. Yang / R. Liem / *G. Wiche*)
- **Regulating IF Assembly and Dynamics In Vivo**
  (M. Inagaki / R. Quinlan / P. Salas / *M.B. Omary*)
- **Function of Keratins in Epithelia: Beyond Scaffolding?**
  (I. McLean / E.B. Lane / P. Coulombe / R. Oshima / M. Tomic-Canic / *T. Magin*)
- **Issues Arising in IF Research**
  (*J. Eriksson* / *N. Marceau*)

ION CHANNELS
TILTON SCHOOL
TILTON, NH
JUL 14-19, 2002
GARY YELLEN, CHAIR
WILLIAM ZAGOTTA, VICE CHAIR

- **Neurotransmitter-Gated Channels**
  (M. Mayer / G. Smit)
- **Potassium Channels**
  (Z. Lu / L. Heginbotham / R. MacKinnon / B. Roux)
- **Nucleotide-Gated Channels**
  (J. Chen / W. Zagotta)
- **Calcium-Activated Channels**
  (M. Nelson / R. Aldrich / J. Adelman)
- **Channel Therapeutics Development**
  (M. Garcia / K. Rhodes)
- **Calcium Channels and Signalling**
  (D. Clapham / D. Yue / R. Dolmetsch)
- **Channels in Neurons**
  (B. Bean / M. Sheng / J. Roeper)
- **New Channel Biology and Structure**
  (F. Sigworth / T. Jentsch / R. Dutzler)

LASER INTERACTIONS WITH MATERIALS
PROCTOR ACADEMY
ANDOVER, NH
JUL 21-26, 2002
JAMES HORWITZ, CHAIR
TOM DICKINSON, VICE CHAIR

- **Laser Generation of Single-Wall Carbon Nanotubes**
  (D. Geohegan / A. Dillon)
- **Ultrafast Laser Interactions**
  (K. Sokolowski-Tinten / W. Kautek)
- **Laser Biomaterial Interactions**
  (F. Hillenkamp / D. Freid)
- **Laser Modification of Materials**
  (H. Helvajian / F. Falk)
- **Pulsed Laser Deposition**
  (D. Blank / C. Afonso / D. Bäuerle / D. Bubb)
- **Laser Nanoparticle Interactions**
  (K. Murakami)
- **Laser Interaction Dynamics in Bose Condensates**
  (L. Hau)

LASERS IN MEDICINE & BIOLOGY
KIMBALL UNION ACADEMY
MERIDEN, NH
JUL 14-19, 2002
RAIMUND HIBST &
REBECCA RICHARDS-KORTUM, CO-CHAIRS
BRUCE TROMBERG &
TON VAN LEEUWEN, CO-VICE CHAIRS

- **Low-Coherence Imaging**
  (*B.E. Bouma* / G.J. Tearney / J. De Boer / C. Yang / A. Wax / M.S. Feld / C.K. Hitzenberger / J. Mertz)
- **Nanotechnologies for Optical Sensing, Imaging and Manipulation**
  (*J. West* / N. Halas / C. Hollars / C. Larabell)
- **Biological Applications of Micro-Optical Devices**
  (*M. Descour* / M.C. Wu / D.L. Dickensheets / A. Scherer / A. Majumdar)
- **Combined Imaging Methodologies**
  (*J.K. Barton* / A.G. Yodh / Q. Zhu / A. Kriete / C.P. Lin)
- **Fluorescence Methods for Biomedical Diagnostics**
  (*M.-A. Mycek* / E. Sevick-Muraca / M. Follen / T. Vo-Dinh / Z. Gryczynski)
- **Advances in Optical Microscopy**
  (*T. Wilson* / R. Oldenbourg / P. So / M. Gustafsson)
- **Intra-Vital Imaging and Microscopy**
  (*M. Rajadhyaksha* / R. Jain / C.A. DiMarzio / A.C. Halpern / S. Gonzalez)
- **Wavefront Sensing and Adaptive Optics in Vision Correction**
  (*D. Huang* / G. Pettit / M. Mrochen / J. Bille / S.I. Panagopoulou)

- **Recent Advances in Photodynamic Therapy**
  (*G. Wagnieres* / R. Mansfield / B. Wilson / K. Berg)

LIPOPROTEIN METABOLISM
KIMBALL UNION ACADEMY
MERIDEN, NH
JUN 16-21, 2002
MICHAEL PHILLIPS, CHAIR
DANIEL RADER, VICE CHAIR

- **HDL Apolipoprotein Structure-Function**
  (*M. Sorci-Thomas* / K. Weisgraber / F. Peelman / G. Chimini)
- **Genetics and In Vivo Regulation of HDL Metabolism and Reverse Cholesterol Transport**
  (*D. Rader* / R. Hegele / B. Paigen / T. van Berkel)
- **Niemann-Pick C Disease and Intracellular Trafficking of Cholesterol**
  (*T.Y. Chang* / D. Ko / J. Strauss / Y. Ioannou)
- **Reverse Cholesterol Transport**
  (*G. Rothblat* / D. Williams / M. Krieger / O. Francone)
- **Insulin Resistance and Hyperlipidemia**
  (*H. Ginsberg* / F. Kraemer)
- **Nuclear Receptors and Lipoprotein Metabolism**
  (*P. Edwards* / T. Willson / J. Repa / B. Spiegelman)
- **Lipid Metabolism in the Brain**
  (*U. Beisiegel* / J. Dietschy / J. Herz / T. Perlmann)
- **Genomics and the Study of Lipid Metabolism**
  (*D. Nickerson* / J. Cohen / L. Pennacchio / D. Symula)
- **Keynote Address**
  (*H. Bryan Brewer*)

LYSOSOMES
PROCTOR ACADEMY
ANDOVER, NH
JUN 23-28, 2002
SCOTT EMR, CHAIR
TOM KIRCHHAUSEN, VICE CHAIR

- **Transport at the Trans Golgi**
  (J. Bonifacino / V. Malhotra / G. Thomas)
- **Protein/Receptor Sorting in the Endosomal/Vacuolar System**
  (R. Schekman / M. Zerial / W. Wickner)
- **Mechanisms of Endocytosis and Developmental Signaling**
  (H. Riezman / P. Di Fiore / H. McMahon / M. Muskavitch)
- **Ubiquitin and Phosphoinositides in Endocytosis and Endosomal Sorting**
  (L. Hicke / P. Woodman / R. Lefkowitz / P. De Camilli)
- **Viral Budding and Sorting at the Late Endosome/MVB**
  (Y. Yarden / W. Sundquist / I. Mellman)
- **Structural Studies along the Endocytic Pathway**
  (J.Hinshaw / M. Overduin / D. Owen)
- **Mechanisms of Autophagy**
  (P. Codogno / D. Klionsky / Y. Ohsumi / B. Levine)
- **Pathogens and Disorders in the Endosomal/Lysosomal System**
  (N. Andrews / A. Dautry-Varsat / M. Marks / B. Grant / T. Soldati)

MACROMOLECULAR ORGANIZATION & CELL FUNCTION
THE QUEEN'S COLLEGE
OXFORD, UK
AUG 4-9, 2002
KEVIN BRINDLE &
BRENDA WINKEL-SHIRLEY, CO-CHAIRS
CHRISTOPHER HARDIN &
JUDIT OVADI, CO-VICE CHAIRS

- **Nucleic Acid Superstructure and Gene Expression**
  (*R. Berezney* / N. Francis / P. Cook / V. Vance)
- **Organization of Cellular Metabolism**
  (*J. Ovadi* / J. Wilson / R. Perham / A. Saltiel / B. Wieringa)
- **Paul Srere Memorial Lecture**
  (D. Kell)
- **The Virtual Cell**
  (*P. Mendes* / L. Barabási / H. Kitano)
- **The Cytoskeleton and Cell Function**
  (*K. Gull* / R. Singer / E. Gavis / M. Schwartz / K. Thomasson)
- **Signaling**
  (*D. Bray* / D. Bray / S. Kay / S. Huang)
- **Organization of Translation**
  (*M. Deutscher* / S. Kim / G. Makie / V. Ramakrishnan / D. Tollervey)
- **New Technologies for the Post-Genomic Era**
  (*S. Oliver* / R. Raines / I. Xenarius / O. Fiehn)
- **Molecular Imaging in Intact Living Systems**
  (*K. Brindle* / S. Gambhir / R. Pepperkok / P. Schwille / W. Baumeister)
- **Imaging of Intracellular Processes**
  (*C. Hardin* / J. Presley / P. Silver / G. Prestwich)

MAMMALIAN GAMETOGENESIS & EMBRYOGENESIS
CONNECTICUT COLLEGE
NEW LONDON, CT
JUN 30-JUL 5, 2002
PATRICIA HUNT, CHAIR
JOHN MCCARREY, VICE CHAIR

- **Fate Determination in the Germ Cell, Egg and Early Embryo**
  (*G. MacGregor* / B. Maro / H. Scholer)
- **Genome Modification and Activation**
  (*J. McCarrey* / R. Jaenisch / H. Cedar / M. Bartolomei)
- **Mechanisms of Genetic Quality Control**
  (*M.A. Handel* / P. Burgoyne / S. Hawley / R.M. Roberts)
- **Assisted Reproduction: The State of the ART**
  (*K. Hardy* / D. Gardner / C. Simerly / R. Winston)
- **Cell Signaling**
  (*M. Matzuk* / T. Woodruff / T. Ducibella)
- **The Control of Gene Expression: Transcriptional and Translational Regulation**
  (*M. Skinner* / E. Adashi / H. Clarke / M. Skinner)
- **Genomics and Proteomics: Reproductive Biology in the Post-Genome Era**
  (*B. Braun* / J. Schimenti / J. Herr / M. Griswold / K. Eilertsen)
- **New Frontiers in Reproduction**
  (*J. Cohen* / A. Trounson / R. Schultz / J. Eppig)
- **Post-Banquet Speaker**
  (R. Short)

MECHANISMS OF HORMONE ACTION
KIMBALL UNION ACADEMY
MERIDEN, NH
JUL 28-AUG 2, 2002
CHRISTOPHER GLASS, CHAIR
MONA NEMER, VICE CHAIR

- **Plenary Lecture**
  (*S. Korsmeyer*)
- **Signal Transduction I - Kinase Cascades**
  (*J. Drouin* / M. Karin / M. Cobb / J. Kuriyan)
- **Signal Transduction II - Signal-Dependent Transcription**
  (*M. Nemer* / M. Montminy / B. Ren)
- **Transcriptional Mechanisms I**
  (*D. Moore* / B. Roeder / T. Kozarides)
- **Transcriptional Mechanisms II**
  (*S. Tosai* / M. Brown / B. O'Malley / M. Lazar)
- **Development I**
  (*P. Mellon* / J. Drouin / P. Lowry / N. Ferrara)
- **Development II**
  (*H. Ingraham* / T. Perlman / O. Conneely)
- **Metabolic Control I**
  (*M. Lazar* / T. Maratos-Flier / P. Tontonoz)
- **Metabolic Control II**
  (*C. Glass* / R. Evans / B. Spiegelman)

MECHANISMS OF TOXICITY
BATES COLLEGE
LEWISTON, ME
JUL 21-26, 2002
RONALD HINES, CHAIR
KENNETH RAMOS, VICE CHAIR

- **Applications of Genomics and Proteomics in Toxicology**
  (*A. Buckpitt* / *H. Hamadah* / J. Waring / D. Liebler / M. Snyder)
- **Extracellular Matrix Proteins as Mediators of Toxicity**
  (*L.A. Hoffman* / *N. Sheibani* / A. Parrish / R. Ruch / J. Smith)
- **Cell Cycle Control and Signaling**
  (*S. Lau* / *J. Stevens* / D. Johnson / A. Senderowicz / J. Pietenpol)
- **Receptor Mediated Toxicity**
  (*C. Elferink* / *M. Gallo* / J. Abel / E. Leof / A. Roberts)
- **Redox Regulated Transcriptional Control**
  (*K. Ramos* / *A. Jaiswal* / M. Montano / B. Aggarwal / N. Colburn)
- **Developmental Toxicology**
  (*R. Finnell* / *E. Lammer* / E. Meyers / W. Skarnes / G. Shaw)
- **Apoptosis**
  (*B. Hales* / *P. Mirkes* / Z. Xia / E. Baehrecke / M. Hengartner)
- **Genetic Susceptibility to Toxicants**
  (*G. McCarver* / *S. Leeder* / C. McQueen / C. Furlong / X. Wu)
- **Keynote Address**
  (*C. Bradfield* / *B. Van Houten* / B. Hammock)

MEDICINAL CHEMISTRY
COLBY-SAWYER COLLEGE
NEW LONDON, NH
AUG 4-9, 2002
JOHN MACOR, CHAIR
PHILIP HIPSKIND, VICE CHAIR

- **G-Protein Coupled Receptors as Medicinal Chemistry Targets**
  (*L. Yang*)

- **Inflammation**
  (*J. Barrish*)
- **New Antiviral Drugs**
  (*R. Griffith*)
- **Proteases**
  (*A. Ripka*)
- **Soluble Receptors**
  (*B. Morgan*)
- **Histone Deacetylase Inhibitors: From Chromatin Remodeling to Experimental Therapeutics**
  (*K. Van Emelen*)
- **Novel Approaches to Pain Therapy**
  (*C. Walpole*)
- **Kinases**
  (*R. Al-Awar*)
- **Technology-Enhanced Medicinal Chemistry**
  (*M. Rafferty*)
- **Special Topics**
  (*P. Ornstein*)

MEIOSIS
COLBY-SAWYER COLLEGE
NEW LONDON, NH
JUN 16-21, 2002
ANNE VILLENEUVE, CHAIR
DOUGLAS BISHOP &
DENISE ZICKLER, CO-VICE CHAIRS

- **DNA Replication and Initiation of Meiotic Recombination**
  (M. Zolan / S. Keeney / M. Grelon / B. de Massy)
- **Nuclear Reorganization During Early Meiotic Prophase**
  (Y. Hiraoka / H. Scherthan / Z. Cande / A. Villeneuve)
- **Recombination Pathways and Mechanisms**
  (K.-P. Hopfner / J. Petrini / P. Sung / M. Lichten / J. Haber)
- **Homolog Juxtaposition and Synapsis**
  (S. Burgess / G. Moore / S. Hawley / A. Dernburg)
- **Regulation of Meiotic Recombination**
  (N. Kleckner / S. Roeder / D. Bishop / A. Shinohara / A. Goldman)
- **Condensation, Cohesion and Morphogenesis of Meiotic Chromosome Axes**
  (T. Hirano / D. Zickler / C. Hoog / C. Heyting)
- **Chromosome Segregation**
  (G. Karpen / B. Meyer / J. Suja / K. Nasmyth / F. Pardo-Manuel de Villena)
- **Meiotic Progression**
  (T. Orr-Weaver / M. Yamamoto / T. Ashley / D. Greenstein / M. Fuller)
- **Chromosome Morphogenesis and Chromosome Evolution**
  (S. Stack / D. Page)

MEMBRANE TRANSPORT PROTEINS
CONNECTICUT COLLEGE
NEW LONDON, CT
JUL 21-26, 2002
NANCY CARRASCO, CHAIR
HEINI MURER, VICE CHAIR

- **The XYZ of ABC transporters**
  (*L. Aguilar* / M. Dean / R. Tampe / B. Stieger)
- **Regulation Everywhere (But Not the Red Tape Kind)**
  (*S. Corvera* / K. Geering / D. Hilgemann / M. Caplan)
- **Channel Proteins: To Open or Not to Open, That is the Question**
  (*D. Papazian* / E. Perozo / F. Bezanilla / B. Rossier)
- **What's in a Structure?**
  (*M. Amzel* / K. Brejc / S. Subramaniam)
- **Transporters: The Road from Here to There (and Back)**
  (*E. Wright* / A. Davidson / I. Forster / H. Daniel)
- **Health and Disease as a Matter of Transport I**
  (*C. Bear* / B. Gasnier / M. Hediger / D. Eaton)
- **Health and Disease as a Matter of Transport II**
  (*K. Giacomini* / G. Sachs / M. Newman)
- **Neurotransmitter Transporters: A Case of Double Identity?**
  (*S. Amara* / G. Rudnick / J. Javits)
- **From Bioenergetics to Mechanism**
  (*R. Kaback*)

MEMBRANES: MATERIALS & PROCESSES
COLBY-SAWYER COLLEGE
NEW LONDON, NH
AUG 4-9, 2002
PAUL BRYAN, CHAIR
BENNY FREEMAN, VICE CHAIR

- **Barrier Membranes**
  (*R. Prasad* / W. Arnold)
- **Mixed Matrix Membranes**
  (*E. Marand* / W. Koros / M. Guiver / S. Tantekin-Ersolmaz)
- **Polymeric Materials**
  (*J. Pellegrino* / A. Hiltner / D. Ginn)
- **Industry / University / Government Collaborative Research I**
  (*R. Beyerlein* / T. Tsotsis / A. Greenberg / M. Wessling)
- **Industry / University / Government Collaborative Research II**
  (*T. Chapman* / I. Pinnau / S. Kloos)
- **Fuel-Cell Membrane Applications**
  (*P. Pintauro* / M. Mulder / D. Edlund / T. Zawodzynski)
- **Inorganic Membranes**
  (*G. Gavalas* / R. Noble / K. Okamoto)
- **Biomedical Membrane Applications**
  (*G. Belfort* / T. Barbari / A. Bunge / J. Tamada)
- **Plenary**
  (*P. Bryan* / R. Baker)

METALS IN MEDICINE (NEW)
COLBY-SAWYER COLLEGE
NEW LONDON, NH
JUL 21-26, 2002
MICHAEL CLARKE, NICHOLAS FARRELL &
C. FRANK SHAW, CO-CHAIRS

- **Metal Generated Radicals & Photodynamic Therapies**
  (*J.T. Groves* / J.L. Sessler)
- **Metalloproteins in Disease**
  (*J.S. Valentine* / M.A. Marletta / Z. L. Harris)
- **Radiopharmaceuticals**
  (*A. Davidson* / A. Packard / S. Jurisson / J. Yanch / S. Edwards)
- **Beneficial & Deleterious Effects of Transition Metal Ions**
  (*D. Crans* / J.B. Vincent / P.A. Lay / C. Orvig / P.J. Kostyniak)
- **Transport of Metal Ions**
  (*P.J. Sadler* / M.J. Abrams)
- **Metals and Malaria**
  (*V. Sharma* / G. Posner / D.S. Bohle / D.W. Wright / R. Sanchez-Delgado)
- **Metalloproteins as Targets**
  (*T.J. Meade* / R. Holz / W.G. Rice)
- **Magnetic Resonance Imaging Agents**
  (*R.B. Lauffer* / S. Aime / R. Weissleder / D. Sherry / P. Caravan)
- **Metal Ion - Nucleic Acid Interactions**
  (*T.W. Hambley* / S.J. Lippard)

MICROBIAL STRESS RESPONSE
SALVE REGINA UNIVERSITY
NEWPORT, RI
JUL 14-19, 2002
GISELA STORZ, CHAIR
JOHN FOSTER, VICE CHAIR

- **Regulatory Networks**
  (*R. Losick* / A. Arkin / C. Price)
- **Regulatory Mechanisms**
  (*C. Gross* / R. Hengge-Aronis / S. Gottesman / T. Baker / A. Grossman)
- **Metal, O_2 and NO Stress**
  (*J.-H. Roe* / T. O'Halloran / F. Fang / C. Nathan)
- **Acid and Salt Stress**
  (*J. Slonczewski* / G. Sachs / J. Banfield / H. Arst)
- **Development**
  (*J. Willey* / M. Buttner / S. Golden / K. Pogliano)
- **Host-Pathogen Interactions**
  (*S. Hultgren* / E. Groisman / J. Miller / R. Isberg / O. Schneewind)
- **Quorum Sensing and Biofilms**
  (*R. Kolter* / S. Winans / B. Bassler / S. Molin)
- **Antibiotic Resistance and Genome Dynamics**
  (*T. Dougherty* / R. Brennan / M. Waldor / H. Ochman / D. Schneider)
- **Life at the Extremes and Metabolic Diversity**
  (*J. Battista* / K. Nelson / M. Lidstrom)

MICROBIAL TOXINS & PATHOGENICITY
PROCTOR ACADEMY
ANDOVER, NH
JUL 14-19, 2002
WILLIAM GOLDMAN, CHAIR
DANIEL PORTNOY, VICE CHAIR

- **Evolution and Genetic Diversity of Bacterial Pathogens**
  (N. Salama / B. Wren / P. Cossart)
- **Bacterial Cell Biology and Pathogenesis**
  (R. Taylor / M. Goldberg / M. Sandkvist)
- **Host Cell Signaling by Bacteria**
  (B. Cookson / M. Donnenberg / D. Philpott)
- **Toxins and Effectors: Translocation**
  (M. Caparon / D. Burns / J. Bliska / H. Wolf-Watz)
- **Trafficking Within Host Cells**
  (D. Portnoy / C. Sasakawa / T. Hackstadt / D. Russell)
- **Intracellular Pathogenesis**
  (D. Holden / P. Gros / J. Swanson)
- **Extracellular Pathogenesis**
  (J. Weiser / P. Dube / G. Frankel)
- **Bacterial and Host Gene Regulation During Infection**
  (V. DiRita / L. Hooper / P. Cotter / P. Greenberg)
- **Toxins and Effectors: Structure & Function**
  (J. Barbieri / C. Collins / J. Collier)

MITOCHONDRIA & CHLOROPLASTS
THE QUEEN'S COLLEGE
OXFORD, UK
AUG 25-30, 2002
ERIC SHOUBRIDGE, CHAIR
SALLY MACKENZIE, VICE CHAIR

- **Organellar Evolution**
  (*C. Leaver* / M. Gray / W. Martin / L. Grossman)
- **Organellar Morphology and Dynamics**
  (*J. Nunnari* / R. Jensen / D. Chan / K. Osteryoung / D. Logan)
- **Replication and Transcription**
  (*D. Clayton* / L. Kaguni / G. Shadel / D. Stern)
- **Organellar Import/Export and Biogenesis**
  (*T. Fox* / T. Langer / J. Herrmann / Y. Choquet / F. Kessler)
- **Metals and Organelles**
  (*R. Lill* / D. Winge / E. Craig)
- **Nuclear-Organelle Interactions**
  (*F.-A. Wollman* / S. Mackenzie / R. Butow / M. Goldschmidt-Clermont / B. Battersby)
- **Posttranscriptional Mechanisms, Signalling**
  (*S. Merchant* / C. Dieckmann / A. Danon / M. Sugiura)
- **Disease Mechanisms, Model Systems**
  (*E. Schon* / M. Hirano / Y. Kirino / P. Rustin)
- **Development and Lifespan**
  (*E. Shoubridge* / S. Hekimi / J. Balk / H. Jacobs)

MOLECULAR & CELLULAR NEUROBIOLOGY
HONG KONG UNIVERSITY OF
SCIENCE & TECHNOLOGY
HONG KONG, CHINA
JUN 2-7, 2002
NANCY IP, CHAIR
LIQUN LUO, VICE CHAIR

- **Trophic Factors & Cell Death I**
  (*N.Y. Ip* / D. Kaplan / N.A. Nicola / J. Yuan)
- **Trophic Factors & Cell Death II**
  (*N.Y. Ip* / M. Raff / M.V. Chao / M.-M. Poo / P. Greengard)
- **Axon Guidance & Neuron Migration I**
  (*L. Luo* / C.S. Goodman / M.-M. Poo / Y.-N. Jan)
- **Synaptic Transmission & Ion Channels**
  (*L. Mei* / R.H. Scheller / R.L. Huganir / M.H. Sheng / S.F. Heinemann / G.D. Fischbach)
- **Axon Guidance & Neuron Migration II**
  (*L. Luo* / M.E. Hatten / T. Curran / Y. Rao)
- **Neural Development**
  (*X. He* / R.E. Zigmond / L.F. Reichardt / R. Klein / D.D.M. O'Leary / S. McConnell)
- **Neural Plasticity and Behavior I**
  (*L.F. Reichardt* / M. Ito / H.R. Horvitz / T.K. Hensch)
- **Neural Plasticity and Behavior II**
  (*L.F. Reichardt* / C.J. Shatz / M. Constantine-Paton / T. Bonhoeffer)
- **Neurobiology Diseases**
  (*B. Lu* / L.-H. Tsai / V.M.Y. Lee / R.E. Tanzi)

MOLECULAR BASIS OF MICROBIAL ONE-CARBON METABOLISM
CONNECTICUT COLLEGE
NEW LONDON, CT
JUL 7-12, 2002
COLIN MURRELL, CHAIR
JOSEPH KRZYCKI, VICE CHAIR

- **Genomics**
  (*M. Lidstrom* / G. Gottschalk / L. Chistoserdova / M. Odom)
- **Structure and Function of CO Dehydrogenase**
  (*S. Ragsdale* / O. Meyer / D. Grahame / P. Ludden / C. Drennan / J. Seravalli)
- **Novel Reactions in the Environment**
  (*R. Oremland* / A. Boetius / M. Jetten / K. Kuesel)
- **Methanogenesis**
  (*T. Donohue* / J. Krzycki / W. Metcalf / R. Thauer / M. Rasche)
- **Chemolithoautotrophic Metabolism**
  (*C. Anthony* / C. Friedrich / G. Keunen / A. Boeck)
- **Environmental Microbiology of C-1 Compounds**
  (*H. Drake* / A. Kaplan / Y. Trotsenko / S. Dedysh / J. Semrau / I. McDonald)
- **Diversity of CO_2 Fixation Pathways and Their Regulation**
  (*B. Friedrich* / F.R. Tabita / Y. Igarashi / G. Fuchs / T. Hanson)
- **C-1 and Beyond: Structure-Function Relationships**
  (*H. Dalton* / D. Arp / T. Smith / G. Ferry / J. Peters / H. Jensen)
- **Methylotrophic Metabolism in Yeast and Bacteria**
  (*Y. Sakai* / I. van der Klei / N. Kato / J. Vorholt)

MOLECULAR CYTOGENETICS
ROGER WILLIAMS UNIVERSITY
BRISTOL, RI
AUG 11-16, 2002
MALCOLM FERGUSON-SMITH &
PETER PEARSON, CO-CHAIRS
BEVERLY EMANUEL &
MARC LALANDE, CO-VICE CHAIRS

- **Keynote Speaker**
  (J. Rowley)
- **Comparative Cytogenetics**
  (*M. Ferguson-Smith* / L. Stubbs / F.T. Yang / G. Elder)
- **Live Imaging of Chromosome Structure and Behavior**
  (*H. Tanke* / R. Eils)
- **Epigenetic Phenomena**
  (*M. Laland* / H. Willard / P. Warburton / A. Ferguson-Smith)
- **Pre and Post-Implantation Chromosome Analysis**
  (*S. Munné* / P. Palermo / D. Lo)
- **Micro-Array Aanalysis**
  (*P. Lichter* / N. Carter / G. Trent)
- **Mechanisms of Meiotic Non-Disjunction**
  (*U. Eichenlaub-Ritter* / T. Hassold / T. Ashley)
- **Chromatin Structure**
  (*B. Dutrillaux* / J. Bernardino / B. Earnshaw)

MOLECULAR GENETICS
CONNECTICUT COLLEGE
NEW LONDON, CT
JUL 21-26, 2002
STEPHEN BELL, CHAIR
SHARON ROTH, VICE CHAIR

- **Splicing and RNA Function**
  (*J. Williamson* / D. Bartel / K. Gould / P. Zamore)
- **Genomics and Proteomics**
  (*E. O'Shea* / M. Snyder / R. Deshaies / B. Chait)
- **Transcription and Chromatin**
  (*S.Y. Dent* / K. Luger / B. Kingston)
- **Proteolysis**
  (*P. Jackson* / J.-M. Peters / D. Finley / J. Chen)
- **Recombination**
  (*J. Haber* / T. Baker / M. Gellert)
- **Cell Cycle Regualtion**
  (*A. Amon* / D. Toczyski / P. Sorger)
- **DNA Replication and Repair**
  (*J. Diffley* / S.P. Jackson / V. Lundblad / A. Dutta)
- **Nuclear Transport**
  (*M. Moore* / G. Dreyfuss / P. Silver / K. Weis)
- **Enzymology and Structural Approaches**
  (*D. Herschlag* / J. Kuriyan)

MULTIPHOTON PROCESSES
TILTON SCHOOL
TILTON, NH
JUN 30-JUL 5, 2002
LOUIS DIMAURO, CHAIR
STEPHEN PRATT, VICE CHAIR

- **Intense Laser-Atom Interactions**
  (G. Paulus)
- **Attosecond Pulse Generation**
  (*D. Charalambdis* / H. Muller / P. Corkum)
- **Strong Field Molecular Control**
  (*A. Bandrauk* / A. Stolow / R. Levis / M. Motzkus)
- **High Harmonic Generation**
  (M. Murnane / J. Marangos)
- **Super Intense Field Interactions with Matter**
  (*T. Ditmire* / S.L. Chin / R. Freeman / B. Walker)
- **Light Manipulation**
  (L. Hau / Jun Ye)
- **Alignment and Orientation**
  (M. Vrraking)
- **Future Directions in Multiphoton Processes**
  (*K. Kulander* / P. Lambropoulos)

MUSCLE: CONTRACTILE PROTEINS
COLBY-SAWYER COLLEGE
NEW LONDON, NH
JUN 9-14, 2002
YUICHIRO MAEDA &
DAVID WARSHAW, CO-CHAIRS
JOHN SPARROW &
LEE SWEENEY, CO-VICE CHAIRS

- **Structural Biology of Molecular Motors**
  (K. Trybus)
- **Muscle Myosin: Functional Boundaries**
  (B. Brenner)
- **Structural Dynamics of Myosin During Crossbridge Cycle**
  (R. Cooke)
- **Myosin Function Modulation by Thin Filament Regulation**
  (J. Solaro)

- **Myopathies: Structural Mutations and Functional Implications**
  (J. Robbins)
- **Cell Biology of Unconventional Myosins**
  (M. Titus)
- **Unconventional Myosins**
  (L. Sweeney)
- **Comparative Molecular Motor Function**
  (J. Sellers)
- **Comparative Muscle Myosin Function**
  (C. Cremo)

MUSCULOSKELETAL BIOLOGY & BIOENGINEERING
PROCTOR ACADEMY
ANDOVER, NH
JUL 28-AUG 2, 2002
ERNST HUNZIKER, CHAIR
ROBERT SAH, VICE CHAIR

- **Initiation Factors for Skeletal Developoment and Differentiation**
  (*L. Sandell* / *Y.-J. Kim* / K. Lyons / R. Fässler / G. Karsenty)
- **Growth Factors and Mechanoregulation**
  (*R. Cancedda* / G.R. Grotendorst / D.M. Salter / Q. Chen)
- **Molecular Mechanics and Signal Transduction Mechanisms**
  (*A.J. Grodzinsky* / C. Ortiz / G. Forgacs)
- **Cellular Responses to Mechanical Stress**
  (*M. Chiquet* / D.P. Felsenfeld / D.G. Gardner / J.Y.-J. Shyy)
- **Regulatory Mechanisms in Tendon and Ligament Cell Biology**
  (*D.L. Butler* / P. Aspenberg / B. Mikic / C.B. Frank)
- **Genetic and Mechanical Factors in the Formation of Cartilage and Intervertebral Disc**
  (*M. Buschmann* / S.B. Trippel / B. de Crombrugghe / F. Guilak / J. Lotz)
- **Mechanoregulation of Bone Cells and Structure**
  (*D. Carter* / *T. Einhorn* / C.R. Jacobs / J.A. Helms)
- **Cell-Based Tissue Engineering for Skeletal Tissues**
  (*G. Vunjak-Novakovic* / I. Martin / R. Quarto / J. Jurvelin)
- **Honorary Speaker**
  (*E.B. Hunziker* / H. Fleisch)

MUTAGENESIS
BATES COLLEGE
LEWISTON, ME
JUL 28-AUG 2, 2002
MYRON GOODMAN, CHAIR
MIROSLAV RADMAN, VICE CHAIR

- **Keynote Talks**
  (*P. Hanawalt* / M. O'Donnell / S. Wilson)
- **Structure and Function of the DNA Replication Complex**
  (*K. Marians* / S. Benkovic / L. Bloom / A. Sugino)
- **Structural, Kinetic and Theoretical Determinants of DNA Polymerase Fidelity**
  (*T. Ellenberger* / A. Warshel / W. Yang / J. Sweasy)
- **Nucleotide Excision and DNA Mismatch Repair**
  (*T. Kunkel* / J. Hoeijmakers / R. Wood / P. Modrich)
- **Base Excision Repair**
  (*S. Wallace* / J. Tainer / E. Dogliotti / T. Lindahl)
- **DNA Recombination and Double-Strand Break Repair**
  (*R. Kolodner* / S. Kowalczykowski / S. West / P. Sung)
- **Mechanisms of Translesion Synthesis By Error-Prone Polymerases**
  (*L. Prakash* / R. Woodgate / F. Hanaoka / P. Pham
- **Somatic Hypermutation of Immunoglobulins**
  (*N. Maizels* / M. Neuberger / M. Scharff / C. Reynaud)
- **Mutagenesis and Genetic Instability in Evolution and Human Disease**
  (*L. Loeb* / N. Arnheim / T. Cebula / F. Taddei)

NANOSTRUCTURE FABRICATION
TILTON SCHOOL
TILTON, NH
AUG 4-9, 2002
DIETER KERN, CHAIR
DONALD EIGLER, VICE CHAIR

- **Nano/Biotechnology**
  (*H. Craighead* / A. Belcher / H. Hoerber)
- **Selfassembly/Templated Growth**
  (*H. Smith* / M. Aono / J. Wessels / T. Mayer)
- **Nanotubes**
  (*S. Wind* / M. Welland / S. Washburn)
- **Molecular Electronics**
  (*R. Reifenberger* / J. Heath / P. Weiss / C. Dekker)
- **Printing**
  (*C.D.W. Wilkinson* / S. Chou / C. Vieu)
- **Limits in Lithography**
  (*F. Houle* / M. Fritze / R.F.W. Pease / J. Fujita)
- **Magnetics/Spintronics**
  (*D. Tennant* / L. Molenkamp / D. Awschalom)
- **NEMS and Novel Opporunities**
  (*C.R.K. Marrian* / M. Roukes / L. Sekaric / J. Randall)
- **Nanopath to Quantum Computing**
  (*D. Eigler* / R. Clark / E. Yablonovitch)

NATURAL PRODUCTS
TILTON SCHOOL
TILTON, NH
JUL 28-AUG 2, 2002
CYNTHIA MCCLURE, CHAIR
MICHAEL LUZZIO, VICE CHAIR

- **Synthesis of Natural Products and Derivatives**
  (*R. Majerle* / *A. Hulme* / S. Ley / M. Joullie / A. Dondoni / Y.-G. Gu)
- **New Synthetic Methods / Application to Synthesis**
  (*K. Hansen* / *M. Ciufolini* / *R. Polt* / *L. Jimenez* / *D. Casteel* / *P. McDougal* / *S. Wittenberger* / E. Jacobsen / K. Woerpel / F. Davis / J. Cossy / K. Parker / P. Reider / F. West / M. Kozlowski / C. Spilling / P. Hansen / T. Jamison / L. McKinstry / S. Diver / D. Wright / D. Sames / M. Faul / J. Rainier / B. Stoltz)
- **Synthesis and Medicinal Chemistry of Natural Products and Derivatives**
  (*L. Latimer* / G. Georg / F.H. Ebetino)
- **Synthetic Studies Toward the Synthesis of Natural Products**
  (*H. Mastalerz* / E. Vedejs / M. Brimble / M. Rewolinski)
- **Natural Product Isolation / Characterization**
  (*J. Kubanek* / A. Stierle / H. He)
- **Bioorganic Chemistry**
  (*D. Beemis* / L. Kiessling / C. Burrows / M. Cloninger)

NEURAL DEVELOPMENT
SALVE REGINA UNIVERSITY
NEWPORT, RI
AUG 18-23, 2002
S. LAWRENCE ZIPURSKY, CHAIR
BEN BARRES, VICE CHAIR

- **Neural Stem Cells**
  (D. Anderson / R. Jaenisch / F. Doetsch)
- **Neural Induction and Early Neural Patterning**
  (C. Stern / M. Mullins / N. Papalopulu / E. De Robertis)
- **Cell Fate Specification**
  (C. Doe / J. Thomas)
- **Cell Biology of Cortical Development**
  (A. Ghosh / S. Ackerman / C. Walsh)
- **Transcriptional Regulation**
  (Y. Sun / C. Cepko / G. Mandel)
- **Axon Guidance**
  (C. Bargmann / B. Dickson / S. Stritmatter)
- **Synapse Formation**
  (Y. Jin / S. Burden / L. Luo / H. Cline)
- **Molecular Diversity and Connection Specificity**
  (C. Shatz / P. Mombaerts)

NEUROETHOLOGY: BEHAVIOR, EVOLUTION & NEUROBIOLOGY
THE QUEEN'S COLLEGE
OXFORD, UK
AUG 18-23, 2002
HAROLD ZAKON, CHAIR
RONALD HOY &
NICHOLAS STRAUSFELD, CO-VICE CHAIRS

- **Introductory Lectures**
  (H. Karten / R. Hanlon)
- **Behavioral Plasticity**
  (*J. Zeil* / B. Smith / G. von der Emde / M. Sokolowski / C. Rankin)
- **Plasticity in the Auditory System**
  (*T. Park* / *B. Grothe* / E. Knudsen / C. Kapfer / L. Hurley)
- **Synaptic Mechanisms of Plasticity: Are they Universal?**
  (*C. Bell* / *S. Bottjer* / D. Glanzman / A. Mercer / R. Mooney / P. Katz)
- **Morphological Plasticity**
  (*S. Fahrbach* / *S. Pallas* / J. Weeks / S. Farris / A. Tramontin)
- **Molecular/Genetic Approaches**
  (*G. Robinson* / *E. Serrano* / K. Ito / T. Zars / E. Jarvis / S. Lockery)
- **Aggressive/Affiliative Behaviors**
  (*I. Lederhendler* / *C. Marler* / L. Young / A. Bass / D. Theodosis / D. Edwards)
- **Computational Neuroethology**
  (*F. Theunnisen* / *C. Linster* / G. Rose / G. Jacobs / D. Margoliash)

NITROGEN FIXATION
COLBY-SAWYER COLLEGE
NEW LONDON, NH
JUN 30-JUL 5, 2002
BRIAN HALES, CHAIR
LAWRENCE DAVIS, VICE CHAIR

- **History of Substrate Reduction by Nitrogenase**
  (*L. Davis* / M. Dilworth)

- **Structure/Function Relationships**
  (*R. Eady* / L. Seefeldt / J. Peters / B. Hoffman / K. Rupnik)
- **Synthetic Models**
  (*R. Holm* / D. Coucouvanis / B. Averill / R. Henderson)
- **FeS Clusters**
  (*D. Dean* / C. Drennen / B. Huynh / J. Cowan / P. Kiley)
- **Theoretical Models**
  (*B. Hoffman* / M. Durrant / D. Beratan / L. Noodleman)
- **Hydrogenase**
  (*M. Johnson* / J. Fontecilla-Champ / R. Cammack / S. George / I. Georgakaki)
- **Alternative Nitrogenase**
  (*L. Seefeldt* / R. Eady / S. Crammer / P. Ludden)
- **Nitrogenase Biochemistry**
  (*S. George* / B. Burgess / W. Newton / L. Davis / S. Mayer)
- **Foundations of FeS Cluster Synthesis**
  (*B. Hales* / R. Holm)

NUCLEAR CHEMISTRY
COLBY-SAWYER COLLEGE
NEW LONDON, NH
JUN 16-21, 2002
PHILLIPPE CHOMAZ, CHAIR
ROBERT WADSWORTH, VICE CHAIR

- **Nuclear Reactions - Isospin and Structure in Reaction**
  (M. Colonna / R. Desouza / S. Yennello)
- **Multi-Fragmentation and the Liquid-Gas Phase Transition**
  (L. Moretto / B. Tamain / B. Tsang)
- **Nuclear Dynamics - Transport Phenomena and Particle Production**
  (P. Danielewicz / H. Horiuchi / P. Sapienza)
- **From CERN to RHIC: Towards Quark-Gluon Plasma**
  (J.-P. Blaizot / B. Erazmus / R. Lacey / J. Stachel)
- **Special Evening: The 50th Anniversary of the Nuclear Chemistry GRC**
  (R. Wadsworth)

NUCLEIC ACIDS
ROGER WILLIAMS UNIVERSITY
BRISTOL, RI
JUN 2-7, 2002
MICHAEL COX &
JENNIFER DOUDNA, CO-CHAIRS
KARIN MUSIER-FORSYTH &
ERIC WESTHOF, CO-VICE CHAIRS

- **Telomere Structure and Function**
  (*C. Greider* / E. Blackburn / V. Lundblad)
- **Ribozymes**
  (*A. Pyle* / D. Herschlag / D. Lilley / J. Szostak)
- **RNA Processing and Transport**
  (K. Wassarman / J. Steitz / R. Luhrmann / T. Tuschl)
- **Translation**
  (*G. Culver* / J. Williamson / T. Steitz / P. Moore / H. Noller)
- **RNA Synthesis and Regulation**
  (*T. Record* / R. Gourse / R. Kornberg)
- **DNA Metabolism**
  (*P. Modrich* / A. Sancar / N. Cozzarelli / L. Beese)
- **Modified DNA**
  (*E. Kool* / S. Lloyd / J. Stubbe / P. Glazer)
- **Mobile DNA**
  (*M. Belfort* / R. Johnson / J. Boeke / P. Rice / T. Sixma)
- **Single Molecule Experiments**
  (*H. Hansma* / J. Gelles / S. Kowalczykowski / S. Chu / C. Radding)

ORGANIC GEOCHEMISTRY
HOLDERNESS SCHOOL
PLYMOUTH, NH
JUL 28-AUG 2, 2002
MARK MCCAFFREY, CHAIR
STUART WAKEHAM, VICE CHAIR

- **Role of Organic Geochemistry in the Global Warming/Carbon Cycle Debate**
  (*J. Dickens* / K. Hinrichs / A. Judd)
- **Organic Geochemical/ Paleoenvironmental Reconstructions/Proxies**
  (*P. Meyers* / J. Rullkoetter / J. Grimalt / K. Freeman)
- **Basin Modeling Applications of Geochemistry**
  (*Z. He* / B. Huizinga / A. Pepper)
- **Mid-Cretaceous Biogeochemistry**
  (*J. Sinninghe Damste* / M. Kuypers / T. Wagner / S. Schouten)
- **Microbiology of In-Reservoir Petroleum Biodegradation**
  (R. *Patience* / H. Wilkes / J. Parkes)
- **Nitrogen Geochemistry**
  (*M. Altabet* / P. Hatcher / J. Montoya)
- **Age-Diagnostic Biomarkers: Applications and Controlling Factors**
  (*A. Holba* / D. Zinniker / J.S. Damste / A. Holba)
- **Organic Geochemical Approaches to Tracing Human Activities and Impacts on the Environment**
  (*R. Eganhouse* / W. Michaelis / R. Haddad / R. Evershed)
- **Organic Geochemistry: Past and Future**
  (*K. Kvenvolden* / P. Philp / J. Hunt / G. Eglinton / T. Eglinton / M. McCaffrey)

