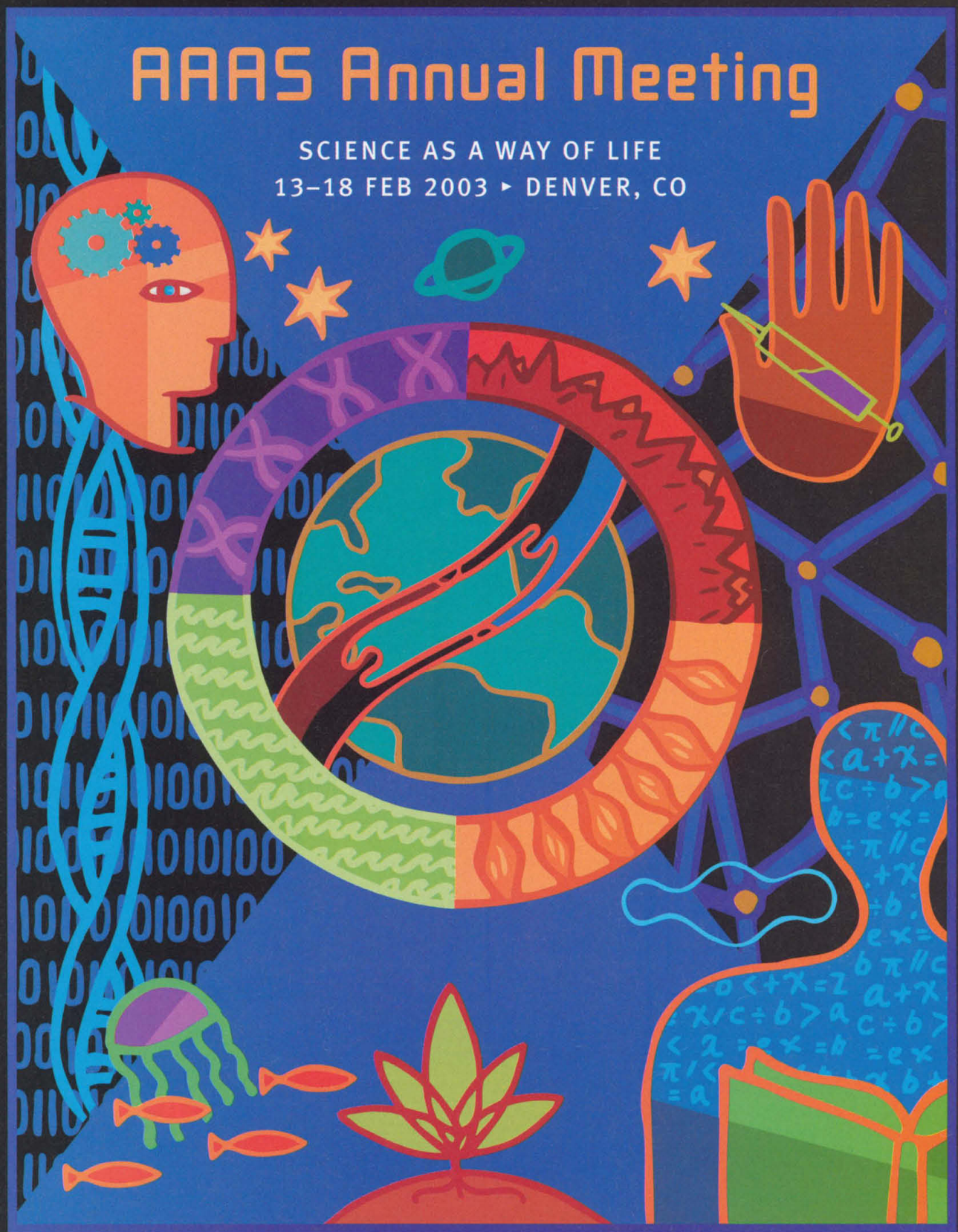

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2003 INTERNATIONAL — ITALY / U.K. / HONG KONG

Conference Title	Chair(s)	Dates	Location
Antimicrobial Peptides	Hans-Georg Sahl & Margherita Zanetti	Apr 27-May 2	Il Ciocco, Italy
Bioinformatics: From Inference to Predictive Models	Kimmen Sjolander & Greg Stephanopoulos	Aug 24-29	Queen's College, Oxford
CAG Triplet Repeat Disorders	Gillian Bates	May 4-9	Il Ciocco, Italy
Catecholamines	Terry Robinson	Aug 3-8	Queen's College, Oxford
Chronobiology	Russell Foster	May 11-16	Il Ciocco, Italy
Genetic Toxicology	Penelope Jeggo	Aug 10-15	Queen's College, Oxford
Illicit Substance Detection: Explosives	Nick Cartwright & Susan Hallowell	Jun 8-13	Il Ciocco, Italy
Laser Diagnostics in Combustion	Marcus Alden	Aug 17-22	Queen's College, Oxford
Malaria	Brian Greenwood	Jul 6-11	Queen's College, Oxford
Mechanisms of Cell Signalling	D. Bar-Sagi, T. Leung & H. Benjamin Peng	Jun 1-6	Hong Kong
Modern Developments in Thermodynamics	Enrico Sciubba	May 11-16	Il Ciocco, Italy
Molecular Therapeutics of Cancer	Mary-Ann Bjornsti	Jul 13-18	Queen's College, Oxford
Organic Thin Films	Gero Decher	May 18-23	Il Ciocco, Italy
Photoions, Photoionization & Photodetachment	John H. Eland	Sep 21-26	Queen's College, Oxford
Polysaccharides, Chemistry of	Paul Gatenholm	May 4-9	Il Ciocco, Italy
Red Cells	Joel Ann Chasis	May 25-30	Il Ciocco, Italy
Solid State Chemistry II	Miguel Alario-Franco	Sep 14-19	Queen's College, Oxford
Staphylococcal Diseases	Brigitte Berger-Bachi	Sep 7-12	Queen's College, Oxford
Stress-Induced Gene Expression	Nic Jones	Jul 27-Aug 1	Queen's College, Oxford
Tissue Repair & Regeneration	William Parks	Jun 1-6	Il Ciocco, Italy
Tuberculosis Drug Development	Ken Duncan	Aug 31-Sep 5	Queen's College, Oxford
Viruses & Cells	Lynn Enquist	May 18-23	Il Ciocco, Italy
Visualization in Science and Education	Mary Jane Shultz & Antony Rest	Jul 20-25	Queen's College, Oxford

2003 SUMMER — NEW ENGLAND (CT, MA, ME, NH, RI) / MONTANA

Conference Title	Chair(s)	Dates	Location
Analytical Chemistry	Robert Kennedy	Jun 15-20	Connecticut College
Angiogenesis & Microcirculation	Luisa Iruela-Arispe	Aug 10-15	Salve Regina University
Applied & Environmental Microbiology	Judy Wall	Jul 27-Aug 1	Connecticut College
Archaea: Ecology, Metabolism & Molecular Biology	Richard Shand	Aug 3-8	Proctor Academy
Assisted Circulation (NEW)	Harvey Borovetz & D. Glenn Pennington	Sep 14-19	Big Sky Resort
Atherosclerosis	Garret Fitzgerald & Alan Attie	Jun 15-20	Kimball Union Academy
Atmospheric Chemistry	Barbara Finlayson-Pitts	Sep 7-12	Big Sky Resort
Atomic Physics	Ronald Walsworth	Jun 15-20	Tilton School
Autophagy in Stress, Development and Disease (NEW)	Beth Levine	Jun 22-27	Colby College
Barrier Function of Mammalian Skin	Jake Bouwstra & Maria Ponec	Aug 3-8	Roger Williams University
Biological Molecules in the Gas Phase	Martin Jarrold	Jul 20-25	Connecticut College
Biomaterials: Biocompatibility / Tissue Engineering	William Wagner	Jul 20-25	Holderness School
Bioorganic Chemistry	Andrea Cochran & John Koh	Jun 15-20	Proctor Academy
Bones & Teeth	Robert Nissenson	Aug 17-22	Kimball Union Academy
Calcium Signalling	Shmuel Muallem	Jul 6-11	Mount Holyoke College
Carbohydrates	Jacquelyn Gervay-Hague	Jun 22-27	Tilton School
Catchment Science: Interactions of Hydrology, Bio. & Geochem.	Kevin Bishop & John Stoddard	Jul 20-25	Colby-Sawyer College
Cell Contact & Adhesion	Pamela Cowin	Jun 8-13	Proctor Academy
Cell Proliferation, Molecular & Genetic Basis of	Jacqueline Lees	Jul 6-11	Colby-Sawyer College
Cellular Osmoregulation: Sensors, Transducers & Regulators (NEW)	Janet Wood & Karlheinz Altendorf	Aug 10-15	Roger Williams University
Cellulases & Cellulosomes	Mike Himmel	Jul 27-Aug 1	Proctor Academy
Ceramics, Solid State Studies in	Juergen Roedel	Aug 10-15	Colby-Sawyer College
Chemical Oceanography	David Demaster	Aug 10-15	Tilton School
Chemical Senses: Taste & Smell	Susan Travers & John Scott	Jul 6-11	Colby-Sawyer College
Chemical Sensors & Interfacial Design	Hank Wohltjen	Aug 3-8	Salve Regina University
Clearance of Dying Cells By Phagocytes: Mech. & Conseq. (NEW)	Valerie Fadok & Ding Xue	Aug 3-8	Connecticut College
Clusters, Nanocrystals & Nanostructures	R. Stanley Williams	Aug 3-8	Connecticut College
Coastal Ocean Modelling	Dan Lynch	Jun 22-27	Colby-Sawyer College
Coatings & Films	Marek Urban	Jul 13-18	Colby-Sawyer College
Cobalamin (NEW)	Ruma Banerjee	Jul 6-11	Colby College
Collagen	Peter Byers	Jul 27-Aug 1	Colby-Sawyer College
Combinatorial Chemistry	Thomas Sowin	Jul 6-11	Tilton School
Computer Aided Drug Design	John Van Drie	Jul 20-25	Tilton School
Condensed Matter Physics	Thomas Witten	Jun 22-27	Connecticut College
Developmental Biology	Gail Martin	Jun 22-27	Proctor Academy
Drug Metabolism	Deborah Nicoll-Griffith	Jul 6-11	Holderness School