ORGANIC REACTIONS & PROCESSES
ROGER WILLIAMS UNIVERSITY
BRISTOL, RI
JUL 21-26, 2002
MUKUND SIBI, CHAIR
CHRISTOPHER SCHMID, VICE CHAIR

- **Catalysis I**
  (*J. Johnston* / T. Lectka / V. Aggarwal / H. Yamamoto)
- **Catalysis II**
  (*C. Senanayake* / N. Boaz / T. RajanBabu / A. Pfaltz)
- **Catalysis III**
  (*X. Zhang* / L. Tan / M. Kozlowski / K. Jorgenson)
- **Process Chemistry**
  (*A. Gelormini* / S. Wittenberger / S. Kiau)
- **Organometallic Chemistry**
  (*J. Green* / V. Gevorgyan / W. Donaldson / J. Takacs)
- **Radical Chemistry**
  (*A. Howell* / D. Yang / G. Friestad / J. Lawson)
- **Catalysis and Radical Chemistry**
  (*J. Suffert* / S. Kozmin / L. Deng / M. Malacria)
- **New Reactions I**
  (*K. Brummond* / C. Najera / V. Dahanukar / R. Singer)
- **New Reactions II**
  (*B. Pagenkopf* / P. Beak / T. Hayashi)
- **New Reactions III**
  (*M. Sommer* / M. O'Donnell / S. May / W. Kissel)
- **New Reactions IV**
  (*R. Hsung* / C. Crudden / A. Whitehead)
- **Synthesis**
  (*J. Rainier* / T. Hoye / M. Crimmins / A. Smith)
- **Featured Speaker**
  (*C. Schmid*)

ORGANIC STRUCTURES & PROPERTIES
SPring-8
HYOGO, JAPAN
JUL 28-AUG 2, 2002
YOSHINORI NARUTA, CHAIR
MIR WAIS HOSSEINI &
JUERG HULLIGER, CO-VICE CHAIRS

- **Molecular Recognition**
  (*K. Kano* / A. Hamilton / F.-G. Klärner / S. Shinkai)
- **Suprmolecular Chemistry**
  (*M. Hosseini* / S. Matile / K. Kim / T. Aida)
- **Fullerenes and Extended Conjugate Compounds**
  (*T. Tsuji* / F. Diederich / Y. Tobe / H. Meier)
- **Functional Organic Molecules**
  (S.C. Zimmerman / D.A. Leigh)
- **Crystal Design and Nanostructure Control**
  (*S. Kitagawa* / P.J. Stang / O.M. Yagai)
- **Organic Molecular Electronics I**
  (*M. Tsutsui* / R.M. Metzger / H.E. Katz / Y. Wada)
- **Organic Molecular Electronics II**
  (*M. Tsutsui* / P.S. Wiss / D.B. Mitzi)
- **Bio-Inspired Chemistry**
  (*M. Komiyama* / Y. Kobuke / W. Woggon / J. Suh / D. Gust)
- **Young Investigater Session**
  (A. Credi / Y. Shimazaki / V. Ball)

ORGANOMETALLIC CHEMISTRY
SALVE REGINA UNIVERSITY
NEWPORT, RI
JUL 21-26, 2002
PETER WOLCZANSKI, CHAIR
MORRIS BULLOCK, VICE CHAIR

- **Organometallics in Organic Synthesis**
  (R. Widenhoefer / M. Mori / C.A. Merlic / D. Sames / S. Buchwald)
- **Physical/Theoretical Organometallic Chemistry**
  (C. Kubiak / S. Shaik / D. Dubois)
- **Catalysis**
  (P. Weider / K. Moloy / J. Kruper / M.K. Leclerc / M. Holtcamp / H. Bryndza)
- **BioOrganometallic**
  (S. Lippard / R. Alberto)
- **Organometallic Synthesis**
  (J. Kiplinger / G. Hillhouse / M.L.H. Green / D. Astruc)
- **Organometallic Mechanism**
  (C. Landis / P. Chen / D. Blackmond)

OSCILLATIONS & DYNAMIC INSTABILITIES IN CHEMICAL SYSTEMS
THE QUEEN'S COLLEGE
OXFORD, UK
JUL 28-AUG 2, 2002
STEFAN MUELLER, CHAIR
JOHN POJMAN, VICE CHAIR

- **Oscillatory Reactions**
  (*S.K. Scott* / M. Orban / H. Westerhoff)
- **Chemical Patterns and Waves**
  (*A.M. Zhabotinsky* / Q. Ouyang / O. Steinbock / M. Wittmann)
- **Theoretical Advances**
  (*J.J. Tyson* / G. Nicolis / R. Kapral)

- **Nonlinear Dynamics in Polymeric Systems**
  (*Q. Tran-Cong* / V. Volpert / J. Douglas / A.J. Ryan)
- **Short Talks I**
  (*J. Pojman*)
- **Patterns in Bistable Reactions**
  (*P. Borckmans* / P. DeKepper / A. Toth / H.H. Rotermund)
- **Compartimented Systems**
  (*J.-C. Micheau* / V.K. Vanag / P.M. Bisch)
- **Cellular Organization**
  (*J.D. Lechleiter* / H.R. Petty / C. Weijer / M. Bär)
- **Short Talks II**
  (*R. Larter*)

PEPTIDE GROWTH FACTORS
KIMBALL UNION ACADEMY
MERIDEN, NH
AUG 4-9, 2002
ROGER DAVIS, CHAIR
TONY PAWSON, VICE CHAIR

- **Trafficking and Dynamics of Growth Factor Receptors**
  (*S. Corvera* / P. Bastiaens / T. Kirchhausen)
- **Neuronal Signaling Mechanisms**
  (*T. Pawson* / M. Greenberg / R. Klein / J. Flanagan / J. Scott)
- **Bioinformatics/Proteomics and Complex Systems**
  (*J. Ferrell* / M. Tyers / M. Mann)
- **Growth Factor Signaling Mediated by G Proteins**
  (*S. Gutkind* / R. Cerione / H. Bos / R. Marais / D. Morrison)
- **The TGF-β Family of Growth Factor Receptors**
  (*J. Massague* / C. Hill / J. Kuriyan / J. Wrana)
- **Signaling by the Insulin Receptor**
  (*M. Czech* / G. Ruvkun / R. Kahn / G. Thomas / P. Cohen)
- **The Wnt Pathway**
  (*J. Woodgett* / R. Nusse / N. Perrimon / M. Mlodzik)
- **Cytokine Signaling Networks**
  (*S. Ghosh* / D. Hilton / J. Ihle / M. Karin / L. Zon)
- **Apoptosis**
  (*C. Thompson* / J. Tschopp / A. Strasser / J. Penninger)

PHOTONUCLEAR REACTIONS
TILTON SCHOOL
TILTON, NH
AUG 18-23, 2002
ELIZABETH BEISE, CHAIR
HANS-JURGEN ARENDS &
DANIEL PHILLIPS, CO-VICE CHAIRS

- **Electromagnetic Reactions on Light Nuclei**
  (*F. Gross* / W. Gloeckle / M. Holtrop / G. O'Reilly)
- **Low Energy Nucleon Structure**
  (*H. Gao* / W. Weise / H. Merkel / T. Ito / F. Maas)
- **EM Production of Nucleon Resonances**
  (*A. D'Angelo* / E. Smith / M. Ostrick / S. Barrow / T. Nakano)
- **Compton Scattering and Polarizabilities**
  (S. Scherer / M. Lundin / M. Schumacher)
- **Few and Many Body Physics**
  (*H. Blok* / B. Zihlmann / L. Zhu / S. Nakamura / M. Distler)
- **Advances in Theory**
  (*S. Wallace* / B. van Kolck / S. Jeschonnek / D. Leinweber / J.-W. Chen)
- **Nucleon Spin and Parton Structure**
  (T. Averett / M. Vincter / M. Battaglieri)
- **Future Directions in Photonuclear Physics**
  (*A. Nathan* / L. Cardman / T. Walcher / R. Milner / H. Weller)

PHOTOSYNTHESIS
ROGER WILLIAMS UNIVERSITY
BRISTOL, RI
JUN 16-21, 2002
DONALD BRYANT, CHAIR
MARILYN GUNNER, VICE CHAIR

- **Type I Reaction Centers: Structure and Electron Transfer Dynamics**
  (*P. Fromme* / P. Heathcote / J.H. Golbeck / *A. van der Est*)
- **Antenna: Structure, Dynamics and Quenching**
  (*M. Miller* / R. van Grondelle / N.-U. Frigaard / R. Bassi / *B. Blankenship*)
- **Type II Reaction Centers**
  (M. Gunner / S. Lin / J. Allen / *C. Kirmaier*)
- **Photosystems: Biogenesis and Dynamics**
  (*J. Barber* / E.-M. Aro / W. Vermaas / F.-. Wollman / S. Merchant / *J.-D. Rochaix*)
- **PS II: Structure, Function and Oxygen Evolution**
  (*J.-R. Shen* / D. Britt / *C. Yocum* / *W. Rutherford*)
- **Cofactor Biosynthesis: Quinones, Chlorophylls and Carotenoids**
  (*S. Beale* / R.D. Willows / C.N. Hunter / D. della Penna / F.X. Cunningham, Jr. / *H. Scheer*)
- **Electron Transfer Complexes: Structure, Function and Biogenesis**
  (*J.C. Gray* / F. Daldal / T. Ogawa / *T. Kallas*)
- **Emerging Methodologies**
  (B. Martin / K. van Wijk / A. Grossman)
- **Proton Transfers and ATP Synthesis**
  (*M. Richter* / D. Kramer / W. Junge / *W. Frasch*)

PHYSICAL METALLURGY
HOLDERNESS SCHOOL
PLYMOUTH, NH
JUL 21-26, 2002
JAMES HOWE & DAVID SROLOVITZ, CO-CHAIRS
DENNIS DIMIDUK, RICHARD LESAR &
TRESA POLLOCK, CO-VICE CHAIRS

- **Interface Motion**
  (G. Weatherly / R. Pond / G. Gottstein)
- **Segregation**
  (G. Smith / K. Moore)
- **Wetting**
  (E. Rabkin / W. Ludwig)
- **Interface Reactions**
  (J. Morral)
- **Deformation**
  (M. Mills)
- **Solidification**
  (M. Baskes / L. Greer / H. Brody)
- **Processing/Degredation**
  (M. Kumar / D. Fields / S. Bruemmer)
- **Structure/Property Relations**
  (G. Rorher / Q. Pan)

PHYSICS RESEARCH AND EDUCATION: QUANTUM MECHANICS
MOUNT HOLYOKE COLLEGE
SOUTH HADLEY, MA
JUN 9-14, 2002
BETH ANN THACKER, CHAIR
DAVID JACKSON &
HARVEY LEFF, CO-VICE CHAIRS

- **Physics Education Research and Developing Curricula**
  (*H. Gould* / J. Redish / L. Bao)
- **Quantum Mechanics Curricula and Teaching Quantum Mechanics**
  (*J. Tobochnik* / P. Garik / C. Manogue / G. Greenstein / A. Zajonc / D. Pritchard)
- **Research Experiments in Quantum Curriculum**
  (*J.-F. Van Huele* / H. Mabuchi / T. Havel)
- **Students' Understanding of Concepts in Quantum Mechanics**
  (*D. Meltzer* / S. Vokos / C. Singh / M. Wittmann / S. Rosenberg)
- **Theoretical Research and Teaching Quantum Mechanics**
  (*N. Chonacky* / E. Goldstein / P. Lepage)
- **Topics in Quantum Mechanics**
  (*A. Zajonc* / D. Griffiths / E. Taylor / J. Townsend / D. Styer)
- **Photon Experiments with Undergraduates**
  (*G. Greenstein* / M. Schneider / C. Holbrow)
- **Quantum Curricula**
  (*H. Leff* / D. Zollman / R. Kosloff / A. Bug / D. Hestenes)
- **Experimental Research that Could Influence Quantum Curricula**
  (*S. Addison* / H. Batelaan / J. Eberly)

PLANT & FUNGAL CYTOSKELETON
PROCTOR ACADEMY
ANDOVER, NH
AUG 11-16, 2002
LIZA PON, CHAIR
CHRIS STAIGER, VICE CHAIR

- **Keynote Session**
  (*C. Staiger* / D. Drubin / P. Hussey)
- **Microtubule Organization**
  (B. Oakley / T. Davis / S. Dutcher / G. Wasteneys / R. McClinton)
- **Actin Organization**
  (R. Li / M. Peter / R. Meager / S. Gilroy)
- **Microtubule Function**
  (*P. Helper* / B. Liu / W. Sale / J. Cooper / K. Osteryoung)
- **Actin Function**
  (R. Hangarter / A. Bretscher / P. Novick / L. Weisman)
- **Mitosis**
  (K. Bloom / P. Sorger / Z. Cande)
- **Cytokinesis**
  (L. Smith / K. Gould)
- **Morphogenesis and the Cytoskeleton**
  (*J. Pringle* / A. Emons / E. Bi / V.E. Tong)
- **Emerging Technologies**
  (C. Boone / CellZome)

PLANT MOLECULAR BIOLOGY
HOLDERNESS SCHOOL
PLYMOUTH, NH
JUL 7-12, 2002
BARBARA BAKER, CHAIR
DAVID BAULCOMBE, VICE CHAIR

- **Gene Silencing / Post Transcriptional Regulation**
  (*D. Baulcombe* / J. Carrington / M. Matzke / H. Vaucheret / J. Paskowski)

- **Signal Transduction**
  (*J. Ecker* / J. Sheen / S. Clark / B. Bartel / J. Schroeder)
- **Photosensory Perception and Signaling**
  (*J. Chory* / P. Quail / W. Briggs / T. Cashmore)
- **Proteolytic Cellular Regulation in Plants**
  (*M. Estelle* / R. Vierstra / K. Shirasu / P. Genschik)
- **Microbe Interactions**
  (*B. Staskawicz* / J. Jones / J. Dangl / P. Schulze-Lefert / B. Baker)
- **Genetic and Metabolic Framework of Plant Growth and Defense**
  (*G. Coruzzi* / C. Chapple / S. Smeekens / N. Raikhel)
- **Keynote Speaker**
  (X.W. Deng)
- **Development From Cell to Seed**
  (*S. McCormick* / C. Dean / M. Tsiantis)
- **Genomes and Genomics**
  (*R. Last* / R. Buell / S. Theologis / S. Wessler)

PLASMA PROCESSING SCIENCE
TILTON SCHOOL
TILTON, NH
JUL 21-26, 2002
JAVAD MOSTAGHIMI, CHAIR
MARK KUSHNER, VICE CHAIR

- **Plasmas for Adding Materials to Surfaces: Deposition and Coatings**
  (T. Yoshida / C. Moreau / P. Grant / S. Felch)
- **Plasmas for Removing Materials from Surfaces: Etching, Sputtering and Surface Modification**
  (O. Joubert / M. Wertheimer)
- **Plasmas for Material Production in the Gas Phase: Nucleation and Growth**
  (R. Boswell / S. Girshick)
- **Getting Smaller: Applications of Plasmas in Nanotechnology**
  (O.Takai / L. Boufendi)
- **Plasmas in the Atmosphere: Environmental Applications and Combustion**
  (M. Gundersen / F.Massines)
- **Biotechnology and Health Care: A Role for Plasmas**
  (R. Hicks / Y. Horiike)
- **MEMS: Plasmas for Fabrication and Function**
  (S. Pang / Y. Gianchandani / W.M.M. Kessels)
- **Photons from Plasmas: Advanced Lighting Sources**
  (J.K. Lee / F. Vollkommer)
- **Plasma Devices**
  (K. Landes / J. Heberlein / J. Hopwood)

POINT & LINE DEFECTS IN SEMICONDUCTORS
COLBY-SAWYER COLLEGE
NEW LONDON, NH
JUL 7-12, 2002
STEFAN ESTREICHER, CHAIR
JOERG WEBER, VICE CHAIR

- **Defects in Silicon**
  (*H. Katayama-Yoshida* / U. Gösele / N. Cowern)
- **Dislocations**
  (*W. Schröter* / D. Chrzan / S. Christiansen)
- **Interface Defects**
  (*R. Jones* / Pasquarello)
- **Nanostructures**
  (*A. Larsen* / F. Priolo / R. Lopez)
- **Zinc Oxide**
  (*D. Auret* / D. Hofmann / S. Zhang)
- **Muon Spin Resonance**
  (*R.Lichti* / S.F.J. Cox)
- **Spins and Qbits**
  (*K. Itoh* / T. Dietl / T. Kennedy)
- **III-V Nitrides**
  (*B. Monemar* / B. Clerjaud / S. Limpijumnong)
- **Isotopes as Point Defects**
  (*E.E. Haller* / M. Cardona)
- **Gap Issues in (In)GaAsN**
  (*H. Temkin* / A. Zunger / W. Walukiewicz / M. Capizzi)
- **Defects in SiC**
  (*R. Devaty* / N. Son / M. Bockstedte)
- **Defects in Diamond**
  (*C. Ammerlaan* / A. Mainwood)
- **Banquet**
  (*S. Estreicher* / A.M. Stoneham)

POLYMER PHYSICS
SALVE REGINA UNIVERSITY
NEWPORT, RI
AUG 11-16, 2002
MURUGAPPAN MUTHUKUMAR, CHAIR
MARK EDIGER, VICE CHAIR

- **Collective Phenomena in Colloids and Polymers**
  (D. Weitz / W. Poon / S. Kumar)
- **Polyelectrolytes**
  (C. Williams / G. Fredrickson / J. Joanny)
- **Nanomaterials**
  (R. Krishnamoorti / T. Russell / M. Srinivasarao)
- **Crystallization**
  (J. Hobbs / G. Reiter / J. Kornfield)
- **Self-Assembly**
  (A. Eisenberg / F. Bates)
- **Biological Processes**
  (S. Bezrukov / D. Hoagland / N. Hud)
- **Single-Molecule Force Spectroscopy**
  (A. Janshoff)
- **Heirarchical Dynamics**
  (A. Sokolov / M. Ediger)

POSTHARVEST PHYSIOLOGY
MOUNT HOLYOKE COLLEGE
SOUTH HADLEY, MA
AUG 4-9, 2002
MICHAEL REID, CHAIR
CHRISTOPHER WATKINS, VICE CHAIR

- **Genomics and Proteomics in Postharvest Biology**
  (*D. Grierson* / J. Giovannoni / J. Rose)
- **Regulation of Ripening and Senescence**
  (*J.-C. Pech* / J. Botella / R. Jones / H. Klee / E. Woltering)
- **Genetic and Chemical Technologies for Ethylene Control**
  (*M. Serek* / R. Beaudry / C. Chang)
- **Genetic Approaches to Improving Postharvest Performance**
  (*I. Ferguson* / R. Harker / H. Stotz)
- **Non-Chemical Tools in Postharvest Technology**
  (*J. Fellman* / S. Droby / H. Peppelenbos / A. Woolf)
- **Critical Issues in Postharvest Technology**
  (*J. Faragher* / E. Mitcham / R. Premier)
- **Postharvest Technology for the Developing World**
  (*M.Cantwell*)
- **Crop Postharvest Physiology**
  (*R. Paull* / S. Gan / D. Hunter / S. Kays /P. Tonutti)
- **Nutritional Genomics and Postharvest Physiology**
  (*A. Kanellis* / D. DellaPenna / N. Smirnoff)

PROTEOGLYCANS
PROCTOR ACADEMY
ANDOVER, NH
JUL 7-12, 2002
ARTHUR LANDER, CHAIR
ANNA PLAAS, VICE CHAIR

- **Late-Breaking Results**
  (*A. Lander*)
- **Synthesis, Biosynthesis and Sequence Analysis**
  (*L. Kjellén* / R. Sasisekharan / R. Rosenberg)
- **Structural Biology and Biophysics of Proteoglycans and Their Interactions**
  (*J. Gallagher* / C. Ortiz / A. Day / G. Pejler)
- **Cell Biology of Proteoglycans: Regulation of Cellular Signaling**
  (*A. Rapraeger* / D. Fernig / D. Ron / R. Wells)
- **Cell Biology of Proteoglycans: Roles in the Extracellular Matrix**
  (*S. Chakravarti* / K. Kimata / J. Adams / D. Birk)
- **Proteoglycans in Developmental Biology**
  (*S. Selleck* / L. Solnica-Krezel / H.J. Yost / V. Wilson / H. Nakato)
- **Proteoglycans in Physiology: Neural Tissue, Connective Tissue and Cancer**
  (*A. Plaas* / J. Loeb / J. Fawcett / B. Toole)
- **Proteoglycans in Physiology: Cardiovascular, Immune/Inflammatory, and Reproductive Systems**
  (*P. Goetinck* / P. Park / A. De Agostini / T. Wells / R. Iozzo)
- **Proteoglycans in the Clinic: Diagnosis and Therapy**
  (*N. Shworak* / A. Varki / S. Laverty)

PROTEOLYTIC ENZYMES & THEIR INHIBITORS
COLBY-SAWYER COLLEGE
NEW LONDON, NH
JUL 7-12, 2002
JAMES MCKERROW, CHAIR
NANCY THORNBERRY, VICE CHAIR

- **Regulated Intermembrane Proteolysis**
  (*B. De Strooper* / R. Rawson / N. Kopan / M. Freeman)
- **Synthetic Protease Inhibitors: New Tools and Drug Leads**
  (*S. Thompson* / U. Obst / B. Katz / H. Tschesche / P. Podolin / P. Dragovich)
- **Determinants of Protease Specificity**
  (*C. Craik* / M. Bogyo / B. Turk / R.S. Roy)
- **Structural Basis of Protease Function**
  (*W. Bode* / P. Gros / J. Deisenhofer / H. Brandstetter / Z. Jia / T. Clausen)
- **Microbial Proteases**
  (*D. Goldberg* / A. Mitchell / B. Sauer / R. Liddington)
- **Proteases in Cell Cycle and Cell Death**
  (*G. Salvesen* / J.-M. Peters / B. Hay / P. Vandebabeele / H. Wu / K. Rodberg / K. Tomaselli)
- **Proteases in the Immune Response and Inflammation**
  (*H. Chapman* / H. Pleough / C. Watts / I. Mellman / C. Peters)
- **Secreted and Membrane Associated Proteases in Cancer and Endocrine Function**
  (*B. Sloane* / P. Brown / J. Joyce / E. Madison / T. Bugge / C. Brix)

- **Keynote Address**
  (Z. Werb)

RADIATION CHEMISTRY
COLBY COLLEGE
WATERVILLE, ME
JUN 23-28, 2002
PAUL BARBARA, CHAIR
JACQUELINE BELLONI, VICE CHAIR

- **Opening Session**
  (*K. Gray* / J. Miller / S. Lymar)
- **Super Critical Fluids, Clusters and Hydrated Electron**
  (*C. Jonah* / D. Bartels / K. Jordan / S. Pommeret)
- **Ice on Earth and in the Outer Solar System**
  (*T. Orlando* / L. Sanche / R. Carlson)
- **Hydrated Electron**
  (*B. Schwartz* / R. Mathies / T. Tahara / *M. Johnson* / S. Bradforth)
- **Young Investigator "Ed Hart" Session**
  (*J. Belloni*)
- **Biomolecules**
  (*G. Baldachino* / G. Schuster / T. Majima / M. Sevilla)
- **Nanosystems I**
  (*Dirk Guldi* / D. Meisel / P. Kamat)
- **Organic and Bio Polymers**
  (*L. Siebbeles* / A. Whittaker / J. Warman / D. Cabelli)
- **Nanosystems II**
  (*S. Pimblott* / A. Trifunac / M. Mostafavi)

REPRODUCTIVE TRACT BIOLOGY
CONNECTICUT COLLEGE
NEW LONDON, CT
JUN 30-JUL 5, 2002
LINDA GIUDICE, CHAIR
SUDHANSU DEY &
ASGI FAZLEABAS, CO-VICE CHAIRS

- **Reproductive Tract Biology in the Post-Genomic Era**
  (*A. Hsueh* / R. Braun / E. Adashi / G. Pilia)
- **Molecular Basis of Ovarian Development and Function**
  (*J. Richards* / M. Conti / J. Orly / S. Shimasaki / T. Wilson / T. Hsu)
- **Molecular Basis of Male Reproductive Tract Development and Function**
  (*M. Griswold* / B. Capel / G. Prins / I. Dobrinski / L. Heckert)
- **Reproductive Tract Development and Function Phenotypes in Transgenic Models**
  (*S. Dey* / J. Nilson / D. Sassoon / E. Winterhager / P. Cohen)
- **Angiogenesis and Reproductive Function**
  (*S. Fisher* / N. Ferrara / H. Weiler)
- **Maternal-Fetal Interactions/Implantation**
  (*A. Fazleabas* / S. Kimber / J. Cross / S. Lye / A. Sutherland / B. Paria)
- **Comparative Implantation**
  (*F. Bazer* / R. Burghardt / A. Enders / T. Spencer / I. Bagchi)
- **Steroid Hormone Actions in the Reproductive Tract**
  (*K. Korach* / S. Curtis-Hewitt / O. Conneely / K. Chwaliscz / B. Katzenellenbogen / D. Buchanan / P. Davies)
- **Grand Rounds in the Reproductive Tract**
  (*P. Leppert* / B. Lessey / S. Franks / S. Bulun / J. McLachlin)

SALT & WATER STRESS IN PLANTS
THE QUEEN'S COLLEGE
OXFORD, UK
JUL 14-19, 2002
PAUL HASEGAWA, CHAIR
EDUARDO BLUMWALD &
KAZUO SHINOZAKI, CO-VICE CHAIRS

- **Salt and Water Stress**
  (*M. Hasegawa* / E. Epstein / H. Bohnert / A. Hanson)
- **Ion Homeostasis**
  (*E. Blumwald* / D. Schachtman / M. Apse / N. Uozumi / J. Pardo)
- **Ion Homeostasis - Ca2+ Facilitated or Modulated**
  (*H. Sze* / M. Tester / K. Hirschi)
- **Ca2+ Signaling in the Plant Stress Response**
  (*A. Smith* / J. Cushman / D. Sanders / J. Schroeder / J. Harper)
- **Model Genetic Systems for Plant Stress Research**
  (*R. Quatrano* / A. Rodriguez-Narvarro / R. Bressan / H. Saito)
- **Plant Osmotic Stress Responses**
  (*B. Bray* / K. Yamaguchi-Shinozaki / D. Bartels / J. Giraduat / J. Giraduat / M. Knight)
- **Crop Production and QTLs**
  (*T. Flowers* / M. Kearsey / B. Forster / A. Blum / M. Koyama)
- **Stress Signaling**
  (*K. Shinozaki* / J.-K. Zhu / M. Pages / M. Seki / H. Hirt)
- **Plant and Cellular Responses to Stress**
  (H. Uchimiya / S. Assmann / R. Hedrich)

SECOND MESSENGERS & PROTEIN PHOSPHORYLATION
KIMBALL UNION ACADEMY
MERIDEN, NH
JUN 9-14, 2002
MORRIS WHITE, CHAIR
KENDALL BLUMER &
STEPHEN LANIER, CO-VICE CHAIRS

- **Protein Kinases**
  (M. Mohammadi / S.S. Taylor / D. Allessi)
- **Metabolism**
  (M. Birnbaum / M. Myers / S. Shoelson / B. Kemp)
- **Regulatory Interactions**
  (M. Lemmon / B. Margolis / C. Rubin / S. Corvera)
- **Growth, Metabolism and Longevity**
  (M. Hall / C. Kenyon / E. Hafen / G. Shulman)
- **Control Mechanism**
  (J. Dixon / B. Neel / B. Hemmings / J. Conaway)
- **Drug Design**
  (P. Cohen / B. Zhang / S. Courtneidge / C. Sawyer)
- **Downstream Signaling**
  (Tsai / M. Montminy / G. Thomas / T. Sturgill)
- **Kinase Regulation**
  (R. Davis / K. Blumer / J. Blenis / S. Lanier)

SENSORY CODING AND THE NATURAL ENVIRONMENT (NEW)
MOUNT HOLYOKE COLLEGE
SOUTH HADLEY, MA
JUN 30-JUL 5, 2002
BRUNO OLSHAUSEN &
PAMELA REINAGEL, CO-CHAIRS

- **Keynote Speakers**
  (*Y. Dan* / R. Shepard / A. Bregman)
- **Image Statistics and Grouping**
  (*D. Field* / J. Elder / A. Oliva)
- **Color**
  (*M. Webster* / D. MacCleod / S. Yendrikhovskij / T. Wachtler)
- **Visual Search and Object Recognition**
  (*B. Olshausen* / D. Kersten / S. Thorpe)
- **Visual Neurophysiology**
  (*J. Gallant* / M. Weliky / D. Scheinberg / M. Berry)
- **Probabilistic Models**
  (*E. Simoncelli* / A. Hyvarinen / M. Wainwright / D. Donoho)
- **Auditory Neurophysiology**
  (*M. Lewicki* / A. Herz / X. Wang / C. Schreiner)
- **Adaptation**
  (*R. de Ruyter* / N. Grzywacz / A. Fairhall)
- **Active Senses**
  (*P. Reinagel* / R. Muller / M. Nelson)

SIGNAL TRANSDUCTION BY ENGINEERED EXTRACELLULAR MATRICES
CONNECTICUT COLLEGE
NEW LONDON, CT
JUN 23-28, 2002
DONALD BOTTARO & SHU CHIEN, CO-CHAIRS
DAVID MOONEY, VICE CHAIR

- **Molecular Cues of ECM**
  (*S. Bruder* / B.R. Olsen / M. Bissell / R. Lapcevich)
- **Stem Cells**
  (*B. Petersen* / A. Caplan / G. Schatteman / M. Carpenter / J. Rossant)
- **The Regulation of Cell Fate**
  (*M. Bissell* / S. Chien / D. Laufenberger / S. Goldstein)
- **Spatial and Mechanical Signal Presentation by ECM**
  (*D. Ingber* / L. Griffith / K. Burridge / M. Sheetz / C. Chen)
- **Convergence of Signaling by ECM and Growth Factors**
  (*D. Bottaro* / S. Boden / M. Schwartz / W. Fantl)
- **ECM in Tissue Regeneration and Remodeling**
  (*N. Parenteau* / P. ten Dijke / A. Rapraeger / J. Hubbell / S. Bhatia)
- **Biomaterials for Engineered ECM**
  (*G. Martin* / G. Prestwich / B. Ratner / K. Anseth)
- **Growth Factor Signaling in Tissue Remodeling**
  (*H. Geller* / D. Mooney / J. Soriano / S. Meiners / R. Iozzo)
- **Engineering Epithelium**
  (*H. Sun* / A. Atala / J. Mansbridge / J. Vacanti)

SIGNALING BY ADHESION RECEPTORS
CONNECTICUT COLLEGE
NEW LONDON, CT
JUL 14-19, 2002
RICHARD ASSOIAN, CHAIR
ALAN HALL, VICE CHAIR

- **Adhesion Signaling in Differentiation and Development I** (*J. Schwarzbauer* / E. Fuchs / M. Peifer)
- **Adhesion Signaling in Differentiation and Development II** (*B. Gumbiner* / N. Brown / E. Knust / W.J. Nelson)
- **Adhesion Signaling in Neurobiology** (*L. Reichardt* / F. Gertler / T. Uemura)
- **Adhesion Signaling in Endothelial Cell Biology and Angiogenesis** (*R. Hynes* / E. DeJana / D. Cheresh / F. Giancotti)
- **Adhesion Signaling in Cancer and Cell Transformation I** (*J. Brugge* / J. Downward / H. Clevers)
- **Adhesion Signaling in Cancer and Cell Transformation II** (*P. Polakis* / K. Vuori / B. Weiss / R. Juliano)
- **Integrin Signaling** (*M. Ginsberg* / J.T. Parsons / R. Liddington)
- **Signaling by Rho GTPases and the Cytoskeleton I** (*D. Bar-Sagi* / K. Burridge / C. Turner / M. Schwartz)
- **Signaling by Rho GTPases and the Cytoskeleton II** (*A. Hall* / R. Treisman / K. Kaibuchi)

SOLID STATE CHEMISTRY I
COLBY-SAWYER COLLEGE
NEW LONDON, NH
JUL 28-AUG 2, 2002
NATHANIEL BRESE, CHAIR
MARTHA GREENBLATT, VICE CHAIR

- **Optical Materials** (*S. Kauzlarich* / D. Keszler / C. Page)
- **Building Blocks and Frameworks** (*M. O'Keefe* / S. Keller / M. Eddaoudi / D. Bem / F. DiSalvo)
- **Moving Charge** (*L. Schneemeyer* / C. Kloc / C. Kagan)
- **Deep Thoughts in Solid State Chemistry** (*S. Lee* / C. Catlow / N. Hill / R. Dronskowski / R. Nesper)
- **Hot Chemistry** (*J. Corbett* / M. Geselbracht / T. Albrecht-Smith)
- **Oxygen and Beyond** (*H. zur Loye* / T. Mallouk / T. Vanderah / S. Jobic / A. Rappe)
- **Living Solid State Chemistry** (*G. Stucky* / A. Belcher / J. Aizenberg)
- **Nanoscale Solids** (*S.-J. Hwu* / S. Brock / J. Zhang / P. Yang / T. Douglas)
- **Rare and Well Done** (*M. Kanatzidis* / P. Dorhout / J. Ibers)

STEREOCHEMISTRY
SALVE REGINA UNIVERSITY
NEWPORT, RI
JUN 9-14, 2002
PETER WIPF, CHAIR
CAROL ENSINGER, VICE CHAIR

- **Stereoselective Synthesis I** (*C. Ensinger* / S. Denmark / D. Lectka)
- **Catalytic Asymmetric Transformations I** (*C. Senanayake* / S. Kobayashi / A. Charette / A. Yudin)
- **Chiroptical Methods** (*N. Berova* / S. Matile / K. Nakanishi / P. Polavarapu)
- **Bioorganic Transformations** (*M. Egbertson* / F. Fang / S. Gellman / D. Huryn / S. Walker)
- **Stereoselective Synthesis II** (*J. McGill* / M. Sodeoka / B. Feringa / P. Floreancig)
- **Catalytic Asymmetric Transformations II** (*J. Morken* / E. Carreira / D. Krishnamurthy / D. Lee)
- **Natural Product Synthesis** (*E. Eliel* / D. Evans / K. Brummond / S. Kozmin)
- **New Aspects of Stereochemistry** (*B. Maryanoff* / Y. Okamoto / P. Cintas / D. Walba)
- **Stereoselective Synthesis III** (J. McNamara / D. Yang / M. Sigman)

SYNAPTIC TRANSMISSION
KIMBALL UNION ACADEMY
MERIDEN, NH
AUG 18-23, 2002
DAN JOHNSTON, CHAIR
STEVE REDMAN, VICE CHAIR

- **Plenary Lectures** (E. Marder / B. Sakmann)
- **Synaptic Circuits** (*C. McBain* / M. Wilson / D. McCormick / A. Thomson / R. Cossart)
- **Synaptic Transmission in the Retina** (S. Wu / D. Copenhagen)
- **Presynaptic Mechanisms** (*B. Zucker* / B. Betz / T. Sudhof / E. Chapman / H. Koester)
- **Postsynaptic Mechanisms** (*L. Trussel* / K. Harris / P. Jonas / H. Lester)
- **Synaptic Plasticity** (*D. Johnston* / M.-M. Poo / J. Tsien / M. Kennedy)
- **Computational and Translational Research** (*R. Malenka* / L. Abbott / J. Kauer / R. Montague)
- **Spinal Cord and Pain** (*S. Redman* / A. MacDermott / M. Salter / J. Huettner)

TETRAPYRROLES, CHEMISTRY & BIOLOGY OF
SALVE REGINA UNIVERSITY
NEWPORT, RI
JUL 14-19, 2002
GLORIA FERREIRA, CHAIR
MARK O'BRIAN, VICE CHAIR

- **Emerging Technologies: Genomics and Beyond** (*M. O'Brian* / P.H. Quail / U. Schwaneberg)
- **Enzymology of Tetrapyrrole Biosynthesis** (*M. Warren* / O. Nakajima / E. Jaffe / D. Jahn)
- **Supramolecular and Dynamic Combinatorial Chemistry** (*K. Smith* / J.K.M. Sanders / J.L. Sessler)
- **Iron Transport and Metal Regulation of Tetrapyrrole Metabolism** (*A. Smith* / S. Merchant / R. Lill / C. Wandersman)
- **Plant Tetrapyrroles** (*B. Grimm* / K. Apel / J. Chory)
- **Novel Facets of Heme** (*P.R. Ortiz de Montellano* / P. Kroneck / K. Rodgers / M. Marletta)
- **Tetrapyrrole Catabolism: Linear Tetrapyrroles and Signaling Mechanisms** (*A. McDonagh* / *T. Yoshida* / T.J. Mantle / N. Frankenberg)
- **Heme-Mediated Signal Transduction and Clinical Implications** (*J. Kushner* / J.-J. Chen / X. Wang / M. Gassmann)
- **Keynote Address** (*G.C. Ferreira* / G.A. Petsko)

THEORETICAL BIOLOGY & BIOMATHEMATICS
TILTON SCHOOL
TILTON, NH
JUN 9-14, 2002
ALEXANDER MOGILNER &
CLAUDIA NEUHAUSER, CO-CHAIRS
TIM ELSTON &
RAYMOND MEJIA, CO-VICE CHAIRS

- **Phylogenetic Trees** (*J.R. Jungck* / P. Lockhart / M. Huynen)
- **Structure and Function of the Primary Visual Cortex** (*P.C. Bressloff* / Y. Fregnac / L.F. Abbott / M. Pugh)
- **Modeling Parkinsonian Rhythms** (*D. Terman* / K. Sigvardt / A. Yew)
- **Modeling Chemotaxis** (*H. Othmer* / R. Albert / S. Setayeshgar / D.C. Bottino / A. Levchenko)
- **Morphogenesis and Gene Regulation Networks** (*L. Davidson* / E. Munro / P. Hogeweg)
- **Global Environmental Change** (*M. Lewis* / M. Pascual / P. Moorcroft / J.S. Clark)
- **Gene Regulation Networks: Robustness and Disease** (*M. Nowak* / D.C. Krakauer / A. Sengupta)
- **Transcriptional Regulation** (*T. Elston* / D. Endy / A. van Oudenaarden / J.J. Collins)
- **Computational Biology in a Changing Scientific Culture** (*R. Mejia* / C. DeLisi/ M . Cassman)

THIN FILM MECHANICAL BEHAVIOR
COLBY COLLEGE
WATERVILLE, ME
JUL 14-19, 2002
ROBERT COOK, CHAIR
EDUARD ARZT, VICE CHAIR

- **Global and Local Thin Film Behavior** (*W. Nix* / O. Kraft / S. Baker)
- **Stress Effects on Film Formation and Stability** (*Z. Suo* / E. van der Giessen / K. Maex)
- **Time-Dependent Behavior** (*M. Thouless* / R. Vinci / D. Josell / D. Clarke)
- **Adhesion and Interfaces** (*R. Dauskardt* / N. Moody / T. Weihs)
- **Contact Behavior** (*G. Pharr* / Y. Cheng / J. Vlassak / B. Lucas)
- **Electromigration and Voiding** (*B. Freund* / C. Volkert / T. Shaw)
- **Magnetic and Electrical Effects** (*K. Barmak* / R. James / N. Sottos / A. Bushby)
- **Topical Lecture** (*R. Cook* / G. Michot)

TRIBOLOGY
ROGER WILLIAMS UNIVERSITY
BRISTOL, RI
AUG 4-9, 2002
IRWIN SINGER, CHAIR
TREVOR PAGE, VICE CHAIR

- **Rubber Friction, Adhesion and Contact Mechanics** (*J. Greenwood* / M. Chaudhury / B. Persson)
- **Lubrication with Roughness** (*H. Spikes* / C. Hooke / S. Granick / U. Landman)
- **Friction at Large and Small Scales** (*J. Harrison* / M. Scherge / T. Baumberger)
- **In Situ Studies of Lubricated Contacts** (*J. Israelachvili* / P. Cann / M. Salmeron / J. Klein)
- **Wear Mechanisms** (*T. Dickinson* / J.-P. Celis / S. Harris)
- **Surface Science in Tribology** (*J. Krim* / M. Dugger / N. Spencer / S. Perry)
- **Tribology in Engineering** (*K. Johnson* / P. Blau / K. Holmberg)
- **Modeling Tribology** (*T. Page* / A. Torrance / G. Sawyer)

VIBRATIONAL SPECTROSCOPY
SALVE REGINA UNIVERSITY
NEWPORT, RI
JUL 28-AUG 2, 2002
PETER KELLY, CHAIR
SANFORD RUHMAN, VICE CHAIR

- **Time Resolved FTIR**
- **Biological Dynamics**
- **Imaging Applications: Near and Far**
- **Molecular Dynamics**
- **Clusters, Solvation and Aerosols**
- **THz Developments**
- **Spectroscopy at Interfaces**
- **Ultrafast Spectroscopy in Liquids**

VISUAL SYSTEM DEVELOPMENT
SALVE REGINA UNIVERSITY
NEWPORT, RI
JUN 9-14, 2002
NANSI JO COLLEY & THOMAS REH, CO-CHAIRS
CLAUDE DESPLAN, VICE CHAIR

- **Benzer Symposium** (W. Gehring / U. Gaul / F. Bonhoeffer)
- **Early Eye Development** (*T. Glaser* / *G. Oliver* / W. Harris / R. Lang / H. Kondoh / F. Pignoni)
- **Photoreceptor Morphogenesis** (*C. Desplan* / *D. Ready*)
- **Development of Visual Connections** (*C. Mason* / *I. Meinertzhagen* / S.Kunes / P. Garrity / D. Sretavan / J. Flanagan)
- **Development of Cell Fates: Signaling Molecules** (*K. Moses* / *R. Cagan* / J. Fischer / N. Baker / K.W. Choi)
- **Development of Cell Fates: Transcription Factors** (*C. Cepko* / *A. Jarman* / R. Kageyama / A. Swaroop / G. Mardon / L. Michaut)
- **Evolution and Eye Development** (*P. Raymond* / *V. Hartenstein* / J. Wittbrodt / M. Neitz)
- **Development of Cell Fates: Signaling Molecules II** (*U. Banerjee* / *J. Treisman* / X. Yang / Y. Hiromi / J. Malicki)
- **New Waves in Visual System Development** (*M. Vetter* / *M. Mlodzik*)

WATER & AQUEOUS SOLUTIONS
HOLDERNESS SCHOOL
PLYMOUTH, NH
AUG 4-9, 2002
PABLO DEBENEDETTI &
JOHN FINNEY, CO-CHAIRS
ALFONS GEIGER &
RICHARD SAYKALLY, CO-VICE CHAIRS

- **Wet Earth - How Our Planet Works** (*A. Thompson* / G. Hirth / C. Manning)
- **Water in Aerosols and Clouds** (*T. Peter* / M. Baker / T. Koop / M.C. Facchini)
- **Amorphous, Supercooled and Glassy Water** (*E. Mayer* / C. Angell / A. Soper)
- **Aqueous Solutions** (*E. Castner* / D. Bowron / G. Galli / K. Harris)
- **Biopreservation and Physical Chemistry in Low-Moisture Formulations** (*C. Roberts* / G. Zografi / M. Pikal / J. dePablo)
- **Self-Assembly in Water** (*A. Parsegian* / R. Prud'homme / S. Leikin / J. Nagle)
- **Structure and Dissociation Dynamics in Tetrahedral Liquids** (*F. Stillinger* / F. Sciortino / C. Dellago)
- **Water in Extreme Biological Systems** (*R. Daniel* / N. Pace / P. Halling / J. Zaccai)
- **30 Years After Rahman and Stillinger's First Simulation: What Have We Learned and What Might Come Next?** (*A. Geiger* / D. Chandler)

ZEOLITIC & LAYERED MATERIALS
MOUNT HOLYOKE COLLEGE
SOUTH HADLEY, MA
JUN 16-21, 2002
MICHAEL TREACY, CHAIR
KENNETH BALKUS, VICE CHAIR

- **Optical and Electronic Properties** (A. Stein / J. MacDougall / F. Marlow / H. Hillhouse)
- **Hypothetical Framework Structures** (M. Treacy / M. O'Keeffe / O. Delgado-Friedrichs / R. Bell / K.-P. Lillerud)
- **Novel Structures and Their Properties** (T. Nenoff / R. Bedard / P. Wright / T. Maesen)
- **Multi-Scale Porosity** (S. Auerbach / O. Terasaki / R. Ryoo / A. Jan-Bons / M. Tsapatsis)
- **Nucleation and Growth** (E. Flanigen / F. Taulelle / M. Deem / B. Schoeman)
- **Synthesis and Catalysis** (G.B. McVicker / S. Zones / F. Schweyer / D. Vaughan / J. Beck)
- **Layered Materials** (K. Carrado / T. Pinnavaia / A. Yamagishi / S. Valange)
- **Poster Highlights** (*K. Balkus*)
- **Keynote Lecture** (P. Dutta / Z. Gabelica)

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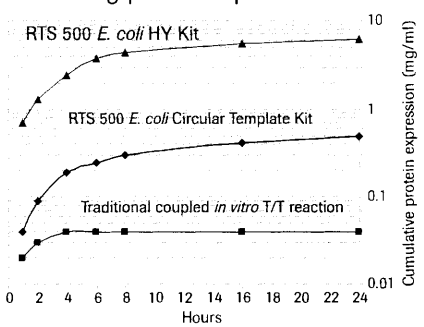

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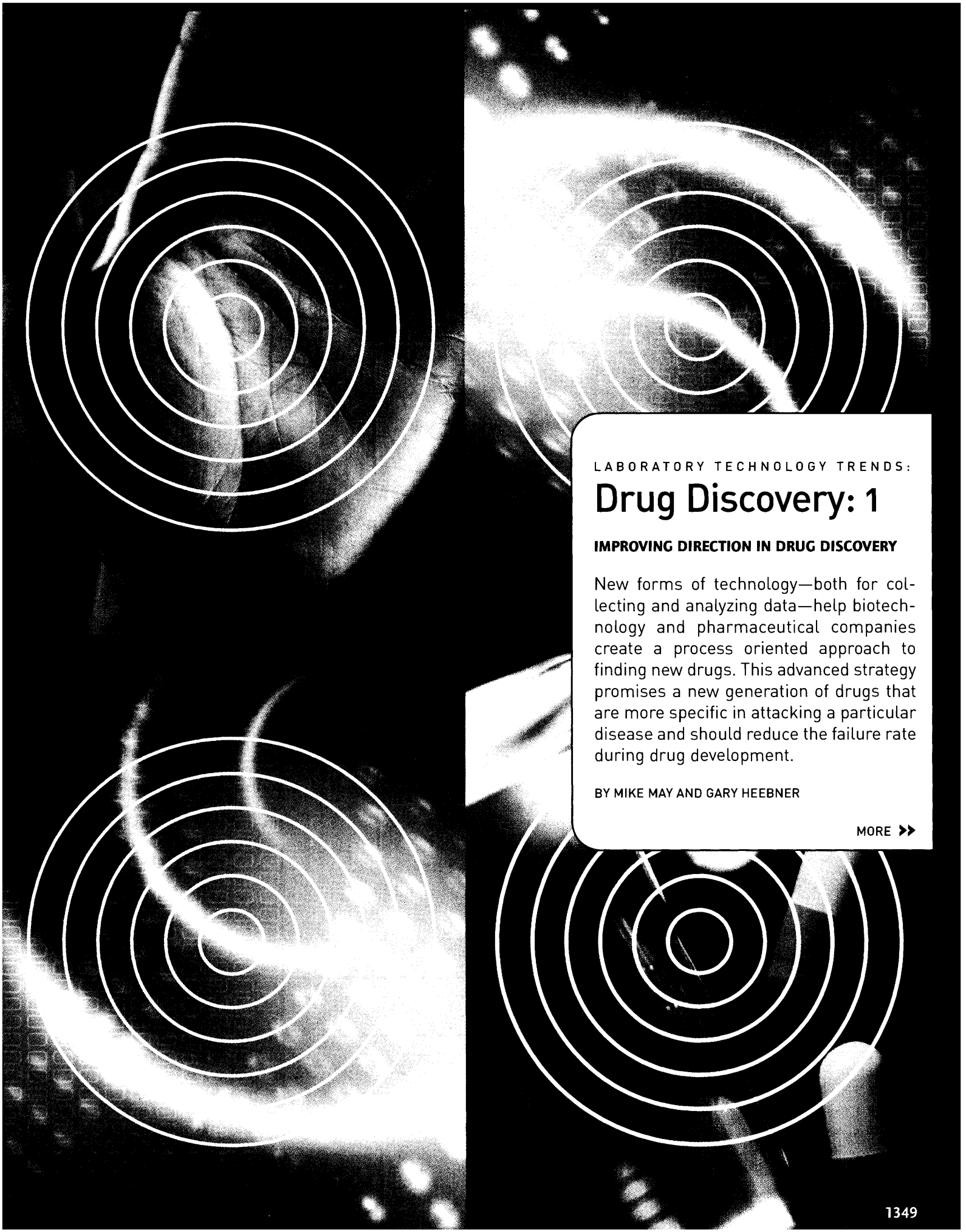

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Drug Discovery: 1

IMPROVING DIRECTION IN DRUG DISCOVERY

New forms of technology—both for collecting and analyzing data—help biotechnology and pharmaceutical companies create a process oriented approach to finding new drugs. This advanced strategy promises a new generation of drugs that are more specific in attacking a particular disease and should reduce the failure rate during drug development.

BY MIKE MAY AND GARY HEEBNER

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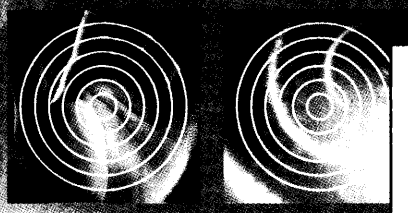
LABORATORY TECHNOLOGY TRENDS:

Drug Discovery: 1



SECTIONS:

This is the first of a five-part series. The second part will appear in the 29 March 2002 issue of Science.

The companies in this article were selected at random. Their inclusion in this article does not indicate endorsement by either AAAS or Science, nor is it meant to imply that their products or services are superior to those of other companies.

Developing a new drug requires an enormous investment and years of work. In June 2001, the Boston Consulting Group reported that—on average—bringing a novel drug to the pharmaceutical market costs about $880 million and takes 15 years. The cost alone grabs most anyone's attention. Nevertheless, drug discovery also involves a complicated process. For decades, this process seemingly relied more on art—almost luck—than science, but new techniques provide more objective approaches in the modern world of drug discovery.

Today's scientists rely on data mining, computational chemistry, "in silico" experimentation via computers, and a variety of other evolving tools. For example, today's approach to finding drugs relies on performing and analyzing many experiments—so-called high throughput screening—but scientists demand more than speed alone. They require fast results that overflow with information. Neil Cook, vice president of drug discovery at Amersham Biosciences, said, "Research is shifting from simply working with high throughput screening to using much smarter experimentation." He added: "High throughput is still important, but high information content is even more important."

On the target-finding end, the Human Genome Project opened a new world of possibilities. The 30,000 or so human genes offer a vast number of possibilities for molecular researchers to consider in the search for new drugs. Understanding how these genes work—as well as how they fail—can reveal the most logical genes to consider as targets. As Seth Pinsky, senior vice president of research and development and chief technology officer at **MDL® Information Systems, Inc.**, said, "A decade or so ago, pharmaceutical companies had secret drug targets. But the genome project leveled the playing field, because now everyone knows what the targets are."

The wealth of targets allows even more optimistic hope for the future of pharmaceuticals. Tomorrow's medicine should include advanced drugs that strike harder, but in an increasingly specific way. Drugs will probably even be tweaked to meet the needs of a specific individual's genotype. In addition biotechnology and pharmaceutical companies already hope to get new drugs to the market in much less time, and to lose less time on drugs that are destined to fail.

PARTS IN THE PROCESS

The preclinical stages of drug discovery involve four steps: target identification, target validation, lead identification, and lead optimization. A drug target generally involves cellular components or genetic material. In all cases, a target participates in a disease in some way. Scientists use a variety of techniques to identify and isolate a target, and then explore its functions and how they might influence disease.

An identified target must be validated. Researchers analyze and compare drug targets based on their association with a specific disease and their ability to regulate biological and chemical compounds in the body. Most important, there must be some way to manipulate a target so that it produces a desired change in the behavior of diseased cells.

With a target validated, scientists search for a lead compound. They compare new compounds with known substances to determine their likelihood of success. Tests then reveal if a compound generates a desirable effect on a target. If so, the compound moves forward.

In lead optimization, scientists compare the properties of various compounds and select the ones with the greatest potential to be developed into safe and effective medicines. At this stage, testing often begins on animals and on human cells in a test tube or in culture.

The drug discovery process turns up thousands of compounds, but only a handful make it to testing in humans. Once a potential drug reaches this clinical stage, it takes three to six years to complete the testing required before taking the product to market. This complex, expensive, and laborious process demanded new techniques for drug discovery to keep pace in a rapidly changing world of disease. According to Lans Taylor, president and chief executive officer of **Cellomics**: "The whole paradigm of drug discovery is evolving quickly because conventional techniques are too slow and too costly."

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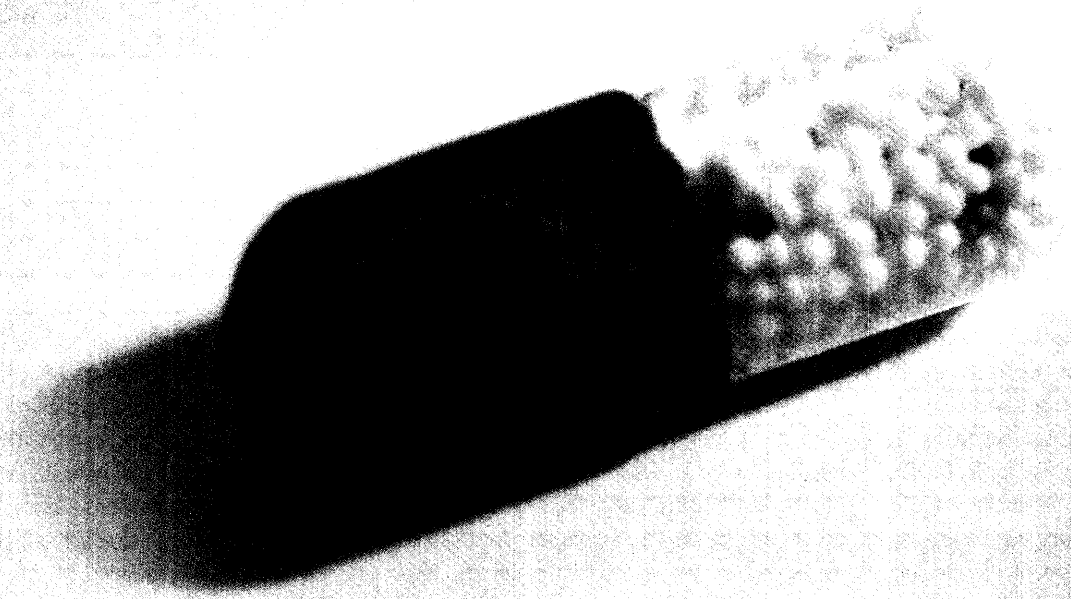

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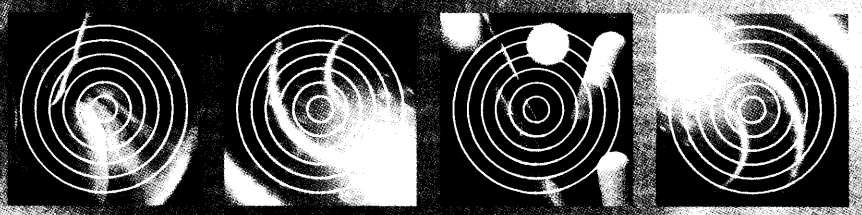

SEARCHING FOR THE SIGNALS

A drug's success or failure depends on what it does inside of cells. Investigators want to know how a potential drug interacts with metabolic pathways in cells, which can determine how a drug might work. Many companies–including **Alexis Corporation**, **Biomol Research Laboratories**, **Calbiochem**, **Cell Signaling Technology**, and **Tocris-Cookson**–provide products for the study of cellular function.

Christopher Bunker, business development manager at Cell Signaling Technology (CST), said, "CST is a reagent company that focuses on tools that enable the assessment of signaling pathway activation and function." For example, this company produces so-called "smart antibodies," which detect a protein if it is in a specific activation state. Consequently, these antibodies reveal whether a specific protein is active, and by inference the state of the downstream pathway. Specifically, Cell Signaling Technology develops antibodies that bind to proteins depending on their state of phosphorylation or acetylation.

Cell Signaling Technology makes reagents to identify targets that are causal in a specific disease. Once a target is shown to be active in a disease, reagents can help find drugs that affect that target. Bunker added: "In clinical stages, our reagents can be used to look at the activation status of a therapeutic target in a patient, and–following treatment of the patient–to assess therapeutic efficacy in turning off the target."

In the future, a physician might use these reagents as diagnostic tools. For example, Bunker said, "Particularly in the case of cancer, a doctor may be able to administer personalized medicine by running a set of diagnostic tests that assess which oncogenes and pathways are active, and then prescribing a combination of targeted therapeutics as treatment." He emphasized that cancer–and most other diseases–probably involve multiple pathways, and will require multiple treatments.

INSIDE INSTRUMENTATION

Scientists searching for drugs would love watching the dance between a target and lead compound. This interaction can be documented with **Biacore International AB**'s surface plasmon resonance technology. This technology quantifies the specificity of binding between two molecules, their concentrations, the kinetics of the binding process, and the affinity of the binding. Biacore® 3000 uses this technology for target identification and target characterization. According to Julian Abery, vice president and head of Pharmaceutical and Biotechnology Business Units at Biacore, all of the top 30 pharmaceutical companies use this device.

Recently, this company introduced Biacore® S51, which characterizes small molecules. For example, Abery said, "You can look at small molecules and how they interact with enzymes, DNA, and so on." Investigators at Biacore use this device on a wide range of targets–from compounds as small as 100 daltons to complete cells. Most important, Biacore® S51 reveals the mechanism behind an interaction between a potential drug and its target. For example, the rates of attachment and release tell researchers how effective a drug could be. Abery said, "You can alter a drug's chemical structure based on these parameters, which leads to more intelligent drug design."

Abery pointed out that pharmaceutical companies want to reduce drug failures that arise after high throughput screening. They can do this, he said, by using *in vitro* studies of target and compound interactions. Abery said, "The needle in a haystack approach is fine, but you need intelligent knowledge of interactions or high throughput screening will just create lots of candidates and not necessarily better ones."

DESIGNING DRUGS

Every scientist involved with pharmaceuticals relies heavily on computing. For instance, researchers use computers to explore molecular configurations as potential drug candidates. This approach saves time and the expense of screening a huge library of compounds for activity against a target. Companies such as **Accelrys**, **CAChe**, and **Tripos, Inc.**, create computer programs that help investigators design synthetic molecules that are likely to have the desired biological properties, but minimize the risks of adverse effects.

According to Peter Hecht, senior vice president, discovery research operations at Tripos: "We try to get to better drugs faster by having an informatics-driven chemistry approach." For investigators looking for compounds that target a specific pathway, for instance, Tripos provides LeadQuest–a library of more than 80,000 compounds that this company makes. Once investigators find a hit for a given target, Tripos can help make analogs to it. In addition, Tripos software can create related compounds and see which ones can be made easily or even run simulations of docking between the hit and a targeted protein.

Despite all of the advances in computing, predicting toxicity remains one of today's most significant challenges. Hecht said, "Toxicity is a

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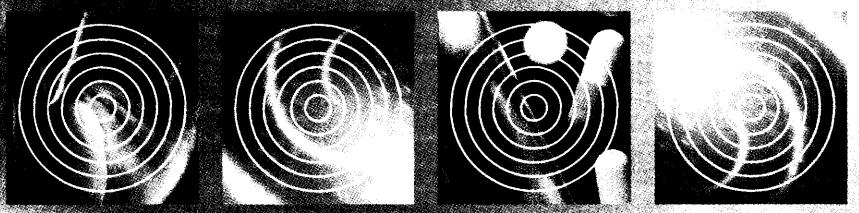

difficult problem. It's a sliding scale, because a feature can be beneficial in some cases and toxic in others." If investigators at Tripos have reliable data, though, they can generate better models. In fact, Tripos currently uses fuzzy logic experts to attack this problem. For now, Hecht said, "Toxicity is an observed *in vivo* feature, more than a mechanism."

CELL BASED SCREENING ASSAYS

In the past, scientists studied groups of cells to assess the average interaction between a target and a lead compound. In other cases experiments required the extraction of various fractions of a cell for analysis. The first method might average away important information, and the second may not tell a scientist what happens in an intact cell. To improve the screening process, a number of companies—including Amersham Biosciences, **Applied Biosystems**, **Arena Pharmaceuticals, Inc.**, **Athersys, Inc.**, **Aurora Biosciences**, **Axiom Biotechnologies**, **BioImage A/S**, and Cellomics—developed assays that use intact, living cells and look for target-lead interactions in a more native surrounding.

The use of single, whole cells should help scientists pick the best drug candidates. High throughput techniques generate loads of potential drugs, but finding the ones that work takes more doing. As Pandi Veerpandian, president and chief executive officer for Axiom Biotechnologies, says, "We have a lot of pebbles, but we don't know which ones are diamonds." To dig out the diamonds, Axiom uses normal human cells—ones that have not been bioengineered in any way—and tests potential drugs against them. Axiom's Human Cell Bank consists of 193 cell lines, mostly human ones, and this company has access to about 100 primary cell types. In addition, Axiom just added stem cells to its bank. Using this genomically and pharmacologically indexed cell bank, Axiom can develop assays that test compounds against about 1,700 potential disease targets. Axiom also uses a collection of these cell lines to test potential drugs against the cells derived from about 38 human tissue types required by the FDA.

In the past, investigators grew cells in wells and watched for changes after applying a potential drug. Axiom, on the other hand, flows the cells through channels so that they can be studied at various points with a flow cytometer. Instead of looking for the average response to a cell population, Axiom's technique explores a drug's effect on single cells. Combining this technique with Axiom's Human Cell Bank lets a scientist look at every kind of cell in a human body. Investigators can also use this system to apply increasing doses of a drug to create a dose response curve. Veerpandian says, "Introducing a compound to our entire cell panel is indirectly like putting it in the human body."

A WINDOW ON LIFE

Other companies also watch whole cells. Taylor said, "The cell is a window on life." To watch what goes on inside cells, Cellomics uses high content screening, which makes spatial and temporal measurements on individual cells. For example, investigators could use Cellomics products to watch a transcription factor move from the cytoplasm to the nucleus. This approach can also be used to measure the impact of a potential drug, because experiments could record the percentage of cells that show transcription-factor activation when a specific ligand is added.

Taylor and his colleagues also offer whole-cell assays for various therapeutic areas. In the neurosciences, for instance, Cellomics makes an assay to measure neuron viability and neuron outgrowth and branching, which could be used to assess the impact of a potential drug on neurodegenerative diseases, including Alzheimer's. These assays prove especially useful in secondary screening, including cytotoxicology, functional assays, and more.

Cellomics also offers KineticScan, which provides spatial and temporal measurements on live cells. Investigators can use this system to watch a cell's condition before, during, and after the application of a compound. Cellomics created this device for target identification and validation. Nevertheless, Taylor said, "High content screening goes across all stages of early drug discovery."

Other companies also provide products that examine whole cells. For example, Applied Biosystems produced the FMAT 8100 HTS System, which performs high throughput screening for live cells. This system uses fluorescence to quantify labeled events, including enzyme assays, protein-protein interactions, and much more.

LABORATORY AUTOMATION

Virtually any wet approach to drug discovery requires liquid handling systems, and **Hamilton Company**, **Nalge Nunc International**, **Rainin Instrument**, **Wheaton Science Products**, and others simplify these processes. Ken Rainin, president of Rainin Instrument, said, "Pipettes are the most basic lab tool, and one of the most important."

Rainin's company sells the Pipetman—a tool that quickly grew as popular as a test tube. Rainin's company also makes ergonomically designed, single-channel manual pipettes and single-channel electronic pipettes, which Rainin invented in 1984. Rainin also makes pipettes with 8 or 12 channels. "To have the drug discovery chemistry work properly," Rainin said, "you have to have a pipette that works properly and that doesn't hurt your hand."

The repetition of using a pipette can cause musculoskeletal strain disorders, such as carpal tunnel syndrome. Conventional pipettes demand high forces to put on a tip, depress a pipette's plunger, and remove the tip. So Rainin designed their Pipet-Lite and LTS LiteTouch tip ejection system that reduce pipeting and ejection forces by up to 85 percent.

Although Rainin still sells nine manual pipettes to every electronic one, some aspects of drug discovery depend on automated approaches. For example, Applied Biosystems, **Beckman Coulter**, **Cell Robotics**, **Packard BioScience**, and **Zymark** all offer sophisticated systems that automatically perform many of the functions needed to screen compounds for biological activity.

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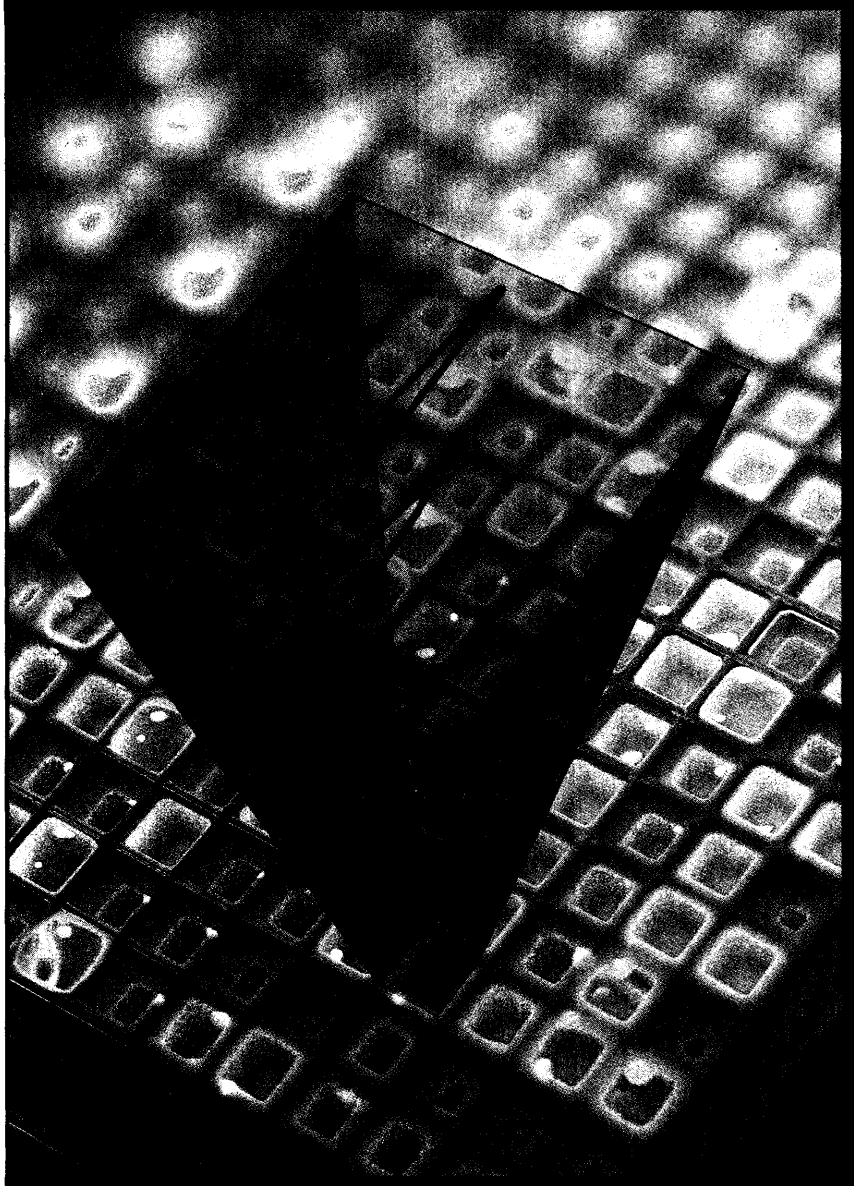

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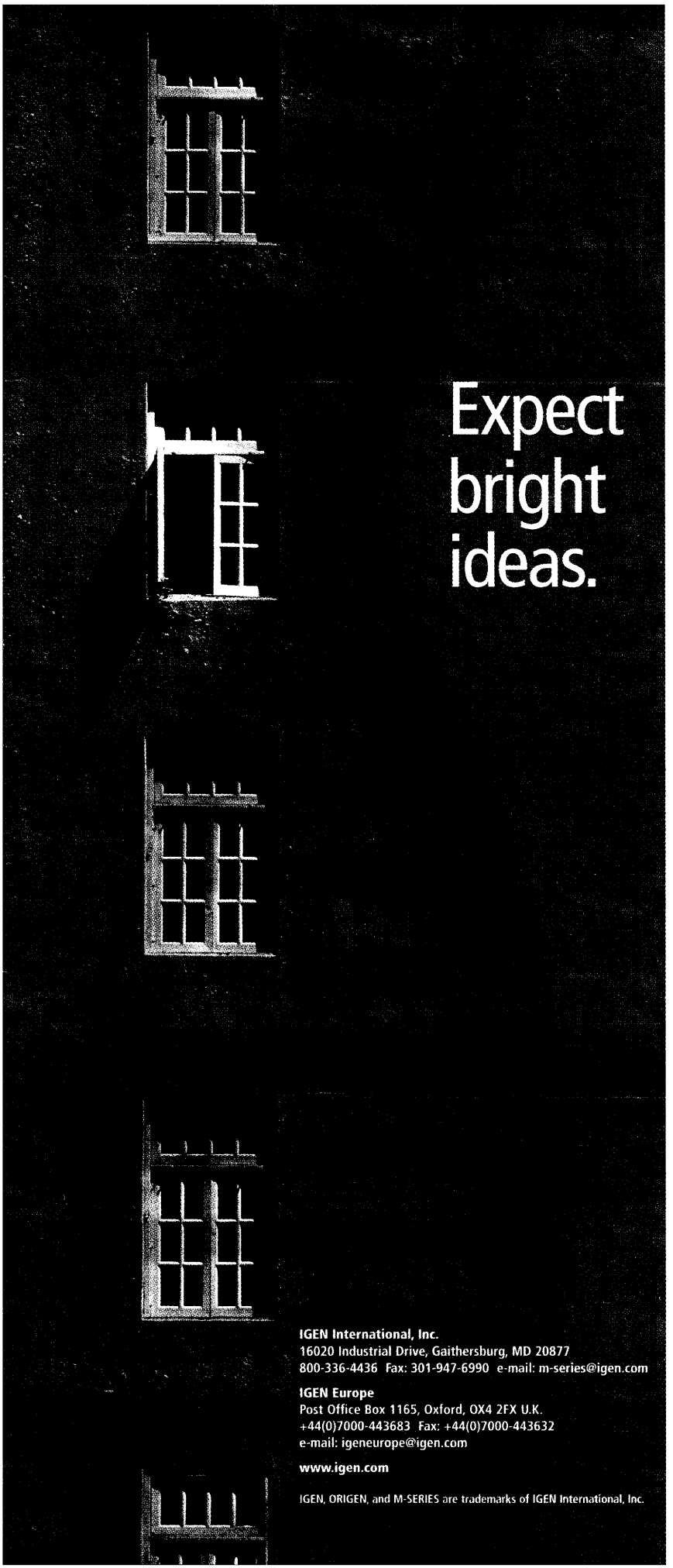

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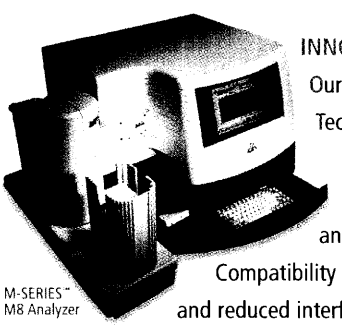

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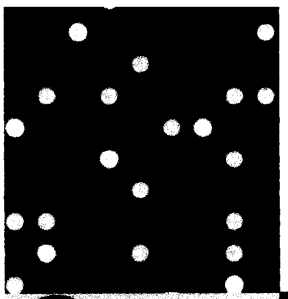

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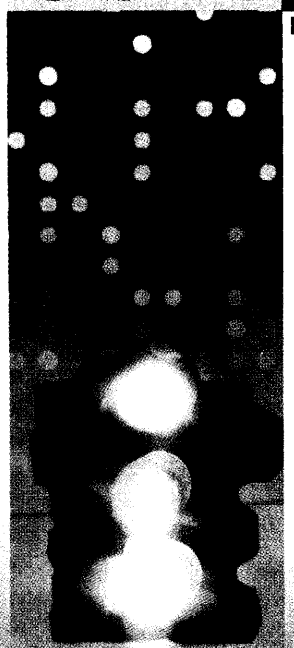

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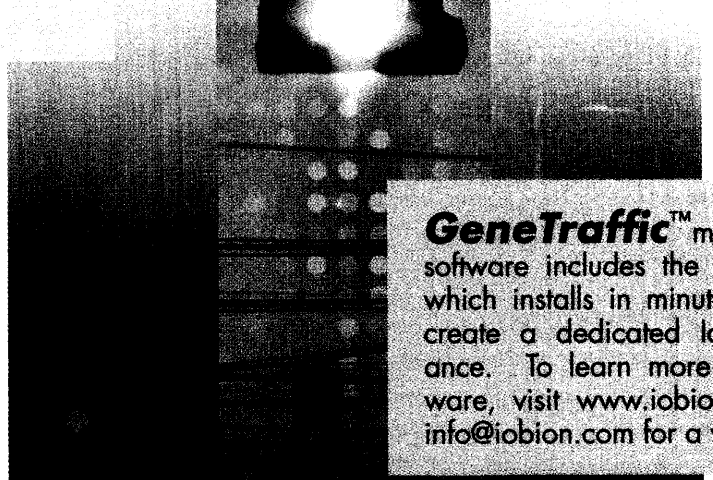

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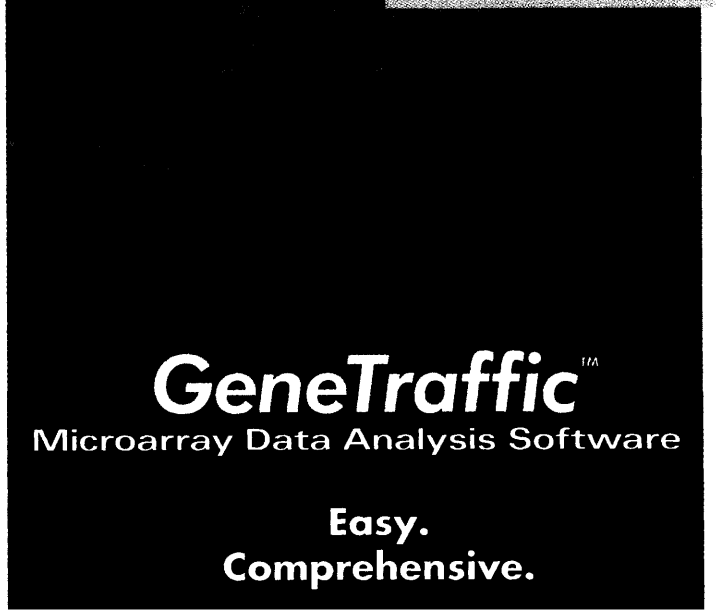

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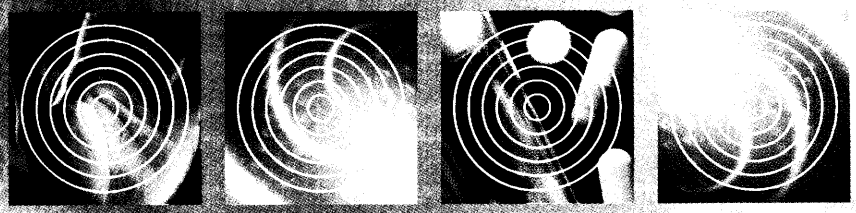

DISSECTING THE DATA

"In pharmacology, and other disciplines, we now recognize that reality is more complex than we can handle in our mind alone. Therefore, we need software that can identify—in the data—very complex patterns and systematic trends, so complex that they go beyond what a scientist could comprehend intuitively," said Paul Lewicki, president of **StatSoft**.

To help accomplish that goal, StatSoft provides STATISTICA, which is a broad line of statistical and data mining tools. For example, STATISTICA Data Miner tracks many variables simultaneously, and automatically "mines" the data–that is, looks for hidden complex trends and patterns. In addition, STATISTICA Neural Networks performs exploratory data analysis, which essentially looks for the cause behind an effect, even if that cause is hidden very deep in a multitude of interactively related variables. This package includes more than two dozen approaches to data analysis and includes artificial intelligence features that help investigators select the best neural network solution for a particular data set.

Many examples in today's drug discovery, however, go beyond one set of data and reach to many data sets being created and examined by various teams of scientists. Lewicki said, "WebSTATISTICA Server Applications help companies coordinate efforts of many researchers and manage a project over the Internet, regardless of whether the collaborating researchers reside across the hall or across the continents."

Other ongoing projects also enhance the potential of modern drug discovery. Companies including **Compugen**, **Incyte Genomics**, **InforMax**, and **LION Bioscience** provide products and services to analyze sequence data for drug discovery research. With the human genome initially sequenced, researchers can query these data to look for genes that are related to specific diseases. In addition, **Celera Genomics** is sequencing the rat genome, which will be useful in matching known sequences in it with analogous sequences in the human genome.

Genomics can also lead scientists down other exciting paths. Ken Livak, vice president of science at Applied Biosystems, said, "Another promising area from genomics is rescuing drugs. A drug that failed in the past might still be useful in a specific genetic population."

PROTEOMICS AS A DRUG PROBE

Many of today's scientists look beyond the genes to their products: proteins. The variations in proteins that arise from alternative splicing or other posttranscriptional modifications make it important to determine which form of a protein might participate in a disease process. Databases, including the **Swiss Institute for Bioinformatics**, house the sequence information of many peptides. In addition, a variety of companies including **AxCell Biosciences**, **MDS Proteomics**, and Incyte Genomics provide databases and support services for proteomics research.

The breadth of proteomics will continually test industry's ability to create devices to push the field forward. Currently, Biacore and **Bruker Daltonics, Inc.**, are working on a technique that combines surface plasmon resonance and mass spectrometry. This approach should aid target validation and answer a wide variety of questions about protein function, and simultaneously provide identification and characterization information on relevant compounds.

In addition, Applied Biosystems provides a mass spectrometry product developed specifically for proteomics. This company's Proteomics Solution 1 delivers automated high throughput for protein identification by tracking 96-well plates from start to finish.

Moreover, differential expression analysis using 2D DIGE (Difference In Gel Electrophoresis), provided by Amersham Biosciences, helps researchers studying proteins to analyze more than one sample in a two-dimensional electrophoresis gel. Using proprietary cyanine dye chemistry, 2D DIGE allows a researcher to rapidly analyze up to three prelabeled samples in a single gel. The two-dimensional DIGE combined with a software package called DECyder™ increases the throughput, reproducibility, and accuracy of differential protein analysis.

A CHEMICAL COUP

With a target in hand from advanced proteomic studies, a scientist could search for a lead compound. In the past, such searches started with long hours reviewing the literature and making calls to colleagues in hope of locating several compounds with specific characteristics. To reduce this time and increase the efficiency of locating possible drug candidates, companies developed searchable databases. Accelrys, **CambridgeSoft**, **ChemNavigator**, and MDL Information Systems provide scientists with these searchable chemical databases and the tools for companies to create databases of their proprietary compounds.

Patricia Rougeau, president and chief executive officer for MDL Information Systems, said her company "helps scientists increase productivity and creativity. We help them bring together data to make insights." MDL started doing this a decade ago when it introduced ISIS™, the Integrated Scientific Information System. This software package gives investigators access to a compound's chemical structure and other properties, including results from biological assays. In addition, this package lets companies add their own data to create a customized package that includes public and private information.

Other MDL products accelerate the invention of better drugs and manage workflow for chemical and biological experiments. Their database called Toxicity, for instance, describes the toxic potential of more than 150,000 chemical substances, and more than half of these are drugs or drug development compounds. Moreover, MDL's Metabolite provides a structurally linked database of the metabolic transformations for more than 8,500 parent compounds. In tandem, scientists use these databases to explore and "design out" possible toxic and undesired metabolic side effects in potential drugs.

Pinsky said, "Today's huge volumes of disparate data demand ways to put it all together in a collaborative environment so that project team members can develop and share hypotheses and make better informed decisions. This requires integration, a way to put all those data

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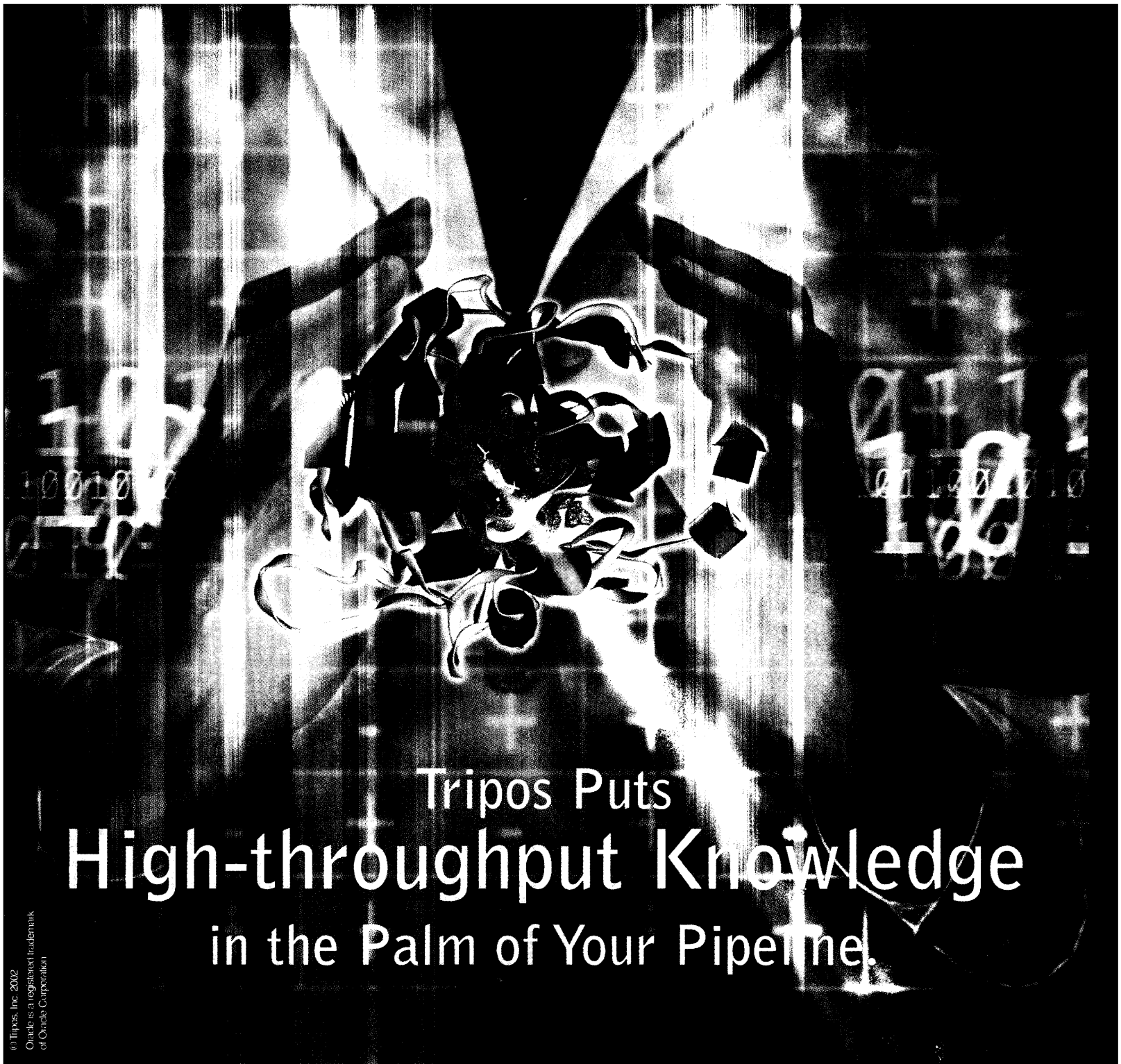

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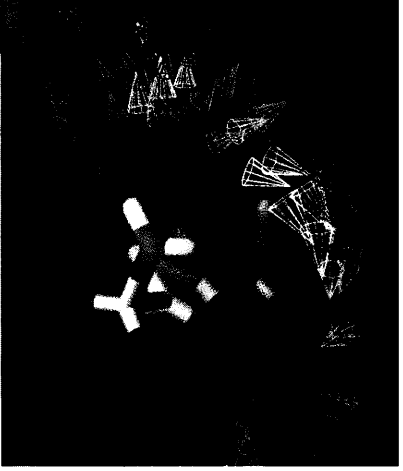

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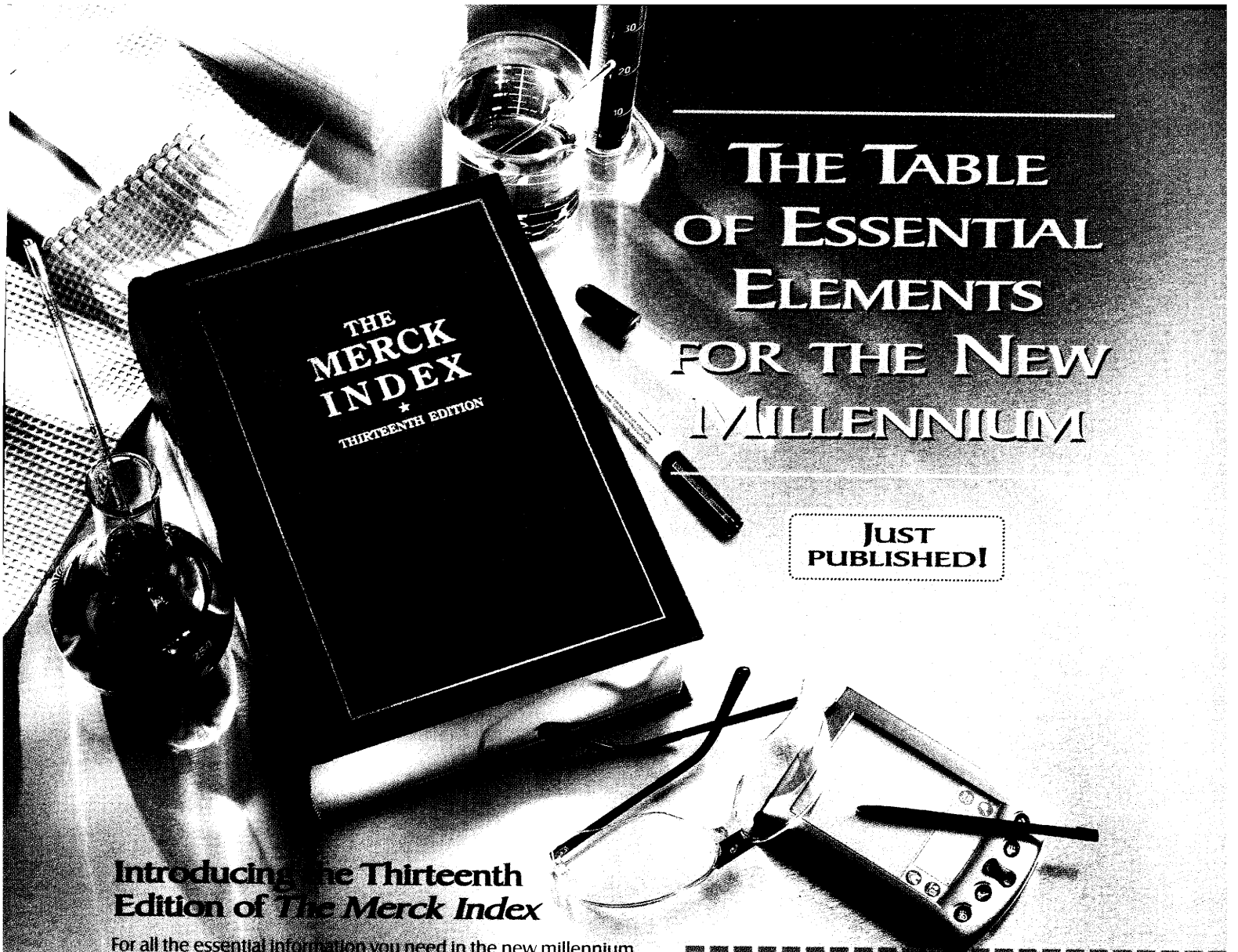

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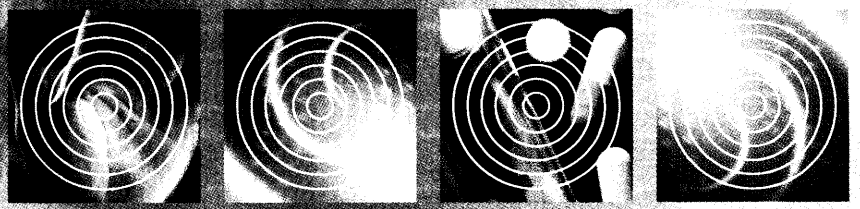
LABORATORY TECHNOLOGY TRENDS:

Drug Discovery: 1



in context across all of the structures, assays, and literature." MINE™—MDL's soon-to-be-released decision support application—is one example of such collaborative integration. MDL also enhances its products with LitLink®, which provides access to full text of a wide variety of articles cited in MDL databases. In addition, their soon-to-be-released DiscoveryGate™ provides Internet access to multiple databases.