Conference Title	Chair(s)	Dates	Location
Dynamics At Surfaces	Stephen Holloway	Aug 10-15	Proctor Academy
Elastin & Elastic Fibers	Steven Shapiro	Aug 3-8	Kimball Union Academy
Elastomers	Donald Schulz	Jun 29-Jul 4	Colby-Sawyer College
Electronic Materials, Chemistry of	James Sheats & Melissa Hines	Jul 13-18	Connecticut College
Electronic Spectroscopy & Dynamics	Elliot Bernstein & James Skinner	Jul 6-11	Bates College
Enzymes, Coenzymes & Metabolic Pathways	Patricia Babbitt & Tadhg Begley	Jul 13-18	Kimball Union Academy
Epigenetics	Robert Martienssen & Wolf Reik	Aug 10-15	Holderness School
Epithelial Differentiation & Keratinization	Kathleen Green	Jul 13-18	Tilton School
Evolutionary & Ecological Functional Genomics (NEW)	Martin Feder	Aug 3-8	Colby-Sawyer College
Excitatory Amino Acids & Brain Function	Richard Huganir	Jun 29-Jul 4	Mount Holyoke College
Fertilization & Activation of Development	Jurrien Dean	Jul 27-Aug 1	Holderness School
Free Radical Reactions	David Crich	Jul 13-18	Holderness School
Fuel Cells	Mark Mathias & Brant Peppley	Jul 27-Aug 1	Roger Williams University
Global Aspects of Technology Transfer: Biotechnology (NEW)	Ben Prickril, Rita Khanna & Charles Maynard	Sep 21-26	Big Sky Resort
Gravitational Effects in Physico-Chemical Systems	Peter Voorhees	Jul 27-Aug 1	Connecticut College
Heterocyclic Compounds	Timothy Gallagher	Jul 6-11	Salve Regina University
High Temperature Corrosion	Ian Wright	Jul 20-25	Colby-Sawyer College
Hormonal Carcinogenesis	Robert Brueggemeier	Jul 6-11	Kimball Union Academy
Hormones & Development	James Truman	Jun 8-13	Connecticut College
Human Genetics & Genomics	Aravinda Chakravarti	Aug 3-8	Colby College
Hydrogen-Metal Systems	Michael Baskes & Annick Percheron Guegan	Jul 13-18	Colby College
Inorganic Chemistry	Stephen Koch	Jul 13-18	Salve Regina University
Interior of the Earth	Jerry Mitrovica	Jun 8-13	Mount Holyoke College
Ion-Containing Polymers	Kenneth Mauritz & Claudine Williams	Jul 13-18	Mount Holyoke College
Lipids, Molecular & Cellular Biology of	Susan Henry	Jul 20-25	Kimball Union Academy
Liquid Crystals	Robert Lemieux	Jun 15-20	Colby-Sawyer College
Liquids, Chemistry & Physics of	Peter Rossky	Aug 3-8	Holderness School
Magnetic Resonance	Kurt Zilm	Jun 15-20	Salve Regina University
Mammary Gland Biology	Mary Helen Barcellos-Hoff	Jun 1-6	Roger Williams University
Matrix Isolated Species, Physics & Chemistry of	Martin Vala	Jul 20-25	Bates College
Matrix Metalloproteinases	Christopher Overall	Aug 17-22	Big Sky Resort
Mechanisms of Hormone Action	Mona Nemer	Jul 27-Aug 1	Kimball Union Academy
Mechanisms of Membrane Transport	Biff Forbush	Jun 15-20	Holderness School
Mechanotransduction & Gravity Signaling in Biological Systems	Michael Gustin	Jul 20-25	Connecticut College
Medicinal Chemistry	Philip Hipskind	Aug 3-8	Colby-Sawyer College
Microbial Population Biology	Siv G. Andersson	Jul 20-25	Proctor Academy
Microfluidics, Physics and Chemistry of	Albert Van Den Berg	Aug 24-29	Big Sky Resort
Molecular & Cellular Bioenergetics	Michael Forgac	Jun 22-27	Kimball Union Academy
Molecular Cell Biology	Susan Wente	Jun 8-13	Tilton School
Molecular Mechanisms of Microbial Adhesion	Jorge Galan & Philippe Sansonetti	Jul 27-Aug 1	Salve Regina University
Molecular Membrane Biology	Jennifer Lippincott-Schwartz	Jul 13-18	Proctor Academy
Molybdenum & Tungsten Enzymes	John Enemark & Rudolf Thauer	Jun 29-Jul 4	Kimball Union Academy
Motile & Contractile Systems	Velia Fowler	Jun 29-Jul 4	Colby-Sawyer College
Muscle: Excitation / Contraction Coupling	Martin Schneider	Jun 8-13	Colby-Sawyer College
Mycotoxins & Phycotoxins	Frances Van Dolah & Ronald Riley	Jun 15-20	Colby College
Natural Products	Michael Luzzio	Jul 27-Aug 1	Tilton School
Neural Plasticity	Tobias Bonhoeffer	Jun 22-27	Salve Regina University
Neurotrophic Factors	Yves-Alain Barde	Jun 8-13	Salve Regina University
New Frontiers in Cancer Detection & Diagnosis	Sudhir Srivastava	Aug 17-22	Proctor Academy
Nonlinear Optics & Lasers	David Hanna	Jul 27-Aug 1	Colby-Sawyer College
Nonlinear Science	Rajarshi Roy	Aug 3-8	Tilton School
Nuclear Chemistry	Robert Wadsworth	Jun 15-20	Colby-Sawyer College
Nuclear Physics	Barry Holstein	Jul 20-25	Colby College
Nucleic Acids	Karin Musier-Forsyth & Eric Westhof	Jun 1-6	Salve Regina University
Organic Reactions & Processes	Christopher Schmid	Jul 20-25	Roger Williams University
Organometallic Chemistry	Morris Bullock	Jul 20-25	Salve Regina University
Origin of Life	J. Peter Gogarten	Jul 13-18	Bates College
Origins of Solar Systems	Patrick Cassen	Jul 6-11	Roger Williams University
Permeable Sediments (NEW)	Richard Jahnke	Jun 15-20	Bates College
Phagocytes	Alan Aderem	Jun 8-13	Connecticut College
Photoacoustic & Photothermal Phenomena	James Spicer	Jun 8-13	Colby-Sawyer College
Photochemistry	Laren Tolbert	Jul 20-25	Mount Holyoke College
Photosynthesis	Marilyn Gunner	Jun 22-27	Roger Williams University
Physical Organic Chemistry	Lawrence Scott	Jun 29-Jul 4	Holderness School
Plant Cell Walls	Daniel Cosgrove	Aug 10-15	Kimball Union Academy
Plasmid & Chromosome Dynamics	Alan Grossman	Aug 17-22	Tilton School
Polyamines	Lo Persson & Cyrus Bacchi	Jun 15-20	Connecticut College
Polymer Colloids	Robert Gilbert	Jun 29-Jul 4	Tilton School
Polymers (East)	Craig Hawker	Jun 15-20	Mount Holyoke College
Proteins	Lynne Regan & Rachel Klevit	Jun 22-27	Holderness School
Purines, Pyrimidines & Related Substances	John Secrist	Jun 29-Jul 4	Salve Regina University
Quantum Control of Light and Matter	Klaas Bergmann	Aug 3-8	Mount Holyoke College
Risk Analysis Summer School (NEW)	D. Byrd, J. Wilson, C.R. Cothern & L. Cox	Aug 3-15	Roger Williams University
Second Messengers & Protein Phosphorylation	Kendall Blumer & Stephen Lanier	Jun 8-13	Kimball Union Academy
Solar Radiation & Climate	V. Ramaswamy & Jeff Kiehl	Jul 13-18	Colby-Sawyer College
Statistics in Chemistry & Chemical Engineering	Mary Beth Seasholtz	Jul 27-Aug 1	Mount Holyoke College
Supramolecules & Assemblies, Chemistry of	Nicholas Abbott	Jul 6-11	Proctor Academy
Thin Film & Crystal Growth Mechanisms	David Cahill	Jun 22-27	Mount Holyoke College
Three Dimensional Electron Microscopy	Kenneth Taylor	Jun 22-27	Colby-Sawyer College
Toxicogenomics (NEW)	James Selkirk & Raymond Tennant	Jun 22-27	Bates College
Undergraduate Biology Education	Robin Patterson & Jean Douthwright	Jun 22-27	Connecticut College
X-Ray Physics	Doon Gibbs	Jul 13-18	Roger Williams University

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ONLINE VECTOR TOOL

The power of the World Wide Web has been considerably underutilized for analyses other than BLAST or other sequence comparisons, which are commonly available via central sites, such as the National Center for Biotechnology Information (NCBI) or Swiss-Prot databases. One company that has created Web programming of interest to molecular biologists is Redasoft, whose Visual Cloning software for making plasmid maps on the Web was the first of its type. Their latest online offering, the Cloning Vector Search Engine (CVSE), is a natural addition that complements and extends the functions of their other software.

The CVSE is a useful tool, long overdue. The program is simply an online search engine for locating information about common vectors used in molecular biology. Visitors to the CVSE Web page (www.redasoft.com/rsn/vectorsearch.htm) will find a front end for an extensive database with an impressive collection of cloning vector information. Search criteria for locating vectors include name (full or partial), features, topology (circular, linear, both, either), vector type (plasmid, cosmid, phage, phagemid, virus, yeast artificial chromosome), supplier (14 choices), host strain, functions (e.g., cloning, expression, mutation), parent vectors (progenitors), siblings (related plasmids), offspring (progeny plasmids). Using "pUC" as the search criteria, for example, resulted in the identification of 54 different pUC plasmids—some still used, others out of date. It is virtually impossible for any database to provide access to each of the thousands of useful cloning tools that have been created, so it was not surprising that a few vectors, such as pTYB4, were not found by the search engine. Such omissions were the exception, rather than the rule, however.

Records returned by the program include plasmid description, vector type, hosts, size, functions, copy number, selection method, suppliers, parents, and siblings. Hyperlinks to the NCBI database readily provide users with access to vector sequence information. Searches can be composed using any or all of the search criteria, and operation is almost instantaneous.

The program is an excellent Web utility that simplifies access of users to vector information. Its interface is easy to use, enabling visitors to the page to find common sequences in seconds. CVSE provides a good deal of the functionality of the old VectorDB database with virtually none of its limitations. Best of all, the price of admission to CVSE (free) insures it will be welcomed by all in the biotechnology community as an excellent service.

—Kevin Ahern

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CONTINUED ON PAGE 1806

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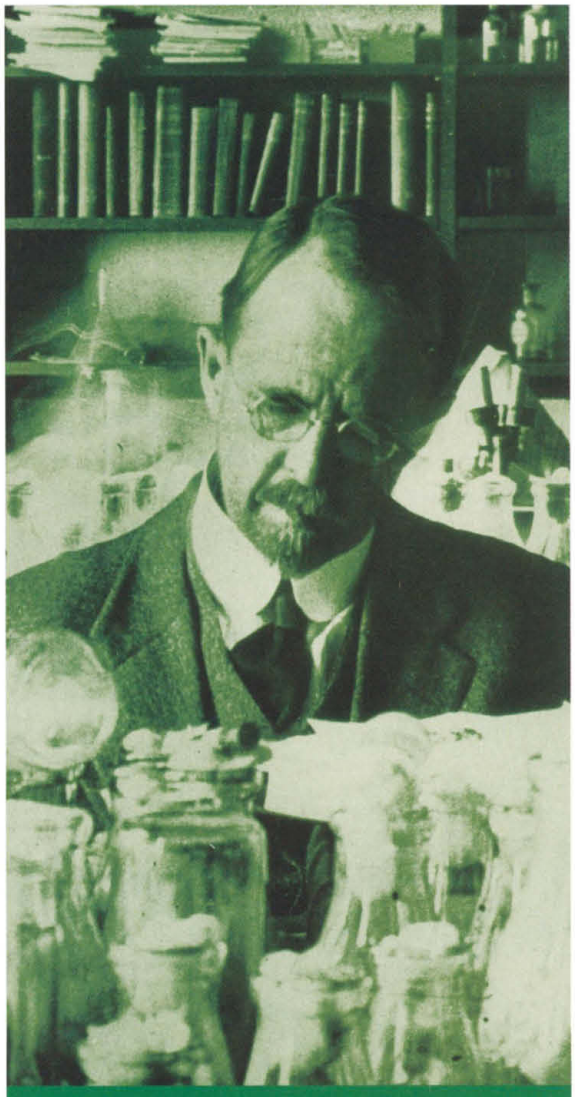
In 1910

HEREDITY AND GENETICS BEGAN TO FLY.



Thomas Hunt Morgan in the lab, 1922

Photo by A. F. Huettner, Courtesy of the Archives, California Institute of Technology

The lowly fruit fly became a noble harbinger of scientific discovery in 1910, when *Science* published Thomas Hunt Morgan's pioneering genetic experiments with *Drosophila*. His work helped determine how heredity and genetics influenced evolution, and he won the Nobel Prize in 1933.

Morgan not only worked to advance science in his research lab, but also as a member, Fellow, and in 1930, President of AAAS. Today, AAAS members continue to support innovative science education, sound science policy, and global cooperation.

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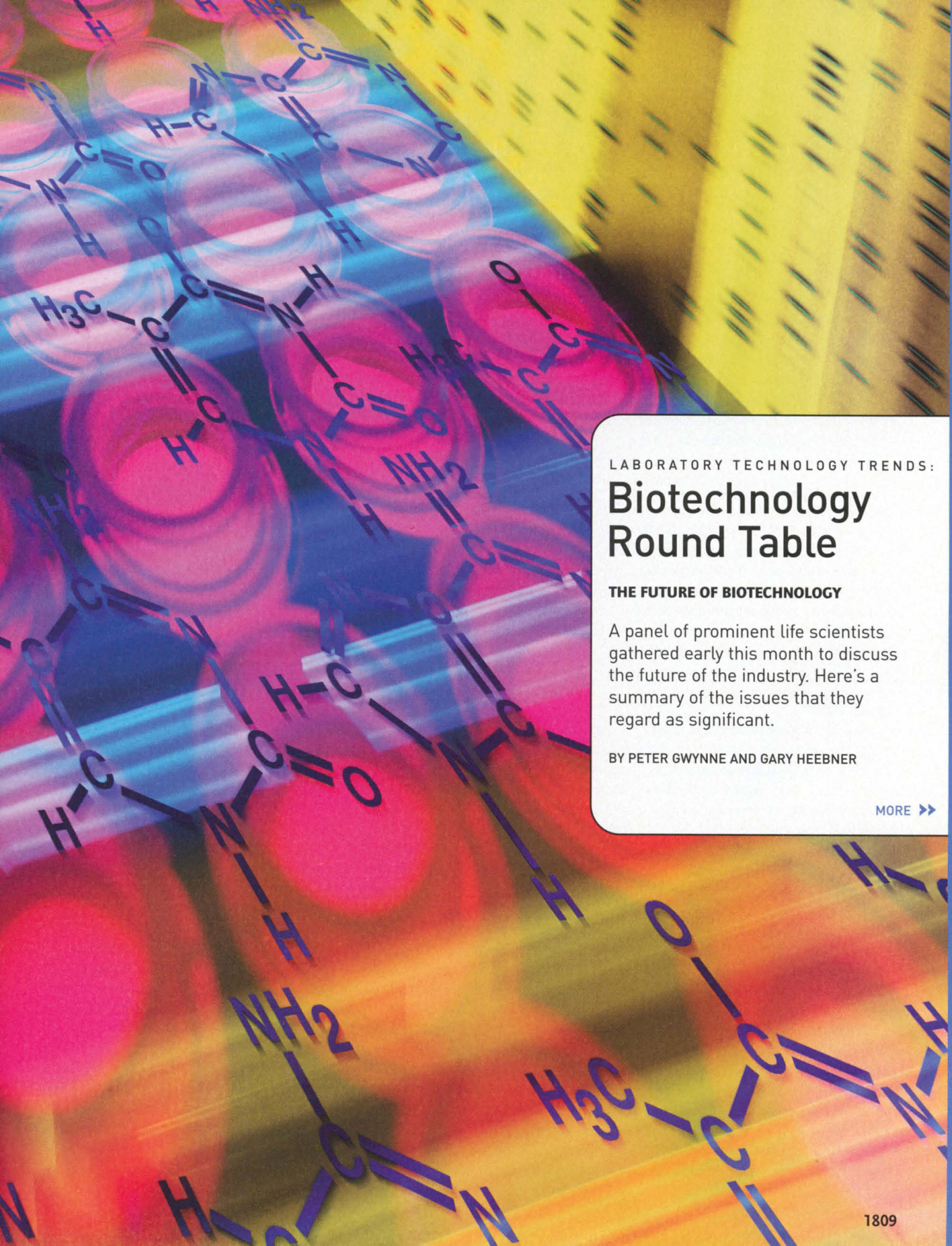

LABORATORY TECHNOLOGY TRENDS:

Biotechnology Round Table

THE FUTURE OF BIOTECHNOLOGY

A panel of prominent life scientists gathered early this month to discuss the future of the industry. Here's a summary of the issues that they regard as significant.

BY PETER GWYNNE AND GARY HEEBNER

MORE ››

special advertising section

LABORATORY TECHNOLOGY TRENDS:

Biotechnology Round Table

» How healthy is the life science industry? How critical a role does information technology play in improving the industry's current efficiency and how will IT advances such as distributed computing play out in coming years? And how will the life science landscape appear a decade from now?

» Early this month, consulting firm **Frost & Sullivan** brought together prominent members of the life science industry to discuss these and other issues at a special round table in San Diego. "Our thinking in assembling the panel was to talk with some of the leading minds in life science and biotechnology about the future of this business," says Dorman Followwill, Frost & Sullivan's vice president for health care and life sciences. "We were specifically trying to zero in on when the bridge will truly be built between the technologies that we currently have or are envisioning and the realized potential of new therapeutics in the marketplace. We also wanted to examine the huge question on the minds of people looking to put their money in this space: What is the best business model and how do we get there?"

» To comprise the panel, Followwill continues, "We looked for a collection of people from mainstream life science companies and from the academic side. We tried to identify individuals who could make major contributions." Among other topics, the discussion focused on the impact of information technology on the life science business. Panel members talked specifically about the future role of grid computing in life sciences, whereby complex problems are distributed across a large number of computers for parallel processing. The account that follows is based on comments during the round table and separate interviews with the panelists.

LIFE SCIENCE TODAY

To open proceedings, panelists provided their snapshots of the current state of the life sciences. The clear message is one of turbulence. The industry plainly faces serious challenges. However, developments in research promise ways to deal with those challenges.

"There's an urgent need to decrease the time and cost of bringing new drugs to market," said Howard Asher, director of global life sciences at **Sun Microsystems**. "In 1969 it took $8 million and six years to develop a drug," Asher continued. "Now it takes 15 to 17 years and $802 million. It takes a blockbuster drug to justify a return on that level of investment. Prevalent ailments such as the common cold and diabetes may not fall into that paradigm. We need to look at a model that can more effectively address the broad needs of the global population, and can do so in a way that's economically viable. IT has the potential to change the current model."