Rougeau knows that drug discovery requires a subtle balance. She said, "Informatics is very structured, but scientific discovery includes a serendipitous quality. You need the right amount of structured technology to support the creative aspects of drug discovery."

In some cases, creativity arises as nearby as your lab notebook. Companies like CambridgeSoft, **ChemSW**, **LabBook, Inc.**, and MDL Information Systems offer specialized versions of electronic laboratory notebooks to organize information and data. Some of these products feature algorithms for making routine calculations, and others exchange data between users. For instance, E-Lab Notebook from CambridgeSoft organizes Excel spreadsheets, Word documents, ChemDraw reactions, stoichiometry grids, and spectral data.

JOINING FORCES

The breadth of research techniques used in modern drug discovery usually means that a single company cannot cover every angle. Consequently, some companies work together. For example, **Merck & Co., Inc.**, recently acquired **Rosetta Inpharmatics**, which is a leader in the use of DNA chips to study gene expression.

In describing the wide use of DNA chips in today's pharmaceutical research, Anthony Ford-Hutchinson, executive vice president, worldwide basic research at Merck, said, "Chip biology provides a way to look at system biology in ways never before possible." Nevertheless, he added that such mountains of data can generate what he calls chip paralysis—essentially an investigator frozen in front of a monitor and lost deep in tons of data. He said, "Rosetta can take large amounts of data and simplify them."

For example, Ford-Hutchinson pointed out that toxicogenomics—basically using the genome to predict the toxic potential of a drug candidate—could be a gold mine. He said, "If you could reduce the failure rate of new drugs by even 20 percent, it would have an enormous impact." Merck also hopes to benefit from Rosetta's genomics capabilities by applying them to target validation—hoping to look for subtle differences between drugs.

NEW MOVES IN CELLULAR SPACE

At the 2001 Drug Discovery and Technology Conference in Boston, Massachusetts, BioImage described how it develops novel drug candidates that modulate information flow through signaling pathways. This company calls its new cell based screening technology Redistribution™, and it is based on the use of green fluorescent protein, or GFP. GFP can be used to label components expressed inside living cells, which allows researchers to build a detailed picture of the production and migration of proteins. BioImage uses its patented GFP technology to develop primary screening assays that can follow the movements of almost any selected signaling protein within cells in real time.

Communications and activities inside a cell depend largely on cascades of proteins, so-called signaling pathways. According to Ole Thastrup, chief technology officer for BioImage, "We're focusing on the spatial aspects of signaling. We wanted to see if signaling components are specifically localized in the cell." This company's work shows that numerous signaling proteins stay in one place when not activated, then move somewhere else when activated, and then back to the starting spot when deactivated. So, a protein might go from the plasma membrane to the nucleus and back in an activation-deactivation cycle, or it might move between protein complexes that are only spaced a few nanometers apart. Both classes of movement can be monitored by Redistribution™ technologies. Thastrup and his colleagues have tracked hundreds of signaling components to create a library of such movements. Thastrup added: "GFP allows us to assay the behavior of signaling components in their native environment."

Inhibiting or promoting movements can change, for instance, an enzyme's functional activity without directly impacting its catalytic capabilities. Thastrup said that small molecules can affect this translocation of proteins. So, compounds have been found that control translocation, thereby acting as drugs to enhance or inhibit information flow through specific, disease-related signaling pathways. Investigators at BioImage also apply chemical expertise to screen and optimize compounds to trigger just the right translocation. BioImage will collaborate with Amersham Biosciences to make GFP-based assays for their ultra-high throughput drug screening detection system called LEADseeker™. This system helps discover and screen drug targets and is already in use at many large pharmaceutical companies. Amersham Biosciences also recently signed an agreement with Aurora Biosciences to commercialize their combined GFP technology.

According to Cook, Amersham Biosciences is also using the GFP technology to develop a system call the INCell™ Analyzer—a cellular analysis platform that simultaneously monitors several subcellular parameters in living cells. This new tool will enhance target validation. Cook said, "Companies don't need more targets. They need validated targets, ones that will serve as therapeutic points of intervention."

In many ways, the future of drug discovery will add accuracy and direction to seemingly every step of this process. As Hecht said, "Until now, drug discovery has been more like an art form. I think we need to change it to more of a process." He added: "I believe drug discovery will be more informatics-driven than it has been in the past." The added information is already on its way—from new techniques and devices.

Mike May is a freelance writer based in Clinton, Connecticut, U.S.A. Gary Heebner is a marketing consultant serving the scientific industry, based in Foristell, Missouri, U.S.A.

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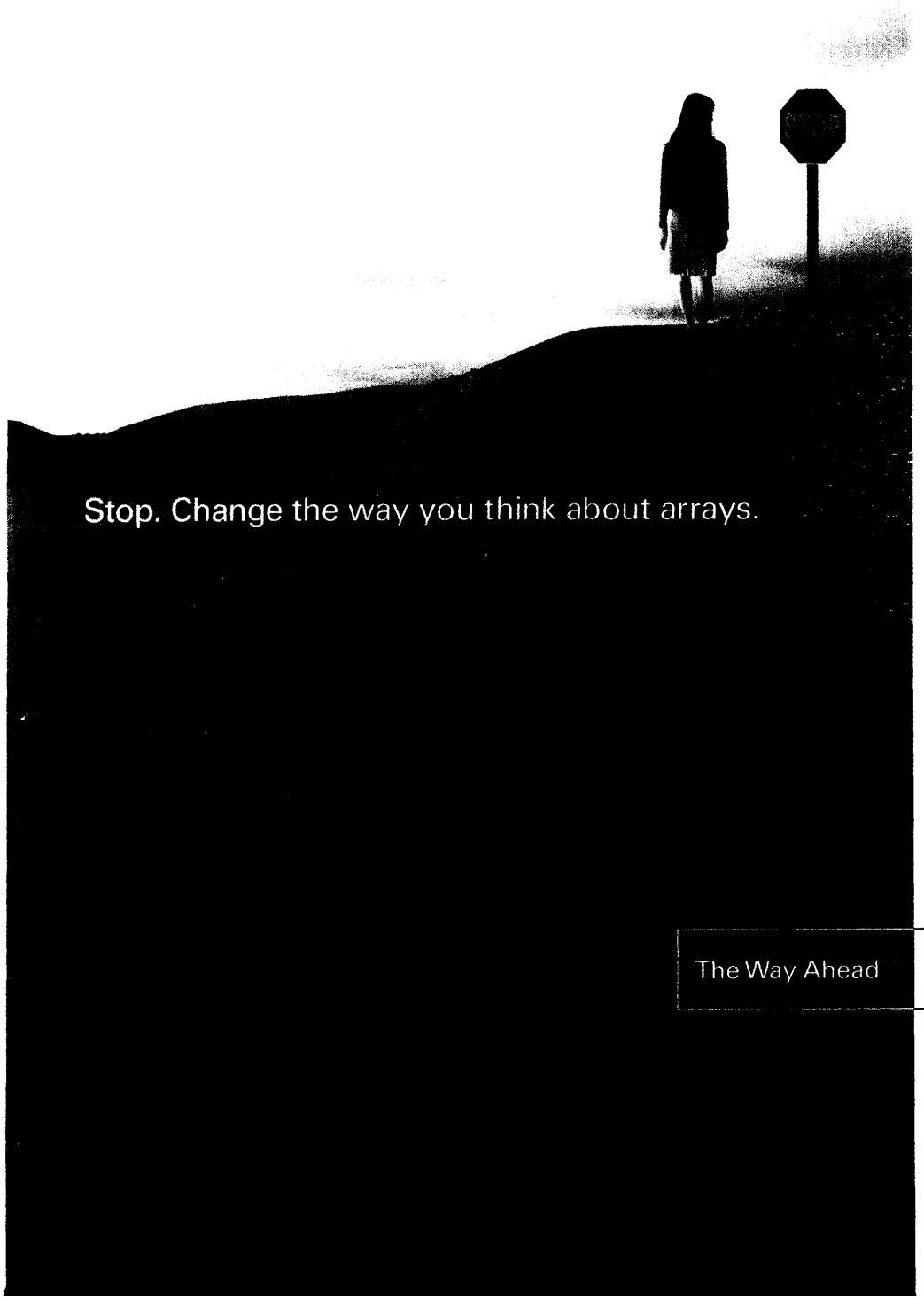

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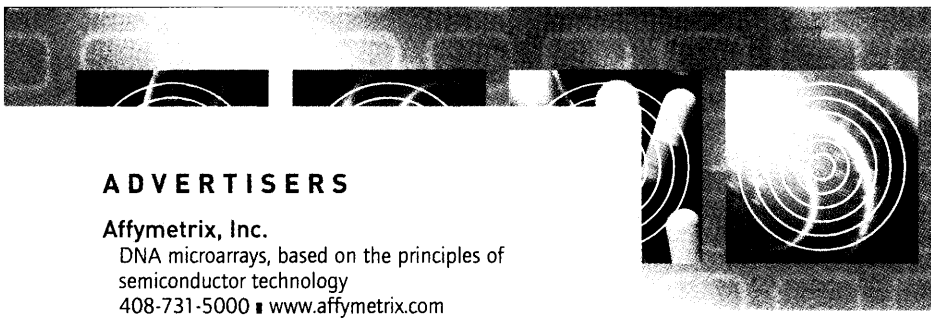

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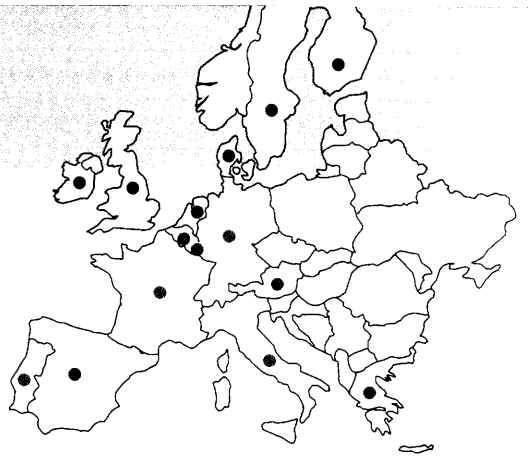
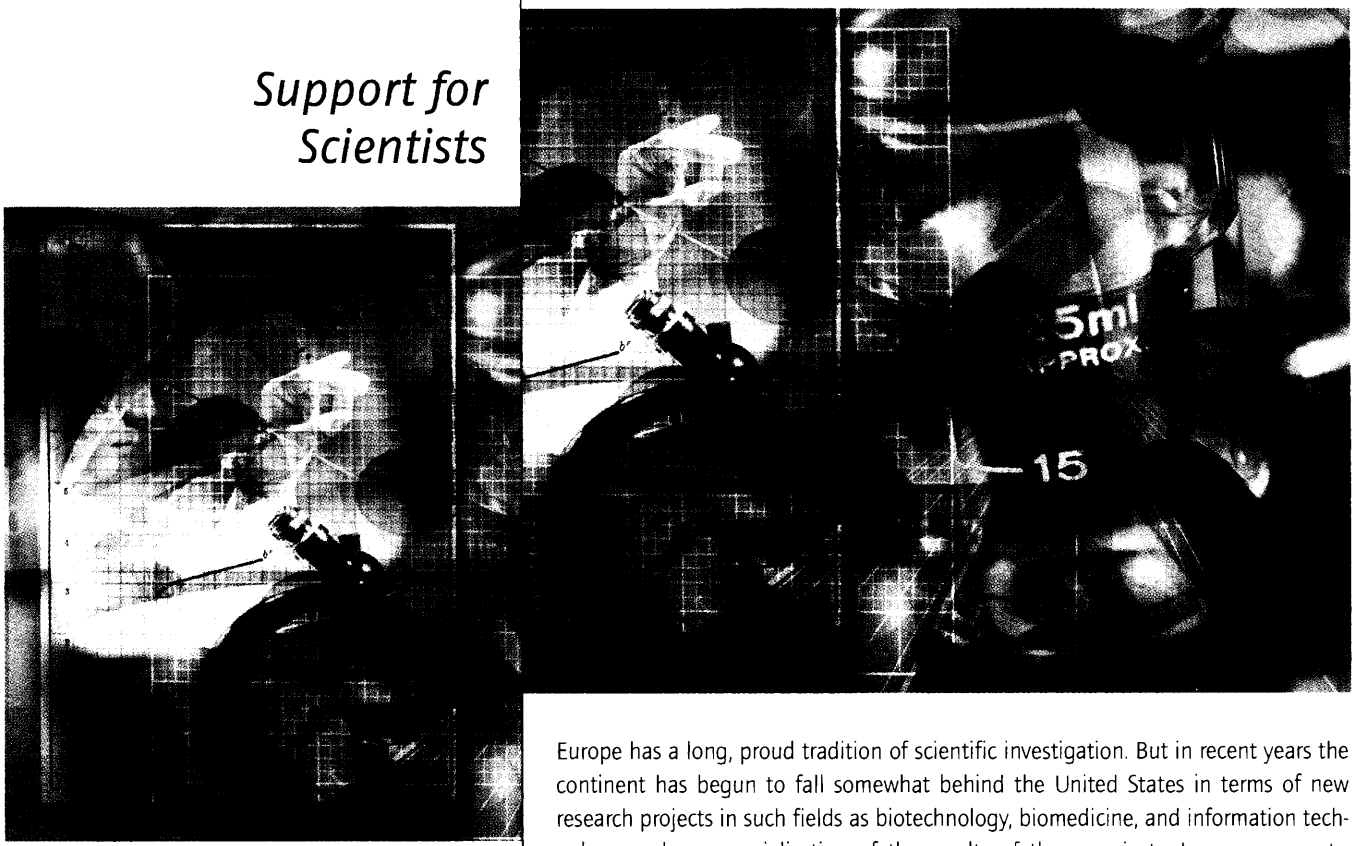


THE EUROPEAN COMMISSION

Support for Scientists



In the effort to advance science and improve competitiveness and job creation, the European Commission provides grants, fellowships, and other initiatives that encourage mobility and specialized training for young scientists. Here's a look at the opportunities.

Europe has a long, proud tradition of scientific investigation. But in recent years the continent has begun to fall somewhat behind the United States in terms of new research projects in such fields as biotechnology, biomedicine, and information technology and commercialization of the results of those projects. In some respects, notably the proportion of gross domestic product devoted to science, the continent also falls behind Japan and other Far Eastern nations.

Since scientific achievement represents a major factor in competitiveness, Europe plainly needs to improve its scientific performance to ensure that it maintains its place in global commerce. To do so it must overcome a difficulty inherent in the continent's political nature: Its research suffers from fragmentation. Each European nation has its own research policy. Even within the European Union (EU), the 15 member nations tend to concentrate more on their individual research policies than on Europe-wide scientific efforts.

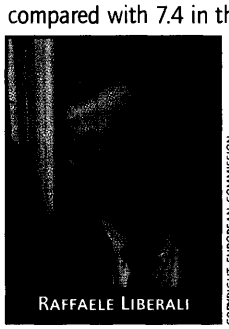
That situation is about to change. Initiatives sponsored by the European Commission (EC), the body that administers the EU, have started to create the first steps toward a unified research policy. "An urgent reinforcement of the coherence of national programs and activities is needed to meet the challenges of the 21st century," says Philippe Busquin, the EU commissioner responsible for research. "This is the purpose of the European Research Area [ERA] which I launched in January 2000 to make European research more competitive on the world scene."


PHILIPPE BUSQUIN

The initiative has the goal of developing a more comprehensive and strategic approach to research in Europe. Thus it will encourage effective cooperation among national and EU-wide research projects. It will also encourage freer movement across EU frontiers by individual scientists who want to pursue their research and advance their careers. "Mobility is an underlying element of all EU initiatives in the research area," says Raffaele Liberali, director of the ERA's human factor department. "It is one of the most efficient and visible ways to achieve the goals of the European Research Area. We therefore want mobility to be considered as a natural initiative undertaken through the different phases of the researcher's career."

PLUSES AND MINUSES

Busquin outlines some of the factors that stimulated creation of the ERA. "One of the most disturbing factors is the fact that Europe presently invests less in research than its main competitors," he explains. "It devotes roughly 1.8 percent of its GDP to scientific purposes, compared with 2.7 percent in the U.S. and 3.1 percent in Japan. The proportion of researchers in the population shows similar imbalances. We have 5.1 researchers for every 1,000 active citizens in the EU compared with 7.4 in the U.S. and 8.9 in Japan."


RAFFAELE LIBERALI

The EU is also falling behind its rivals in the ability to attract the top research talent from different parts of the world. Busquin notes that the number of doctoral degrees obtained annually by foreign researchers in the U.S. increased from 3,300 in 1988 to more than 8,000 in 1996. Significantly, more than 50 percent of those foreign graduates remain in the U.S. for at least five years after they obtain their Ph.D.s. In addition, he continues, "notwithstanding some progress in certain European countries, the EU lags behind the U.S. concerning the number of patents awarded, investments in capital risk, and support for start-ups and spin-offs. This undoubtedly has negative effects on our capacity to fully exploit research and on our ability to foster smooth links between academia and industry."

Europe's situation is far from entirely dismal. "The EU has a number of strongholds," says Busquin. These include the overall quality of its research and researchers; its intellectual richness and cultural diversity; and the adaptability of its centers to development and change. "A good indicator of this positive trend is the fact that, since the second half of the 1990s, the EU has surpassed the U.S. in terms of scientific publications," Busquin says. "In 1998 the EU totaled 37.8 percent of the world's scientific publications compared with 32.9 percent for the U.S. And this trend seems to be increasing."

THE ERA HAS FOUR MAIN GOALS:

* Developing the EU's policy in research and technological development, thereby contributing to the international competitiveness of European industry.
* Coordinating research activities sponsored by the EU with those that the 15 member states set up at the national level.
* Supporting the EU's policies in such science-related fields as environment, health, energy, and regional development.
* Promoting a better understanding of science's role in modern societies and stimulating a public debate about research-related issues.

To achieve those goals, the ERA will benefit from several sources, notably the EU's Framework Program. This multiyear project helps to arrange and provide financial support for collaboration on scientific initiatives among universities, research centers, and large and small companies. The current Fifth Framework Program, which started in 1998 and will end this year, has notched a series of successes. They include the sequencing of the yeast genome, protection of the ozone layer, improved food safety, aeronautics, and communication mechanisms.

The Sixth Program, which will start later this year, has even more ambitious aims. It will, for example, concentrate research in a limited number of areas in which Europe plainly offers the most significant added value. Organizers of the program have identified seven priority areas: genomics and biotechnology for health; information society technologies; nanotechnologies and nanosciences; aeronautics and space; food quality and safety; sustainable development, global change and ecosystems; and citizens and governance. An eighth priority will cover themes related to emerging scientific needs. Beyond that, says Busquin, "the program will develop the structure of Europe's scientific landscape." How? "Through the incorporation of new instruments such as excellency networks and integrated projects that aim at achieving a critical mass of larger and more competitive projects and at fostering synergy with other EU policies," he explains.

ENTER THE ERA

European governments have recognized that the EU must reinforce those positive attributes. At a meeting in Lisbon in March 2000, the leaders of the 15 current member countries agreed on the need to enhance Europe's competitiveness, to ensure a more sustainable development, and to increase the participation of citizens in society. Put simply, says Busquin, the idea was "to make Europe the most dynamic and competitive society in the world by 2010." The heads of government recognized that a main thrust in that task would be research. Specifically, the group required stronger recognition of research's contribution to competitiveness and job creation, and the need to bring together national and EU-wide research initiatives in a rational way. Indeed, in

CONTINUED ➢

preparation for next month's meeting of EU leaders in Barcelona, the European Commission has proposed that the EU should set a target of 3 percent of GDP for the overall level of public and private expenditure on research and development by the end of this decade.

In setting up the European Research Area, Busquin set out to help achieve that. "The ERA calls for a single market for research, researchers, and knowledge – an area in which all actors in research and innovation, be they individual researchers, universities, research centers, or businesses, are able to define common strategies and act without constraints at the European level," he says.

MOVING TOWARD MOBILITY

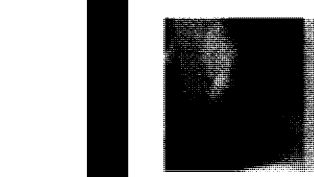
A critical aspect of the program is encouraging researchers to move freely among European countries and cultures. "We have put a lot of emphasis on the need to enhance the mobility of researchers," Busquin says.

The focus on mobility isn't new. "Every member country has developed schemes to foster the mobility of their researchers and to attract research talent from other member states and other countries," says Liberali. "Certain countries, such as France, have developed initiatives to facilitate the access of foreign researchers. Others, like the United Kingdom and the Scandinavian countries, have introduced fiscal measures to encourage research activities and attract foreign researchers."

The problem, Liberali says, "is that these initiatives are not harmonized. And even in the few that are harmonized through European legislation, there is a discrepancy between the rule of law and its application in practice." Thus an entry visa to the U.K. does not give a non-European scientist the right to travel freely to other EU countries to take part in scientific meetings. "There are too many obstacles of this kind," he continues. "It is often discouraging for researchers and damaging to the EU's attractiveness for scientists."

The European Commission is addressing this issue officially through a segment of the Fifth Framework Program known as the Human Potential Program. This sets out to support the training and mobility of researchers from virtually all scientific fields throughout Europe.

Jean-Charles Lambert, a life scientist who heads a research group at France's Institut National de la Santé et la Recherche Médicale (INSERM) and who benefited from the program, points out its role in helping Europe to keep up with the United States. "Every country in Europe has its own political research program with specific priorities, while in the U.S.A. a powerful structure such as the National Institutes of Health seems to be able to define and finance ambitious scientific programs," he points out. "A program such as the Human Potential Program appears essential in Europe. It will give us the opportunity to facilitate and better organize research in the EU." Lambert also endorses the program's focus on young scientists. "Surely financing and keeping young researchers in Europe is a good initiative," he says. "It is clear that the funding for salaries and experiments here is very attractive."



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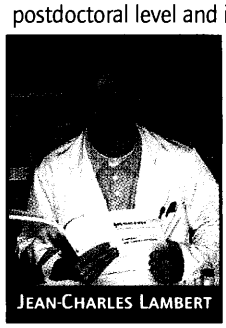
SUPPORT SCHEMES

Several methods exist in the EC for encouraging the mobility of European scientists. A major vehicle is the Marie Curie fellowship scheme. The fellowships take several forms. Young researchers at the postdoctoral level and individual scientists who wish to return to Europe after work experience abroad can apply for jobs in industry or research positions in academic institutions. Individual researchers and scientific teams can apply to use specific research facilities located outside their own countries. And young scientists even at the undergraduate level can apply for short-term fellowships that permit them to attend conferences and courses.



JEAN-CHARLES LAMBERT

The Marie Curie program has already had a powerful impact on scientists and scientific institutions. In 2000 about 1,000 researchers used fellowships to work in organizations outside their native countries. About the same number, in 167 separate projects, benefited from training grants in research training networks. And more than 50,000 individuals took part in scientific conferences financed by the EC.

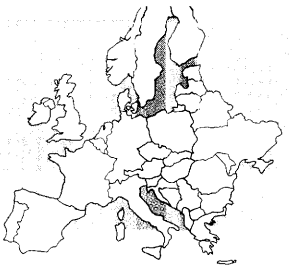
The fellowship program had social successes as well. "We have achieved the threshold of 40 percent of women participating in the schemes," says Liberali. "That represents an undeniable increase over previous programs. Gender balance has been one of the main sources of concern in European research over the past few years. The figures that we achieved in the Fifth Framework Program can hence be considered as a real source of encouragement."

The success of this type of program can best be judged by the experience of its participants. To obtain the view from the lab bench *Science* talked to three beneficiaries from three nations.

POSTDOCTORAL OPPORTUNITY

As he prepared to defend his Ph.D. thesis in 1999, French life scientist Lambert had already decided that he wanted to carry out postdoctoral work in the molecular psychiatry department at Birmingham University in England. He also knew what he wanted to investigate: the genetic components of inflammatory processes developed in the brains of patients with Alzheimer's disease and the effect of estrogens on the regulation of the expression of the apolipoprotein E gene, whose e4 allele is a major risk factor for the disease. However, Lambert needed funds to finance the research. He learned about the Marie Curie fellowships from a fellow student and immediately applied.

The approval process was a demanding one. "It was clear that the funding was designed not only to provide the opportunity to work in Europe



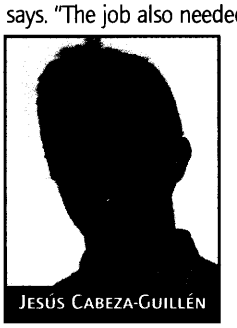
but also to realize a project of high quality that would lead to publications," Lambert says. "The fellowship, the host institution, and the scientific project were evaluated. Both the institution and I had to describe the scientific project precisely and to justify our abilities to bring it to a successful conclusion. The fact that I was working on Alzheimer's disease, a competitive and attractive subject with important implications in terms of public health, clearly contributed to the success of our proposal. "

Both Lambert and European science have benefited from the project. "The fellowship afforded me the freedom to develop an original research project that produced publications," he says. "It was also very interesting to assimilate other approaches to bring a scientific project to a successful issue and to better understand other ways of life; it was very instructive to be assimilated as a foreigner. Furthermore, my going to the U.K. allowed me to initiate and develop a collaboration between my host lab and French laboratories." The postdoctoral fellowship also helped Lambert to achieve his career goal of winning a position in INSERM.

STIMULATING WANDERLUST

In the last year of work on his diploma in physics at Spain's University of Zaragoza, Jesús Cabeza-Guillén undertook a period of study at the University of Saint-Etienne in France. That work stimulated a sense of wanderlust. "When I finished my studies I wanted to work in Europe outside Spain," he recalls. "I found the Marie Curie website and checked the industrial offerings on it. I sent an application along with my CV. A few days later I received an invitation to interview at Carl Zeiss Oberkochen in Germany. They agreed to hire me a few months after that, and I started work in October 2000."

Cabeza-Guillén notes that Carl Zeiss set up the project, applied for approval to the European Commission, and took full responsibility for selecting him. "The EC has only to agree to the selected candidates," he explains. What qualifications did he bring to the position? "One requirement was a solid degree in physics with a strong background in optics," he says. "The job also needed some background in electronics, which I had."


JESÚS CABEZA-GUILLÉN

Now Cabeza-Guillén plans to use the fellowship as a fresh stepping stone in his career. "I asked the company to help me get a Ph.D.," he says. "Carl Zeiss has good contacts at the University of Stuttgart. So I've just started on the doctorate." He plans to stay in Germany until he receives his Ph.D. and then perhaps look for opportunities for further travel.

A much shorter fellowship gave Margarida Coelho an equally important leg up on her career. In June 2000, as she was about to complete her undergraduate degree in environmental engineering at the Technical University of Lisbon, she hadn't decided whether she wanted to go into a job or to continue her academic studies. At the suggestion of her final project coordinator she applied for a Human Potential program grant to attend a six-day course on the sustainability assessment of new and renewable energy systems.

Approval came surprisingly fast. "I sent a registration form and my CV to the coordination committee along with a recommendation letter from my supervisors," Coelho remembers. "I learned in two days that I had been selected. The course was starting the next week." The result of her attendance: "The course was useful for meeting people," she says. "And it helped me to decide what to do next." She has started on a Ph.D. in environmental engineering and plans to stay in academic life as a professor undertaking research in transportation.


MARGARIDA COELHO

WHAT NEXT?

How will the EU continue to encourage the mobility of young scientists, and hence ensure greater harmonization between the national and pan-European science policies? The European Commission is developing a new philosophy on scientists' mobility that involves several segments. The approach is based on a pyramid of opportunities, all under the Marie Curie "brand," that correspond to different stages of researchers' careers.

The bottom level of the pyramid addresses all researchers with up to four years of experience. It will give them a more focused training environment than they usually experience. To do so, the program will provide financial incentives for initial training in research and the transfer of knowledge, particularly in host organizations such as corporate and academic laboratories. The second tier of the pyramid focuses on scientists with more than four years of experience in research and aims to address specific needs for training and mobility. The top level provides grants that help experienced researchers to start projects and set up their own research teams. This level includes excellence grants for projects deemed to have high quality, and so-called Marie Curie chairs that will provide three-year teaching opportunities for top-level researchers in European universities.

The new approach has three significant targets. First, it will aim to give scientists from all EU members and candidates for membership the opportunity to integrate into an EU-wide network of research. Second, it will encourage scientists who have left Europe for work elsewhere to return to the EU. Officials plan to stimulate this return of the natives by providing financial support for their reintegration in the EU. Finally, the EC will open up its system of grants to researchers from countries outside the European Union. "We want to increase the EU's attractiveness as one of the world's main research centers," explains Liberali.

These new initiatives come at a time when the EU itself is preparing to change; 13 nations, mostly from Eastern Europe, have applied for membership. Liberali emphasizes that the new schemes will be open to those candidate countries. "Their participation with their numerous and well-trained researchers," he says, "is particularly encouraging." ■

A former science editor of Newsweek, *Peter Gwynne writes about science and technology from his base on Cape Cod, Massachusetts, U.S.A.*

UNIVERSITY COLLEGE DUBLIN
National University of Ireland

Department of Computer Science
Roinn na Ríomheolaíochta

OPPORTUNITIES IN COMPUTER SCIENCE

The Computer Science Department at University College Dublin engages in advanced research and teaching across the spectrum of computer science. The Department comprises 25 academic staff members, 400 undergraduates, 120 students in taught postgraduate programmes, 100 research postgraduates, and several postdoctoral researchers. The Department has secured more than • 2.7 million in research funding over the last 2 years, and has been recognized by numerous international research awards. Additional information is available at **www.cs.ucd.ie**.

Opportunities are available at all levels:

- Undergraduate degrees - BSc/BA (Computer Science). See **www.ucd.ie/~science** for details.
- Taught postgraduate degrees - Higher Diploma (Computer Science), MSc/MA (Cognitive Science), MSc (Computational Science). See **www.cs.ucd.ie/courses** for details.
- Postgraduate research degrees - MSc/PhD. See **www.cs.ucd.ie/courses/msc_phd** for details.
- The Department is recruiting post-doctoral researchers; see **www.cs.ucd.ie/vacancies** for details.
- The Department anticipates openings for permanent academic staff members over the coming months; see **www.cs.ucd.ie/vacancies** for details.

OPEN POSTDOCTORAL POSITIONS

"QUEST" ("Quantum Entangled States of Trapped Particles") is a Research Training Network of the European Union, referenced under number HPRN-CT-2000-00121. For general information about RT networks see http://www.cordis.lu/improving/networks/home.htm

The scientific objectives of the network are in the domain of **quantum information processing**, and they aim at practical implementations of quantum logic, achieved through the controlled engineering of the quantum state of trapped particles.

Here are some recent publications by the network teams that can be found in "Nature" : 411: 1024 (2001), 413: 495 (2001), 414: 49 (2001), 415: 39 (2002), or "Science" : 288: 2024 (2000), 292: 1695 (2001).

Postdoctoral positions are immediately available, following european eligibility criteria. The fellows expertise should be either in atomic physics, laser cooling, quantum optics or quantum information. These positions may be particularly attractive for european citizens presently in the USA, and looking for a temporary position (1-2 years) when coming back to Europe.

For more information please contact the network coordinator, Dr. Philippe Grangier, Institut d'Optique, F91403 Orsay, France. Email: philippe.grangier@iota.u-psud.fr.

The network web site is **http://www.iota.u-psud.fr/~quest/**.

Candidates can still apply to the YEP ski conference !

THE UNIVERSITY of MANCHESTER

The University of Manchester

Marie Curie Training Sites

Applications are invited from European (non-UK) students registered for doctoral studies in universities outside the UK to undertake short research projects and training in state-of-the-art techniques at the following Marie Curie Training Sites in the University of Manchester. These groups are internationally recognised in their field and have vast experience of supporting doctoral studies. The duration of a stay at a Training Site will be between 3 months and 1 academic year. Financial support is available to cover travel, research costs and a monthly subsistance allowance.

Information for applicants:

Applications and enquiries should be made directly to the appropriate host site. Here, they will be able to apprise you of current opportunities and the next available deadline for application.

Potential applicants may also talk through their proposed research project with one of the training site supervisors, and discuss a reasonable length of stay at the site required to carry out such a project.

An application form should be completed by the applicant in advance of the specified deadline. All documentation should be sent directly to the relevant training site. Applications will be evaluated first within the host department. Successful applications must then be approved by the European Commission before applicants will be informed whether they have been successful.

University of Manchester Marie Curie Training Sites

School of Biological Sciences

- Brain Research and Inflammatory, Neurodegenerative Disease (BRAIN)
- Plant Raw Material Mobilisation and Synthesis (PRAMMS)
- Molecular Translocation, Assembly and Folding in Cells (TRAFIC)
- University of Manchester Bioinformatics Education and Research (UMBER)

Faculty of Science and Engineering

- Jodrell Bank Observatory Training Site for Radio Astronomy
- Structural Chemistry in Biomolecular Recognition (Department of Chemistry)
- International Training Site in Analytical EM and Electron Backscattered Diffraction (Manchester Materials Science Centre)
- Training in Advanced Microanalysis of Earth Materials (Department of Earth Sciences)
- Advanced Techniques in Experimental Fluid Mechanics (Manchester School of Engineering)

Faculty of Social Sciences and Law

- The Cathie Marsh Centre for Census and Survey Research
- Science, Technology and Innovation Management and Policy for European Competitiveness (Policy Research in Engineering, Science and Technology – PREST)
- Research Training at the Manchester School of Accounting and Finance
- Bioethics and Biolaw at the Institute of Medicine, Law and Bioethics

Information and application forms for all the Training Sites at the University of Manchester can be found at :

www.man.ac.uk/rgsu/EUcommission/mariecurie.html

Marie Curie Fellowships

UNIVERSITY OF MANCHESTER
SCHOOL OF BIOLOGICAL SCIENCES

The School of Biological Sciences, at The University of Manchester, is one of the largest unified departments with over £80 million in external grant income. Research at the School was recently awarded the highest rating of 5* in the 2001 Research Assessment exercise. Applications are invited from PhD students across Europe to undertake research at one of four Marie Curie training sites identified below. For information on current vacancies see:
www.man.ac.uk/rgsu/EUcommission/mariecurie.html

- **Brain Research and Inflammatory, Neurodegenerative Disease**
  Group leaders: Brotchie, Crossman, Rothwell, Verkhratsky;
  (Contact: alex.verkhratsky@man.ac.uk).
- **Plant Raw Material Mobilisation and Synthesis**
  Group leaders: Bowsher, Bray, Day, Emes, Ennos, Johnson, Turner;
  (Contact: anil.day@man.ac.uk).
- **Molecular Translocation, Assembly and Folding in Cells**
  Group leaders: Allan, Bulleid, High, Stirling, Tokatlidis, Woodman;
  (Contact: tokatlidis@man.ac.uk).
- **The University of Manchester Bioinformatics Education and Research**
  Group leaders: Attwood, Bella, Bornberg-Bauer, Brass, Goble, Higgs, Oliver, Rattray, Stevens;
  (Contact: ebb@bioinf.man.ac.uk) (pending final contract signature by the EU).

To qualify for a fellowship under the terms of this programme, you should be a national of an EU member state or a state associated with the European Framework Programme, or have resided in the EU for at least five years. These fellowships are not open to UK nationals or to people who reside in the UK. Financial support is available to cover travel, research costs and a monthly subsistence allowance. Informal enquiries are welcomed.

For further information, please contact: Dr Kostas Tokatlidis,
Marie Curie Training Sites, School of Biological Sciences,
2.205 Stopford Building, The University of Manchester
Oxford Road, Manchester M13 9PT, UK.
Tel: +44 (0)161 275 5687. Fax: +44 (0)161 275 5082.
Email: tokatlidis@man.ac.uk
www.biomed.man.ac.uk/rgs/graduate/mariecurie/default.asp

THE UNIVERSITY of MANCHESTER

University of Sassari
Postdoctoral Position

One Postdoctoral position is opened by the EU Marie Curie Development Host Fellowship Program in Sassari (Sardegna, Italy) to study the molecular mechanisms involved in the establishment of the cardiac phenotype in embryonic stem cells. Ph.D., experience in molecular biology, cell signaling, and confocal microscopy is required. The capability of investigating structural and molecular patterning in apoptotic cell death is also essential. For further information, see the portal of Marie Curie Fellowships:
http://improving.cordis.lu/mc
Contract Number HPMD-CT-2001-00098.

Please send a full curriculum vitae, names and e-mail addresses of two referees to:

Prof. Carlo Ventura,
Laboratory of Cardiovascular Research
Dipartimento di Scienze Biomediche
University of Sassari
Viale San Pietro 43/B - 07100
Sassari, Italy.
Fax: +39-079-228120
e-mail:chim_med@ssmain.uniss.it

At the leading edge of research

Opportunities for European PhD students at the University of Leeds

Marie Curie Fellowship

The University of Leeds has received EU recognition as a major site of excellence in training for scientists by the award of a number of Marie Curie Training Sites during the period 2000 to 2004.

We invite applications from European PhD students studying in any country (other than the UK) to join us for 3 to 12 months as Marie Curie Fellows during the period of their studies. Students will receive a monthly allowance of •1200 per month as well as a one-off payment for travel costs. We offer state-of-the-art facilities, together with specialised training within internationally recognised research groups.

Details of the individual sites are available from the following academics:

- **Food Colloids.** Contact: Dr Brent Murray, Proctor Department of Food Science (b.s.murray@food.leeds.ac.uk)
- **Modern Methods in Structural Molecular Biology.** Contact: Professor John Trinick, School of Biomedical Sciences (j.trinick@leeds.ac.uk)
- **Molecular Epidemiology of Common Disease.** Contact Professor Chris Wild, Molecular Epidemiology Unit, (c.p.wild@leeds.ac.uk)
- **Polymer Dynamics and its Influence on Plastics Processing and Properties.** Contact: Professor Geoff Davies, Dept. of Physics and Astronomy (g.r.davies@leeds.ac.uk)
- **Testing Transgenic Plant Products for Agriculture.** Contact: Professor Peter Meyer, School of Biology (p.meyer@leeds.ac.uk)

Full details on all the above sites and an on-line application form are available at the following WWW site:

http://www.leeds.ac.uk/external-affairs/european/resmenu/mcsites.htm

Please note that in order to be eligible to apply, you must normally be under 35 years of age and a national of an EU member or associated state (except the UK). Other nationals, who have lived in an EU or associated state for at least five years, may also be eligible. Your PhD studies at your home university must be closely related to the subject area offered by the training site.

Short-term Doctoral Fellowships

Investigation of in vivo phenotype of genetically modified mice

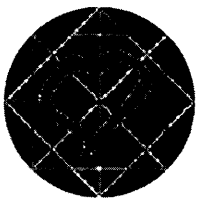
The Claude Bernard Institute (Paris, France) offers the possibility to investigate **the in vivo phenotype of genetically modified mice** (cardiovascular, renal, pulmonary, metabolic functions...; see www.bichat.inserm.fr/CEFI). **Short-term fellowships** (1 month to 1 year) **are available** for European PhD students wishing to learn such in vivo techniques, through a **Marie Curie program** in our Institute.

Cardiac echography and Doppler, Renal clearances, Metabolic cages, Non-invasive arterial pressure on non-anesthetized mice, Scintigraphic imaging (gamma camera), Auditory functions, Pulmonary plethysmography, Microanalysis of blood and urine are currently available and can be practised on state-of-the-art dedicated equipment.

For information, contact: E. GIESEN (giesen@bichat.inserm.fr)

Equal Opportunity Employer and Educator

POSTDOCTORAL POSITIONS



As a major in vitro diagnostics company, focusing on infectious diseases, bioMérieux develops, manufactures and markets reagents and automated systems designed for medical analyses and product quality control in the agri-food, cosmetics and pharmaceutical industries.
bioMérieux has a well established program for developing a DNA chip-based integrated platform which will provide new and high performance tools for research and diagnostic laboratories.
The program is based in Lyon, in a state-of-the-art research facility with about 50 multi-disciplinary scientists (molecular biologists, biochemists, bioinformaticians, engineers). This facility benefits from bioMérieux's latest equipment and strong research environment.
In partnership with the European Commission, we invite applications for 2 two-year research post-doctoral positions, funded under the Marie Curie Industry Host Fellowship (Quality of Life Programme).

Opportunities in Human Genetics (ref. GEN)

The applicant will work within the Human Genetics Department. Holding a PhD or a MD degree, you have developed competences in molecular biology and/or oncology. Experience in bioinformatics would be an advantage.
You will participate in the interpretation of Gene Expression profiles using high-density microarrays and undertake researches in pharmacogenomics in the field of cancer.

Opportunities in Bioinformatics (ref. INF)

As a member of bioMérieux bioinformatics team, the successful candidate will contribute to the development of our expertise in the design and interpretation of microarray experiments. This expertise will primarily be applied to assess the usefulness of microarray-based gene expression monitoring for various bioMérieux projects : in this context, experiments are primarily conducted on Affymetrix technological platform, though alternative micro/macro array technologies are also used.
Applicants must have practical experience with micro/macro array-based gene expression monitoring, and first degree in statistics or equivalent. Experience with Affymetrix technology and/or higher degree in statistics would be a plus.

All applicants must not be French nationals or have worked in France during the last two years. They should be nationals of an European Union member state or state associated with the EU framework program, or have resided in Europe for at least five years.

- Good interpersonal skills and willingness to work in a multidisciplinary team are required.
- Fluency in English and/or French is highly desirable

For all positions, appointments are subject to the terms of the Marie Curie Industry Host Fellowship Programme (for more information consult the Marie Curie website at : www.cordis.lu/improving). We offer competitive salaries including travel allowances

Applications should include a C.V., list of publications and letters of reference which should be sent to:

- For ref. GEN : Philippe Leissner, **bioMérieux**,
Chemin de l'Orme 69280 Marcy L'Etoile (F).
E-mail : philippe.leissner@eu.biomerieux.com
Fax : (33) 4 78 87 53 40

- For ref. INF : Bruno Lacroix, **bioMérieux**,
Chemin de l'Orme 69280 Marcy l'Etoile (F).
E-mail : bruno.lacroix@eu.biomerieux.com
Fax: (33) 4 78 87 53 40

BIOMÉRIEUX

orc.fr

A la source de la santé, la pertinence du diagnostic

bioMérieux website : www.biomerieux.com

Marie Curie Training Site

Multidisciplinary Approaches to CNS Plasticity
Institut Fédératif des Neurosciences, Strasbourg
Postgraduate fellowships

Several positions are available in Strasbourg until october 2004 for fellowships of 3 to 12 months, with focus on ageing, chronobiology pain, neuroprotection, neuronal growth and regeneration, long-term adaptation in neurotransmitter systems, and functional restoration in models of degenerative diseases. Nine federated laboratories contribute to the training site, with expertise in neurotransmission (Dr. B. Poulain); neuroadaptation to psycho-active drugs and neuroimmunity (Dr. D. Aunis); neurophysiology (Pr. M.J. Freund-Mercier); epilepsy (Pr. C. Marescaux); neural stem cells, development and regeneration (Dr. E. Mohier); retinal physiopathology (Pr. J. Sahel); neurobiology of rhythms (Dr. M.Masson-Pévet); behavioural neuroscience (Pr. B. Will); cognitive psychopathology and pharmacology (Pr. J.M. Danion).

The site implements state-of-the-art techniques in molecular and cellular biology, proteomic analysis, brain imaging and neurophysiology, histochemical and immunocytochemical techniques, cell culture and tissue grafts, microdialysis and voltammetry, selective inactivation of brain structures, and behavioural recordings and testing. Université Louis Pasteur, located within a beautiful and lively city, offers doctoral courses and provides an outstanding intellectual environment.

Applicants, women as men, must be engaged in Ph.D. research outside France, less than 35 years old, and nationals of the European Union, or associated countries, or residing in the EU for at least the last 5 years. Date and details of training must be arranged with the receiving team.
Send applications, preferably in electronic form, to:

Dr. A. Marchand, Laboratoire de Neurosciences Comportementales et Cognitives, 12 rue Goethe, F-67000 Strasbourg.
E-mail: **marchand@neurochem.u-strasbg.fr**
For more information, visit **http://neurochem.u-strasbg.fr**

International Symposia and Courses organized by the Mérieux Foundation in 2002

- Microarrays, Immune Responses and Vaccines
27-29 May 2002
- Foot and Mouth Disease: Control Strategies
2-5 June 2002
- Third Advanced Vaccinology Course
3-14 June 2002
- Therapeutic Vaccines against HIV and Cancers
23-26 June 2002
- XIIIth Cent Gardes Symposium, 27-29 October 2002
- Protection of Newborns through maternal immunization
8-11 December 2002

Information and registration on: www.fond-merieux.org

FONDATION MERIEUX
17 rue Bourgelat
BP 2021 – 69227 Lyon Cédex 02 - France
betty.dodet@fond-merieux.org

PHARMACIA

SENIOR RESEARCH SCIENTIST / BIOCHEMICAL TOXICOLOGIST

Discovery and Development Toxicology Italy, Nerviano

This Ph.D. scientist will lead the Biochemical Toxicology laboratory within the Investigative Toxicology group. He or she will support multiple discovery and development projects through the investigation of mechanisms of toxicity and through work on projects teams.

The primary objectives for this senior scientist position are:

Build a premier biochemical toxicology effort, including the development and application of new and emerging methods, assays and biochemical technologies.

Participate as a member of investigative toxicology teams aimed at supporting drug discovery efforts and the management of toxicity issues arising during the course of candidate development.

Manage daily operations of the biochemical toxicology laboratory, equipment and personnel.

Participate as a team member on discovery project teams.

Some travel will be required (<10%).

Requirements:

Ph.D. in Biochemistry, Toxicology or a related field and a minimum of 2 years of postdoctoral training.

Good problem solving and decision making abilities, oral and written communication and presentation skills, and interpersonal, time management and organizational skills.

Fluency in written and verbal English.

Desired skills include experience in biochemical toxicology in an industrial setting; experience in enzymology and experience in managing technical personnel.

Qualified candidates should send their resume to:
Serenella Appierto - Gruppo Pharmacia
Via Robert Koch 1.2 - 20152 Milano - Italy
E-mail: serenella.appierto@pharmacia.com
fax: 02/4838.4434
Deadline: 15th March, 2002

THE UNIVERSITY *of* LIVERPOOL

POSTDOCTORAL RESEARCHERS

(MARINE ELECTROCHEMISTRY)

Department of Earth Sciences

Initial salaries within the range £17,626 - £22,522 pa

In addition, a mobility allowance will be paid

As one of three appointments to be filled between now and December 2005, you will work within the Marine Electrochemistry Group on the application of microelectrodes, or small solid electrodes, to the detection of metals and sulphide in the marine environment (seawater, porewaters of sediments and lakes). Competence is sought in the area of electroanalytical chemistry and microelectrodes, or solid electrodes generally, composed of various materials and their application to natural waters. You should possess a PhD in a related area and have experience in the research area. The posts are funded by the EU-Marie Curie for one year and, due to requirements of the funding body, candidates should be aged under 35 and be nationals of an EU or EU-associated state other than the UK. Informal enquiries to Professor Stan van den Berg, email: vandenberg@liv.ac.uk Weblink: www.liv.ac.uk/~sn35/Marine_Electrochemistry.html *Quote Ref: B/772/S*

The closing date for this first post is 15 March 2002, however the vacancy will remain open to find suitable candidates until the end of the project, December 2005.

Further particulars and details of the application procedure should be requested from the Director of Personnel, The University of Liverpool, Liverpool L69 3BX on 0151 794 2210 (24 hr answerphone) or via email: jobs@liv.ac.uk Web site at http://www.liv.ac.uk

COMMITTED TO EQUAL OPPORTUNITIES

Drug Discovery TECHNOLOGY *Europe*

6th Annual Conference & Exhibition
www.drugdisc.com
15–18 April 2002
Messe Stuttgart International, Germany

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  European Congress on Clinical Microbiology and Infectious Diseases (ECCMID)
  24-27 April, Milan, Italy

Reservation Deadline ..... 19 March 2002
Material Deadline ..... 26 March 2002
Extended Deadline ..... 28 March 2002

Contact Anna McBryde at *Science* International
tel: +44 1223 326 500 • fax: +44 1223 326 532

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www.sciencecareers.org

The Future is our Mission

Forschungszentrum Jülich

The Research Centre Jülich is the largest interdisciplinary centre of its kind in Germany: 4 200 staff members are concerned with finding solutions to urgent problems in the fields of "Matter", "Energy", "Information", "Life" and the "Environment". As a member of the Hermann von Helmholtz Association of German Research Centres (HGF), the Research Centre Jülich is primarily committed to issues of public concern.

For our "Department of Solid State Research" (IFF), we are seeking a scientist for the position of

Director (C4)

of the experimental **"Institute for Electronic Properties"**.

The IFF department consists of six experimental and three theoretical institutes, working on condensed matter research extending from fundamental research on an atomic scale to its applications. In order to continue our successful activities in the field of magneto-electronics, one of the main focuses of the institute should be the investigation of electronic properties of magnetic nano-structures. The aim is to investigate fundamental problems related to quantum effects, such as coupling and transport phenomena, spin injection or ultra-fast magnetisation dynamics. Further development and application of existing methods are expected in the following two areas: preparation of magnetic thin films and laterally structured systems consisting of various material combinations, and advanced techniques of time and space resolved spectroscopy, e.g. scanning probe spectroscopy or spectroscopy with laser and synchrotron radiation.

This announcement is directed to scientists having experience in the preparation of magnetic layer systems and nano-structures and in their investigation using modern spectroscopic techniques. The successful candidate is expected to collaborate within a larger research programme extending over several departments as well as to initiate ones own scientifically attractive research programme. Teamwork within the management of an interdisciplinary functioning department is required as well as the willingness to cooperate with other institutes of the centre, other research institutions and universities as well as industry.

The director will be appointed jointly to a chair at one of the universities of North Rhine-Westphalia ("Jülich Model"). The salary will conform to the C4 scale of the German Civil Service. Applicants are required to have "Habilitation" or an equivalent scientific qualification as well as the ability to teach on an academic level.

Equal opportunities is a cornerstone of our staff policy for which we have received the "TOTAL E-QUALITY" accolade. Applications from disabled persons are welcome.

Applications comprising a curriculum vitae, list of publications and a short summary of scientific achievements should be sent by 20 April 2002 to

Vorstand der Forschungszentrum Jülich GmbH
D-52425 Jülich
Germany

Internet Address: http://www.fz-juelich.de

The UK Research Councils' Basic Technology Research Programme

2nd Call for Outline Proposals. Closing date: 7th May 2002.

The Basic Technology Research Programme will contribute to the development of a generic technology base that can be adapted to a diverse range of scientific research problems and challenges spanning the interests of all the UK Research Councils.

The Research Councils' Basic Technology Research Programme is concerned with building UK capability in technology research to underpin the next generation of tools, techniques and processes that will have a significant impact across science and form the basis of the industries of the future.

Basic technology involves the creation of fundamentally new capabilities across all areas of science. The challenge will be for researchers to think beyond their own discipline with a focus on innovation.

The Programme will encourage consortia and develop a new 'technology community' that is not constrained by Research Council remit or academic discipline.

It will develop new technologies and bring existing technologies together in new ways, to address challenges that have common ownership across the research community. These technologies will ensure the UK science and engineering base maintains its position in leading edge research.

The call is open to researchers of all scientific & engineering disciplines in UK universities and colleges, approved academic analogues, and Research Council sponsored institutes.

The challenge will be to:

- innovate
- build capacity through establishing new teams and developing and sharing new skills and knowledge to provide the opportunity for novel approaches in technology progression
- develop new devices, instruments, systems, processes and approaches to aid observation, measurement, optimisation and control
- devise new methods for the fabrication, embodiment, integration and implementation of technologies

Funding of around **£20 million** is available for this call.

Further information, details of the call and outline proposal forms will be available to download from the UK Research Councils' website:
www.research-councils.ac.uk/basictech/
or contact Jane Sykes, Basic Technology Research Programme Manager
Tel: 01793 444225
Email: jane.sykes@epsrc.ac.uk

Four regional seminars will be held to launch the 2nd call:

National Motorcycle Museum, Birmingham - 4th March 2002
Edinburgh International Conference Centre - 6th March 2002
Royal Armouries Museum, Leeds - 8th March 2002
Congress Centre, London - 11th March 2002

Register at www.research-councils.ac.uk/basictech/

Freie Universität Berlin – Fachbereich Humanmedizin
Universitätsklinikum Benjamin Franklin

MDC
Berlin-Buch

The MEDICAL FACULTY of the Freie Universität Berlin (Benjamin Franklin Medical Center) and the MAX DELBRÜCK CENTER FOR MOLECULAR MEDICINE (MDC), BERLIN-BUCH invite applications for the following position:

Full Professorship in Medical Genomics
(C4 BBesG)

The successful applicant will be a tenured faculty member of the Freie Universität Berlin, Medical School (Benjamin Franklin Medical Center), and the MDC.

We are seeking applications from outstanding individuals with research interests in the broad areas of medical genomics and disease-oriented research. Applicants should have a strong background and an international reputation in their respective field. Specific areas of interest at the MDC are genetics and genomics with regards to cardiology, hypertension, nephrology, endocrinology, vascular biology and cancer (tumor progression, angiogenesis, metastasis, animal models in tumor biology) as well as diseases of the nervous system. Expertise in genetic animal models of human disease is welcome.

Appropriate space, positions, and funds for a laboratory and its operation will be provided by the MDC in a newly built genome center. Applications for extramural funding are expected. The successful applicant will be specifically encouraged to engage in collaborative research with interested clinicians at the Benjamin Franklin Medical Center and other institutions, e.g. within Collaborative Research Centers (Sonderforschungsbereiche).

Applications (CV, list of publications, five reprints and an outline of past and future research) should be sent within 4 weeks to

Dekan des Fachbereichs Humanmedizin
Prof. Dr. Martin Paul
Freie Universität Berlin
Universitätsklinikum Benjamin Franklin
Hindenburgdamm 30
D-12200 Berlin

Scientific Director
Prof. Dr. Detlev Ganten
Max-Delbrück-Centrum für Molekulare Medizin (MDC) Berlin-Buch

Robert-Rössle-Str. 10
D-13125 Berlin-Buch

The Freie Universität Berlin and the MDC are equal opportunities employers and welcome applications from women in order to increase the proportion of the female staff in University research and teaching.

MDC is a member of the Hermann von Helmholtz Association of National Research Centers supported by the Federal Government of Germany and by the City of Berlin.

For further information about MDC or the Freie Universität Berlin please visit our web site:
http://www.mdc-berlin.de or http://www. FU-Berlin.de

stem cell biologist

Merck Sharp & Dohme is part of Merck & Co., Inc., one of the world's leading pharmaceutical companies with over 70,000 employees worldwide. Merck discovers, manufactures and markets a broad range of products to improve human and animal health, and has an unparalleled reputation for innovative research. This year alone the company will invest £2.6 billion in research and development, as much as 5% of all spending by the pharmaceutical industry worldwide.

The Neuroscience Research Centre is fully committed to the discovery of novel therapies for the treatment of disorders of the central nervous system including Alzheimer's disease, anxiety, depression, chronic pain and schizophrenia. It is one of the largest dedicated neuroscience research laboratories in the world and is a premier site for Merck. It is located in picturesque parkland surroundings on the rural Hertfordshire/Essex border.

As part of an initiative to develop neural stem cell biology and integrate it into our drug discovery process, we are seeking an outstanding stem cell biologist. You will take a leading role in a programme that will utilize novel imaging technologies, genomics and proteomics, in conjunction with stem cell biology, to identify novel molecular targets and innovative approaches for the treatment of neurological and neurodegenerative diseases.

You will have a Ph.D. and several years experience in the area of neural stem cell biology, either from an academic or industrial setting, and will be excited by the challenge of a new approach to drug discovery.

We offer excellent salary and benefits including private healthcare, life assurance, company pension scheme and, where appropriate, relocation assistance. We have a very active Sports and Social Club and a well equipped gym. There is also an on-site childcare facility.

Please write or e-mail, enclosing a full CV, quoting reference MB023513 to: Recruitment Co-ordinator, Human Resources Department, **The Neuroscience Research Centre**, Merck Sharp & Dohme, Terlings Park, Eastwick Road, Harlow, Essex CM20 2QR. e.mail: tp_hr@merck.com http://www.msd-nrc.co.uk

MERCK SHARP & DOHME
The Neuroscience Research Centre

FOR THE ADVANCEMENT OF MEDICAL SCIENCE
serono foundation

SERONO FOUNDATION FOR THE ADVANCEMENT OF MEDICAL SCIENCE

The Serono Foundation for the Advancement of Medical Science is supporting the following workshops in 2002

Neuroendocrine Behaviour in the Post Genome Era
Bristol, UK - August 31 to September , 2002
Scientific Organisers: S. Lightman, T. Insel, C. Ingram
The Royal College of Physicians UK has awarded 9 CME credits for full attendance at this workshop

Anti Müllerian hormone/ hormone inhibiting substances
Aix-en-Provence, France - October 7-8, 2002
Scientific Organisers: N. Josso, R. Behringer, R. Lovell-Badge, J-Y. Picard, R. Rey, M. Fontès,
The Royal College of Physicians UK has awarded 15 CME credits for full attendance at this workshop.

Lymphocyte Antigen Receptor and Co-receptor Signaling
Siena, Italy - May 1-8, 2002
Scientific Organisers: C.T. Baldari, O. Acuto, G. Koretsky, J. Telford
Joint Meeting with the **European Molecular Biology Organization** (EMBO)

Translational Control of Developmental and Neuronal Function
Mallorca, Spain - May 23-26, 2002
Scientific Organisers: A. Ephrussi, J. Richter, C. de Haro
Joint Meeting with the **European Molecular Biology Organization** (EMBO)

For further information and registration details contact **www.serono-foundation.org**

MRC Clinical Sciences Centre
Faculty of Medicine, Imperial College

POSTDOCTORAL OPPORTUNITIES

The CSC is an institute funded by the Medical Research Council (MRC) and is a division of the Faculty of Medicine, Imperial College based on the Hammersmith Hospital in West London. In addition to this, it is a short ride away from the centre of one of Europe's most exciting and vibrant capital cities. The CSC has first class facilities and provides investigators from clinical and basic science backgrounds with the opportunity to pursue innovative, multidisciplinary research within the established clinical base of Imperial College. Visit our website: **www.csc.mrc.sc.uk**

Gene Targeting Group
Ref. GTG/PD/03

The Group aims to improve our understanding of gene targeting, and to promote its efficiency with a view to applications in somatic cell genetics and gene therapy. The position will involve one of two main areas: i) studies of factors that control the efficiency of gene targeting in human somatic cells (Gene Therapy 6:1282; Gene Therapy 5:149; Nucleic Acids Res 30:740) and ii) use of conditionally targeted human cell lines to analyse aspects of cell cycle control (Nat. Genet. 15:258; Mol Cell Biol 20:2358).

For further information , contact Dr Andy Porter, e-mail: **andy.porter@csc.mrc.ac.uk**

To apply, please send a letter of interest with CV and names of three referees to Dr Andy Porter, andy.porter@csc.mrc.ac.uk quoting ref. GTG/PD/03.

Mammalian Artificial Chromosome Vectors
Ref. MAC/PD/03

Mammalian artificial chromosomes (vectors carrying a mammalian centromere, replication origins and gene of interest) have great potential in gene therapy and trans-chromosomal mouse models. They are maintained as an independent mini-chromosome in mammalian cells and mice allowing long term stable expression of the gene of interest without integration into the host genome. This project aims to utilise MACs for gene delivery and also to study aspects of chromosome biology such as position effects, centromere DNA requirements and replication origin spacing.
For further information, contact Clare Huxley: **c.huxley@ic.ac.uk**

To apply, please send a letter of interest with CV and names of three referees to Dr Clare Huxley, c.huxley@ic.ac.uk, quoting ref. MAC/PD/03

Both positions will be appointed to the MRC pay band 4. A Location Allowance, Non-clinical Supplement (6% of basic) and Central London Supplement are also payable.

Applicants are asked to submit their interest no later than 1 March 2002.

PRIZES

BODOSSAKI FOUNDATION

ARISTEIO BODOSSAKI PRIZE 2002

The Aristeio Bodossaki is a prize which was instituted to give recognition to Greeks who have devoted their lives to science and who, by means of their exceptional, lifelong performance and significant achievements, have made a distinctive contribution towards furthering their field of science. The Aristeio Bodossaki, which is accompanied by the sum of • 150.000, is awarded every two years.

The Board of Trustees of the Bodossaki Foundation, at its meeting in December, 2001 accepted the proposal of the International Committee for the Aristeio and decided to award the Aristeio Bodossaki for the year 2002 in the field of Physics to Professor John Iliopoulos, for his outstanding contributions to the theory of interactions of elementary particles. The award winner is Director of research at the National Centre for Scientific Research (CNRS), France and Director of the Theoretical Physics Laboratory of the École Normale Supérieure, Paris, Corresponding member of the Academy of Athens and of the French Academy of Sciences.

The Award Ceremony will take place in Athens next June.

KAROLINSKA INSTITUTET

Karolinska Institutet is a university with an exclusive focus on medicine. With nearly 6,000 students, more than 2,000 PhD-students and about 3,500 employees, Karolinska Institutet is responsible for about 30% of the medical training in Sweden. Awarding the Nobel Prize in Physiology or Medicine has given Karolinska Institutet an invaluable contact network throughout the medical scientific community.

To promote and expand our research on physiological and pathophysiological aspects of functional genomics, we now invite applications for a position as

Scientist / Project leader in integrative physiology of genetically modified animals

The successful candidate should have a strong track record in experimental integrative physiology and a documented capacity to collaborate with molecular biologists in functional studies of gene-targeted animals, particularly mice. He/she is expected to lead an active research group in this field. The candidate should also be prepared to lead, and be scientifically responsible for, a facility for advanced phenotyping in mice that is being built up at the department of Physiology and Pharmacology. This laboratory is at present well equipped and its further development as a strategic development has been decided. It complements other laboratories at the Karolinska, which focus on behavioural physiology, neurophysiology, metabolism and rodent pathology.

Karolinska Institutet will fund the project for five years with a budget of up to SEK 2 million per year, including salaries and running costs. The project leader is expected to attract a substantial amount of external funding. After four years, an external peer review committee will evaluate the position.

For further information, please contact Professor Jan Carlstedt-Duke, Dean of Research, phone: +46 8 728 6470, e-mail:**Jan.CarlstedtDuke@fostyr.ki.se**

The trade union representative for scientists is Professor Tomas Cronholm, phone: +46 8 728 7733, e-mail: **Tomas.Cronholm@mbb.ki.se**
(for information on Karolinska Institutet, see **www.info.ki.se**).

Please submit your application, with Registration no 5132/01-228 to: Karolinska Institutet, Registration Office, S-171 77 Stockholm, Sweden, **Registrator@ki.se**, Fax: +46 8 33 8415.

The deadline for receipt of applications is 15 March, 2002.

FOOD STANDARDS AGENCY

Recent expert reviews have identified gaps in the knowledge related to the risk assessment of dioxins particularly with respect to effects on the developing fetus. Proposals are sought that address this issue and specifically maternal and fetal body burdens arising from different dosing protocols in relation to the dose-response relationship for adverse developmental effects in animal models. Since the goal is to relate these data to possible human fetal exposure from the maternal diet the inclusion of modelling to address this point is also welcomed.

It is recognised that such a study is likely to require collaboration between contractors with biological and analytical expertise and such proposals are welcomed.

For further details please contact Caroline Tahourdin (caroline.tahourdin@foodstandards.gsi.gov.uk) +44 (0) 20 7276 8520 or David Gott +44 (0) 20 7276 8527.

ETH

Eidgenössisch
Swiss Federal

Faculty Position in Polymer Chemistry

Applicants for this open position at the Department of Materials Science of ETH Zurich should have an excellent record of internationally recognized research in the field of polymer chemistry, and should be equally qualified to teach modern polymer chemistry. The expertise of the successful candidate may be in any of the branches of polymer chemistry, but in particular, in synthetic chemistry, physical chemistry, or materials science. Collaborations with other research groups within the ETH Zurich, at other Swiss Universities, and industry are expected.

Please submit your application together with a curriculum vitae and a list of publications **to the President of ETH Zurich, Prof. Dr. O. Kübler, ETH Zentrum, CH-8092 Zurich, no later than April 30, 2002.** The ETH Zurich specifically encourages female candidates to apply with a view towards increasing the proportion of female professors.

7–10 JULY 2002

Genome-based Pathogen Biology

The first 25 years and beyond

Organized and sponsored by the Wellcome Trust

Hinxton Hall Conference Centre

To mark the 25th anniversary of the sequencing of the first complete DNA genome, phi X174, the Wellcome Trust is hosting a conference to celebrate the success of pathogen genome sequencing. The conference will discuss the impact of genome information on the study of pathogen biology, from phage to eukaryotic parasite. As well as talks by invited speakers, there will be poster sessions.

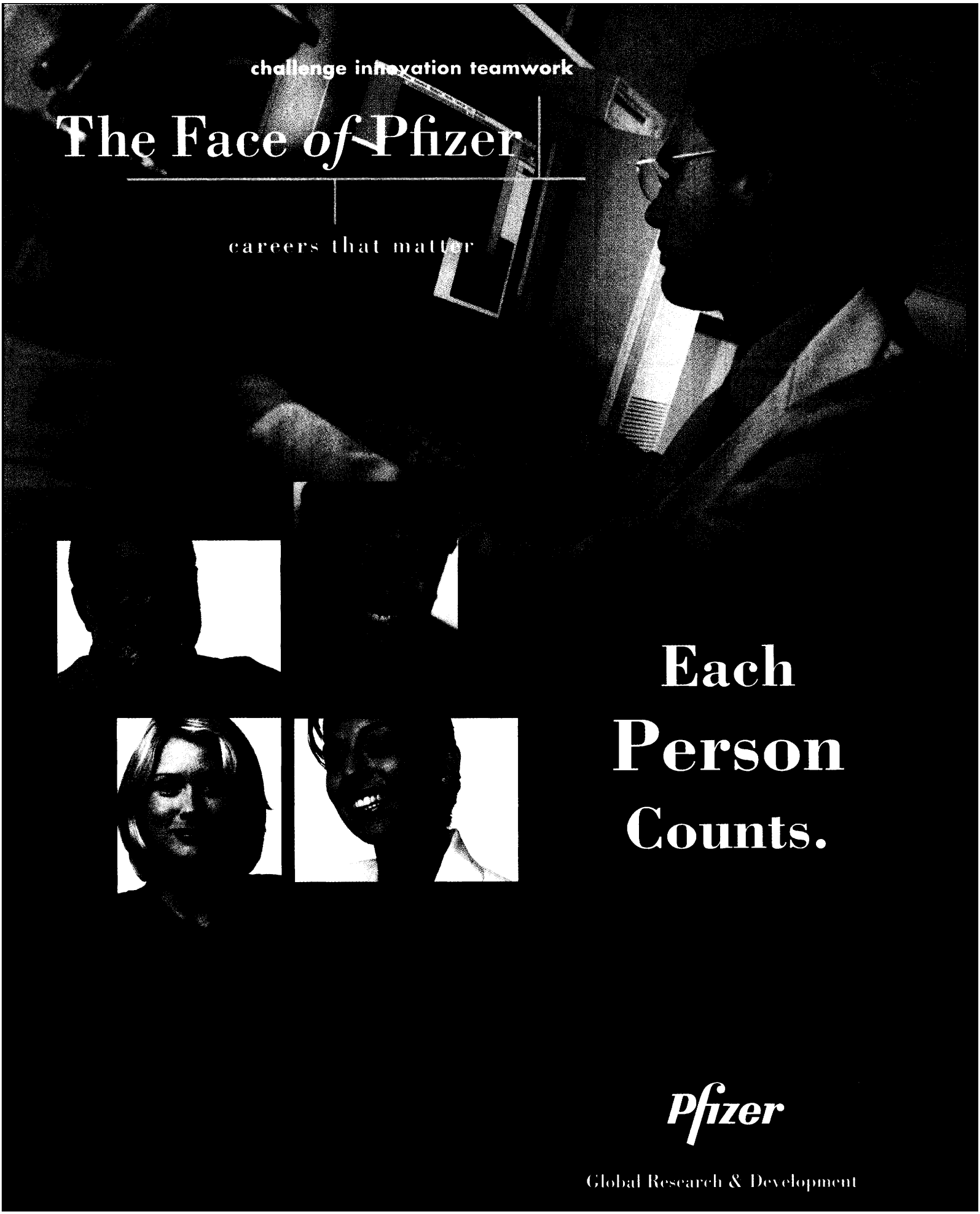
For more details and registration please visit our website. **All registrations and poster abstracts *MUST* be submitted by Monday 13 May 2002.** A limited number of bursaries are available on a competitive basis for graduate students and junior postdoctoral researchers presenting posters. **Bursary application deadline is Monday 26 March 2002.**

Enquiries: Mrs Lucy Criddle
Hinxton Hall Conference Centre
The Wellcome Trust Genome Campus
Hinxton, Cambridgeshire CB10 1RQ, UK
E-mail: lucy.criddle@hinxton.wellcome.ac.uk
Tel: +44 (0)1223 495001 Fax: +44 (0)1223 495023
Registration information: www.wellcome.ac.uk/hinxton/pathogens2002
Venue information: www.hinxton.wellcome.ac.uk

Speakers include:

Mark Achtman	Max Planck Institut für Infektionsbiologie
Steve Beverley	Washington University
Mark Blaxter	Edinburgh University
Dan Carucci	US Naval Medical Research Center
Stewart Cole	Institut Pasteur, Paris
Karen Day	Oxford University
Paul Farrell	Imperial College, London
Sir David Hopwood	John Innes Centre
Clyde A Hutchison III	University of North Carolina/TIGR
Duncan McGeoch	Glasgow University
Richard Moxon	Oxford University
Andrew Simpson	Ludwig Institute, Sao Paolo
Brian Spratt	Imperial College, London
Nick Talbot	Exeter University
Simon Wain-Hobson	Institut Pasteur, Paris

The Wellcome Trust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The Face of Pfizer
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Counts.
Pfizer
Global Research & Development

At Pfizer Global Research & Development, we build our success on the innovation, skills and entrepreneurial spirit of each of our employees. As an integral member of our team, you will find myriad opportunities to assert your scientific independence as you generate results that will advance our ultimate goal of creating life-enhancing therapies. You will also benefit from a wealth of resources, the support of an exceptional team, and the chance to work on some of the most exciting science in the industry. Count the ways you can impact lives as you bring your ideas to life at Pfizer Global Research & Development.

Postdoctoral Fellow, Molecular Sciences

Ann Arbor, Michigan

We currently have an opportunity within our Cancer, Molecular Sciences Department for a highly motivated individual with a strong background in tyrosine kinase signaling, PI 3-kinase signaling or cell cycle regulation. This position requires a PhD in Cell Biology, Molecular Biology or a related field, and a portfolio of published works in high quality scientific journals. The demonstrated capacity to perform top-level research is essential to this position, and experience in immunocytochemistry is desirable. **Req. #21Jan021050**

Postdoctoral Fellow in Sepsis, Antibacterial Pharmacology

Ann Arbor, Michigan

In this unique opportunity to participate in a multidisciplinary research environment, the successful candidate will examine the role of inflammatory mediators and endothelial cell dysfunction in the pathogenesis of sepsis. This position requires a PhD in the biological sciences (preferably Microbiology, Immunology or Pathology) and expertise in animal model development/evaluation and molecular biology techniques, including RNA profiling and proteomics. **Req. #18Dec0109250**

Postdoctoral Fellow, Cardiovascular Pharmacology

Ann Arbor, Michigan

In this role, you will participate in a project focused on the serine palmitoyltransferase regulation in cell culture and animal models of vascular disease in order to uncover novel therapies. You must have a PhD in Biochemistry or Cell Biology, as well as a strong background in biochemical, cell culture and molecular biological techniques. A thorough knowledge of lipid biochemistry and gene expression technologies is preferred. **Req. #18Dec0109252**

Biochemists, PhD Sr. Scientists/Research Scientists

La Jolla, California

We currently have opportunities at several levels for Lead Biochemists to contribute to multidisciplinary project teams aimed at the discovery of novel drugs using combinatorial chemistry and structure-based drug design. The successful PhD candidate must have 2+ years of postdoctoral experience and in-depth knowledge of enzyme kinetics, enzyme assay development and enzyme inhibitor characterization; protein purification; and biophysical techniques. **Req. #01-0501-5V135CL** We are also seeking Associate Scientists with a BS/MS in Biochemistry, Chemistry or a closely related discipline, 2+ years of industrial experience, advanced computer skills and research experience with enzyme kinetics and protein characterization. **Req. #01-0566-5V135SM**

Research Scientist, Crystallography

La Jolla, California

Joining our Molecular Structure Group, you will work alongside other scientists on highly interdisciplinary drug discovery projects targeting viral pathogens, diseases of the eye, cancer, diabetes and obesity. The ideal candidate will have a PhD in Macromolecular Crystallography with demonstrated expertise in protein structure determination and analysis, as well as some familiarity with molecular biology and crystallographic software. **Req. #29Jan0210693**

Virologists

La Jolla, California

We have multiple opportunities for experienced Virologists to perform experimentation and direct internal and external collaboration in order to discover, identify and evaluate preclinical antiviral compounds. These positions require a PhD in Virology or Molecular Biology and a comprehensive knowledge of virology as it applies to molecular biology and biochemistry. Experience with positive strand RNA virology and industrial antiviral drug discovery is preferred. **Req. #01-0729-5V128AP**

Group Leader and Research Scientist

La Jolla, California

Two positions are available within the Ophthalmology Therapeutic Area for experienced scientists to identify and develop new targets and approaches for the treatment of age-related macular degeneration, diabetic retinopathy and other serious ocular diseases. The Group Leader will lead a pharmacology group dedicated to the discovery and testing of novel therapeutics, and must have 8+ years experience in drug discovery and a thorough knowledge of retinal diseases. A minimum of 2 years postdoctoral experience is sought for the research scientist position. Both require familiarity with *in vitro* and *in vivo* models of ocular angiogenesis. When applying, please refer to **Req. #01-0621-5V125SG** and indicate the appropriate job title.

Pfizer offers an exceptional work environment complete with competitive salaries, excellent benefits and training opportunities designed to develop your professional talents. We encourage all applicants to apply by emailing your resume, indicating the appropriate Req. # in the subject field, to SCI@pfizerresumes.com. If necessary, you may also mail your resume, indicating Req. #, to Pfizer Resume Processing Center, 630 Boston Road M-104, Billerica, MA 01821, Attn: Softshoe Resumes. An equal opportunity employer, Pfizer offers a workplace rich with diversity and potential.

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It's a

As one of the world's leading health care companies, Abbott Laboratories is dedicated to improving people's lives through the discovery, development, manufacture and marketing of pharmaceuticals, nutritionals and medical products, including devices and diagnostics. From the discovery of sodium pentothal to a groundbreaking new generation of HIV protease inhibitors, Abbott scientists have played an important part in making life better for patients around the world. That tradition continues today at Abbott with over thirty compounds in preclinical development and a high success rate of advancing compounds to the clinic, with a pipeline that has been described as "an array of development efforts that are pioneering with blockbuster potential." Our commitment to health care is a commitment to top quality science and to hiring and retaining the best in scientific talent. We are investing over $1 billion in research annually to address patients' unmet medical needs in our key pharmaceutical therapeutic areas of oncology, diabetes/metabolism, immunoscience, neuroscience and infectious disease.

Abbott Metabolic Disease Research

Diabetes is a serious metabolic disorder with tremendous health and economic impact. According to the World Health Organization, worldwide cases of diabetes are expected to grow from over 150 million today to 300 million by 2025. A major contributing factor to the development of type 2 diabetes is obesity. Obesity itself is a complex disorder associated with a variety of significant health problems, such as hypertension, heart disease and cancer, and affects many more millions of people around the world.

Abbott markets several important products for the treatment of metabolic diseases, including Meridia/Reductil, TriCor, Tarka, Glucerna, Synthroid and MediSense Precision blood glucose monitoring devices. Metabolic disease is one of Abbott's key therapeutic franchise areas and to ensure a robust pipeline of innovative products, Abbott has formed a strategic alliance with Millennium Pharmaceuticals to create one of the industry's leading discovery organizations in this area. The alliance links world-class drug discovery competencies by pairing Millennium's functional genomics and target discovery efforts with Abbott's structural biology and lead generation and optimization capabilities. Our goal is to leverage the synergy in this relationship to identify and develop the leading drugs of the future for treatment of type 2 diabetes and obesity.

To fully harness the most advanced drug discovery tools and scientific discoveries, we need people who are committed to and excited by the opportunity to discover major new pharmaceutical therapeutics. Exceptional science is the foundation for breakthrough research that can improve the health of millions. Join the team!

BIOLOGY

As a member of a biology team in Abbott Metabolic Disease Research, you will have the opportunity to pursue cutting edge research and work together with your colleagues from a variety of disciplines within Abbott and at Millennium to develop drug discovery programs in obesity and diabetes. The biology teams initiate basic research programs to identify and validate drug targets in signal transduction and metabolic pathways, work with advanced technology groups to generate reagents and research tools, and design and conduct rapid throughput assays to support the drug development process in close association with pharmacology and chemistry teams. Biology team members work closely at each stage of drug discovery with advanced technology groups in genomics, bioinformatics, protein chemistry, and structural biology. State-of-the-art equipment and technologies are available to support the full range of activities in biochemistry, and molecular and cell biology that comprise the biology group effort in metabolic diseases.

We currently have three senior scientist and two associate biologist positions available for extraordinary scientists eager to have an impact on drug discovery for obesity and diabetes.

Senior Scientists - Cell/Molecular Biology (3 positions)

You will take responsibility for growing a program from drug target identification and validation through the process of developing the biochemical and cellular models needed for lead-compound identification and optimization. Your expertise in carbohydrate or lipid metabolism, nuclear hormone signal transduction, or CNS regulation of food intake and metabolism will support ongoing research and drug discovery efforts in fuel sensing and regulation of hepatic glucose output. We require an M.D. or a Ph.D. in biochemistry, cell biology or a related field, and a minimum of three years postdoctoral experience. Strong communication skills are essential. The opportunity to supervise a research group is available, depending on your level of experience. Preference will be given to individuals with significant training and accomplishment in diabetes or obesity research. You will have the opportunity to develop individual scientific and organizational/leadership

matter of life.

skills and will have access to the full range of resources necessary to develop a drug discovery program. **Ad Code: 8199HS**

Associate Cell/Molecular Biologists (2 positions)

You will join a biology team to perform discovery research in the area of biological therapeutic targets for diabetes and obesity. You must possess a B.S. or M.S., and significant research laboratory experience in cell biology, molecular biology or biochemistry. This is an opportunity to continue to grow your existing technical skills, as well as develop new ones. Strong interpersonal, record keeping and computer skills are essential, as is experience in data analysis. **Ad Code: 8051HS**

GENOMICS

The Genomics Group supporting Metabolic Disease Research is a dynamic and exciting collection of scientists who are responsible for understanding and combining biological and technological skills in bioinformatics, genomics, genetics and proteomics to discover and validate new targets in type 2 diabetes and obesity. Members of the team work hand-in-hand with the scientists in Metabolic Disease Research to develop new targets and improve the success rate of promising drug leads. We apply leading edge technologies and tools, such as RNA expression profiling and data mining, polymorphism and genetic analysis and protein expression analysis coupled with MS identification. We have a strong expertise and emphasis on bioinformatics, with access to comprehensive genetic and sequence databases and analytical and statistical tools.

Senior Scientist - Cell/Molecular Biology

You will use genomic information and bioinformatics to discover and validate new targets in type 2 diabetes and obesity. Successful candidates will possess a Ph.D. in related biological sciences and at least three years' postdoctoral experience in molecular mechanisms of metabolic disease. Experience in applying bioinformatics, microarray technology, and molecular biology to novel target identification and validation, demonstrated proficiency in current cloning and expression techniques, and fluency in sequence and RNA expression analysis tools are also essential. **Ad Code: 8907HS**

PHARMACOLOGY

The pharmacology group supporting Metabolic Disease Research at Abbott Laboratories is a cutting edge, dynamic and stimulating environment comprised of experienced *in-vivo* scientists. We provide pivotal efficacy and safety data on experimental compounds identified from an array of diabetes and obesity-related therapeutic target programs. Our facilities are state-of-the-art, including a newly designed barrier facility for evaluating relevant genetic and knockout animal models of obesity and diabetes, *in-vivo* NMR imaging applied to metabolism, MRI and Dexa analysis, Oxymax® metabolism systems, surgical suites and much more. Techniques used include icv and minipump-instrumented animals, hyperinsulinemic euglycemic clamps, radiotracer methods for measuring whole body glucose fluxes and quantification of whole body fat by MRI and NMR evaluation of gluconeogenesis by D2O analysis. These capabilities, combined with the other support groups available at Abbott and Millennium, allow us to identify and fully characterize novel and effective clinical drug candidates. We currently have two senior and six associate positions available for outstanding scientists eager to join our team of pharmacologists for a fun, challenging and rewarding career.