Martin Madaus, CEO of **Roche Diagnostics**, amplified that point. As a result of the emergence of genomics, pharmacogenomics, and proteomics, he pointed out, "Value is shifting away from blockbusters to more targeted pharmaceuticals that are maybe more effective and better overall but for a smaller group of patients. That makes it economically more difficult. It's hard for an industry that's really hooked on blockbusters to get away from them." Another shift detected by Madaus demands less angst. The industry, he said, may move increasingly from pharmaceuticals only to integrated pharmaceutical and diagnostics offerings.

The shifts in the nature of the industry rely in large measure on new and appropriate tools. "We feel that the advances in the tools now available for use by genetic researchers are at least as exciting as anything else going on in the life sciences today," said Murali Prahalad, director of business development at **Sequenom**. "The advent of high performance DNA analysis technologies such as our MassARRAY platform allows a real paradigm shift in the way we can conceive of and carry out genetic studies."

THE 'OMICS' AND 'LUCI' CHALLENGES

Advances in instrumentation can create new problems as well as solve old ones. "From the standpoint of basic discovery research, it's an extremely exciting time," said John Reed, president and CEO of **The Burnham Institute**. "But we are awash in data." Edward Holmes, vice chancellor for health sciences and dean of the School of Medicine at the **University of California, San Diego** (UCSD), amplified that concept. "Today's challenge is the 'omics' challenge," he asserted. "Analyzing the data is the big challenge and we haven't figured out exactly how to do it."

In fact today's typical laboratory is spectacularly badly equipped to deal with huge amounts of data. "Most life science laboratories do the bulk of their record keeping in handwritten notebooks," explained Reed in an interview. "There's very little in the way of databases containing raw data that are mined for connections or even used to keep records." Holmes characterizes that as the LUCI problem (for longitudinal, unstructured, clinical information). "Most of us have very poor electronic records," he told the panel. "We don't have the capital to invest in electronic records. Even if we had them, the information would not exist in such a way that we could easily access it. LUCI will be the limiting factor for us in the future."

The industry has started to take the obvious solution of putting greater reliance on information technology. "IT is increasing," said Reed. "I would expect to see it integrated even more into the laboratory." Where will IT have the most impact? "Whether one looks at large-scale genetic association studies, models of protein folding, molecular docking, membrane dynamics, expression array analysis, or proteomics, the role of IT is already central and can only grow," declared Prahalad of Sequenom. "All of the above rely on several IT inputs."

GOING WITH THE GRID

Grid computing represents a key development with strong potential to help life science. "Grid computing takes central processing unit (CPU)-intensive processes and distributes them across many computers instead of just one," explained

View from the Tools-maker

Frank Laukien, CEO of life science tools company **Bruker Daltonics**, was invited to a CEO round table on drug discovery at this meeting. In a separate interview he commented on its subject matter. Here are some of his thoughts:

- On in silico drug discovery: "I don't think we'll ever fully develop a drug using computers only. But computational biology will play an enormous role. It's a very important complement to the wet lab. I would assume that in silico processes will never replace the need for human trials with the present FDA, and perhaps rightfully so."
- On the need for collaboration among pharmaceutical companies, biotechnology firms, academic institutions, and regulatory authorities in drug development: "It's very important. We are an example of it. We have a number of collaborations with some small biotechnology companies. We also collaborate with startup biotech firms and large pharmas. Good collaboration of this type helps us, as a tools provider, to help our pharmaceutical clients."
- On the arrival of personalized medicine: "If I am a little bearish on pure in silico approaches, I'm bullish here. Personalized medicine has arrived. More and more, companies are trying to stratify their clinical trial subjects. The pharmas that loved their blockbusters resisted a bit, but now they realize that the approach will help. Once the new drugs come out, people will need a genetic test for certain SNPs, haplotypes, etc., to categorize the patients. The personalized medicine approach will become more and more prevalent, perhaps for more than 50 percent of the drugs prescribed in 10 to 20 years. It will help to increase the safety of drugs for patients who really need them while avoiding patients who can't benefit or who might be harmed."

Sun's Asher. "We look at it more like an electric utility, allowing users to share resources across multiple locations or organizations based on demand." As such, it has specific value for drug companies that "tend to work 9 to 5," in Asher's words. "If they were on the utility, they could draw on the grid, and then sell their computing time to the grid in off-peak hours," he continued. "Suppose our scientists work 9 to 5, but our computers don't," diagnostics representative Madaus of Roche, countered. However, he added, "This model offers exciting possibilities to our organization."

Prahalad showed even more enthusiasm. "Grid computing provides the only viable solution," he said. "I think it will be central to achieving the promise of high performance computing in a number of applications." But incorporating grid computing into life science won't necessarily be easy. "A lot of work remains to be done in applications development, resources management, and scheduling," he continued. "The devil really is in the details."

The Burnham Institute has already explored the possibilities of using grid computing. "We have been in discussions with some companies and are looking at some pilot projects," said Reed. "The opportunities for distributed computing are great, but there are certain bottlenecks in the technology. Applications that work well in a distributed computing environment are those that can be broken into small, iterative pieces. For example, in silico drug screening would work well on a distributed network because you can break the process up and distribute it over multiple machines. Large data sets that can't be broken up into small pieces won't work so well."

Holmes of UCSD took a more skeptical view. "I worry about the garbage in, garbage out problem," he said. "The computers are so far ahead of the data. We simply don't have good, reliable clinical information to put in the computer."

A MATTER OF TRUST

Asher of Sun struck a similar theme. "The biggest point of pain is not data management but unstructured information management in any language, including English," he pointed out. "Even medical information in English has Latin acronyms and certain things that only a few people understand. Unless that information is accessible in a meaningful way to the people that can use it, it holds very little value."

Further, that information needs to be trusted – by the people that use it to develop new drugs, and by the people that regulate the development of those drugs. "When we look at the gatekeepers – the public health organizations such as the FDA [**U.S. Food and Drug Administration**] – they need the assurance that the data they receive is valid," Asher said. "When pharmaceutical companies rush in with genomic data that eliminates the need for studies that we normally deal with, they are met with suspicion."

As Asher sees it, the issue is simple. "We're trying to achieve one thing," he says. "All of us need to be able to trust the fruits of the postgenomic era – to prove that methodologies will work." And what can the industry do to invoke trust? He suggested organizing a four-sided table with representatives of the health care community on one side, the IT community on another, members of the life science industry on the third, and regulators on the fourth. "Over the next decade we need to lay out the architectural IT structures and prove through scientific initiatives that they work," he explained. Once commercial companies build and validate something that everyone at the table can trust, the whole industry will come alive."

THE IMPACT OF NEW TECHNOLOGY

Panelists saw certain limits to aggressiveness in accepting new technology. None expects an early emergence of in silico drug discovery

MORE ▸▸

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LABORATORY TECHNOLOGY TRENDS:

Biotechnology Round Table

based on IT and relying on a minimum of human trials. "The replacement of human experimentation is not likely to happen in my lifetime," said Holmes. "I think we'll always need to test hypotheses at the correct time in human beings." Sequenom's Prahalad takes a similar view. "Until we can say with complete certainty that we understand all genes and their functions as well as all proteins and their functions," he said, "the need for wet labs will persist."

That doesn't mean that drug development shouldn't adapt to changes brought about by information technology. "We want to slowly erode the need for animal studies," said Asher. "A study by the Tufts University Center for the Study of Drug Development suggests that if we can eliminate a few of the animal trials we can bring down the cost of bringing a drug to market from $800 million to $560 million." Other savings are possible further along the drug development pipeline. "We can do smarter, more efficient human clinical trials," said Holmes. "Their cost is one of the most prohibitive things in bringing new drugs to the market. Anything that can enhance our ability to identify pharmaceuticals and devices that are safer and more effective is useful."

One sea change that stems from IT has already become evident: the move to personalized medicine, in which treatments are based on patients' individual genetic complements. "We already do it in some ways," explained Reed. "Every woman who has breast cancer has her tumor phenotyped for estrogen expression. She will or will not receive Tamoxifen according to the result."

Extending that approach could happen very quickly. "Personalized medicine will arrive far faster than we think," said Prahalad. "The power to perform large-scale association studies is a reality today. The net effect will be the ability to genetically stratify and substratify patients along as many phenotypic parameters as we would like." Holmes agrees. "I predict that personalized medicine will arrive within two years," he said. "I base that on observations which have shown that genetic variations which are already known can predict which individuals will have adverse outcomes from a particular drug. This is so promising that I can't imagine that the practice of medicine won't be influenced by it in some way."

What else does the future offer the life science business? Reed forecast the impact of personalized medicine on the pharmaceutical business. "I predict that 10 years from now the megamergers of pharmaceutical companies will be undone and that pharmas will spin themselves out to smaller companies," he said. "Disease indication areas will fragment more; heart disease may actually be four, five, or six diseases. And there will be integration between diagnostics and therapeutics." Madaus of Roche agreed that the next decade will see the arrival of more drugs with specific diagnostic products attached to them. "We'll also see a shift away from the classical discipline of clinical chemistry to molecular diagnostics," he continued. "Those technologies will be mainstream. All labs will use them."

For Asher, the future promises the ability to create a healthier society, and hence a more productive society. But it won't be easy. "We've had to make do in the past to have therapeutics that cause side effects," he said. "The future will deal with how to move from therapeutics to prevention. How will we get vaccines that really work? How will we get absolute cures and not just therapies? The answer lies in genomic information."

Peter Gwynne is a freelance science writer based on Cape Cod, Massachusetts, U.S.A. Gary Heebner is a marketing consultant serving the scientific industry, based in Foristell, Missouri, U.S.A.

Young Site on Aging Research

Last month marked the first birthday of an online resource run by *Science*. The **SAGE Knowledge Environment** represents a pioneering effort to help the broad community of scientists interested in aging stay up-to-date on research in their field. "Specialists in aging are spread over a wide range of disciplines," says Kelly LaMarco, the site's editor. "We thought that this was a research community that would benefit from having an electronic community."