Group Leader/Research Investigator

The selected candidate will utilize excellent leadership and communication skills to provide leadership for directing *in-vivo* research related to the characterization of novel therapeutic agents for the treatment of obesity and type 2 diabetes. This individual will be a hands-on, innovative professional with a history of effective communication skills, as demonstrated through peer-reviewed scientific publications and presentations. A Ph.D. or M.D. with a background in pharmacology, physiology or endocrinology, and five to ten years of postgraduate experience are prerequisites. Industry experience is advantageous, and significant *in-vivo* experience in diabetes, obesity and/or lipid and carbohydrate metabolism is essential. State-of-the-art facilities, excellent colleagues and a challenging agenda will provide an optimal platform for success. **Ad Code: 1897HS**

Assistant/Associate Pharmacologists (6 positions)

Qualified candidates will be responsible for conducting pharmacological *in-vivo* experiments related to the discovery of novel therapeutic agents for the treatment of diabetes and obesity. Individuals should have a B.A., B.S. or M.S. in biology or physiology, with significant animal handling/dosing experience. Familiarity with *in-vitro* techniques including RIAs and ELISAs is also required. Excellent interpersonal, organizational and computer skills are necessary for success, and the ability to work effectively in a team environment is essential. Career growth opportunities are abundant for individuals with dedication, enthusiasm and a desire to learn. **Ad Code: 8237HS**

Abbott Laboratories offers a competitive benefits package, including outstanding health insurance, vacation, wellness and work/life policies. We have been recognized by *Money* magazine for our people programs, listed among *Working Mother* magazine's "100 Best Companies for Working Mothers," and chosen by *Fortune* magazine as one of the "Top 50 Companies for Minorities." *Fortune* has consistently named us one of "America's Most Admired Companies" for eighteen years.

For immediate consideration, please visit www.abbott.com, click "Career Center," click "Job Opportunities" and enter the appropriate ad code in the "Keyword" field.

These opportunities are located at our corporate headquarters in north suburban Chicago. Visit our website, www.abbott.com, to view career opportunities not only at our corporate headquarters, but also our research sites in Worcester, MA, Ludwigshafen, Germany, and Katsuyuama, Japan. Current openings in Oncology and Neuroscience Research will be featured in future advertisements.

An EOE, Abbott is committed to employee diversity.

ABBOTT LABORATORIES
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WAYNE STATE UNIVERSITY

Institute of Environmental Health Sciences
Assistant/Associate Professor or Professor

The Institute of Environmental Health Sciences at Wayne State University invites applications for tenure-track positions at all ranks in the area of molecular genomics, including the use of high through-put technologies, such as microarray/global gene expression analysis and polymorphism analysis, as used in research on cell signaling, cell function, gene-environment interactions and disease. The IEHS offers highly competitive start-up packages and a research-intensive environment. The Institute of Environmental Health Sciences is the home of the Environmental Health Sciences Center in Molecular and Cellular Toxicology with Human Applications (**www.ehscenter.org**) which provides cell culture, imaging and cytometry and high through-put molecular genomics facility core support.

Please send curriculum vitae and the names of three references to:

Raymond F. Novak, Ph.D.
Director, Institute of Environmental Health Sciences
2727 Second Avenue, Room 4000
Detroit, MI 48201

Wayne State University is a premier institution of higher education offering more than 350 academic programs through 14 schools and colleges to more than 31,000 students in metropolitan Detroit.

WSU is an Equal Opportunity/Affirmative Action Employer.

THE UNIVERSITY OF MAINE

Laboratory Director

Environmental Chemistry Laboratory
Senator George J. Mitchell Center for Environmental and Watershed Research

The University of Maine invites applications for this base-funded position to guide analytical research in our nationally-recognized programs in environmental chemistry. The Director will join an interdisciplinary group studying the transport, history, and impact of contaminants, tracers, nutrients, and other chemicals in the environment. The Director will have responsibility for a 9,000 sq.ft. lab with $2M of instrumentation, two clean rooms, and a staff of 10-15. Ph.D. plus experience in environmental or analytical chemistry, biochemistry, chemistry, chemical or environmental engineering, or related fields is required. Preference will be given to candidates with experience in (1) personnel and budget management, (2) lab QC/QA, and (3) several of the following types of instrumentation: GFAA, ICP-OES, ICP-MS, CV-AFS, IC, GC/MS, and HR-GC/MS. Must have excellent written and verbal communication skills, and the ability to work independently and as part of a team. See complete announcement at: www.umaine.edu/hr/jobs.

Salary commensurate with qualifications and experience. Application letter, CV, example(s) of technical writing, research funding history, and contact information for four references will be reviewed beginning March 15, 2002 and should be submitted to: Dr. Dana N. Humphrey, 5711 Boardman Hall, University of Maine, Orono, ME 04469-5711.

The University of Maine is an Equal Opportunity/Affirmative Action Employer and welcomes applications from women and minority groups.

A member of the University of Maine System

UNIVERSITY of VIRGINIA HEALTH SYSTEM

RESEARCH ASSISTANT OR ASSOCIATE
Department of Microbiology
University of Virginia

The Consortium for Cell Migration at the University of Virginia has an opening for either a Research Assistant or Research Associate to carry out projects involving the design and construction of genomic and cDNA plasmids. The successful candidate should have a M.S. or Ph.D. degree with a strong background in molecular biology, genetics and cell biology, as well as documented experience in molecular cloning. Additional experience in cell culture and biochemistry is desirable. This position is available immediately.

If interested, please submit a curriculum vitae and the names, addresses, phone numbers and email addresses of 3 references to:

Dr. Jay Fox
Department of Microbiology
University of Virginia Health System
Box 800734
Charlottesville, VA 22908

Email: jwf8x@virginia.edu
FAX: 434-982-1071

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

GLOBAL OPPORTUNITIES

The Heart Research Institute
DIRECTOR

The Board of Governors of the Heart Research Institute (HRI) wishes to appoint a new Director. The Director will be a scientist with an international reputation in an area of cardiovascular science, with demonstrated management expertise. A detailed statement about the position and the HRI can be obtained at **http://www.hri.org.au/**

The HRI, a company limited by guarantee, was established in 1987 as a financially autonomous non-profit medical research institute. The current research focus is on atherosclerosis and an international reputation for scientific excellence has been established. It has an annual expenditure of around A$5.5 million. Income is from commercial research funding, competitive grants and fund raising activities.

The Director will be considered for an academic title by the University of Sydney and if appropriate a clinical attachment at Royal Prince Alfred Hospital.

Application packages can be obtained by e-mail **johny@physiol.usyd.edu.au**. Enquiries may be directed to the **Chairman of the Governing Board (Mr Bruce Reid AM, KNO Ph: +612 9221 7488), the Chair of the Search Committee (Prof Young email above) or Prof D T Kelly AM, Acting Director (Ph: +612 9515 7885, e-mail dkelly@mail.usyd.edu.au)**. Confidential applications should be addressed to **Mr John Dixon, Edward Ford Building (A27), University of Sydney, NSW 2006, Australia** or email: **j.dixon@chs.usyd.edu.au**. Interviews will be conducted in the middle of the year.

UNIVERSITY OF DELAWARE

One of the oldest institutions of higher education in this country, the University of Delaware today combines tradition and innovation, offering students a rich heritage along with the latest in instructional and research technology. The University of Delaware is a Land-Grant, Sea-Grant, Urban-Grant & Space-Grant institution with its main campus in Newark, DE, located midway between Philadelphia and Baltimore.

Microarray Facility Coordinator

Delaware Biotechnology Institute

Seeking a Microarray Facility Coordinator to help establish a Genomics core facility for custom preparation of DNA microarrays to support a variety of research projects involving a range of species. The successful candidate must have a MS in laboratory science and two years related experience or equivalent with previous experience in microarray and other high throughput technologies. This staff member will be responsible to establish and maintain the facility, technical consulting and participation in cutting-edge research, and several levels of training for the research community. Previous experience in generation and analysis of microarray / expression profile date is desirable. Excellent leadership, communication and organizational skills are essential attributes for this position as well as the ability to work as a member of a team. Qualified candidates should send resume and names, addresses and phone numbers of three references to:

Dr. Joan Burnside, Search Chairperson,
Delaware Biotechnology Institute,
University of Delaware,
15 Innovation Way, Newark, DE 19711.
Deadline: March 31, 2002.

The UNIVERSITY OF DELAWARE is an Equal Opportunity Employer which encourages applications from Minority Group Members and Women.

Postdoctoral Position

National Institutes of Arthritis and Musculoskeletal and Skin Diseases

The National Institutes of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) of the National Institutes of Health is seeking a highly motivated candidate to fill a postdoctoral position in an interactive microarray laboratory to study the genetics and molecular biology of human population variation and disease. The successful candidate should have a PhD in human genetics, molecular biology or M.D. and an interest in gene expression profiling.

For more information on the principal technology utilized, refer to:
Nature Genetics 1999; 21:10:14
URL:
(http://www.nature.com/ng/chips_interstitial.html)

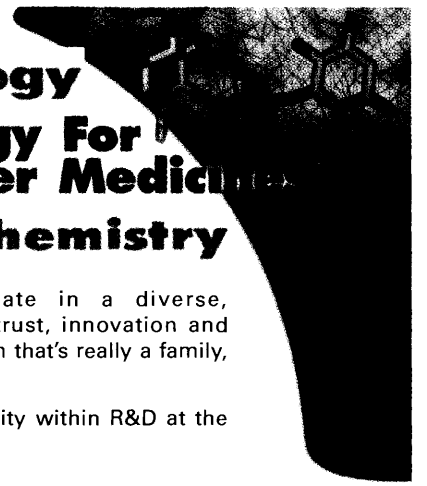
Send a curriculum vitae and research summary, and have three letters of recommendation sent to:

David Duggan, Ph.D.,
Associate Investigator, NIAMS,
National Institutes of Health,
Building 9, Room 1W-111
9000 Rockville Pike MSC 0908,
Bethesda, MD 20892-0908,
Email: David_Duggan@nih.gov

Applications must be submitted by March 7, 2002

NIH is an
Equal Opportunity Employer

NATIONAL INSTITUTES OF HEALTH



It all comes together at **Anadys Pharmaceuticals**: goals worth reaching and paths worth taking in the translation of genomic information into powerful novel antibiotic and antiviral agents. And the synergy isn't just in the science, it's in the people! Our employees take pride in project ownership and the chance to create in a diverse, non-traditional environment based on trust, innovation and collaboration. At Anadys, you'll find a team that's really a family, and a company that's really different.

We are hiring for all levels of responsibility within R&D at the following locations:

San Diego, California

- **Screening Sciences**
- **Medicinal Chemistry**
- **Regulatory Affairs**
- **Enzymology**
- **ADME PK**
- **Cell Biology & Virology**
- **Bacterial Genetics**
- **Clinical Affairs**

Heidelberg, Germany

- **Molecular & Cellular Biology**
- **Protein Biochemistry**

Come collaborate with us. To join our dynamic team please e-mail: **hc@anadyspharma.com**, or visit **www.anadyspharma.com** to learn more about our unique culture. EOE M/F/D/V

ANADYS
PHARMACEUTICALS, INC.

www.anadyspharma.com

JGI
DOE JOINT GENOME INSTITUTE

The Joint Genome Institute (JGI), established in 1997, is a consortium of scientists, engineers and support staff from the Berkeley, Livermore, and Los Alamos National Laboratories. The JGI assumed a significant role in the effort to determine the 3 billion letters ("base pairs") worth of genetic text that makes up the human genome. This international project, the largest biological undertaking in history, promises untold opportunities to understand the basic molecular foundation of life and to improve human health.

The **Genomics Division** currently has a number of exciting job opportunities available at the following levels. Individuals will be responsible for performing a variety of experiments, data collection, processing, and analysis in the Functional Genomics Group (Gene Expression, Gene Regulation, Proteomics, and Image Analysis).

- **Biologist Scientist** (PhD level)
- **Research and Senior Research Associates**
- **Biomedical Scientists**

Minimum qualifications include a BS/MS in Biology, Molecular Biology, Genetics, Biochemistry or related field or equivalent experience. The ability to work in a team environment conducting standard molecular biology experiments is essential.

For detailed information on these and other job opportunities, visit us at http://www.jgi.doe.gov/. You may also email your resume to jobs@cuba.jgi-psf.org (no attachments, please), mail it to Joint Genome Institute, 2800 Mitchell Drive, B100, Walnut Creek, CA 94598, or fax to (925) 296-5656. Reference Job # GN/JS in your cover letter. EOE

Deputy Director, Division of Extramural Activities

National Institute of Diabetes and Digestive and Kidney Diseases
National Institutes of Health

Incumbent serves as principal advisor to the Director, Division of Extramural Activities (DEA), NIDDK. S/he advises on critical issues including the development, dissemination, and implementation of extramural review and management policies for the Institute. Incumbent is the Institute's second-level staff officer for extramural review and management policy and is also responsible for coordinating a broad range of activities and functions to assure sound and efficient management of the Institute's extramural support program.

Incumbent assists and advises the DEA Director by tracking critical macro issues related to the broad field of science within the mission of the Institute. Assists in the resolution of problems of jurisdictional areas of research. Provides guidance on daily operational review and management issues and problems of the research programs. Acts in a consultative capacity to the NIDDK Division Directors involving grant administration, including those mechanisms of support, review, award, and management. Represents NIDDK both within and outside of NIH by acting as a liaison and engaging in outside activities related to NIDDK extramural activities.

Applicants must have a Ph.D. or M.D. degree and also must have demonstrated scientific leadership and a broad knowledge of the biomedical research grant process as it pertains to extramural review and administrative management policies. Total salary is competitive and will be commensurate with the experience of the selectee.

Application packages must be received by Close of Business, March 18, 2002. Please submit current curriculum vitae to the attention of:

Ms. Thomascene White
Human Resources Consultant
Office of Human Resource Management
National Institute of Diabetes and Digestive and Kidney Diseases
6707 Democracy Boulevard, Room 793
Bethesda, MD 20892-5454
Tel: 301.496.4231; Fax: 301.402.3951

POSITIONS OPEN

RESEARCH WILDLIFE BIOLOGIST, Assistant Unit Leader (GS 486-12), South Carolina Cooperative Fish and Wildlife Research Unit, Clemson University. Successful applicant is expected to maintain a productive research program, participate in the mission of graduate student education at Clemson University as a nontenured faculty member, and provide technical assistance to cooperating federal and state agencies. Minimum qualifications include a Ph.D. in wildlife biology or related field with postdoctoral experience preferred. Expertise in wildlife population dynamics; wildlife ecology; or wildlife-habitat relationships is desired, especially as applied to management challenges resulting from landscape change. The successful applicants' research program should (1) center on pursuits of challenging problems; (2) emphasize ecological aspects and applied management of wildlife populations in diverse and complex habitats and ecosystems; and (3) address issues of state, regional, national, and international significance. The successful applicant is expected to publish research findings in peer-reviewed scientific journals; transfer results to resource managers; respond to Cooperator's requests for research and technical assistance; and maintain a productive, externally funded research program with sufficient funding to recruit well-qualified graduate students and technical staff. For further information, contact: **Craig Allen; e-mail: allencr@clemson.edu**. The official job announcement and application guidelines are available at **website: http://www.usajobs.opm.gov/**.

ASSISTANT/ASSOCIATE PROFESSOR
Evolution and Functional Genomics

The School of Biological Sciences of the University of Missouri–Kansas City invites applications for a tenure-track Assistant or Associate Professor with a research interest in evolution with an emphasis in functional genomics. The successful applicant will be expected to develop an outstanding, extramurally funded research program; advise Ph.D. candidates; and participate in the School's graduate and undergraduate teaching programs. Excellent core research facilities offer capabilities for high-throughput sequencing, microarray, and proteomics analyses. Salary, laboratory facilities, and start-up funds are highly competitive. Review of applications will begin March 15, 2002, and continue until the position is filled. Applicants should forward complete curriculum vitae and research prospectus and arrange to have three letters of reference sent to:

Evolution and Functional Genomics
Search Committee
Dean's Office
School of Biological Sciences
University of Missouri–Kansas City
5007 Rockhill Road
Kansas City, MO 64110

The University of Missouri–Kansas City is an Equal Opportunity/Affirmative Action Employer.

MARINE SCIENTIST
Phytoplankton Ecology

The Dauphin Island Sea Laboratory invites applications for a faculty-level Marine Scientist position in the area of phytoplankton ecology or physiology. Specialized areas of interest include but are not limited to dynamics of harmful algae, production cycles/trophic linkages, nutrient limitation and cycling, and microscale processes. The position is expected to be filled at a rank equivalent to **ASSISTANT PROFESSOR**. Exceptional applicants may be considered at a higher rank. Applicants should send curriculum vitae, a brief statement of teaching/research interests, selected reprints, and the names and contact information (including e-mail addresses) for three references to: **Dr. William M. Graham, Chair, Marine Scientist Search Committee, Dauphin Island Sea Laboratory, 101 Bienville Boulevard, Dauphin Island, AL 36528**. Review of applications will begin March 18, 2002, and continue until the position is filled. For details, visit **website: http://www.disl.org/phytojob/**. *The DISL is an Equal Opportunity Employer/Affirmative Action/Minorities/Females/Disabled Employer. Women and minorities are strongly encouraged to apply.*

ENDOWED CHAIR
IN BIOMEDICAL ENGINEERING
University of Rochester

The University of Rochester invites applications for an endowed faculty position in the Department of Biomedical Engineering in the School of Engineering and Applied Sciences in the College. Applicants must be established Investigators with outstanding accomplishments in biomedical engineering (BME) with qualifications for appointment as **ASSOCIATE** or **FULL PROFESSOR**. Preference will be given to applicants whose research interests lie in the areas of medical imaging, biomechanics, medical optics, or vision engineering but outstanding applicants with interests in any area of BME are encouraged to apply. The successful candidate is expected to provide leadership as an independent, extramurally funded Investigator and to participate in departmental teaching programs. The University of Rochester, supported by a recent Development Award from the Whitaker Foundation, is engaged in a major enhancement of our programs including at least three other appointments in biomedical engineering (advertised separately). Review of candidates will continue until the position is filled. Applicants should send curriculum vitae, recent reprints, a statement of research interests and plans, and the names of at least four references to: **Dr. Richard E. Waugh, Chair, Faculty Search Committee, Biomedical Engineering, University of Rochester, Medical Center Box 639, 601 Elmwood Avenue, Rochester, NY 14642. Website: http://www.seas.rochester.edu/bme**.

The University of Rochester is an Equal Opportunity/Affirmative Action Employer. Applications from women and underrepresented minorities are encouraged.

ACADEMIC PROSTATE CANCER
University of Colorado Health Sciences Center
Denver, Colorado

A tenure-track position is open at the University of Colorado Health Sciences Center for a **PH.D. SCIENTIST** with a strong research focus on the study of prostate cancer. This individual will interact with groups interested in hormone biology, early diagnosis, signal transduction, and cell death in this tumor type. Excellent facilities are available for the study of this disease including proteomics, transgenic mice, and genomics. UCHSC is an NCI-designated comprehensive cancer Center with available tissue banks and data management resources. Please send curriculum vitae, statement of research interests, and the names and contact information of three references to: **Dr. Michael Glode, UCHSC Medical Oncology, 4200 East Ninth Avenue, B171, Denver, CO 80262. FAX: 303-315-8825**. Position open until filled. Review of applications begins February 15, 2002. *University of Colorado Health Science Center is committed to Equal Employment Opportunity/Affirmative Action.*

GENETICIST/ENVIRONMENTAL BIOLOGIST. Roosevelt University invites applications for a tenure-track **ASSISTANT PROFESSOR** starting in August 2002. Requires Ph.D., strong commitment to teaching, and suitable research program. Send letter, curriculum vitae, copy of graduate transcript, names of three references, statements of teaching and research interests to: **Cornelius Watson, Room 520, Biotechnology and Chemical Science Program, Roosevelt University, 430 South Michigan Avenue, Chicago, IL 60605**. For information on Roosevelt's science programs, see **website: http://www.roosevelt.edu**. Review of applications begins March 10, 2002, and will continue until position is filled. *Roosevelt University is an Affirmative Action/Equal Opportunity Employer and especially welcomes applications from female and minority candidates.*

ASSOCIATE DEAN: The Brody School of Medicine at East Carolina University seeks an Associate Dean to provide leadership for the advancement of its research and graduate educational missions. The Associate Dean reports directly to the Dean of the BSOM and, working cooperatively with the ECU Vice Chancellors for Research and Academic Affairs and Graduate Studies, represents the school in matters relating to research and graduate studies to the University of North Carolina, government agencies, private foundations, industry, the local community, and the media. He/She will oversee the activities of the Assistant Dean for Clinical Research, the Assistant Dean for Graduate Ph.D. Education, and the Assistant Dean for Research and Graduate Studies. As a senior administrator, the successful candidate will be expected to develop a long-term vision and serve as an advocate for new avenues of research and faculty development, ongoing opportunities to develop research and scholarly activity, and strategies that will enhance research initiatives within the BSOM and across the University. The Associate Dean will represent the BSOM on the ECU Research Ethics Oversight Committee to ensure compliance with federal, state, and local regulations pertaining to the integrity of the research and graduate programs. The successful candidate will have substantial autonomy to work with Senior Administrators, Department Chairs, Directors of centers of excellence, and the faculty to enhance the research and graduate educational missions of the school. The Associate Dean will hold an appropriate academic appointment with the BSOM. Candidates must possess an M.D., Ph.D., or equivalent degree and significant research experience. Administrative experience would strengthen the applicant's candidacy. Additional information about East Carolina University and the BSOM and the specific requirements for this job can be found at **websites: http://www.ecu.edu** and **http://www.ecu.edu/med** respectively. Application/nomination screening will begin on or about March 1, 2002, and will continue until the position is filled. Send curriculum vitae, statement of research and administrative experience, and the names and e-mail addresses (if available) of three professional references to: **Dr. David A. Taylor, Professor and Chair, Department of Pharmacology, Brody School of Medicine, East Carolina University, Greenville, NC 27858-4354**. *Equal Opportunity Employer.*

RESEARCH FACULTY OR POSTDOCTORAL FELLOWS
Medical Biotechnology Center
University of Maryland Biotechnology Institute

Research faculty (nontenure track) and Postdoctoral positions are available in molecular and cell biology of the heart. We seek candidates who are interested in examining calcium signals in heart cells and how they may be influenced by the cytoskeleton, kinases, or phosphatases and macromolecular complexes. Patch clamp experiments will be combined with confocal microscopy and multiphoton imaging to examine fundamental biology of the heart, defects that alter calcium signaling, and arrhythmogenesis. Send curriculum vitae and names of three references to: **W. J. Lederer, Medical Biotechnology Center, Institute of Molecular Cardiology, UMBI, 725 West Lombard Street, Baltimore, MD 21201. E-mail: lederer@umbi.umd.edu**. More information can be found at **website: http://www.umbi.umd.edu/~mbc/pages/lederer.htm**. *Equal Opportunity Employer.*

DIRECTOR
Marine Science Education Center

Provide leadership and vision to create a national center of excellence in science education. Requires strong background in marine science, science education, and administration. Ph.D. preferred. Must be experienced in obtaining grants and marketing programs. New waterfront building on University of Connecticut campus. Salary: $80,000 to $95,000 plus benefits. **Project Oceanology, Avery Point, Groton, CT 06340. Telephone: 860-445-9007** or visit **website: http://www.oceanology.org** for details.

Postdoctoral Positions in Jak/Stat and β-catenin Signaling

The Laboratory of Genetics and Physiology at the National Institute of Diabetes, Digestive and Kidney Diseases looks for two post-doctoral scientists to investigate the Jak2/Stat5 and β-catenin signaling pathways in development and disease. We use multiple established and novel approaches in the field of Mouse Genetics, Cell Biology and Bioinformatics to understand how cytokines control the specification, proliferation and differentiation of mammalian cells (Hennighausen and Robinson, *Developmental Cell*, **1**, 467; Miyoshi et al., *J Cell Biol.*, **155**, 531; Miyoshi et al., *PNAS*, **99**, 219). We are an international team with members from eight countries on three continents and our research ranks among the top 1% as established by the ISI. Former members of our laboratory hold positions in Academia, Industry and Government. For more information about our research program see http://mammary.nih.gov/lgp/lab

Contact:

Lothar Hennighausen, Ph.D.
Laboratory of Genetics and Physiology
National Institute of Diabetes, Digestive and Kidney Diseases
hennighausen@nih.gov

NIH is an Equal Opportunity Employer.

SAGE KE Editor

***SCIENCE*'s web publication for researchers in the field of aging** (Science of Aging Knowledge Environment, SAGE KE: http://sageke.sciencemag.org) **seeks a half-time editor** to organize and inspire contributions from scientists. The primary responsibilities will be to solicit and edit scientist-written pieces and to become knowledgeable on research in the field of aging. Ideally, SAGE KE would like people with a strong writing skills, because the editors will sometimes be called upon to write and edit news stories. Opportunities to cover meetings might also arise. This may be a work-from-home position.

We need a talented editor with a strong science background to augment our U.S.-based staff of three scientists-turned-writers/editors. The successful candidate will have a sense of humor, and be creative and critical, but tactful. He/she will have a broad interest in biology and good oral, as well as written, communication skills. Part of the task is to engage researchers who are interested in SAGE KE, but overextended (that is, every productive scientist). Motivation and "self-starting" abilities are a must. The job offers a competitive salary and AAAS benefits. Please send CV and cover letter to: **klamarco@mac.com** and **dgraf@aaas.org. EOE.**

School of Forestry and Wood Products, Michigan Technological University

The faculty of the School of Forestry and Wood Products invites applications for three tenure-track positions in the School. Major responsibilities for each position are teaching (54 percent), research (36 percent), and service (10 percent). Details about each position are available at http://forestry.mtu.edu.

Assistant/Associate Professor, Applied Statistics and Biometrics

Responsibilities: Teaching responsibilities would include an undergraduate course in biometrics and applied statistics, and involvement in another undergraduate and graduate course in the applicant's area of expertise. Service on graduate committees for statistical consultation is expected. Specific areas of expertise are flexible, and include modeling, spatial statistics or experimental design or other interests that complement existing programs in the School.

Qualifications: Ph.D. required at time of appointment. Degree in forestry, statistics, ecology, or related area is desirable.

Assistant/Associate Professor, Ecosystem Sciences

Responsibilities: Teaching responsibilities would include an undergraduate course, and involvement in another undergraduate and graduate course in the applicant's area of expertise. Undergraduate course offerings will include ecosystem modeling or multi-resource assessment. Specific areas of expertise are flexible, and include ecological modeling, ecophysiology, wetland ecology, plant-animal interactions or other areas that complement existing programs in the School.

Qualifications: Ph.D. required at time of appointment. Degree in ecology, forestry or related area is desirable.

Assistant/Associate Professor, Quantitative Ecology/Forest Management

Responsibilities: Minimum teaching responsibilities include a required undergraduate course and a graduate or undergraduate course in the applicant's area of expertise. Undergraduate course offerings will include a senior-level integrated resource assessment course required for all majors. Specific areas of expertise are open, but include quantitative ecology, silviculture, forest management and policy (domestic or international), or demonstrated experience preparing environmental impact statements.

Qualifications: Ph.D. required at time of appointment. Degree in forestry, ecology, or related area is desirable.

Appointment Terms: These are nine-month, tenure-track positions at the Assistant Professor level, with appointment to begin in August, 2002. For candidates with exceptional credentials, appointment at the Associate level will be considered. Salary will be commensurate with qualifications and experience.

For each position, participation with collaborative research teams is expected, and international experience would be beneficial. Development of an externally funded research program involving Master's and Doctoral students is expected. We are seeking outstanding candidates who will complement current faculty interests, participate in the development of applied forestry and environmental resource management curricula, contribute to further development of the relationship between the School and the North Central Research Station of the U.S. Forest Service (which has recently increased the number of ecosystem scientists on its research staff), and participate in the formation of an anticipated Center for Ecosystem Science.

The School of Forestry and Wood Products has active and productive programs of education and research. We have excellent undergraduate degree-granting programs in Forestry, Applied Ecology and Environmental Sciences, and graduate programs in Forestry (M.S.), Forest Science (Ph.D.), and Forest Biotechnology and Molecular Genetics (Ph.D.). The School has just completed an additional fifty-thousand-square-foot teaching and research facility, and has modern laboratory equipment, including advanced capabilities in molecular biology and the use of stable isotopes. We are a high-quality, strongly focused public science and engineering university that enrolls sixty-five hundred students. Michigan Tech is located near some of the most spectacular natural areas in the eastern United States and boasts exceptional outdoor recreational opportunities. (http://forestry.mtu.edu)

Application Procedure: Send cover letter, curriculum vitae, copies of transcripts, names of three (3) references (with addresses and telephone numbers), one-page statements of research interests and teaching philosophy, as well as selected reprints, to the committee of your interest:

Applied Statistics and Biometrics Search Committee, Chair: Dr. Ann L. MacLean
Ecosystem Sciences Search Committee, Chair: Dr. Andrew J. Storer
Quantitative Ecologist/Forest Management Search Committee, Chair: Dr. David F. Karnosky
School of Forestry and Wood Products, Michigan Technological University, 1400 Townsend Drive, Houghton, Michigan 49931-1295.

Individuals interested in being considered for more than one position should send separate materials for each position. Review of applications will begin March 8, 2002, and will continue until appropriate candidates are chosen.

Michigan Technological University is an Equal Opportunity Education Institution/ Equal Opportunity Employer.

DIRECTOR OF THE ANIMAL RESOURCES CENTER

The University of Chicago searches for an academically oriented individual to direct as a faculty a dynamic and growing animal resource program at a major research institution.

The individual should have experience in the management of an animal resource facility and be familiar with the standards of AAALAC accreditation and regulatory compliance issues.

Candidates must have a D.V.M. or equivalent degree from an AVMA-accredited institution and Board certification in laboratory animal medicine (ACLAM). The Director will participate in teaching and/or training and will be expected to develop new programs for faculty and institutional development. The University's research programs include sponsored projects of $268 million annually with approximately 500 animal research protocols. The Center is responsible for the care and housing of laboratory animals used at the University. Animal facilities encompass 110,000 square feet with a census of approximately 25,000 animals. Salary and level of academic appointment will be commensurate with experience and qualifications. Interested candidates should submit curriculum vitae, letter of interest, and three references to: **Ms. Marquetta Woods, c/o The Academic Search Committee, 5841 South Maryland Avenue, MC 1000, Chicago, IL 60637-1463**. *The University of Chicago is an Equal Opportunity/Affirmative Action Employer. Underrepresented minorities and women are encouraged to apply.*

FACULTY POSITION
University of Pennsylvania

The Microbiology Department in the School of Dental Medicine is seeking an outstanding Scientist for a tenure-track faculty position at the **ASSISTANT/ASSOCIATE PROFESSOR** level. The successful candidate is expected to develop a high-quality, independent research program in basic viral or bacterial pathogenesis and/or immunological aspects of microbial diseases funded by extramural support. We are particularly interested in candidates with a strong background in mammalian cell biology. Preference will be given to an established Investigator with an ongoing research program. Appointment at the Assistant Professor level requires a strong record of research productivity, funding, and excellence in teaching. The candidate is expected to teach modern aspects of microbiology to dental students, establish a vigorous research program, interact with faculty at the University of Pennsylvania, and be involved in graduate student training. The candidate must have either a Ph.D., D.M.D., or M.D. and extensive postdoctoral training. Curriculum vitae, three letters of recommendation, a statement of research interests, and pertinent publications should be sent to: **Dr. Gary H. Cohen, Professor and Chair, Department of Microbiology, School of Dental Medicine, University of Pennsylvania, 4010 Locust Street, Philadelphia, PA 19104**. *PENN is an Equal Opportunity/Affirmative Action Employer. Females and minorities are encouraged to apply.*

ASSISTANT/ASSOCIATE PROFESSOR (Tenure Track)
Cell and Developmental Biology

Required qualifications: Ph.D. or equivalent degree in biological/biomedical sciences or related field, postdoctoral experience, research background in cell/developmental biology, ability to teach a development course in the professional curriculum, must have or will have extramural funding. Excellent aquatic and laboratory animal facilities. Salary and rank will be commensurate with qualifications including start-up package. Application deadline is March 12, 2002, or until candidate is selected. Submit letter of application and résumé to: **Gary E. Wise, Ph.D., Comparative Biomedical Sciences, School of Veterinary Medicine, Louisiana State University, Reference Number 014396, Baton Rouge, LA 70803. Telephone: 225-578-9889**. *LSU is an Equal Opportunity/Equal Access Employer.*

POSITIONS OPEN

TENURE-TRACK POSITION BIOLOGY
The Claremont Colleges

Claremont McKenna, Pitzer, and Scripps Colleges seek a broadly trained Ecologist for a tenure-track position. Appointment will be made at the **ASSISTANT PROFESSOR** level to begin July 2002. Teaching responsibilities may include participation in the introductory biology sequence, teaching a course for nonscience majors, and offering an advanced undergraduate course in field ecology. Possible additional areas of interest include invertebrate and/or marine biology. We have a strong preference for expertise in higher-level processes such as population, community, conservation, or ecosystem ecology. The successful candidate will be expected to sustain an active research program involving undergraduates. A Ph.D. degree, prior teaching experience, and a record of scholarly publication are required. Postdoctoral experience is preferred.

The Biology program is part of the Joint Science Department (**website: http://www.jsd.claremont.edu**), an interdisciplinary department that serves three selective liberal arts colleges in the Claremont Colleges consortium. The faculty consists of 11 Biologists, seven Chemists, and four Physicists. The Department offers major programs in these fields as well as various interdisciplinary topics.

Send curriculum vitae and statements outlining teaching interests and philosophy and research interests to: **Ecology Search Committee, W.M. Keck Science Center, 925 North Mills Avenue, Claremont, CA 91711**. Arrange to have three letters of recommendation sent to the same address. Questions may be addressed to: **Professor Emil Morhardt; e-mail: emorhardt@jsd.claremont.edu**. Review of applications will begin March 25, 2002, and continue until the position is filled.

In a continuing effort to enrich our academic environment and provide Equal Educational and Employment Opportunities, The Claremont Colleges actively encourage applications from women and members of historically underrepresented groups in higher education.

The Department of Clinical Pathology at The Cleveland Clinic Foundation has an immediate opening for a **PROJECT STAFF SCIENTIST** in the Molecular Diagnostics Laboratory. The laboratory is rapidly growing and is well equipped with state-of-the-art equipment such as ABI 3100 genetic analyzer, LightCycler, and automated FISH and ISH stainers and workstations. Responsibilities include modifications and development of new assays in the area of molecular pathology. Preference will be given to individuals with expertise in the use of automated instrumentation for molecular analysis and technical expertise in PCR and FISH. Minimum requirements include a Ph.D. degree in a relevant biomedical discipline or Pathologists who have completed a pathology residency. Applicants should submit their curriculum vitae, a cover letter describing their research interests, and the names of three references to: **Dr. Raymond Tubbs, Chairman, Department of Clinical Pathology/L11, Cleveland Clinic Foundation, 9500 Euclid Avenue, Cleveland, OH 44195**.

FACULTY POSITION IN ANATOMY

Mercer University School of Medicine announces a fully funded, tenure-track position in gross anatomy. The successful candidate will be involved in problem-based teaching; will assist in gross anatomy laboraory instruction; and will be expected to develop an independent, competitive research program. The applicant must possess a Ph.D. and/or an M.D. degree with postdoctoral training. Faculty rank will be commensurate with experience. Applications will be accepted until the position is filled. Submit curriculum vitae, statement of career goals and objectives, and names of three references to: **Robert J. Moon, Ph.D., Chairman, Division of Basic Medical Sciences, Mercer University School of Medicine, 1550 College Street, Macon, GA 31207**. *Affirmative Action/Equal Opportunity Employer/Americans With Disabilities Act.*

POSITIONS OPEN

ASSISTANT, ASSOCIATE, or **FULL PROFESSOR** of engineering, Penn State: The Pennsylvania State University invites applications for tenure-track positions in its new Department of Bioengineering at its University Park campus. Through the generosity of the Whitaker Foundation, Penn State has expanded its longstanding graduate program into a full-fledged Department of Bioengineering that offers a new undergraduate major leading to the B.S. degree in bioengineering. The new major consists of a core curriculum of bioengineering courses and specialized instruction in the areas of tissue and cellular engineering, biotransport, bioinstrumentation and devices, medical imaging, biomaterials, and biomechanics. Bioengineering at Penn State has a 30-year history of multidisciplinary graduate training and the new Department has a solid foundation to promote faculty growth and development. Stimulating and productive interactions between engineering and life science faculty are abundant and revolve around well-supported research programs in Penn State's Materials Research Laboratory, Center for Locomotion Studies, Center for Ultrasound Transducer Engineering, Life Science Consortium, and the Institute for Biomedical Engineering at the Milton S. Hershey Medical Center. For more details, visit our department at **website: http://bioeng.psu.edu**. Applicants should have a Ph.D. in bioengineering or a related field with an emphasis on engineering applications to the life sciences. Preference will be given to applicants with research interests in BioMems, micro/nanotechnology, medical imaging, and tissue engineering. Send curriculum vitae; statement of research and teaching objectives; and names of three references by April 1, 2002, to: **Dr. Herbert H. Lipowsky, Professor and Chairman, Department of Bioengineering, Penn State University, Position Number: S–12625, 205 Hallowell Building, University Park, PA 16802**. *Affirmative Action/Equal Opportunity Employer.*

RESEARCH STAFF SCIENTIST
Shriners Hospitals for Children, Tampa

The Center for Research in Skeletal Development and Pediatric Orthopaedics has an opening for a Research Scientist at the **ASSISTANT** or **ASSOCIATE INVESTIGATOR** level to develop a program in the area of bone formation and remodeling relevant to the Shrine Mission **website: http://www.shriner-shq.org/index.html**. Applicants must have a Ph.D. or M.D., postdoctoral experience, excellent communication skills, and the ability to maintain an independent research program. Rank and salary will be commensurate with accomplishments. Generous laboratory space and start-up funds for equipment, supplies, and personnel as well as access to core facilities are provided. The Center is part of the Shriners Hospitals for Children, Tampa and is located adjacent to the College of Medicine on the campus of the University of South Florida, the Hospital's affiliated University.

Applicants should submit a description of their research accomplishments and interests, copy of their curriculum vitae, and contact information for three references to: **John R. Hassell, Ph.D., Director of Research, Shriners Hospitals for Children, 12502 North Pine Drive, Tampa, FL 33612**. To ensure full consideration, applications should be received by March 1, 2002. *Equal Opportunity Employer/alcohol/drug-free workplace.*

The California Academy of Sciences seeks an outstanding Ornithologist or Mammalogist to fill the position of **ASSISTANT** or **ASSOCIATE CURATOR** and **DEPARTMENT CHAIR** in the Ornithology and Mammalogy Department. This is a full-time, regular faculty position on a 10-month annual basis. The successful applicant will pursue a research program in systematic biology that is specimen- and field-based. Teaching opportunities including graduate student mentorships are possible. The successful candidate should be a leader in scientific research and in the communication of science to the public and have a desire to participate in the training of students. To view the entire job description, please visit **website: http://www.calacademy.org/humanresources/Jobs/curator_o&m.htm**.

POSTDOCTORAL FELLOWSHIPS IN MOLECULAR AND CELL BIOLOGY AT THE NIH

Postdoctoral Fellowships are available in the Genetics and Biochemistry Branch, NIDDK, NIH. The Branch is similar to a small academic department and has excellent laboratory facilities. The intramural program of the NIH offers an outstanding research environment. The Branch is located on the main intramural campus of the NIH in Bethesda, Maryland, a 20-minute ride from Washington, D.C. Applications are invited from individuals of the highest caliber with Ph.D., M.D., or M.D., Ph.D. degrees. Physicians may participate in either the NIH Interinstitute Endocrine or the NIH Interinstitute Medical Genetics Training Programs. NIH is an equal opportunity employer. Current research interests of the staff include:

Membrane protein biogenesis. We are currently using a combination of biochemical and genetic approaches to investigate the targeting, membrane integration, assembly, and trafficking of multi-spanning membrane proteins in model systems such as bacteria and yeast. See Cell (1997) 88: 187, Proc. Nat. Acad. Sci. (2001) 98: 3471, EMBO J. (2001) 20: 6724, and J. Bacteriol. (2001) 183: 2187. **(Harris Bernstein harris_bernstein@nih.gov)**

Biochemistry and molecular biology of homologous recombination in eukaryotes and prokaryotes. Current interests include mouse meiosis (Mol. Cell (2000) 6:975), DNA damage and repair (Genes and Dev. (2001) 15: 415), the structure of recombination proteins and their reaction intermediates (J. Mol. Biol. (2000) 299:629; J. Mol. Biol. (2000) 303:709), and novel approaches to gene therapy (including the use of small molecules that promote gene targeting and silencing, such as miniRecAs (Science (1996) 272:868)). Approaches used include protein and peptide biochemistry, mouse knock-outs, chromosome immunolocalization, structural biology, gene microarrays, proteomics, and biophysical approaches. **(Dan Camerini-Otero)**

Molecular mechanisms of DNA repair and homologous recombination. Current efforts focus on structure-function studies of multi-protein-DNA complexes involved in DNA mismatch repair and homologous recombination in bacteria and eukaryotes [Nature (2000) 407:703; J. Biol. Chem. (2001) 276:28291; J. Biol. Chem. (2001) 276:45505]. **(Peggy Hsieh ph52x@nih.gov)**

Molecular mechanisms of orphan nuclear transcription factors. Currently, investigations include transgenic and gene-targeted mouse models. Techniques employ proteomics and gene microarrays and using the Nurr1-null mice deficient in neurotransmitter dopamine and in vitro primary brain cultures. Background in neuroscience is preferable. [Current Genomics (2000) 1:135; Mol. Brain Res. (2000) 84:67; J. of Neuroscience Res. (2001) 64:322]. **(Vera Nikodem veran@intra.niddk.nih.gov)**

The molecular mechanisms facilitating pre-rRNA processing using Xenopus oocytes and yeast as model systems. We are identifying CIS-acting elements (conserved structures or sequences) essential for accurate processing of pre-rRNA in yeast (RNA (1998) 4:1610; NAR (2001) 29:2106). In vivo and in vitro biochemical assays are being used to identify and characterize trans-acting protein factors essential for efficient processing (MCB (1997) 17:3702; JBC (1999) 274:35914; RNA (2001) 7:207-219). Identification of RNA:RNA and RNA:protein interactions facilitating the early steps of pre-rRNA processing will help elucidate the mechanisms regulating ribosome biogenesis in eukaryotes. **(Brenda Peculis, bp51h@nih.gov)**

Interested candidates should send a letter stating their interests, their curriculum vitae and list of publications, and arrange to have letters from three references sent to one of the investigators above or to **Dr. R. Daniel Camerini-Otero (camerini@ncifcrf.gov), Chief, Genetics and Biochemistry Branch, Genetics and Biochemistry Branch, 10 Center Drive, MSC 1810, Building 10, Room 9D-20, National Institutes of Health, Bethesda, Maryland 20892.**

McGill University
Department of Psychology
Assistant or Junior Associate Professor Position in Quantitative Psychology

The Department of Psychology of McGill University invites applications for a tenure-track position at the Assistant or junior Associate Professor level in Quantitative Psychology. The position may be in any area of quantitative psychology (mathematical models, psychometrics or statistics) but candidates involved in the development of data analysis techniques appropriate to behavioural or neural science are particularly encouraged to apply. Applicants at the Assistant Professor level should present early evidence of the ability to establish a record of significant externally funded research productivity, and applicants at the Associate Professor level should have such a record. Applicants are expected to have a doctorate in psychology or a closely related field at the time of appointment. All applicants are expected to have an aptitude for undergraduate and graduate teaching. Review of applications will begin March 1, 2002 and continue until suitable candidates have been identified. Candidates should submit a curriculum vitae, a description of research interests and academic goals, a description of their teaching interests, experience and philosophy, and some selected reprints of publications. They should also arrange for three confidential letters of recommendation to be sent to:

Chair, Quantitative Psychology Search Committee
Department of Psychology
McGill University
1205 Dr. Penfield Avenue
Montreal, Quebec, Canada H3A 1B1.