The site has four main sections: literature and news; community; resources; and highlights. Original content in the literature and news section includes commentary and review articles written by scientists as well as news articles written by journalists. Site editors rely partly on an active scientific advisory board to keep SAGE KE current in terms of coverage of new findings. Items accessed by visitors divide about evenly between articles by scientists and news articles by journalists. "We're happy we decided to include news," LaMarco says. "Our Noteworthy This Week section is quite popular with our readers." In fact scientists seem to like the entire site. About 5,000 different individuals visit the site each month, each staying there for 25 to 35 minutes on average.

As to subject matter, LaMarco says, "We focus mainly on basic mechanisms of aging and less on pure clinical papers." However, she adds, AAAS and the American Society for Family Physicians plan to introduce a website on aging for practitioners that will contain coverage of clinical studies on aging and age related diseases.

sageke.sciencemag.org

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MARINE BIOLOGIST
Department of Biological Sciences
East Stroudsburg University

East Stroudsburg University is pleased to invite applications for a full-time, tenure-track Marine Biologist at the **ASSISTANT/ASSOCIATE PROFESSOR** level beginning fall 2003. Requirements: Ph.D. in biological sciences, a strong commitment to undergraduate teaching and research, and a strong background in marine biology. Final determination will be based upon successful interview, which may include a teaching demonstration. Experience in academic advising, directing a marine science program, and teaching of marine biology and introductory courses is preferred. Applicants may also teach courses in an area of specialization. The area of specialization and research interests should be complementary to existing departmental expertise. Please visit **website: http://www.esu.edu/biology/faculty.html** for review of existing faculty expertise. Applicants should submit a brief letter of introduction, description of teaching and research experiences, curriculum vitae, transcripts, and three letters of reference to: **Terry Master, Search and Screen Committee Chair, Department of Biological Sciences, East Stroudsburg University, East Stroudsburg, PA 18301.** Visit our **website: http://www.esu.edu.** Full consideration will be given to applications received by January 17, 2003. No electronic submissions accepted. *ESU is an Equal Opportunity Employer. Minorities and women are strongly encouraged to apply. All candidates must furnish proof of eligibility to work in the United States upon appointment.*

FACULTY POSITION IN INVERTEBRATE BIOLOGY
Department of Integrative Biology
The University of California at Berkeley

The Department of Integrative Biology at the University of California, Berkeley, is seeking an outstanding Scientist for a tenure-track position (**ASSISTANT PROFESSOR**) in invertebrate biology. Applicants with a Ph.D. and a research record in any area of invertebrate biology (e.g., behavior, biomechanics, ecology, evolution, development, physiology) will be given serious consideration. Candidates must have a strong interest in undergraduate and graduate teaching and will be expected to contribute to instruction in marine invertebrate biology as well as in their specific area of expertise. Interested applicants should send curriculum vitae, bibliography, brief description of research accomplishments and objectives, statement of teaching interests, and selected reprints to the address below and should have three letters of reference sent to the same address. Closing date for applications: January 6, 2003. Applications should be sent to:

Invertebrate Biology Search
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Department of Pharmacology, Physiology, and Therapeutics
University of North Dakota
School of Medicine and Health Sciences

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The Division of Neonatology at the Vanderbilt University School of Medicine is seeking a Physician Scientist whose research interest is the biology of embryonic, fetal, or neonatal development including research into the cell and molecular biology and/or genetics of appropriate model systems. This position is on the tenure track with a faculty rank commensurate with background and experience. There will be minimal clinical responsibilities so that at least 80% of the time will be available for research. Salary and research support are available to entry-level Investigators for a reasonable period of time to allow external funding to be secured. The research environment includes established Investigators with proven track records. The opportunity to establish collaborative relationships with exceptionally strong basic science departments ensures the highest quality research and training environment. Information about the Division of Neonatology may be seen at **website: http://vuneo.org.** Interested candidates should send their curriculum vitae and three letters of reference to: **Robert B. Cotton, M.D., Department of Pediatrics, Vanderbilt University Medical Center, Nashville, TN 37232. E-mail: robert.cotton@vanderbilt.edu.**

MASSACHUSETTS GENERAL HOSPITAL HARVARD MEDICAL SCHOOL

The Massachusetts General Hospital (MGH) Division of Hematology/Oncology and Cancer Center invite applications for the position of **DIRECTOR OF LEUKEMIA RESEARCH**. Board-certified Hematologists/Oncologists acting as Principal Investigators at the **ASSOCIATE PROFESSOR** level are encouraged to apply. A record of program development and success in basic research with translational links to patient care is required. Emphasis is placed on the ability to foster interaction between laboratory and clinical Investigators and to build cooperative teams. This position includes joint research activities with the Dana-Farber Cancer Institute and Brigham and Women's Hospital. Please submit a letter describing qualifications, with curriculum vitae and names of three references to: **Dr. Bruce Chabner, Chief of Hematology/Oncology, Massachusetts General Hospital, 100 Blossom Street, Cox 640, Boston, MA 02114-2617.** *MGH is an Equal Opportunity/Affirmative Action Employer. Women and minority candidates are urged to apply.*

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Please send your application with appropriate documentation of achievements in research and experience in teaching until **December 14, 2002,** to the **Max-Planck-Society (Max-Planck-Gesellschaft zur Foerderung der Wissenschaften e.V., Secretariat of the Biology/Medicine Section – Ulrike Kasemi – Postfach 10 10 62, D-80084 Muenchen, Germany; E-Mail: ulrike.kasemi@mpg-gv.mpg.de)** and **in parallel** to one of the following addresses: **Chairs 1 (File No. K-45), 2 (File No. K-46) and 3 (File No. K-47) to the President of the Justus-Liebig-University, Ludwigstrasse 23, D-35390 Giessen, Germany; Chair 3 to the Dean of the Medical Faculty of the Johann-Wolfgang-Goethe-University, Theodor-Stern-Kai 7, D-60590 Frankfurt/Main, Germany.**

Environmental Scientist Position

Brookhaven National Laboratory (BNL), in collaboration with Stony Brook University and others, is establishing a focused research program called EnviroSuite to develop and apply synchrotron-based techniques for environmental science. The BNL Environmental Sciences Department is seeking a Scientist to conduct and coordinate environmental science research (i.e., biological/geochemical science focused on environmental contamination) at the National Synchrotron Light Source (NSLS) and other facilities. The candidate is expected to serve as a Principal Investigator for original research and provide the interface between researchers at BNL and outside collaborators interested in the application of synchrotron light source techniques for environmental research.

The successful applicant will have an established career with a strong background and experience in the application of synchrotron radiation for environmental research and the unique challenges associated with sample preparation, beam optics, etc.

The candidate must have a distinguished publication record and a history of interacting with sponsoring organizations. Demonstrated ability to prepare grant applications and obtain independent funding is required. Experience in managing an interdisciplinary scientific and technical research team engaged in both basic and applied research is highly desirable.

Interested candidates should submit a CV and three letters of reference indicating position #MK 3854 to: M. Kipperman, Brookhaven National Laboratory, Bldg. 185, P.O. Box 5000, Upton, New York 11973-5000. BNL is an equal opportunity employer committed to workforce diversity.

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Professor and Chair
Department of Genetics, M–344
Stanford University School of Medicine
Stanford, CA 94305-5120

Stanford University is committed to increasing representation of women and members of minority groups on its faculty and particularly encourages applications from such individuals.

MEDICAL UNIVERSITY OF SOUTH CAROLINA
Experimental Pathology

The Department of Pathology and Laboratory Medicine is seeking two faculty members to join its Division of Research. Appointments will be full-time at the **ASSISTANT** or **ASSOCIATE PROFESSOR** level on a tenure track. The area of research is open but should involve some aspect of experimental pathology. Research interests of current Division members include cancer biology, viral and bacterial pathogenesis, and the pathobiology of neurosensory systems and aging. Qualifications include a Ph.D. M.D., or equivalent degree and demonstration of the ability to develop an independent, extramurally funded research program. Please forward curriculum vitae, a statement of research interest, and the names of three references to:

Janice M. Lage, M.D.
Professor and Chair
Department of Pathology and Laboratory Medicine
Medical University of South Carolina
165 Ashley Avenue, Suite 309
P.O. Box 250908
Charleston, SC 294258

The Medical University is an Equal Opportunity Employer.

ASSISTANT/ASSOCIATE PROFESSOR (TENURE TRACK)
Comparative Biomedical Sciences

Required qualifications: Ph.D. or equivalent degree in biological/biomedical sciences or related field, postdoctoral experience, research background in cell/molecular biology, ability to teach in a team-taught course in the professional curriculum, have or will have extramural funding. Responsibilities: Establishes and maintains an extramurally funded research program; teaches in the professional curriculum and in a graduate course. Salary and rank will be commensurate with qualifications. Application deadline is January 10, 2003, or until candidate is selected. Submit letter of application and résumé (including e-mail address) to: **Gary E. Wise, Ph.D., Professor and Head, Comparative Biomedical Sciences, Louisiana State University, Reference Number 014396, Baton Rouge, LA 70803. Telephone: 225-578-9889.**

Louisiana State University is an Equal Opportunity/Equal Access Employer.