All qualified candidates are encouraged to apply, however Canadians and permanent residents will be given priority.

DIRECTOR OF SCIENCE AND TECHNOLOGY

The Office of Naval Research (ONR) is seeking an outstanding individual to serve in this Civil Service position in the Senior Executive Service (SES). Salary is $138,200 per year. In addition to salary, career SES appointees are eligible to compete for performance awards and bonuses. Filling of this position is subject to position allocation availability.

The Director of Science & Technology (DS&T) of the Office of Naval Research (ONR) is the senior civilian manager in ONR. The mission of ONR is to plan and manage all Science and Technology (S&T) for the Department of the Navy (DON). This responsibility includes all DON basic research (category 6.1 funds), exploratory development (category 6.2 funds), and advanced technology development (category 6.3A funds. The incumbent reports directly to the Chief of Naval Research (CNR) and provides executive, technical, and scientific direction to ONR in the performance of its mission.

The CNR will normally delegate to the DS&T broad responsibilities for overall direction of the DON S&T program. Specifically, in support of, and in conjunction with the CNR, the incumbent: exercises line management over ONR S&T departments to plan, foster, and maintain a quality S&T program supporting Navy and Marine Corps needs, recommends to the CNR, after consultation with ONR leadership, financial and programmatic investment plans for the DON S&T program, exercises authority to speak and act for the CNR in S&T matters not required by regulation to be performed by a military officer, and provides a basis for stable policy during rotation of the CNR, serves as the direct representative of the CNR to the highest organizational levels in the Department of Defense (DOD) and DON, serves as the direct representative of the CNR to the highest organizational levels of other branches of government and with the civilian community, including national and international technical societies, the National Academies of Science and Engineering, and the National Institutes for Medicine, and provides continuity and corporate memory for long-term commitment, policies, practices, and processes.

For detailed information on qualifications and how to apply, applicants may download a copy of Announcement # ONR-02-0002-NR from the ONR web site http://www.onr.navy.mil/hr. Applications must be in the HUMAN RESOURCES SERVICE CENTER – NORTHEAST by close of business 29 March 2002.

ONR IS AN EQUAL EMPLOYMENT OPPORTUNITY EMPLOYER
AND PROMOTES DIVERSITY IN THE WORKPLACE.
WOMEN AND MINORITIES ARE ENCOURAGED TO APPLY

ASSOCIATE PROFESSOR OF IMMUNOLOGY
Department of Microbiology and Immunology
Medical College of Ohio

Applications are invited for a 12-month, tenured/tenure-track faculty position. Applicants must have an independent, extramurally funded research program in an area of immunology such as immune response to microbial infection. In addition to teaching medical and graduate students, the successful candidate will be expected to participate in existing bacterial and fungal pathogenesis programs within the Department.

The Department is in a growth phase and there is the potential for the successful candidate to concurrently or subsequently recruit a second faculty position to support the development of immunology. MCO is a state school with a modern campus. To learn more about the Department and MCO, visit our **website: http://www.mco.edu**. Applicants should submit a statement of research goals with representative reprints, curriculum vitae, and the names of five references to: **Garry T. Cole, Ph.D., Chair, Department of Microbiology and Immunology, Medical College of Ohio, 3055 Arlington Avenue, Toledo, OH 43614-5806**. Applications should be received by March 15, 2002, although the search will continue until the position is filled. *Affirmative Action/Equal Opportunity Employer.*

ASSISTANT OR ASSOCIATE PROFESSOR BIOLOGY
Fall 2002 (New Search, Tenure Track)
The College of Arts and Sciences
Adelphi University

The Department seeks an Ecologist and Environmentalist with expertise in one or more of the following: biostatistics, population dynamics, computer modeling. Duties include teaching at the undergraduate and Master's level in ecology and related areas of specialty and establishment of a strong research program including significant field-based investigation. The successful candidate will have a strong record of scholarship and evidence of excellence in teaching. Interest in administration of our growing cross-disciplinary programs in environmental studies is desirable. Please submit curriculum vitae, a statement of accomplishments addressing the above criteria, and names of three references to: **Dr. J. Dooley, Chair, Biology Department, Adelphi University, Garden City, NY 11530**. For additional information about Adelphi University, please visit our **website: http://www.adelphi.edu.** *Adelphi University is an Affirmative Action/Equal Opportunity Employer. Adelphi University is committed to building a diverse faculty and strongly encourages applications from minority and women candidates.*

RESEARCH POSITIONS
Cell Motility/Retinal Cell Biology

Effective April 1, 2002, three full-time positions are available in the **SPECIALIST** series (minimum salary: $45,048 commensurate with experience). Requirements: Ph.D. plus postdoctoral experience in cell and molecular biology and/or protein biochemistry; experience with cell motility or retinal cell biology advantageous. Research into functions of myosin III A and B in vertebrate photoreceptors. Projects include transgenic expression studies in photoreceptors and heterologous cell lines *in vitro* and in *Xenopus* photoreceptors *in vivo*, morpholino gene knockdown experiments in Zebrafish, analysis of protein-protein interactions using expressed and native proteins, expression and localization of GFP-tagged components of myosin IIIA and B, enzyme activity and motility assays. For more details, see our **website: http://mcb.berkeley.edu/labs/burnside/index.html**.

Please send curriculum vitae and three letters of reference by March 20, 2002, to: **Dr. Beth Burnside, Department of Molecular and Cell biology, 335 LSA–3200, University of California, Berkeley, CA 94720. E-mail: burnside@socrates.berkeley.edu**.

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

POSITIONS OPEN

FACULTY POSITION
Estuarine/Coastal Ecology

The College of Oceanic and Atmospheric Sciences (COAS) at Oregon State University announces the availability of a tenure-track faculty position in estuarine/coastal ecology at the **ASSISTANT PROFESSOR** level. COAS is one of the leading oceanographic graduate research institutions in the country with more than 200 faculty and staff and a wide variety of assets including state-of-the-art analytical laboratories, an excellent computing infrastructure, modern coastal facilities at the Hatfield Marine Science Center (HMSC), and two research vessels. In addition to its science curriculum, COAS is home to the widely regarded Marine Resource Management program. The appointee will be expected to develop and maintain a vigorous, externally funded research program; to interact with faculty colleagues on the Corvallis campus and at the HMSC; to advise and mentor graduate students; and to participate in the teaching program of COAS. Essential qualifications include a Ph.D. in marine ecology, oceanography, or a closely related field; a record of significant and exciting research; and the clear potential to attract external funding. Applicants should have a strong background in estuarine or coastal ecology. Research interests may include but are not limited to the ecology of benthic-pelagic interactions, submerged aquatic vegetation, eutrophication, invasive species, larval recruitment, and biogeochemical cycling. It is desirable that candidates conduct or show an interest in developing field-based research on local or regional ecological issues.

Applications should consist of a letter of interest referencing Position 005-514, detailed curriculum vitae that includes a list of publications, a description of current and future research interests, and the names and addresses of at least four references sent to: **Mark R. Abbott, Dean, College of Oceanic and Atmospheric Sciences, Oregon State University, 104 Ocean Administration Building, Corvallis, OR 97331-5503**. For full consideration, complete applications must arrive by 12 April 2002. Inquiries about the position may be directed to: **Dr. Rob Wheatcroft; Telephone: 541-737-3891; e-mail: raw@coas.oregonstate.edu; FAX: 541-737-2064**. Consult the College **website: http://www.coas.oregonstate.edu**. *Oregon State University is an Affirmative Action/Equal Opportunity Employer.*

ASSISTANT PROFESSOR
Physiology of Marine Animals

The Department of Biological Sciences at the University of Rhode Island requests applications for a new position in physiology of marine animals. Teaching responsibilities will include human physiology, courses in animal physiology, and upper-division and graduate specialty classes with a marine focus. Ph.D. in biological sciences or related discipline by August 2002 required. Postdoctoral and teaching experience preferred. Must demonstrate (by academic record and letters of recommendation) the academic background to teach undergraduate and graduate courses in animal and human physiology and area of specialization. Must demonstrate (by academic record and letters of recommendation) the background or potential to be an effective teacher of large classes in this area. Demonstrated ability to communicate and interact well with others required. Must demonstrate (through publications, letters of recommendation, and research plan) the ability to develop a high-quality, externally fundable research program in marine animal physiology. A comparative or evolutionary approach preferred. This is a full-time, academic-year, tenure-track position beginning fall 2002. For more information about the Department, please visit our **website: http://www.uri.edu/artsci/bio**. Review of applications will begin March 1, 2002. Submit curriculum vitae; copies of up to three published papers; statements of research plans and teaching philosophy; and three letters of recommendation by March 11, 2002, to: **J. Stanley Cobb, Search Committee Chair, (Log Number SM021438), University of Rhode Island, P.O. Box G, Kingston, RI 02881**. *The University of Rhode Island is an Affirmative Action/Equal Employment Opportunity Employer and values diversity.*

POSITIONS OPEN

ASSISTANT PROFESSOR of biological sciences. A full-time, tenure-track faculty position is available August 2002 in the Department of Biological Sciences, St. Mary's University, San Antonio, Texas. St. Mary's is a private school of 4,000 students, founded in 1852 and operated by the Catholic order of The Society of Mary. The Department of Biological Sciences specializes in the undergraduate education of students pursuing careers in the health professions, especially medicine. The successful candidate will be required to have an earned Ph.D. and postdoctoral research experience in the life sciences (the specific area of specialization is open), to teach courses in introductory biology for majors and nonmajors, to develop upper-division courses, and to participate in grant application (through which release time can be obtained to conduct research involving undergraduates). Important factors are a strong commitment to teaching, advising students, and aiding in their professional development. Applicants should submit a letter of application, complete curriculum vitae, typical publications, undergraduate and graduate transcripts, and have letters of recommendation sent by three former supervisors to: **Dr. Rosemarie Wahl, Chair, Department of Biological Sciences, St. Mary's University, One Camino Santa Maria, San Antonio, TX 78228-8511**. Application deadline: March 15, 2002. *All qualified candidates are welcome; minorities and women are encouraged to apply.*

ASSISTANT PROFESSOR/ASSOCIATE PROFESSOR. The Hormel Institute, a biomedical research center of the University of Minnesota, invites applications for a faculty appointment at the level of Assistant or Associate Professor. Qualifications: Candidates must demonstrate the ability to establish an independent, extramurally funded research program of biomedical relevance that will complement ongoing programs. Preference will be given to applicants with a strong background in molecular/cell biology and a successful research record in one of the following areas: signal transduction, gene expression, functional genomics, molecular carcinogenesis, chemoprevention, or the regulation of membrane-dependent cellular processes. A Ph.D. (or equivalent) degree and two to three years of postdoctoral experience are required. Individuals with additional research experience and with excellent organizational, supervisory, and communication skills are desired. Please submit curriculum vitae; a research plan; and the names of three references no later than April 2, 2002 (or until the position is filled), to: **Dr. Zigang Dong, The Hormel Institute, 801 16th Avenue N.E., Austin, MN 55912. E-mail: personnel@hi.umn.edu**. *The University of Minnesota is committed to the policy that all persons shall have Equal Access to its programs, facilities, and employment without regard to race, color, creed, religion, national origin, sex, age, marital status, disability, public assistance status, veteran status, or sexual orientation.*

RESEARCH ASSOCIATE POSITION: Department of Physiology, The Brody School of Medicine at East Carolina University. Postdoctoral fellow sought to work on NIH-funded grant investigating the role of endothelin on extracellular matrix in cardiovascular disease. Doctoral degree in a biomedical field reqired. Ideal candidate will have experience in cell culture and molecular biology techniques and will have a working knowledge of cytokin signaling mechanisms.

Position is available beginning March 1, 2002. Review of applications will begin immediately and continue until position is filled. Interested applicants should forward curriculum vitae, a summary of research experiences and goals, and the names of at least two individuals willing to submit letters of reference to: **Laxmansa Katwa, Ph.D., Department of Physiology, The Brody School of Medicine at East Carolina University, Brody Medical Sciences Building, Room 6N98, 600 Moye Boulevard, Greenville, NC 27858-4354. FAX: 252-816-3460; e-mail: katwal@mail.ecu.edu**. *East Carolina University is a member of the University of North Carolina system and is an Equal Opportunity/Affirmative Action Employer.*

Director, National Institute of Drug Abuse (NIDA)
National Institutes of Health (NIH)

THE POSITION: The NIH is seeking exceptional candidates for the position of Director, NIDA. The Director provides leadership and direction to the national research program on the health aspects of drug abuse and addiction. Through NIDA's intramural laboratories and the extramural scientific community, the Institute addresses the most fundamental and essential questions about drug abuse, ranging from its causes and consequences to its prevention and treatment. The NIDA has a FY 2002 budget of approximately $900 million and a staff of approximately 425 to support the Institute's efforts.

The Director develops Institute goals, priorities, policies, and program activities, and keeps the Director, NIH, abreast of developments and needs of the categorical diseases of the Institute as they relate to the overall mission of the NIH and identifies needs for new or amended NIH-wide policies, procedures and practices. The Director, NIDA, maintains liaison and/or fosters collaborations with other government research programs, private foundations, universities and private research institutes, scientific societies, voluntary health agencies, and international health and research organizations with interest in the categorical disorders of the Institute.

In addition to the leadership and managerial/administrative responsibilities described, the incumbent may carry out his/her own research program. Resources commensurate with the proposed program will be provided.

THE CHALLENGE: NIDA was established in 1974 and supports more than 85 percent of the world's research on the health aspects of drug abuse and addiction, both legal and illegal. NIDA also has a comprehensive program on the medical health and developmental consequences of drug abuse, the effects of drug use on other diseases such as hepatitis C and tuberculosis, and the multidisciplinary aspects of HIV/AIDS. This position offers a unique opportunity for the right individual to provide strong and visionary leadership to an organization dedicated to providing 1) strategic support and conduct of research across a broad range of disciplines; and 2) ensure the rapid and effective dissemination and use of the results of that research to significantly improve drug abuse and addiction prevention, treatment, and policy.

Inherent in this challenge is the greater need to increase our knowledge of drug abuse. Investigation of changing patterns of drug use, the continuing transmission of HIV infection among drug abusers, and the need to develop new and effective treatment and prevention interventions underscore the importance of research in finding new and better ways to alleviate the pain and devastation of addiction. These investigations are conducted in hundreds of extramural laboratories and clinics throughout the United States and in the NIDA's own intramural facilities in Baltimore, Maryland.

THE QUALIFICATIONS REQUIRED: Applicants must possess an M.D. and/or Ph.D. degree and senior-level research experience and knowledge of research programs in one or more scientific areas related to the fundamental chemical and behavioral aspects of abuse and addiction. They should be known and respected within their profession, both nationally and internationally, as individuals of outstanding scientific competence. Candidates should have demonstrated leadership of a research program involving dealings with outside groups and extensive planning, program assessment, and analysis of program objectives; the development of plans for the resolution of major operational problems and issues; and management of financial and human resources, including selecting, managing, and motivating staff using fair and equitable staffing/recruitment practices.

SALARY/BENEFITS: The Director, NIDA, will be appointed at a salary commensurate with his/her qualifications and experience. Full Federal benefits, including leave, health and life insurance, retirement and savings plan (401K equivalent) will be provided.

HOW TO APPLY: Applicants must submit a current Curriculum Vitae, and bibliography to: Ms. Helen Lee, Division of Senior and Scientific Employment, National Institutes of Health, Building 31, Room B3C08, 31 Center Drive MSC2203, Bethesda, MD 20892-2203. Applications may also be sent via E-Mail to: HL75r@nih.gov

APPLICATIONS MUST BE RECEIVED BY CLOSE-OF-BUSINESS APRIL 8, 2002

NIH IS AN EQUAL OPPORTUNITY EMPLOYER

National Institute of Neurological Disorders and Stroke

Tenured or Tenure-Track Scientist
Synaptic Physiology
NINDS, NIH

The Intramural Research Program at NINDS invites applications to fill a faculty position at the tenure-track or tenured level. We seek a creative, interactive scientist to establish or continue an independent research program studying CNS synaptic physiology. Although candidates studying all aspects of neurophysiology will be considered, a focus on synaptic transmission and plasticity in the mammalian CNS is particularly desirable. A PhD and at least four years postdoctoral experience are required; established productivity as an independent investigator is preferred. The successful candidate will join a diverse, collegial group of investigators at NIH comprising researchers from ten different institutes (see **www.neuroscience.nih.gov**). The position includes salary, a highly competitive start-up package, resources to hire at least two postdoctoral fellows and a technician, and a generous annual operating budget to support an ambitious research program. Candidates with substantial experience as an independent investigator may be placed on an accelerated tenure track or hired with tenure and will receive additional research resources appropriate for their career stage.

Applicants should send curriculum vitae including bibliography, statement of research interests and the names of three references to: **Story Landis, PhD, NINDS, NIH, 36 Convent Drive, MSC 4150 36/5A05, Bethesda, MD 20892**. Applications must be postmarked by March 30, 2002.

NIH is an Equal Opportunity Employer.

OHIO UNIVERSITY 1804

Faculty Position

Edison Biotechnology Institute/Department of Chemistry and Biochemistry

The Edison Biotechnology Institute (**http://www.ohiou.edu/biotech/**) and the Department of Chemistry and Biochemistry (**http://main.chem.ohiou.edu/**) at Ohio University invite applications to join a unique and growing interdisciplinary research environment. We seek an outstanding, innovative and creative scientist who utilizes modern tools and approaches to investigate genetically based human health issues. Our current strengths are in molecular, cellular, endocrine and developmental biology emphasizing gene discovery and functional genomics using transgenic and gene disruption technology. The successful candidate must be capable of maintaining a vigorous, creative, and independent, externally funded research program.

The Institute has a strong commitment to excellence in research, scholarship, and teaching of graduate and undergraduate students. A blend of both academic and industrial collaborations, a focus on entrepreneurship and the development of new technologies combined with a modern facility make this a unique research opportunity.

Applicants must have a Ph.D. or M.D., a significant history of publication and funding, and exhibit interpersonal skills that will build cooperation across departments and organizations. The position, which may be filled at any professional rank, is a joint appointment between the units and is tenurable in the Department of Chemistry and Biochemistry where the successful candidate will contribute to the Biochemistry curriculum. The appointment may start as early as July 1, 2002.

To apply, please send a curriculum vitae, a brief statement of current and future research plans and the names and addresses of at least three references to:

John J. Kopchick, Ph.D.
Chair, Search Committee
Edison Biotechnology Institute
Ohio University
Athens, OH 45701

Screening of applications will begin on March 8, 2002 and will continue until the position is filled. Women and minorities are especially encouraged to apply.

Ohio University is an Equal Opportunity/Affirmative Action Employer.

POSITIONS OPEN

FACULTY POSITIONS: Department of Biology, The Hong Kong University of Science and Technology. Applications are invited for tenure-track positions at **ASSISTANT PROFESSOR** rank in the Department of Biology at the Hong Kong University of Science and Technology (HKUST) in the areas of cancer, cell biology, and neuroscience with emphasis on studies of cell signaling. HKUST is a publicly funded research university with strong graduate programs. The Department of Biology is a dynamic department with well-equipped modern facilities and has active research programs in cancer genomics, cell fate determination, neuromuscular junction synaptogenesis, signal transduction in living cells, plant biotechnology, and environmental sciences.

Applicants must have a Ph.D. degree, postdoctoral experience, and the ability to establish an independent research program. Teaching responsibilities include undergraduate and graduate courses. Starting salary will be commensurate with qualifications and experience. Fringe benefits including medical/dental benefits and annual leave will be provided. Assistance in housing will also be provided where applicable. Initial appointment will normally be on a three-year contract. A gratuity will be payable upon successful completion of contract. Reappointment will be subject to mutual agreement.

Applications indicating areas applied for together with a curriculum vitae, a short statement on research interests, and the names and addresses of three references should be sent to: **The Chair of Recruitment Committee, Department of Biology, Hong Kong University of Science and Technology, Clear Water Bay, Hong Kong. FAX: 852-2358-0700; e-mail: bovacant@ust.hk** before 15 April 2002.

Information provided by applicants will be used for recruitment and other employment-related purposes.

DIRECTOR OF RESEARCH

Applications are invited for the position of Director of Research in a private research center. The Director will maintain and participate in the research projects and will supervise all employees and provide leadership for a small but dedicated and highly qualified multidisciplinary research and development team in a superbly equipped laboratory. The focus is on chronic, complete spinal cord injury. The successful candidate must have a Ph.D. or M.D. with a strong background in molecular and cell biology and record of solid publications. Experience with stem cells, gene expression systems, and animal experiments is required. A clinical interest in practical cures and administrative experience are a must.

Responsibilities will include the coordination and planning of the research and development program in all areas as well as contribution in the Director's own field. Continuous contact with and reports both written and oral directly to the President and governing board of the organization will be required. Salary and benefits commensurate with qualifications and experience.

Location in a pleasant campus setting. Send complete curriculum vitae with three letters of reference to: **P.O. Box 107, *Science*, 1200 New York Avenue, N.W., Washington, DC 20005** by April 26, 2002. Applicants should also send a short account of their vision focusing on the direction of research for spinal cord repair.

POSTDOCTORAL POSITION

A Postdoctoral position is available for NIH-funded research in the field of experimental bone marrow transplantation. Projects available for study include suicide gene therapy to modulate GVH/GVL reactivity, role of gamma delta T cells in BMT, and role of apoptosis in modulating immunological reconstitution. Applicants must have a strong foundation in cellular immunology. Experience working with animals is preferred. Please send curriculum vitae and information for three references to: **William R. Drobyski, M.D., Bone Marrow Transplant Program, 9200 West Wisconsin Avenue, Milwaukee, WI 53226. E-mail: bill@bmt.mcw.edu.**

POSITIONS OPEN

THREE TENURE-TRACK POSITIONS
Molecular Toxicologist, Population Geneticist, Biochemist
University of Alaska Anchorage

The University of Alaska Anchorage invites applications for three tenure-track faculty positions in the Departments of Biological Sciences and Chemistry. All candidates are expected to establish a strong research program, seek external funding, and contribute to undergraduate and/or graduate education.

(1) Molecular toxicology/toxicogenomics, PCN Number 308536: The Department of Biological Sciences seeks a Molecular Biologist who works on the mechanisms of action of contaminant molecules, ideally at the level of genomics and/or proteomics. A focus on contaminants that might impact the safety of subsistence foods in Alaska is of particular interest. Candidates must have a Ph.D. in biology or relevant scientific field. Applicants at the **ASSISTANT PROFESSOR** level must have at least two years of postdoctoral experience and at least one first-author publication in a refereed journal. Applicants at the **ASSOCIATE** level must have an externally funded research program and a substantial publication record **(Search Chair: Dr. J.E. Krebs; e-mail: afjek@uaa.alaska.edu)**.

(2) Population Geneticist, PCN Number 300320: The Department of Biological Sciences seeks a Population Geneticist at the **ASSISTANT PROFESSOR** level. Candidates must have a Ph.D. in biology or relevant scientific field, postdoctoral experience, and at least one first-author publication in a refereed journal. Teaching expertise in population genetics and biometry or evolution preferred **(Search Chair: Dr. F. von Hippel; e-mail: affvh@uaa.alaska.edu).**

(3) Biochemist, PCN Number 731088: The Department of Chemistry seeks a Biochemist at the **ASSISTANT PROFESSOR** level. Candidates must have a Ph.D. in biochemistry or chemistry and postdoctoral experience. Candidates must have a strong commitment to teaching chemistry and biochemistry at the undergraduate level. Collaboration with the Department of Biological Sciences and Biomedical (WWAMI) program encouraged **(Search Chair: Dr. L. Heasley; e-mail: aflwh@uaa.alaska.edu).**

Candidates should submit (1) a cover letter referencing the PCN number and position name, (2) completed UAA application form, (3) curriculum vitae including publication list, (4) a statement of research experience and future interests, (5) a statement of teaching experience and philosophy, and (6) the names and contact information for three references. Send materials to: **University of Alaska Anchorage, Human Resource Services, 3211 Providence Drive, Anchorage, AK 99508-8136.**

Review of applications begins February 15, 2002, and will continue until positions are filled. Applicants may contact Search Chair with questions. Detailed position announcements and UAA application form can be found at **website: http://www.finsys.uaa.alaska.edu/uaahrs.** *UAA is an Affirmative Action/Equal Opportunity Employer and Education Institution. Women and minorities are especially encouraged to apply. Must be eligible for employment under the Immigration Reform and Control Act of 1986.*

POSTDOCTORAL POSITION: Department of Physiology, The Brody School of Medicine at East Carolina University. Available immediately to study various proteins and peptides implicated in the pathogenesis of Alzheimer's disease. Strong background in protein biochemistry and/or molecular biology required. Send curriculum vitae and three reference letters to: **Dr. Jan K. Teller, Department of Physiology, The Brody School of Medicine at East Carolina University, 600 Moye Boulevard, Brody 6N98,Greenville,NC27858-4354.E-mail:tellerj@mail.ecu.edu; website: http://ecu.edu/physio/newfac.htm.** *East Carolina University is a member of the University of North Carolina system and is an Equal Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

POLLIN ENDOWED CHAIR IN MOLECULAR BIOLOGY OF MYOCARDIAL CELLS
Department of Pediatrics, University of Maryland School of Medicine

The University of Maryland School of Medicine Department of Pediatrics announces an exciting opportunity for an outstanding Scientist working on the molecular biology of myocardial cells. Potential areas of research include cellular physiology, development, protein structure-function, and especially genomics. Investigators whose work is applicable to pediatric cardiology will be preferred. Pediatric Cardiologists are especially encouraged to apply. The faculty member will join an expanding group of Molecular Cell Biologists in the Department and will have opportunities to interact with other School of Medicine Centers of Excellence including Membrane, Muscle Biology, and Genomics programs. The successful candidate must have an M.D. and/or Ph.D. degree and an outstanding, well-funded research program. The appointment is for a tenure-track faculty position at the **FULL/ASSOCIATE PROFESSOR** level. Salary is negotiable and will be commensurate with experience.

Applicants should submit curriculum vitae, a clear statement of research goals, and the names of three references to:

James P. Nataro, M.D., Ph.D.
Center for Vaccine Development
685 West Baltimore Street
Baltimore, MD 21201
E-mail: jnataro@medicine.umaryland.edu
Telephone: 410-706-5328; FAX: 410-706-6205

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FACULTY POSITION PHARMACOLOGY
The Ohio State University

Applications are invited for a tenure-track faculty position at the **ASSISTANT** or **ASSOCIATE PROFESSOR** level in the Division of Pharmacology, College of Pharmacy. Candidates should have a Ph.D. and relevant postdoctoral experience in pharmacology, pharmaceutical sciences, or related biomedical fields. The new faculty member will be expected to maintain an extramurally funded research program and to participate in teaching. Although the area of research is open, scholars that apply biochemical, molecular, and/or cellular approaches to solve problems in pharmacology and/or toxicology are especially encouraged to apply. Screening of applications will commence April 30, 2002. Candidates should submit curriculum vitae, statement of research plan, and arrange to have three letters of reference sent to: **Dr. Anthony Young, Chairperson, Division of Pharmacology Search Committee, College of Pharmacy, The Ohio State University, 500 West 12th Avenue, Columbus, OH 43210-1291.** Alternatively, applications may be submitted via **e-mail: griffith@dendrite.pharmacy.ohio-state.edu.** *The Ohio State University is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL POSITION AVAILABLE

A Postdoctoral position is available in the Department of Molecular Biophysics and Biochemistry at Yale University. Start date is negotiable. The research concerns the *Salmonella* flagellar protein export pathway, which is related to the Type III secretion pathway used by many pathogenic bacteria. Knowledge of bacterial genetics and molecular biology tools is essential and experience in protein biochemistry is highly desirable. Salary will be competitive and depends on time elapsed since earned Ph.D. Please mail or e-mail curriculum vitae, names of three references with contact information, and a brief statement of research interests to: **Professor Robert M. Macnab, Yale University, 266 Whitney Avenue, P.O. Box 208114, New Haven, CT 06520-8114. E-mail: robert.macnab@yale.edu.**

BIOLOGY DEPARTMENT
Rensselaer Polytechnic Institute

The Rensselaer Biology Departments seeks outstanding candidates for tenure-track faculty positions as part of a major expansion program in biotechnology and life sciences. We seek to fill two positions, one in each of the following areas:

(1) Cell biology: Preference will be given but not limited to Cell Biologists studying mechanisms of cell-cell signaling, cell-matrix interactions, growth factors and cytokines, tissue formation and regeneration, stem cells, and tissue engineering.

(2) Biochemistry/molecular design. Special interests in development of novel proteins and their integration into metabolic or signaling pathways, rational design of proteins and/or new molecules that can modify behavior and performance of existing enzymes, structural biochemistry. Seeking faculty interested in interacting with Investigators working at the cell, tissue, and organism level to study the action of modified genes.

Candidates should be active in research and have current funding or excellent potential for sponsored research. The successful candidates will be expected to play major roles in Rensselaer's research and educational initiatives in biotechnology. Salary and start-up packages will be competitive. Exciting opportunities exist for collaboration through cooperative programs within Rensselaer and with neighboring institutions such as the NYS Health Laboratories.

Review of applications begins March 11, 2002. Later applications will be considered. Send curriculum vitae, statement of research and teaching interests, publication list, and names of three references to: **Ms. Jan MacDonald, Assistant to the Chair, Biology Department, SC 1W14, 110 Eighth Street, Troy, NY 12180-3590.** Please indicate for which position you are applying. For additional information about the campus and local area, visit the Rensselaer **website: http://www.rpi.edu**. *Rensselaer Polytechnic Institute is an Equal Opportunity/Affirmative Action Employer. Members of underrepresented groups (including people of color, persons with disabilities, and women) are strongly encouraged to apply.*

The Department of Neurosurgery at the University of Virginia has a **POSTDOCTORAL RESEARCH ASSOCIATE POSITION** available immediately to study estrogen-dependent changes in synaptic transmission and synaptic plasticity (LTP/LTD) in the adult female hippocampus as part of a multidisciplinary effort focused on estrogen-dependent synaptogenesis in the hippocampus. Opportunities exist to participate in cellular/molecular aspects of the collaborative project. A Ph.D. in neuroscience or related discipline, documented neurophysiological experience, and excellent verbal and written communication skills are required; experience with hippocampal electrophysiology is preferred. Position is open until filled. Send curriculum vitae, names, and telephone numbers/FAX/e-mail addresses for three references to: **Dr. Nancy L. Desmond, University of Virginia Health System, Department of Neurosurgery, P. O. Box 800420, Charlottesville, VA 22908-0420. E-mail: nld@virginia.edu.** *The University of Virginia is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL POSITION available immediately to study signal transduction underlying synaptic plasticity, regulation of transmitter release, and receptor plasticity in auditory brain stem nuclei. An earned Ph.D. degree in biochemistry/neuroscience/pharmacology is required; experience with cell signaling pathways is preferred. Techniques may include brain microdissection, transmitter release, receptor binding, tissue fractionation and lysis, Western blotting, and immunohistochemistry. Send curriculum vitae, statement of research experience, and two letters of recommendation to: **Dr. Steven J. Potashner, Department of Neuroscience, University of Connecticut Health Center, 263 Farmington Avenue, Farmington, CT 06030 U.S.A. FAX: 860-679-8766; e-mail: sjp@neuron.uchc.edu.**

POSITIONS OPEN

GenApps Inc., an agricultural research and biotechnology company located near Lexington, Kentucky, has two positions available immediately.

SCIENTIST: Qualified candidates should possess a Ph.D. degree in biology/molecular biology. Demonstrated ability to initiate and perform independent research in molecular biology area. Strong knowledge of and outstanding skills in plant gene cloning, gene expression, and enzyme activity essays. Experience with developed nucleic acid techniques, protein expression/profiling, and automation technologies. Experience in differential display, cDNA/genomic library construction screening, and strong knowledge/hands-on experience in plant biochemistry/chemistry desirable. Qualified applicant must be able to provide technical expertise and intellectual support to meet technically challenging program objectives and assist in developing new research projects. Candidate must possess effective communication skills, math knowledge associated with technical problems, and proficiency with standard molecular biology software packages.

ASSISTANT SCIENTIST: Qualified candidates should possess an M.S. or B.S. degree in biology/molecular biology or related field, and three to five years of laboratory experience emphasizing molecular biology is required. A background in application of recombinant nucleic acid techniques in plants is preferred. Knowledge of and skills in gene expression analysis and/or enzyme activity assays is desired. Qualified applicant must be able to provide technical expertise, intellectual support to meet technically challenging program objectives, and assist in developing new research projects. Candidate must possess accurate oral and written communication skills, computer skills, and the ability to independently perform assigned duties in varied environments including laboratory and greenhouse.

We offer competitive salary, an excellent benefits package, and the opportunity for personal and professional growth in an outstanding work environment. To become part of a dynamic organization, please forward or FAX your résumé, salary history/requirements, and references to:

GenApps Inc.
Attention: Human Resources Coordinator
P.O. Box 237
Winchester, KY 40391
FAX: 859-744-4195

Equal Employment Opportunity/Minority/Female/Veteran/Disabled. Must have proof of eligibility for working visa.

POSITION ANNOUNCEMENT

POSTDOCTORAL POSITION in physiology/biochemistry/molecular biology of fishes. Research focus is upon structure/function relationships of proteins related to life at cold body temperature and evolutionary biology of polar fishes. Skill in biochemistry/molecular biology is essential. Experience in marine biology/fish physiology and/or site-directed mutagenesis is desirable. Candidate must be willing to participate in some fieldwork at remote locations. Initial appointment may be up to one year with renewal contingent upon performance and availability of funds. Send letter of application, curriculum vitae, and names and addresses of three references to: **Dr. Bruce D. Sidell, School of Marine Sciences, University of Maine, 5751 Murray Hall, Orono, ME 04469-5751.** Review of applications will begin February 2002 and continue until the position is filled. *Equal Opportunity/Affirmative Action Employer.*

JOHNS HOPKINS ONCOLOGY CENTER

Two **POSTDOCTORAL POSITIONS** are available to study FLT3, a receptor important in hematopoiesis. One position is to study its signaling and role in normal hematopoiesis. The other position is to study the regulation of the gene. Please respond by e-mail or FAX with curriculum vitae and three references to: **Donald Small, M.D., Ph.D., CRB Room 251, 1650 Orleans Street, Baltimore, MD 21231. Telephone: 410-614-0994; FAX: 410-955-8897; e-mail: donsmall@jhmi.edu.**

POSITIONS OPEN

ASSISTANT PROFESSOR of Earth science: Peru State College invites applications for a full-time, tenure-track position as Assistant Professor in the Natural Science Department beginning August 2002. We are searching for a Geologist, Earth, or Planetary Scientist to develop and support the Department's programs in Earth and physical science. Duties include but are not limited to undergraduate teaching (course responsibilities dependent upon specialty and interests, but applicants should be prepared to teach a combination of Earth science, geology, physical geography, meteorology, astronomy, or introductory physics); establishing an effective undergraduate-based research program (research interests in the Great Plains preferred); mentoring undergraduate research (department has a strong tradition of undergraduate-based research supported by institutional, foundation, and extramural resources); engaging in scholarly activity; curriculum development; and providing service to the Department and College.

Salary base is $35,000 to $40,000 per nine months and rank commensurate with qualifications and experience. Excellent benefits package.

Ph.D. in a geoscience or related discipline before fall 2002 required. Strong interest in undergraduate teaching at a liberal arts institution and a commitment to working in a diverse environment are essential. For more information about the Department, see **website: http://natsci.peru.edu/**.

Contact: **PSC Human Resources; Telephone: 402-872-2206; e-mail: lbahensky@oakmail.peru.edu** for an employment application. Send the completed application plus letter of interest; curriculum vitae; statement of teaching philosophy and research interests; academic transcripts (photocopies accepted); and contact information for five current references (names, addresses, telephone numbers, and e-mail addresses) to: **Earth Science Search Committee, c/o Lisa Bahensky, Peru State College, P.O. Box 10, Peru, NE 68421-0010. Website: http://www.peru.edu.** Consideration of applications begins March 8, 2002, and will continue until the position is filled.

PSC is committed to Equal Opportunity and Affirmative Action.

FDA, CBER, Division of Cellular and Gene Therapies, has several full time employment openings for a **PRODUCT REVIEWER**. The incumbent will serve as the scientific and technical authority on a multidisciplinary scientific/medical team that reviews, evaluates, and decides on the approvability of scientific research, human testing, and manufacture of human biological products. Some products and issues that will be addressed by incumbents include gene therapy, stem cell transplantation, xenotransplantation, somatic cell therapies, and tumor vaccines. A Ph.D. is highly desirable or equivalent experience in one or more of the following disciplines: immunology, cell biology, stem cell transplantation, molecular biology, and virology. Salary range is $66,229 to $86,095. All interested parties should send their curriculum vitae to: **FDA, OTRR, DCGT, 1401 Rockville Pike, HFM-591, Rockville, MD 20852-1448**. Please reference DCGT-Reviewers on all correspondence. *FDA provides reasonable accommodations to applicants with disabilities. Equal Opportunity Employer; smoke-free environment. United States citizenship is required.*

FACULTY POSITION

Wayne State University, School of Medicine, is seeking a faculty position at the rank of **ASSISTANT PROFESSOR** to conduct research into the effects of physical forces on intestinal epithelial signal transduction. Ph.D. required. Must have previous experience with molecular biology, signal transduction, and *in vitro* kinase assays. Five-year track record of productive research at the Assistant Professor level required. Send curriculum vitae to: **David Fromm, M.D., Chairman, Wayne State University, Department of Surgery, 6C/UHC, 4201 St. Antoine, Detroit, MI 48201.** *Wayne State University is an Equal Opportunity/Affirmation Action Employer.*

CASE WESTERN RESERVE UNIVERSITY

Department of Neurosciences

The Department of Neurosciences at CWRU seeks applicants for a full-time, tenure-track Assistant Professor position. We are particularly interested in an investigator using cell biological approaches to study the function, development or repair of the nervous system. Preference will be given to workers studying synaptic function, axonal growth and guidance, protein and vesicle trafficking or intracellular signaling. Our department has an interactive faculty and a complete set of resources for modern cell and molecular biology, including an imaging center and EM facility. The CWRU School of Medicine is among the top 20 medical schools in NIH funding and has a variety of state-of-the-art facilities to support structural biology and genetics. The position requires a Ph.D. or an M.D. degree and significant accomplishments as a post-doctoral researcher. Review will start March 15, 2002 and continue until the position is filled. Applicants should send curriculum vitae, a 1-2 page description of research plans, and a list of 3 references to:

Chair of the Neurosciences Search Committee
Department of Neurosciences
Case Western Reserve University
10900 Euclid Avenue
Cleveland, OH 44106-4975

Case Western Reserve University is an Affirmative Action/Equal Opportunity Employer and Educator and strongly encourages applications from women and underrepresented minorities.

Visit neurowww.cwru.edu

mayo

POSTDOCTORAL POSITION

Department of Biochemistry and Molecular Biology
Rochester, Minnesota, U.S.A.

A postdoctoral fellowship position is available in the laboratories of Dr. Thomas C. Spelsberg in the Department of Biochemistry and Molecular Biology, Mayo Clinic. The broad project area of study is the "actions and interactions of estrogen receptor (ER)α, ERß, and the co-regulators (SRCs) in the regulation of gene expression in human and rodent osteoblasts and breast cancer cells." Most of the research utilizes cells in culture with occasionally some work with transgenic/knockout mice. The laboratories are well equipped with state-of-the-art instruments and techniques, with the support of a dozen core facilities and animal facilities.

The labs are housed in a large (20 story) research building, housing many other laboratories and departments. Candidates should have a Ph.D. or M.D. degree with molecular biology experience. Candidates who qualify for NIH training grant positions are preferred, but this is not a requirement.

Salary will be determined by the successful candidate's experience. There is an attractive benefit package. Mayo Clinic Rochester is a not-for-profit organization. Mayo integrates research with clinical practice and education in a multi-campus environment.

Please send curriculum vitae and bibliography, summary of past accomplishments, and the names of three references to:

Ms. Jackie House
1601 Guggenheim Building
200 First Street SW
Rochester, MN 55905
House.jackie@mayo.edu

Mayo Foundation is an Affirmative Action and Equal Opportunity Employer and Educator.

USDA

RESEARCH PLANT PATHOLOGIST

The USDA, Agricultural Research Service, North Atlantic Area, Foreign Disease Weed-Science Research Unit located in Frederick, Maryland, is seeking a Research Plant Pathologist with responsibility for a research program that will investigate the biology, pathology, and ecology of *Phytophthora ramorum* and the epidemiology and control of sudden oak death caused by *P. ramorum*. The incumbent will study fungal pathogen life cycles, host range, and virulence to acquire fundamental knowledge necessary to develop improved long-term control strategies for exotic and endemic diseases of major crops.

The exotic nature and potential hazard of *P. ramorum* requires that research be performed in specialized quarantine BSL3-P level greenhouse containment facilities as well as laboratories and growth chambers. Applicants must have 1 year of specialized experience as indicated in the vacancy announcement OR applicants at the GS-12 can also qualify with either a Ph.D or equivalent doctoral degree with emphasis on plant pathology or a related scientific discipline that includes at least 20 semester hours in courses such as botany, plant science, plant physiology, plant taxonomy, plant ecology and 10 semester hours in microbiology. Must be U.S. citizen. Salary for GS-12 ranges from $55,694 to $72,400; GS-13 salary ranges from $66,229 to $86,095 depending on experience. Closing date of this announcement is April 11, 2002. Call 301-504-1482 to request a copy of ARS-X2E-2180 or access website at **www.ars.usda.gov**. For specific questions call **301-619-2922**.

USDA/ARS is an Equal Opportunity Provider and Employer.