MCGILL UNIVERSITY. The Faculty of Science, McGill University, is seeking to appoint the first occupant of the Tomlinson Chair in Science Education. The successful applicant will be an excellent Scientist who has a distinguished record in science education research and who is familiar with information technology as applied to education. He/she will take up a tenured appointment in one of the departments of the Faculty of Science and will be expected to set up a comprehensive research program relating to the teaching of science at the university level. He/she will have access to significant funding from the Tomlinson University Science Teaching Project and will also be expected to attract external research funding. Application procedure: Applications including curriculum vitae as well as a research plan and a statement of teaching interests should be sent to:

Professor Dik Harris, Director
Tomlinson University Science Teaching Project
McGill University
Rutherford Physics Building
3600 University Street
Montreal, Quebec H3A 2T8 Canada
E-mail: dik.harris@mcgill.ca

Three references should be asked to send supporting letters. Applications will be reviewed beginning January 1, 2003, but applications will be accepted until the post is filled. *All qualified candidates are encouraged to apply; however, in accordance with immigration regulations, priority will be given to Canadian citizens and permanent residents. McGill Univesity is committed to Equity in Employment.*

FACULTY POSITIONS in bioinformatics. Tenure-track positions in bioinformatics are offered through the Departments of Biology and Statistics as part of a Universitywide initiative in genomics. Candidates with research programs in (1) the analysis of genomic data and the creation of bioinformatics tools or (2) statistical methodology for the analysis of biological data (particularly in transcriptional or genotypic profiles) are especially encouraged to apply. The University of Kentucky offers generous start-up packages, outstanding computational facilities, and a highly interactive multidisciplinary environment. Successful applicants are expected to establish nationally competitive research programs and participate in undergraduate and graduate instruction. Applicants should submit curriculum vitae, a statement of research interests, and have three letters of recommendation sent to: **Dr. Brian Rymond, Bioinformatics Search Committee, 101 Morgan Building, University of Kentucky, Lexington, KY 40506-0225. FAX: 859-257-1717.** Application review will begin on December 20, 2002, and continue until the positions are filled. *The University of Kentucky is an Equal Opportunity Employer.*

YOUNGSTOWN STATE UNIVERSITY

Department of Biological Sciences: **TENURE-TRACK FACULTY POSITION** available August 2003. Ph.D. in physiology or related field and postdoctoral experience required. For additional information regarding this vacancy, please visit **website: http://www.ysu.edu/hr**. Send letter of interest, curriculum vitae, transcripts, statements of teaching and research interest, and three letters of reference to: **Dr. Robert Leipheimer, Chairperson, Biological Sciences, Youngstown State University, Youngstown, OH 44555. E-mail: releipheimer@ysu.edu.** *YSU is an Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL POSITION is available in the Laboratory of Neurophysiology, Department of Psychiatry, Harvard Medical School, to study the brainstem mechanisms controlling hippocampal activity and rhythmic synchronization in the limbic system. Experience required in computer analysis of electrophysiological signals and in *in vivo* neurophysiology, preferably in recording ensemble neuronal activity in the freely moving rat. Curriculum vitae, summary of research experience, and names of references should be sent to: **Dr. Bernat Kocsis, Psychiatry/MMHC, Harvard Medical School, 74 Fernwood Road, Boston, MA 02115. E-mail: bkocsis@hms.harvard.edu.**

SWARTHMORE

DEVELOPMENTAL BIOLOGIST LEAVE REPLACEMENT

The Biology Department at Swarthmore College invites applications for a one-year faculty leave replacement position at the **ASSISTANT PROFESSOR** level beginning September 2003. Teaching may include an intermediate-level laboratory course in developmental biology, a junior/senior level seminar in one's area of special interest, and participation in a team-taught introductory biology course. Applicants should have a Ph.D., teaching experience, and a strong commitment to undergraduate education. Interested persons should submit curriculum vitae, three letters of recommendation, and a statement of teaching and research interests to: **Developmental Biology Search, Department of Biology, Swarthmore College, Swarthmore, PA 19081.** All application materials should be received by January 6, 2003. *Swarthmore College is an Equal Opportunity Employer.*

RESEARCH FACULTY POSITION
University of California, San Francisco

The Department of Orthopaedic Surgery at the University of California, San Francisco, invites applications for a research faculty position at the **ASSISTANT PROFESSOR** level. Qualified applicant must have extensive and comprehensive expertise in comparative anatomy, vertebrate embryology, craniofacial development, skeletal biology, and evolution. Duties include research, teaching medical students and residents, initiating extramurally funded research, and supervising graduate students. A Ph.D. and postdoctoral experience are required. Send curriculum vitae to:

David S. Bradford, M.D.
University of California San Francisco
Department of Orthopaedic Surgery
500 Parnassus Avenue, Box 0728
San Francisco, CA 94143

UCSF is an Affirmative Action/Equal Opportunity Employer. The University undertakes Affirmative Action to assure Equal Employment Opportunity for underutilized minorities and women, for persons with disabilities, and for Vietnam-era veterans and special disabled veterans.

CELL BIOLOGY
University of Puget Sound

Full-time, three-year **VISITING ASSISTANT PROFESSOR**; begins fall term 2003. Teach an introductory biology course and a sophomore-level course in cell biology. Courses have both lecture and laboratory components. An active research program with undergraduates is encouraged. Requires Ph.D. with emphasis in cellular biology and commitment to undergraduate teaching and liberal arts education. Postdoctoral teaching or research experience desirable. Submit interest letter; teaching and research statements; curriculum vitae; and three reference letters by February 3, 2003, to: **Cell Biology Search, University of Puget Sound, Campus Mail Box 1007, Tacoma, WA 98416.** *An Equal Opportunity/Affirmative Action Educator/Employer.*

ASSISTANT/ASSOCIATE PROFESSORS: The Department of Biological Sciences at the Louisiana State University in Shreveport invites applications for two tenure-track appointments starting August 2003. The successful candidates are expected to have an earned Ph.D. to teach courses at the undergraduate and graduate (Master's) level and to maintain an active research program that provides opportunities for students. Letters of application stating teaching and research interests, curriculum vitae, and three letters of reference should be sent to: **Dr. Stephanie Aamodt, Chair, Department of Biological Sciences, Louisiana State University–Shreveport, One University Place, Shreveport, LA 71115-2301.** For details, please see **website: http://www.lsus.edu/sc/bios.** *Louisiana State University–Shreveport is an Equal Opportunity/Affirmative Action Employer.*

Department of Health and Human Services
National Institutes of Health
National Institute of Diabetes and Digestive and Kidney Diseases

With nation-wide responsibility for improving the health and well being of all Americans, the Department of Health and Human Services oversees the biomedical research programs of the National Institutes of Health and those of NIH's research Institutes.

A NIDDK **POSTDOCTORAL POSITION** is available to study yeast prions (amyloid) and the cellular factors involved in prion propagation. Biochemistry and molecular biology experience is desirable. We have identified protein chaperone mutations that alter prion propagation and are using biochemical and genetic approaches to determine how the activities of these chaperones affect prion propagation. Send cover letter, summary of research experience, and the names and addresses of three references to: Dr Daniel C. Masison, Laboratory of Biochemistry and Genetics, National Institute of Diabetes and Digestive and Kidney Diseases, NIH/HHS, Bldg 8, Room 407, 8 Center Drive, Bethesda, MD 20892, MSC 0851, USA. E-mail: masisond@helix.nih.gov

DHHS and NIH are Equal Opportunity Employers

BROOKLYN COLLEGE

BROOKLYN COLLEGE
of the
CITY UNIVERSITY OF NEW YORK

DEAN OF RESEARCH AND GRADUATE STUDIES

Applications are invited for the position of Dean of Research and Graduate Studies to work closely with faculty to promote and increase research and grant activity.

Brooklyn College is one of the nation's leading public liberal arts colleges and a principal teaching and research institution of The City University of New York. The college is located on a 26 - acre setting, with a faculty of 550, offering undergraduate and graduate degree programs in 31 departments to 15,500 students of culturally, religiously, and socio-economically diverse backgrounds.

The Dean will manage the Office of Research and Sponsored Programs and provide leadership; support and increase entrepreneurial revenues via various technology projects including licensing/stock issuance agreements, patent applications, business incubators, Small Business Innovation Research (SBIR) funding; represent the College on appropriate university committees and in national associations and meetings; serve as liaison with CUNY Graduate Center and doctoral programs; participate in campus-wide planning and policy development; take the lead role in planning the construction and renovation of science facilities as per College Master Plan and work closely with the Assistant Dean for Graduate Studies and the Coordinator of Graduate Studies to plan and promote the graduate curriculum.

Candidates are expected to have a commitment to the mission of the College and specifically, to the goals set for research and graduate education; scholarly credentials, including an earned doctorate and a record of significant research and scholarship; must qualify for appointment as a tenured full professor; a solid record of successful grantsmanship; experience in the administration of research or institutional grants and contracts and demonstrated leadership in programmatic and curriculum development. Background in the Sciences highly preferred. Please send current resume, and contact information. Review of applications will begin on December 29, 2002 and continue until the position is filled.

All correspondence should be addressed to:

Assistant Vice President of Human Resource Services
Brooklyn College, 2900 Bedford Avenue, Brooklyn, NY 11210.

For additional information please see our web site at
http://www.brooklyn.cuny.edu/bc/offices/personnel/jobs/

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Penn
UNIVERSITY of PENNSYLVANIA

BLOOD BANK/ TRANSFUSION MEDICINE

Assistant Professor - Tenure Track

The Department of Pathology and Laboratory Medicine at the University of Pennsylvania's School of Medicine seeks candidates for an Assistant Professor position in the tenure track. Applicants must have an M.D. or M.D./Ph.D, and expertise in Blood Banking and/or Transfusion Medicine.

Please refer to our Web site for further details:
http://www.uphs.upenn.edu/path/JobOpps.html

The University of Pennsylvania is an equal opportunity, affirmative action employer. Women and minority candidates are strongly encouraged to apply.

Department of Health and Human Services
National Institutes of Health
National Institute on Aging

With nation-wide responsibility for improving the health and well being of all Americans, the Department of Health and Human Services oversees the biomedical research programs of the National Institutes of Health and those of NIH's research Institutes.

The National Institute on Aging, a major research component of the National Institutes of Health (NIH) and the Department of Health and Human Services, is recruiting for a Health Scientist Administrator to serve as Program Director and lead a research program in neuroepidemiology, which includes studies of prevalence, incidence, and risk factors for Alzheimer's disease and other dementias of aging. The individual selected for this position will develop the program, define its research questions and goals, encourage scientists with appropriate expertise and interest to develop and submit research grant applications, and foster interactions with other epidemiology programs across NIH.

The successful individual will possess an M.D. or Ph.D. degree in epidemiology-relevant biological or behavioral disciplines, have training and research experience in epidemiology as related to the aging process with preference for a focus on aging-related neurodegenerative diseases such as Alzheimer's disease, and have leadership/managerial skills and experience that include responsibility for the conduct and administration of biomedically related research.

Salary range is $55,694 to $101,742 and will be commensurate with research experience and accomplishments, and a full Civil Service package of benefits (including retirement, health, life and long term care insurance, Thrift Savings Plan participation, etc.) is available.

For additional information on this position, and for instructions on submitting your application, please see our website, at: **www.jobs.nih.gov**, or contact the **NIA Human Resources Office** at **301-496-5347**. Refer to announcement # **NIA-02-538**. Applications must be postmarked by **January 31, 2003**.

HHS and NIH are Equal Opportunity Employers

FACULTY POSITION
Department of Biological Sciences
University of Alabama–Huntsville (UAH)

The Department of Biological Sciences invites applications for a tenure-track faculty position as an **ASSISTANT** or **ASSOCIATE PROFESSOR** to begin August 2003. We seek a Biologist who will contribute to the research strength of the Department and have a commitment to excellence in undergraduate and graduate education. The successful candidate is expected to maintain a productive, externally funded research program and to teach in our anatomy and physiology courses. The new faculty member might also teach in other core curriculum courses and develop a course in an area of expertise. UAH is one of three universities in the University of Alabama system. The UAH campus is located in Huntsville, Alabama, home to NASA's Marshall Space Flight Center and numerous high-technology corporations. Huntsville is a midsize cosmopolitan community with one of the highest per capita incomes in the Southeast. Our department offers Bachelor and Master of Science degrees as well as an interdisciplinary Ph.D. degree in biotechnology. Please send curriculum vitae along with a statement of research interests and teaching philosophy to: **Search Committee Chair, Department of Biological Sciences, 142 Wilson Hall, University of Alabama in Huntsville, Huntsville, AL 35899** or e-mail your application to **e-mail: podilag@email.uah.edu**. Include the names, addresses, and telephone/e-mail contact information for three references. Consideration of completed applications will begin on December 16, 2002. For more information about our department and degree programs, please visit **website: http://www.uah.edu/biology/**. *UAH is an Affirmative Action/Equal Opportunity Employer.*

ASSISTANT/ASSOCIATE PROFESSOR OF MICROBIOLOGY

The Department of Biochemistry and Microbiology of Oklahoma State University Center for Health Sciences, College of Osteopathic Medicine, invites applications for a tenure-track faculty position at the Assistant/Associate Professor level. Rank and salary commensurate with experience. Position is for a full-time, 12-month appointment in an expanding division of basic sciences. Candidates must possess Doctoral degree and postdoctoral research experience in immunology and/or related molecular biology. Knowledge of medical microbiology desired but not required. Research facilities, start-up funds, competitive salary, and environment for professional development will be provided. Selected individual must have commitment to establishing a successful, externally funded research program. The successful candidate will be expected to participate in team teaching to medical students in a medical microbiology and immunology course, to develop a graduate course in area of expertise, and to participate in training of graduate students. Applications will be accepted and reviewed until the position is filled. Candidate should send a letter of application, statement of research interest, curriculum vitae, and the names and addresses of three to five professional references to: **Human Resources, OSU-COM, 1111 West 17th Street, Tulsa, OK 74107-1898**. *Oklahoma State University is an Equal Opportunity/Affirmative Action Employer.*

ASSOCIATE RESEARCH SCIENTIST
Columbia University

Associate Research Scientist position available immediately in the Department of Pharmacology at Columbia University. This is an opportunity to join an interdisciplinary laboratory investigating the subcellular basis of arrhythmias in the infarcted heart. Applicant should have at least three years of postdoctoral research experience in molecular biology and/or electrophysiology of ion channels. Send curriculum vitae to: **Dr. Penelope Boyden, Ph.D., Department of Pharmacology, Columbia University College of Physicians and Surgeons, 630 West 168th Street, New York, NY 10032**. *Columbia University is an Affirmative Action/Equal Opportunity Employer.*

POSITIONS OPEN

SCIENCE EDUCATORS

California State University, Los Angeles, seeks three tenure-track **ASSISTANT PROFESSORS**, one in each of the following fields, starting September 2003. Successful applicants will participate in the preparation of future K–12 teachers and collaborate with existing science education colleagues. They must demonstrate potential for effective teaching and scholarly publications. They are expected to seek extramural funding in science education. Start-up funds are available. Applicants should include a letter of application, curriculum vitae, statements of research plans and teaching philosophy, and have three letters of recommendation sent separately. Reviews of applications begin January 2, 2003, and continue until the positions are filled.

BIOLOGICAL SCIENCE EDUCATOR: Ph.D. in a biological science required. Teaching responsibilities include general biology for majors and future teachers and courses in area of specialty. Expertise or interest expected in the scholarship of teaching and learning. Submit application to: **Dr. Robert Nakamura, Department of Biological Sciences, California State University, Los Angeles, CA 90032-8201. E-mail: rnakamu@calstatela.edu; FAX: 323-343-6451.**

CHEMISTRY EDUCATOR: Ph.D. in chemistry required with a research specialization in chemistry education and laboratory research experience equivalent to the M.S. level. Postdoctoral experience in chemistry education is required. Submit application to: **Dr. Wayne Tikkanen, Chair, Department of Chemistry and Biochemistry, California State University, Los Angeles, CA 90032-8202. E-mail: wtikkan@calstatela.edu.**

PHYSICS EDUCATOR: Ph.D. in physics or astronomy required. Duties will include teaching in the undergraduate physics program and development of a research program in physics or astronomy education involving undergraduate and graduate students. The successful candidate will be expected to seek extramural funding to support his/her research program in physics or astronomy education. Applications may be submitted to: **Dr. William Taylor, Chair, Department of Physics and Astronomy, California State University, Los Angeles, CA 90032-8206. E-mail: wtaylor@calstatela.edu; FAX: 323-343-2497.**

CSLA is an Equal Opportunity/Title IX/Americans With Disabilities Act Employer. Qualified women and minorities are encouraged to apply. Employment contingent upon proof of eligibility to work in the United States.

CHAIRMAN
Department of Human Genetics

The Division of the Biological Sciences at The University of Chicago seeks a first-rate Scientist as Chairman of the Department of Human Genetics. The successful applicant will have an outstanding record of scientific accomplishments as well as demonstrated excellence in teaching and administrative abilities that will qualify him or her for the rank of **PROFESSOR**. The Chair reports to the Dean of the Division and Vice President for Medical Affairs and is responsible for strategic planning and leadership in research, academic, and administrative areas. The Division's teaching mission includes undergraduate, graduate, and medical students as well as residents and Postdoctoral Fellows. The Department currently includes 11 M.D. and Ph.D. primary faculty members and approximately 28 academic and support staff. Please send nominations or applications (curriculum vitae) to: **Drs. Neil Shubin** and **Michelle Le Beau, Co-Chairs, Search Committee for Human Genetics; e-mail: nshubin@uchicago.edu** and **mlebeau@medicine.bsd.uchicago.edu** or: **c/o Ms. Marquetta Lewis, The University of Chicago, Office of the Dean, Division of the Biological Sciences, 5841 South Maryland Avenue, MC-1000, Chicago, IL 60637. E-mail: mlewis@delphi.bsd.uchicago.edu**. Review of applications will begin December 1, 2002.

The University of Chicago is an Equal Opportunity/Affirmative Action Employer. Qualified minorities and women are encouraged to apply.

POSITIONS OPEN

FACULTY POSITIONS
MICROBIAL SYSTEMS
Department of Biological Sciences
Purdue University

The Department of Biological Sciences at Purdue University invites applications for one or more tenure-track faculty positions. We wish to identify candidates in two areas of scholarship. (1) Cellular microbiology focused on host-pathogen interactions or the cell biology of infection. Topics of interest include trafficking of intracellular pathogens, toxin modes of action, and novel models for pathogenesis. (2) The interdependent effects of microbes and their environment in natural and engineered systems. Areas include community structure and function, molecular responses to environmental signals, cell modeling, bioremediation, and metabolic engineering. Investigators who exploit modern approaches (e.g., bioinformatics or advanced imaging) are of special interest. We expect to fill academic-year appointments at the **ASSISTANT PROFESSOR** level; however, appointment at higher rank will be considered for highly qualified individuals. The successful applicant must have a Ph.D. in an appropriate discipline (e.g., microbiology, cell biology, information sciences, or engineering); postdoctoral experience is preferred. We seek candidates with strong promise of successful extramural funding, research productivity, and effective teaching and mentoring of graduate and undergraduate students. For more information, see **website: http://bio.purdue.edu**; informal inquiries can be directed to: **Chair; e-mail: akonopka@purdue.edu**. Applicants should send their curriculum vitae, the names and addresses of three references, and a summary of research and teaching interests to: **Dr. Allan Konopka, Chair of the Search Committee, Department of Biological Sciences, Purdue University, 915 West State Street, West Lafayette, IN 47907-2054**. Review of candidates will begin immediately and continue until the positions are filled. *Purdue University is an Equal Opportunity/Affirmative Action Employer.*

PSYCHOLOGY POSITION
University of Toronto

The Department of Psychology at the University of Toronto has a position for an **ASSOCIATE** or **FULL PROFESSOR** in the area of human neuroscience, broadly defined. We invite applications from people with interests in cognitive, social, perceptual, or affective processes. Individuals with a life span approach to any of these issues are also encouraged to apply. This position is for a **SENIOR CANADA RESEARCH CHAIR** (Tier I). The appointment will begin on July 1, 2003. As such, the candidate should have an outstanding record of research and teaching achievement. Our new faculty member will be expected to maintain an active, externally funded program of research and be committed to both undergraduate and graduate education. Interested applicants should submit curriculum vitae, a statement of research interests, and copies of representative publications to: **Search Committee, Department of Psychology, University of Toronto, Toronto, Ontario M5S 3G3 Canada**. In addition, applicants can arrange to have three letters of recommendation sent directly to the **Search Committee** or **Chair of the Department of Psychology, Lynn Hasher,** or else provide names of potential references. As well, potential applicants may contact **Lynn Hasher, Chair,** for additional information at **e-mail: chair@psych.utoronto.ca**. The committee will begin to consider applications after January 15, 2003, until the position is filled.