Agricultural Research Service

PRINCIPAL INVESTIGATOR POSITION
U.S. Department of Agriculture (USDA)
Agricultural Research Service (ARS)

The Growth Biology Laboratory, Animal and Natural Resources Institute, Beltsville Agricultural Research Center, Beltsville, Maryland, is accepting applications for an interdisciplinary research position: Research Molecular Biologist/Research Chemist (Protein Biochemist)/ Research Animal Scientist (nutrition)/ Research Physiologist (GS–12/13). Salary range is $55,694 to $86,095. A Ph.D. is preferred. The position is in a laboratory performing research within a broad project addressing the identification of economically important, production-related genes in livestock and poultry. The overall goal of the research is to improve animal productivity, disease resistance, and develop new animal products or traits that affect well-being and production efficiency of livestock and poultry. The objectives of the research are to determine critical regulatory steps and identify genetic controls, to determine metabolic limits, and to characterize nutrient use within the ruminant animal to aid the development of management tools to minimize metabolic genetic limitations restricting animal performance. Specific areas of research will include determining the effect of growth factors and nutrients on visceral organ cell proliferation, differentiation, and metabolism and determination of differential gene expression and gene product (proteome) response to changes in nutrient input. Expertise in general molecular biological procedures (cloning, sequencing, and hybridization); protein purification; polymerase chain reaction techniques; proteomics; differential display techniques; DNA microarray analysis; Western blotting; and ELISA is required. *U.S. citizenship is required.* Applications must be submitted by the closing date of March 25, 2002. For information on the research program, contact: **Dr. J. McMurtry; e-mail: mcmurtry@anri.bpbarc.usda.gov**.

For information on application forms or procedures or for a copy of the vacancy announcement, call **Telephone: 301-504-1369** or view the full announcement Number ARS–X2E–2183 on the Internet on **website: http://www.afm.ars.usda.gov/divisions/hrd/index.html**. *ARS is an Equal Opportunity Provider and Employer.*

POSTDOCTORAL FELLOW
Biochemistry of Chromosome Dynamics

Position is available to study enzyme complexes involved in meiotic chromosome dynamics. Initial salary of $33,000 per year. Applicants must have experience in biochemical purification of proteins, peer-reviewed publications, and be fluent in written and spoken English. Experience with yeast methodologies and mass spectrometry would be helpful but is not essential. Send curriculum vitae and references to: **Dr. Wayne Wahls, Vanderbilt University School of Medicine, 621 Light Hall, Nashville, TN 37232-0146. E-mail: wahlswp@ctrvax.vanderbilt.edu**.

POSTDOCTORAL POSITION available. The laboratory uses a combination of molecular biology, cell biology, physiology, and mouse genetic approaches to study functional roles of several LIM/PDZ domain-containing proteins in cardiac development and physiology (**Chu et al.**, *Mol. Cell. Biol.* **20**:7460, 2000; **Zhou et al.**, *J. Cell Biol.* **155**:605, 2001). E-mail curriculum vitae and names of three references to: **Dr. Ju Chen, Institute of Molecular Medicine, University of California at San Diego; e-mail: juchen@ucsd.edu**.

The Department of Environmental Science at the University of San Francisco (USF) invites applications for a tenure-track **ASSISTANT PROFESSOR** position in environmental science and studies with a specialty in land use planning and resource management to begin fall 2002. For details, please see **website: http://www.usfca.edu/envsci/**. *University of San Francisco is an Affirmative Action/Equal Opportunity Employer.*

POSITIONS OPEN

Biology: Tenure-track **ASSISTANT PROFESSOR** position beginning fall 2002 for an Animal Cell Biologist to play a key role in developing a new biotechnology program. Expectation to teach cell biology and introductory and nonmajors biology as well as to develop courses for the biotechnology program. Candidates with tissue culture experience and willingness to pursue extramural funding for teaching/research preferred. Ph.D. in cell biology or related field, two years of college-level teaching, commitment to undergraduate education, and successful on-campus interview including a lecture/presentation required. Submit an application letter, curriculum vitae, statement of teaching philosophy and research interests including ways you would involve students in research, a statement describing how you would contribute to a new biotechnology program, copies of undergraduate and graduate transcripts (official transcripts necessary before hiring), and three letters of recommendation to: **Chair, Cell Biologist Search, Biology Department, Kutztown, PA 19530. FAX: 610-683-4854; e-mail: baguinon@kutztown.edu**. For more information, visit **website: http://www.kutztown.edu/employment/faculty.shtml**. Materials must be received by March 11, 2002.

KU is an Affirmative Action/Equal Opportunity Employer/member of the Pennsylvania State System of Higher Education and actively solicits applications from women and minority candidates. The University is interested in hiring faculty who have extensive experience with diverse populations.

INSECT POPULATION ECOLOGIST

ASSOCIATE RESEARCH SCIENTIST, Center for Economic Entomology, Illinois Natural History Survey (INHS). A Ph.D. by the date of hire in entomology or related field is required. Training and/or experience in field ecology, population modeling, and mosquito disease management are assets. Demonstrated skills with the preparation of research proposals and technical reports and an ability for planning, supervising, and evaluating research activities as well as the ability to collect and analyze field and laboratory data are required. Experience in mosquito ecology or medical entomology is desirable but not mandatory. INHS is part of the Illinois Department of Natural Resources and an affiliated agency of the University of Illinois at Urbana–Champaign. Further information is available at **website: http://www.inhs.uiuc.edu**. Direct technical questions to: **Dr. Robert Novak; Telephone: 217-333-1186; e-mail: r-novak1@uiuc.edu**. To apply, send cover letter, curriculum vitae, statement of research interests, three letters of reference to: **Sue Key, Human Resources Manager, PRF Number 930, Illinois Natural History Survey, 607 East Peabody Drive, Champaign, IL 61820. Telephone: 217-244-7790; e-mail: suekey@inhs.uiuc.edu; FAX: 217-333-4949**. Deadline: March 15, 2002. *INHS is an Equal Opportunity Employer.*

POSTDOCTORAL POSITIONS
ENZYMOLOGY, PROTEIN DESIGN

Two positions are available: (1) mechanisms by which enzymes generate and control organic radicals to catalyze unusual carbon-skeleton rearrangements and (2) *de novo* design and characterization of peptides containing fluorous amino acids. Techniques include synthesis of fluorinated amino acids and isotopically labeled substrates, steady-state and presteady-state kinetics, site-directed mutagenesis, NMR, and CD spectroscopy. Applicants should have recently obtained or be about to obtain a Ph.D. in a relevant area of research. Send curriculum vitae and names of three references to: **Dr. Neil Marsh, Department of Chemistry, University of Michigan, Ann Arbor, MI 48109-1055. FAX: 734-615-3790; e-mail: nmarsh@umich.edu**.

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

POSITIONS OPEN

FACULTY POSITION
Extracellular Matrix Research
School of Medicine
Case Western Reserve University

The Gastroenterology Division invites applicants for a tenure-track position at the **ASSISTANT, ASSOCIATE,** or **FULL PROFESSOR** level in the field of extracellular matrix and healing and fibrosis in the gastrointestinal tract. CWRU has a strong tradition of research in intestinal immunity and inflammation based at University Hospitals of Cleveland and Rainbow Babies and Children's Hospital. Applicants must have a Ph.D. or M.D. and be interested in joining a team of Scientists supported by an NIH program project on pediatric inflammatory bowel disease. Applicants should send curriculum vitae, statement of research interests, and names and addresses of references to: **Claudio Fiocchi, M.D., CWRU School of Medicine, 10900 Euclid Avenue, Cleveland, OH 44106-4952**. *The University is an Equal Opportunity/Affirmative Action Employer.*

SENIOR SCIENTIST
MOLECULAR BIOLOGIST

Known for its innovation and commercial development of enzymes, reagents, and kits for genetic analysis, the USB Corporation recently received Ohio's Thomas Edison Emerging Technology Award for excellence, innovation, and growth. To expedite enzyme discovery and genetic engineering research as well as the development of new reagents and kits, USB is seeking highly experienced **SCIENTISTS** for its research and development division. Candidates must have a Ph.D. with applicable postgraduate experience in gene expression, gene diversity analysis, cloning, DNA amplification, enzyme assay development, or protein purification and should enjoy hands-on development of cutting-edge technology. Salary is highly competitive with a full range of health benefits and 401(K) plan. Applicants must submit the names and telephone numbers of at least three references along with curriculum vitae to: **Human Resources, USB Corporation, 26111 Miles Road, Cleveland, OH 44128. Website: http://www.usbweb.com**.

The Department of Biological Sciences at Louisiana State University in Shreveport invites applications for a tenure-track faculty position at the **ASSISTANT PROFESSOR** level. Applicants with expertise in human physiology/anatomy, microbiology/immunology, or neurobiology are encouraged to apply. Excellence in teaching and undergraduate/M.S. research is expected. Applicants should possess an earned Doctorate. Submit a letter of application; résumé; names and e-mail addresses of three references; and a statement concerning teaching and research interests to: **Dr. Cran Lucas, Biology Search Chair, LSU–Shreveport, One University Place, Shreveport, LA 71115** no later than March 1, 2002. Review of applications will begin immediately. Further information at **website: http://www.lsus.edu/sc/bios**. *LSU–S is an Equal Opportunity/Affirmative Action University. Women and minorities are strongly encouraged to apply.*

POSTDOCTORAL POSITION available for two years to study algal communities as indicators of streambed instability in natural environments and spatio/temporal biofilm dynamics in laboratory streams. Interested applicants must have a Ph.D., proficiency in algal taxonomy, and strong statistical background. Starting date: May 2002 (negotiable). To apply, send a summary of research interests and experience, curriculum vitae, copies of up to four publications, and three letters of recommendation to: **Dr. Sophia Passy, Department of Biology, University of Texas at Arlington, Box 19498, Arlington, TX 76019-0498 U.S.A. Telephone: 817-272-2415; e-mail: sophia.passy@uta.edu**. *UTA is an Equal Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

ASSISTANT PROFESSOR MOLECULAR PHARMACOLOGY/ TOXICOLOGY
University of Pennsylvania

The Department of Animal Biology at the University of Pennsylvania is soliciting applications for a tenure-track faculty position at the Assistant Professor level. The Department has a strong commitment to basic biomedical research and is located at the heart of Penn's Philadelphia campus in an interactive scientific environment. Applications are invited from Scientists with research interests in the areas of molecular pharmacology, toxicology, and pharmacogenetics. We are particularly interested in Scientists who apply genomics or proteomics for investigating pharmacological or toxicological problems. However, outstanding candidates in the broad areas of pharmacology, pharmacogenetics, and receptor biology will be considered. Applicants must have a Ph.D., M.D., V.M.D., or equivalent degree along with postdoctoral training and should be prepared to establish an independent, extramurally funded research program. Applicants can also expect to participate in teaching in the Department and in Universitywide graduate programs.

Interested candidates should submit curriculum vitae, a statement of research interests, and three letters of reference to: **Ms. Judy C. Bennett, Search Committee Coordinator, University of Pennsylvania School of Veterinary Medicine, 3800 Spruce Street, Philadelphia, PA 19104-6046. FAX: 215-573-6810; e-mail: jbennett@vet.upenn.edu. Website: http://www.vet.upenn.edu/AnimalBiology/.** Please include Assistant Professor Position MA in the subject heading. Deadline for applications is April 1, 2002. *The University of Pennsylvania is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL RESEARCH SCIENTIST

This Postdoctoral-level position will use positional cloning and candidate gene strategies to find genes that predispose to Alzheimer's disease. The work entails high-throughput genotyping of microsatellite polymorphisms using robotics and capillary DNA sequencers and then subsequent analysis with genotyping software. Experience with robotics, fluorescent DNA sequencing, microarrays, and dHPLC is highly desirable. In addition, computer skills using Windows NT and Mac OS and excellent interpersonal skills are required. The applicant should have an M.D. or Ph.D. degree in biology or a related science or the equivalent in education, training, and experience. The individual should be fluent in English. A face-to-face interview in New York City is required. Send curriculum vitae and the names and telephone numbers of three references to: **James A. Knowles, M.D.-Ph.D., Columbia University College of Physicians and Surgeons, New York State Psychiatric Institute, 1051 Riverside Drive (Room 5916, Unit Number 28), New York, NY 10032. E-mail: jak8@columbia.edu.** *Columbia University is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL AND GRADUATE STUDENT

Positions sponsored by the Cystic Fibrosis Foundation U.S.A. are available to identify and functionally characterize interacting proteins of normal and mutant CFTR in a collaborative effort between the Hospital for Sick Children/University of Toronto and Integrative Proteomics Inc. We are seeking dedicated individuals with solid experience in biochemistry or a related discipline to join our discovery team aiming to identify potential drug targets in cystic fibrosis by affinity chromatography and spectroscopic techniques. Experience with molecular cell biology and electrophysiology is an asset. The positions are available immediately and renewable up to three years. Apply by sending curriculum vitae, research interest, and names of three references to: **G. Lukacs, c/o S. Jandu, Hospital for Sick Children, 555 University Avenue, Toronto, Ontario M5G1X8 Canada. FAX: 416-813-5771; e-mail: sanita.jandu@sickkids.ca.**

GEOBIOLOGY FACULTY POSITION

The Department of Earth, Atmospheric, and Planetary Sciences at the Massachusetts Institute of Technology invites qualified candidates to apply for a new faculty position in geobiology. We particularly encourage creative and dynamic early-career Scientists to apply at the **ASSISTANT PROFESSOR** level. However, appointment at a higher rank may be considered for an exceptional candidate. We are particularly interested in individuals who study the microbiological mediation of processes at the interfaces between the solid and fluid Earth, ecosystem-climate interactions, the molecular biology of geologically significant microbes, and the coevolution of life and Earth's surface environment. The Department of Earth, Atmospheric, and Planetary Sciences at MIT has a very broad program in all aspects of Earth sciences including geology, geophysics, geochemistry, planetary science, and ocean-atmosphere dynamics. We seek candidates with broad interests and the capacity to inspire and engage in multidisciplinary research. Interest and commitment to teaching at the undergraduate and graduate level are essential at MIT.

Interested Scientists should send curriculum vitae, a one-page description of research plans, and arrange for three letters of professional reference to: **Professor Ronald G. Prinn, Department Head, Attention: Geobiology Search, Department of Earth, Atmospheric, and Planetary Sciences, Massachusetts Institute of Technology, Building 54-918, 77 Massachusetts Avenue, Cambridge, MA 02139-4307. E-mail: rgp@mit.edu; FAX: 617-253-8298.** *MIT is an Equal Opportunity/Affirmative Action Employer.*

ASSISTANT PROFESSOR NEUROSCIENCE
University of Pennsylvania

The Department of Animal Biology at the University of Pennsylvania is soliciting applications for a tenure-track faculty position at the Assistant Professor level. The Department has a strong commitment to basic biomedical research and is located at the heart of Penn's Philadelphia campus in an interactive scientific environment. Scientists with research interests in all areas of neuroscience are encouraged to apply. We are particularly interested in Scientists investigating neural and endocrine mechanisms of eating disorders, metabolism, and obesity. Applicants must have a Ph.D., M.D., V.M.D., or equivalent degree along with postdoctoral training and should be prepared to establish an independent, extramurally funded research program. Applicants can also expect to participate in teaching in the Department and in Universitywide graduate programs.

Interested candidates should submit curriculum vitae, a statement of research interests, and three letters of reference to: **Ms. Judy C. Bennett, Search Committee Coordinator, University of Pennsylvania School of Veterinary Medicine, 3800 Spruce Street, Philadelphia, PA 19104-6046. FAX: 215-573-6810; e-mail: jbennett@vet.upenn.edu. Website: http://www.vet.upenn.edu/AnimalBiology/.** Please include Assistant Professor Position SF in the subject heading. Deadline for applications is April 1, 2002. *The University of Pennsylvania is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL RESEARCH FELLOWSHIP

Two NIH-funded positions in cell signaling and membrane biology are available at the University of Florida Whitney Laboratory. A Ph.D. or M.D. degree is required. Please direct applications including curriculum vitae, list of publications, and names of three references to: **Dietmar Kültz, Ph.D., University of Florida, Whitney Laboratory, 9505 Ocean Shore Boulevard, St. Augustine, FL 32080. E-mail: dkkw@whitney.ufl.edu.** *The University of Florida is an Equal Opportunity/Affirmative Action Employer.*

The Department of Biological Sciences, Southeastern Louisiana University, invites applications for a tenure-track position available August 2002 at the **ASSISTANT PROFESSOR** level. The selected individual will join the research faculty and will be part of an active group of Ecologists and Evolutionary Biologists. Preference will be given to a Plant Physiologist who addresses ecological questions. The successful candidate is expected to develop an active research program, pursue extramural funding, and participate in undergraduate and graduate education. Start-up funding and a competitive salary are available. The Department is undergoing significant expansion, which includes the construction of a new biology building. Research facilities include a field station in the Manchac swamp and greenhouse space. Members of the SLU faculty benefit from interactions with colleagues at universities (Louisiana State University, University of New Orleans, Tulane, Loyola) in nearby Baton Rouge and New Orleans. A Ph.D. degree is required and postdoctoral experience is desired. Send letter of application, résumé, statement of research and teaching interests, and three letters of reference to: **Dr. Nick Norton, Department of Biological Sciences, SLU–10736, Hammond, LA 70402.** Review of applications will begin March 18, 2002, and continue until the position is filled. *SLU is an Affirmative Action/American With Disabilities Act/Equal Employment Opportunity Employer.*

POSTDOCTORAL POSITIONS
Neural Development and Organogenesis
Baylor College of Medicine

Postdoctoral positions are available for outstanding candidates with expertise in genetics, molecular biology, and developmental biology. The focus of our research is to use conditional knockouts and transgenic technologies to study how orphan nuclear receptors, COUP-TFI, and TFII regulate neural development and organogenesis and how BETA2/NeuroD regulates cell differentiation. Recent publications include **Zhou et al.**, *Gene and Dev.* 2001; *Neuron.* 1999; **Pereira et al.**, *Gene and Dev.* 1999; **Liu et al.**, *PNAS* 2000; *Gene and Dev.* 2000.

If interested, please send a résumé and the names of three references to: **Dr. Ming-Jer Tsai** or **Dr. Sophia Tsai, Molecular and Cellular Biology Department, Baylor College of Medicine, One Baylor Plaza, Houston, TX 77030. E-mail: mtsai@bcm.tmc.edu** or **stsai@bcm.tmc.edu.**

Baylor College of Medicine as an Equal Opportunity/Affirmative Action/Equal Access Employer.

POSTDOCTORAL POSITION available for a Membrane Protein Biochemist interested in combining biochemistry with cell biology, genetics, and development for analysis of cell surface signaling receptors involved in cell differentiation and cancers. Excellent facilities and instruments available for molecular, biochemical, and biophysical analyses. Offers ample opportunities for development of independent projects. Should be available for immediate appointment. Contact: **Cedric Wesley, Ph.D., Microbiology and Molecular Genetics, 322 Stafford, The University of Vermont (UVM), Burlington, VT 05405. E-mail: cwesley@zoo.uvm.edu; Telephone: 802-656-8024.** *UVM is an Equal Opportunity/Affirmative Action Employer. Women and minorities encouraged.*

POSTDOCTORAL POSITION (NIH funded) available to study T cell fate decisions (differentiation, memory, survival) during *in vitro* and *in vivo* immune responses including transplantation models. Projects include characterization of alloreactive TCR transgenic mice, biochemical analysis of anergic T cells, and retroviral gene delivery into T cells to modulate immune responses. Candidates should hold a Ph.D. (or equivalent) in immunology. Please send curriculum vitae (including names of three references) to: **Dr. Laurence A. Turka, University of Pennsylvania, 700 CRB, 415 Curie Boulevard, Philadelphia, PA 19104-6144. FAX: 215-573-2880; e-mail: turka@mail.med.upenn.edu.** *Equal Opportunity/Affirmative Action Employer.*

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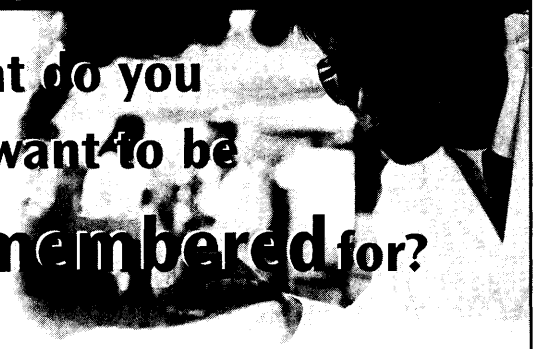

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Job Code: DIA-2751

The successful candidate will lead a laboratory focused on the validation of genes that play a critical roll in inflammatory processes. A central theme will be the use of murine models to identify those targets important in the pathology of diseases such as asthma, rheumatoid arthritis and COPD. This laboratory will utilize retroviral and adenoviral delivery as well as other strategies including the adoptive transfer of haematopoietic progenitors to accomplish its ambitious goals. Access to state-of-the-art technologies like mircoarrays, Taqman, histological analysis will be provided. Understanding of whole organ systems as they apply to inflammatory disorders will be critical for the phenotyping of the murine models and thereby the assessment of the contribution of the gene under study to the human disease pathology. Requirements include: a minimum of 3-5 years post-doctoral experience in academia or industry with a proven track record and a well-developed understanding of inflammation biology, especially if applied to *in vivo* murine models. Experience of viral delivery preferred.

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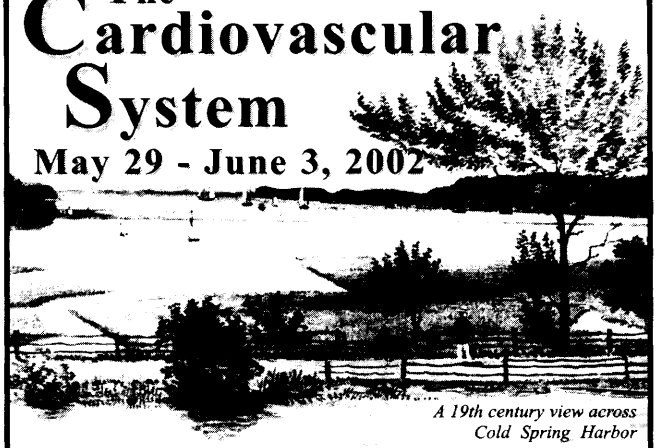
SYMPOSIA

67th Cold Spring Harbor Symposium on Quantitative Biology

The Cardiovascular System

May 29 - June 3, 2002



A 19th century view across Cold Spring Harbor

Arranged by **Bruce Stillman & David Stewart,** *Cold Spring Harbor Laboratory*

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• Myocyte Biology • Excitation/Contraction
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Kari Alitalo
Jeffrey Arbeit
Antonio Baldini
Robert Benezra
Laura Benjamin
Gabrielle Bergers
Helen Blau
David Cheresh
Kenneth Chien
Thomas Coffman
Jonathon Cohen
Shaun Coughlin
Jonathan Epstein
Napoleon Ferrara
Glenn Fishman
Mark Fishman
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Deepak Srivastava
Didier Stainier
George Yancopoulos
Joseph Yost
Brant Weinstein

Abstract Deadline: March 8, 2002

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POSTDOCTORAL FELLOW
Department of Oncology
Rochester, Minnesota, U.S.A.

NIH-funded Postdoctoral positions are available immediately to work in the area of DNA damage-signaling pathways and cancer biology. The laboratory currently focuses on the biochemical and molecular aspects of breast/ovarian cancer and the roles of tumor suppressor genes p53, Chk2, BRCA1/BRCA2, and the DNA damage-signaling pathway in tumorigenesis. The approaches we are using range from mammalian cell culture and molecular biology to mouse and yeast genetics. A strong background in molecular and cellular biology is essential. We are seeking candidates who are self-motivated and career oriented. The research environment at Mayo Clinic is excellent. Prospective applicants are encouraged to contact me by **e-mail: chen.junjie@mayo.edu**.

Salary will be determined by the successful candidate's experience. There is an attractive benefit package. Mayo Clinic is a not-for-profit organization. Mayo integrates research with clinical practice and education in a multicampus environment. For further information, please visit **website: http://www.mayo.edu/research/**.

Applications including curriculum vitae and bibliography, summary of past accomplishments, and the names of three references should be sent to:

Junjie Chen, Ph.D.
Assistant Professor
Department of Oncology
Guggenheim Building, Room 1306
Mayo Clinic, 200 First Street S.W.
Rochester, MN 55905
Telephone: 507-538-1545
E-mail: chen.junjie@mayo.edu

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POSTDOCTORAL POSITION
Immunology/Autoimmunity

The University of Chicago is looking to fill a Postdoctoral position in an NIH-funded project to study T cell tolerance in psoriasis. Studies will make extensive use of laser capture microscopy, microchip arrays, and immunohistochemistry, M.D. and/or Ph.D. required. Experience in molecular biology and immunology preferred. Send curriculum vitae and names of three references to:

Marcus Clark, M.D.
Department of Medicine
Section of Rheumatology
5841 South Maryland Avenue, MC0930
Chicago, IL 60837
E-mail: mclark@medicine.bsd.uchicago.edu

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A **POSTDOCTORAL POSITION** is immediately available to study the biological role of arginine methylation. We are particularly interested in the enzymes PRMT3 and PRMT6. The primary approaches used in the laboratory will be gene targeting in mice and proteomics. The Science Park Research Division is located in a rural, park-like setting in Smithville, Texas, just outside the state capitol of Austin. Ongoing research activities of the Bedford laboratory are described on our **website: http://sciencepark.mdanderson.org/**. Interested persons with a Ph.D. degree and a strong background in molecular and cellular biology methods should send their curriculum vitae along with names, addresses, telephone numbers, and e-mail addresses of three references to: **Mark T. Bedford; e-mail: mbedford@sprd1.mdacc.tmc.edu**.

POSITIONS OPEN

AN EXCEPTIONAL OPPORTUNITY FOR THREE YOUNG SCIENTISTS
Work in Taiwan

Three **POSTDOCTORAL FELLOWS** are sought to join a multidisciplinary group working on research and development of single molecule biomedical technology or microarray biomedical applications. A single molecule biomedical core facility and a microarray core facility, which are part of the National Research Program in Genomic Medicine in Taiwan, are being established. We are looking for three Ph.D. Scientists with a background in the biophotonics (laser tweezers, FRET, confocal microscopy, or fluorescent spectrum) or biological sciences (biology, molecular biology, cell biology, or protein chemistry). Individuals having more than two years of postdoctoral experience with strong publication background can be considered at **ASSISTANT PROFESSOR** level. Interested individuals should send curriculum vitae and a cover letter explaining your interest in the position to: **Dr. Ian C. Hsu, Chairman, Department of Atomic Science, National Tsing Hua University, Hsinchu, 300, Taiwan. Telephone: 886-3-572-7303; FAX: 886-3-571-8649; e-mail: ichsu@mx.nthu.edu.tw**. More information about our laboratory is available at **website: http://140.114.106.30/**.

POSTDOCTORAL RESEARCHER
(MOLECULAR BIOLOGIST)
Comparative Biomedical Sciences
Louisiana State University

We are seeking highly motivated and independent individuals to carry out research in the fields of invasion and metastasis and molecular biology of cancer. Required qualifications: Ph.D. or equivalent degree in molecular biology, biochemistry, cell biology, or related field; experience in molecular and cellular biology. Additional qualifications desired: experience with nude/transgenic mice. For a full description of scientific projects, visit **website: http://www.vetmed.lsu.edu/van/cbs-update/marchetti.htm**. Application deadline is April 1, 2002, or until candidate is selected. Send curriculum vitae, references, and a cover letter explaining how you meet or exceed the position requirements to: **Dr. Dario Marchetti, Associate Professor, Department of Comparative Biomedical Sciences, School of Veterinary Medicine, Skip Bertman Drive, Louisiana State University, Reference Log Number 0726, Baton Rouge, LA 70803. Telephone: 225-578-9897; FAX: 225-578-9769; e-mail: dmarchetti@vetmed.lsu.edu**.

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NIH-funded **POSTDOCTORAL RESEARCH ASSOCIATE**, Department of Pediatrics, Washington University School of Medicine, St. Louis, Missouri. The successful applicant will play a significant role in clinically relevant, laboratory-based genetic research. Experience in high-throughput DNA sequencing; management of large sequence databases (Phred, Phrap, Consed); Linux operating system; statistical analysis of genetic variation; and genotype-phenotype correlation is desirable. This position requires regular interaction with clinicians and provides flexible options for lifestyle and career goals. Interested applicants should send curriculum vitae and references to: **F. Sessions Cole, M.D., St. Louis Children's Hospital, One Children's Place, St. Louis, MO 63110. E-mail: cole@kids.wustl.edu**.

POSTDOCTORAL POSITION
Neurobiology/Cell Tracking

The candidate will use recently developed magnetic labeling techniques to track (neural) stem cell migration following transplantation in animal models of CNS disease. Candidates should have a background in neurobiology or cellular biology and an interest in learning about MRI microscopy and histology. Contact: **Jeff W. M. Bulte, Ph.D., Johns Hopkins University School of Medicine, Department of Radiology, 217 Traylor Building, 720 Rutland Avenue, Baltimore, MD 21205-2195. E-mail: jwmbulte@mri.jhu.edu**.

POSITIONS OPEN

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POSTDOCTORAL
RESEARCH ASSOCIATE

Pioneer Hi-Bred International, Inc. is the world leader in the discovery, development, and delivery of elite crop genetics. The Postdoctoral position is located near Des Moines, Iowa, at our Johnston campus. This person will explore and develop novel methods for high-throughput functional screening of genes in maize using state-of-the art tools including expression arrays, robotics, and novel DNA delivery and expression systems. The postdoctoral applicant will have superior laboratory skills and expertise in relevant areas such as vector design and cloning, library construction, DNA hybridization techniques, and assays for gene expression and will be capable of carrying out an aggressive, focused program in an environment where collaboration is key to success. A Ph.D. in plant molecular biology or a related discipline is required. Visit **website: http://www.pioneer.com** for a complete job description.

Please send a résumé and cover letter to: **Résumé Processing Center, Pioneer, A DuPont Company, P.O. Box 14454, Des Moines, IA 50306-3454. E-mail: apply@pioneerjobs.com**. Reference Job Code RES/PP26/PSC in order to be considered.

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POSTDOCTORAL POSITIONS
IN IMMUNOLOGY

Postdoctoral positions are available immediately to study the role of TCR-reactive CD4 and CD8 T cells in autoimmunity and antitumor immunity using cellular, molecular, and transgenic approaches. Applicants should have a Ph.D. or M.D. and preferably experience with *in vitro* and *in vivo* assays of T cell function. Interested individuals should send their curriculum vitae and the names and addresses of three references to: **Dr. Vipin Kumar, La Jolla Institute for Allergy and Immunology, 10355 Science Center Drive, San Diego, CA 92121. FAX: 858-558-3525; e-mail: vipink@liai.org**.

RESEARCH STAFF ASSOCIATE
Columbia University

Research Staff Associate needed in the Department of Neurology, Columbia University. Requirements include postgraduate degree and laboratory research experience emphasizing the molecular mechanisms associated with human mitochondrial diseases. Strong background in molecular biology and biochemistry is necessary. Research environment is stimulating, and salary and fringe benefits are commensurate with experience and the applicant's professional background. Respond to: **Eric Schon, Ph.D., College of Physicians and Surgeons of Columbia University, 630 West 168th Street, New York, NY 10032**. *Columbia University is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL/RESEARCH ASSOCIATE POSITIONS are immediately available to study Ca2+-permeable cation channels in vascular endothelial cells. Although experience with electrophysiological recordings would be helpful, Ph.D. Investigators with a background in biochemistry or cell biology and a strong desire to learn voltage/patch clamp techniques are welcome to apply. Please electronically submit your curriculum vitae, description of current research, and names of three references to: **Dr. William P. Schilling, Department of Physiology and Biophysics, Case Western Reserve University, Cleveland, OH U.S.A. E-mail: wps@po.cwru.edu**.

POSITIONS OPEN

PRINCETON UNIVERSITY. The Department of Chemistry in conjunction with the Center for the Study of Brain, Mind, and Behavior (CSBMB) invites applications for a **POSTDOCTORAL RESEARCH POSITION** in magnetic resonance. CSMB is a new interdisciplinary enterprise at Princeton University comprising faculty members in the departments of Psychology, Mathematics, Chemistry, Computer Science, Physics, Engineering, Linguistics, Philosophy, and Molecular Biology as well as of the University of Pennsylvania, Rutgers University, and Yale University. The Center operates a research-dedicated 3 Tesla Siemens Allegra head MRI system. A 7 Tesla animal MRI system will be installed in 2002. The incumbent will be given the opportunity to participate in a range of research projects from neuroimaging applications to the methodological development of both magnetic resonance imaging and magnetic resonance spectroscopy. The successful candidate will be appointed to the Princeton University research staff; salary will be commensurate with experience. Ph.D. in basic science or engineering required, as is an interest in magnetic resonance. Princeton is a small academic and residential community within commuting distance of both New York City and Philadelphia, Pennsylvania. Send curriculum vitae, a brief research statement, and names of three references to: **Denise D'Auria, Department of Chemistry, Princeton University, Princeton, NJ 08544-1009**. *Princeton University is an Equal Opportunity/Affirmative Action Employer.*

PEDIATRIC CARDIOLOGY
New York University School of Medicine

POSTDOCTORAL RESEARCH FELLOWSHIP positions are available immediately. We have state-of-the-art voltage clamp/patch clamp systems and a new laser-scanning confocal microscope for the measurement of intracellular Ca2+. A position is available in the group of **Dr. Michael Artman** to study excitation-contraction coupling and the regulation of contractility in the developing heart. The candidate should have expertise with isolated myocytes, cellular electrophysiology, and recording of intracellular Ca2+. A position is also available in the group of **Dr. William Coetzee**, which employs a multidisciplinary approach to study K+ channels in the cardiovascular system. Individuals with experience in patch clamping, molecular biology, or protein chemistry of ion channels are particularly encouraged to apply. Applicants should state their preference and send their curriculum vitae, bibliography, and contact details (with e-mail addresses) of three references to: **Dr. William Coetzee, Pediatric Cardiology, NYU School of Medicine, 560 First Avenue TCH–501, New York, NY 10016. Telephone: 212-263-8518; e-mail: william.coetzee@med.nyu.edu.** More information available on our **website: http://pedcard.med.nyu.edu/Pedlab/index.html**. *NYU is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL POSITIONS
Competitive Salary Commensurate with Experience/Education

Postdoctoral positions available at the University of Alabama at Birmingham (UAB) in the Department of Genomics and Pathobiology for motivated individuals to use mouse models for molecular studies in the areas of bacterial pathogenesis (laboratory of **Dr. Kevin Dybvig; e-mail: dybvig@uab.edu**); Alzheimer's disease (**Dr. Ken-ichiro Fukuchi; e-mail: fukuchi@uab.edu**); and chronic inflammatory diseases (**Dr. Daniel C. Bullard; e-mail: pike@uab.edu**). See the departmental website: **http://www.uab.edu/genpath** for an overview of the Department and details for each area of research. Most positions open immediately. Information on UAB's strong commitment to postdoctoral education and the Cottrell Awards is provided at **website: http://www.postdocs.uab.edu**. Send curriculum vitae and the names and contact information of three references to the indicated laboratory head at: **Department of Genomics and Pathobiology, University of Alabama at Birmingham, 1670 University Boulevard, VH 402, Birmingham, AL 35294-0019.**

POSITIONS OPEN

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POSTDOCTORAL FELLOWSHIP
Pediatric Hematology/Oncology
University of Michigan

A Postdoctoral Fellowship is available immediately for an individual with previous training in molecular biology. The project of study is on death/survival signaling in the pediatric malignancy neuroblastoma with a particular emphasis on HF-kB factors. The candidate will work with faculty and other postdoctoral candidates and will oversee students working in the laboratory. Applicants should have Ph.D. or M.D. and publication record. Technical expertise in immunohistochemistry/Western analysis, kinase assays, electromobility shift assays, transfection, cloning, and cell culture are desired but not requirements. Please send curriculum vitae to: **Valerie Castle, M.D., Professor of Pediatrics, University of Michigan Health System, 1500 Medical Center Drive, Room 4216 CCGC, Ann Arbor, MI 48109-0938. FAX: 734-647-9654.**

POSTDOCTORAL POSITIONS: LYME DISEASE, EHRLICHIOSIS, AND WEST NILE VIRUS
Yale University School of Medicine

Positions available to study the molecular and cellular immunobiology of lyme disease, human granulocytic ehrlichiosis, and West Nile virus. Research projects on tick-host and tick-pathogen interactions are also available. Experience in molecular biology, microbial pathogenesis, or immunology necessary. Send curriculum vitae and research interests to: **Erol Fikrig, M.D., Yale University School of Medicine, P.O. Box 208031, New Haven, CT 06520-8031. E-mail: erol.fikrig@yale.edu.** *Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL FELLOW/RESEARCH ASSOCIATE position available immediately for an individual with experience in molecular biology, cell biology, and biochemistry to study the role of sphingolipids in apoptosis after oxidative stress.

Duska Separovic, Ph.D.
Department of Occupational and Environmental Health Sciences
Life Science Building, Room 416
Wayne State University
Detroit, MI 48202
Telephone: 313-577-8065
E-mail: dseparovic@wayne.edu

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POSTDOCTORAL POSITION in plant-animal interactions to participate in an NSF-funded study of oak dispersal by food hoarders. Starting date negotiable. We seek candidates with experience in one or more of the following: molecular ecology, seed dispersal, plant physiology and ecology, spatial analyses, landscape ecology, and ecomodeling. This research position is renewable annualy for up to two years and will include directing undergraduates. Opportunities also are available for teaching in a small university. Deadline: March 15, 2002. Send curriculum vitae, statement of research experience, and names of three references to: **Dr. M. A. Steele, Department of Biology, Wilkes University, Wilkes-Barre, PA 18766. E-mail: msteele@wilkes.edu.** *WU is an Equal Opportunity Employer.*

GLOBAL OPPORTUNITIES

FACULTY OF SCIENCES, SENIOR LECTURER/LECTURER, (Anatomical Sciences), (Ref Science 28). School of Anatomical Sciences, University of the Witwatersrand, Johannesburg, South Africa. The University of the Witwatersrand wishes to make the following appointments in the School of Anatomical Sciences: (1) Senior Lecturer in morphological anatomy with specialisation in neuroanatomy and (2) Lecturer in morphological anatomy.

Qualifications and experience (in one or more of the following fields): medicine, dentistry, veterinary science, or science with an established research and publication record. Excellent research opportunities exist in the school.

To apply, submit a covering letter; detailed curriculum vitae with names, addresses, and contact details of three references; and certified copies of degrees/diplomas to: **Ms. Cheryl Gatinho, Human Resources Officer, Faculty of Health Sciences, University of the Witwatersrand, 7 York Road, Parktown, 2193, Johannesburg, South Africa. Telephone: +2711 717-2034; FAX: +2711 643-4318; e-mail: 160cherg@chiron.wits.ac.za** by March 15, 2002. **Website: http://www.wits.ac.za.**

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SYMPOSIA

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ANNOUNCEMENT

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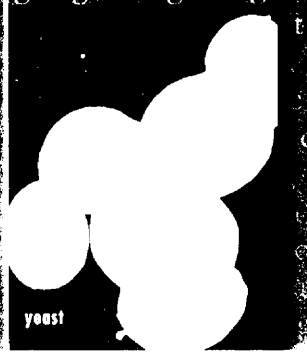

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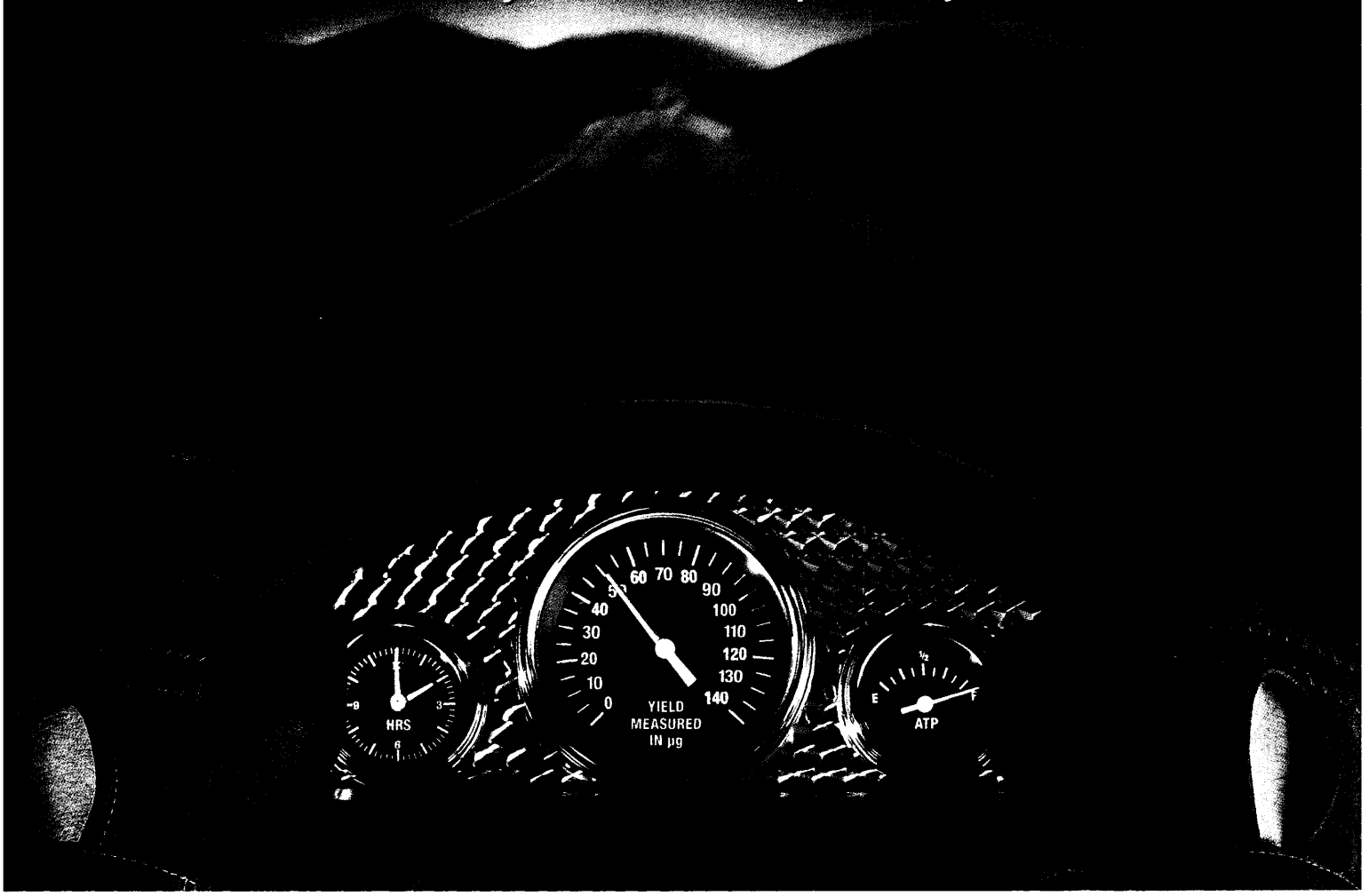

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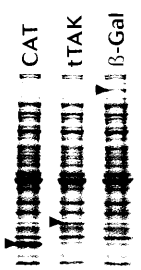

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