Toronto is one of the most ethnically diverse communities in the world and the university shares in that diversity. The University of Toronto is strongly committed to diversity within its community and especially welcomes applications from visible minority group members, women, aboriginal persons, persons with disabilities, members of sexual minority groups, and others who may contribute to further diversification of ideas. All qualified candidates are encouraged to apply; however, Canadians and permanent residents will be given priority.

DIRECTOR
CENTER FOR TRANSLATIONAL MEDICINE
DEPARTMENT OF MEDICINE
JEFFERSON MEDICAL COLLEGE
PHILADELPHIA, PA

The Department of Medicine, Jefferson Medical College, seeks an outstanding scientist for the position of Director of the **Center for Translational Medicine**. The Director will have the responsibility for establishing the scientific directions of the Center and recruitment of both junior and senior investigators. Encompassing two floors of the Medical College and core facilities in gene discovery, gene transfer and functional genomics, the Center will interact collaboratively with ongoing basic research programs in the Department of Medicine including center programs in the Cardeza Foundation for Hematologic Research, the Center for Human Virology, and the Division of Rheumatology. Candidates should have an M.D, Ph.D. or M.D./Ph.D. degree, a strong academic record, and demonstrated leadership and mentoring skills. They should be eligible for appointment at the Associate or Professor level.

Located in Center City Philadelphia, Jefferson Medical College is one of the oldest and highly respected medical schools in the U.S. Founded in 1824, the Medical College is part of Thomas Jefferson University and is affiliated with Thomas Jefferson University Hospital and the Jefferson Hospital for the Neurosciences.

Please send nominations or letters of interest to:

Arthur M. Feldman, M.D., Ph.D., Chair
Department of Medicine
Jefferson Medical College
1025 Walnut Street, Room 824
Philadelphia, PA 19107
E-mail: Arthur.Feldman@mail.tju.edu
Ph: (215-955-6946)

University of Louisville
Center for Oral Health and Systemic Disease

Tenure-Track Faculty Position
Oral Health

The University of Louisville Center for Oral Health and Systemic Disease invites applications for tenure-track faculty appointments at the level of Associate or Full Professor. Candidates ideally should have a research program which utilizes contemporary molecular and/or genetic approaches that would complement the Oral Health and Systemic Disease Center and Health Science Center's planned strategy to create research strengths in the areas of microbial pathogenesis, oral and systemic inflammatory and immune responses, epidemiology, genetics and pathology of both oral and systemic diseases. Candidates must have a Ph.D. degree in a biomedically related field, at least an assistant professorial position, and a sound research program reflected by a strong funding and publication record. Successful candidates will be expected to establish and maintain an independent and innovative research program that attracts extramural funding as well as collaborating on center based projects and initiatives. Opportunities exist and strong encouragement will be given for collaboration with faculty in numerous Centers, Clinics and Institutes within the Health Sciences Center of the University of Louisville and other national and international centers.

Applicants should send a curriculum vitae, a description of research activities and plans, and the names of three referees to: **Dr. Denis F. Kinane, Associate Dean for Research and Enterprise, Director, Center for Oral Health and Systemic Disease, University of Louisville School of Dentistry, 501 S. Preston St., Louisville, KY 40292; Email:dfkina01@louisville.edu.**

The University of Louisville is an EEO/AA employer. Women and minorities are encouraged to apply.

Department of Health and Human Services
National Institutes of Health
National Cancer Institute

With nation-wide responsibility for improving the health and well being of all Americans, the Department of Health and Human Services (DHHS) oversees the biomedical research programs of the National Institutes of Health (NIH) and those of the NIH's research institutes.

The National Cancer Institute (NCI), a major research component of the NIH and the DHHS, is recruiting for a Staff Scientist to support the research program of the Laboratory of Tumor Immunology and Biology, Center for Cancer Research, NCI. The individual selected for this position will plan and carry out experimental studies to develop new immunotherapies for a range of human cancers.

The successful individual will possess an M.D., or Ph.D. degree in the biological sciences, and have a minimum of three years research experience in molecular biology and cellular immunology, preclinical cancer vaccine studies, and, if possible, in the design, engineering, and analyses of vector-based vaccines.

Salary is commensurate with research experience and accomplishments, and a full civil service package of benefits (including retirement, health, life and long-term care insurance, Thrift Savings Plan participation, etc.) is available.

For additional information and instructions on submitting your application, please contact **Robin Riley, Executive Secretary, Search Committee,** at **rr88f@nih.gov**.

HHS and NIH are Equal Opportunity Employers

Sigfried and Janet Weis Center for Research
Geisinger Clinic
STAFF AND SENIOR SCIENTISTS

The Weis Center for Research is seeking outstanding candidates for Staff Scientist (equivalent to Assistant or Associate Professor) and/or Senior Scientist (equivalent to Professor) positions. We are seeking candidates with proven records of accomplishment in conducting innovative research at the molecular, cellular or genetic level. Current areas of investigation include cardiovascular biology, cancer biology, neuroscience and signal transduction. Major shared instrumentation includes a Q-TOF mass spectrometer, Leica confocal microscope, Affymetrix GeneChip system, CE DNA sequencer and robotics, and a modern facility for housing transgenic animals. Applicants should have a Ph.D. and/or M.D. degree and two or more years of postdoctoral or fellowship training. Candidates for Senior Scientist positions are expected to have a history of extramural funding. Physician-scientists may apply for a joint appointment in an appropriate clinical department. The Weis Center is located on the campus of Geisinger Medical Center, a >500 bed tertiary care hospital providing care to patients in Northeastern and Central Pennsylvania. Geisinger Medical Center is located in an attractive semi-rural community that affords an outstanding quality of life plus convenient access to major metropolitan areas. Substantial resources are available for both start-up and ongoing research support.

Qualified individuals should submit curriculum vitae, statement of research interests and the names and addresses of three references to: **Dr. L. I. Rothblum, Chair of Search Committee, C/O Ms. Kristin Gaul, Sigfried and Janet Weis Center for Research, Geisinger Clinic, 100 North Academy Avenue, Danville, PA 17822-2600.**

Affirmative Action/Equal Opportunity Employer

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POSITIONS OPEN

POPULATION GENETICS
Biological Sciences
St. Cloud State University, Minnesota

Population genetics: **ASSISTANT/ASSOCIATE PROFESSOR**, tenure track. Will teach a course in population genetics and share teaching responsibilities in genetics and some of the following courses: introductory biology courses for majors, graduate courses, and advanced undergraduate courses based on their area of expertise. An active research program involving undergraduate and graduate students is expected. Ability to teach and/or perform effectively, scholarly achievement or research, continued preparation and study, contribution to student growth and development, and service to the university and community are required. Ph.D. in relevant field of biological sciences and postdoctoral or equivalent experience. Expertise and training in molecular techniques and population genetics expected. Preference to candidates with successful postsecondary teaching experience, strong commitment to teaching (B.S./Master's), research programs involving undergraduate and Master's students, and experience compatible with current faculty interests and expertise. The successful candidate will have demonstrated the ability to teach and work with persons from culturally diverse backgrounds. Send letter of application including statements of research plans and teaching philosophy; curriculum vitae; transcripts (copies acceptable for initial screening); and the names, telephone numbers, and postal and e-mail addresses of three references. We will contact references to comment specifically upon your teaching ability, experience, and professional preparation. Submit materials to: **Chair, Department of Biological Sciences, St. Cloud State University, 720 Fourth Avenue South, St. Cloud, MN 56301-4498. Telephone: 320-255-4736; FAX: 320-255-4166; e-mail: biology@stcloudstate.edu; website: http://www.StCloudState.edu/~biol.** All materials must be postmarked by December 31, 2002, to be considered. E-mailed or FAXed applications received after December 31, 2002, are not guaranteed consideration. *SCSU is committed to excellence and actively supports cultural diversity. To promote this endeavor, we invite individuals who contribute to such diversity to apply including minorities; women; gay, lesbian, bisexual, and transgendered individuals; persons with disabilities; and veterans.*

Landscape ecology/carbon cycle science. **ASSISTANT/ASSOCIATE PROFESSOR** with a research focus on ecological responses to land use/land cover change and the terrestrial carbon cycle. This position is cofunded by the Department of Geography and Penn State's Institutes of the Environment. Applicants need to submit (1) a letter describing how they would contribute to the Department's teaching and research program, (2) a complete curriculum vitae, (3) reprints, and (4) complete contact information for three to five references. Review of applications will begin January 15, 2003, and will continue until the position is filled. Apply: **Dr. Alan H. Taylor, Chair, Search Committee, Department of Geography, 302 Walker Building, University Park, PA 16802. Telephone: 814-865-3433; FAX: 814-863-7943; e-mail: aht1@psu.edu.** *Pennsylvania State University is committed to Affirmative Action/Equal Opportunity and the diversity of its workforce. Applications from women and underrepresented groups are encouraged.*

BIOLOGICAL OCEANOGRAPHER

We seek a Ph.D.-level Biological Oceanographer for a nine-month, tenure-track appointment at the **ASSISTANT/PROFESSOR** level to begin as soon as August 2003. The position involves research, training (primarily at the graduate level), and service. Area of specialization is open but we are particularly interested in a person who studies the role of nekton in ecological processes. Send a letter of application, curriculum vitae, and contact information for three references to: **Biological Oceanography Search Committee, Department of Oceanography, Florida State University, Tallahassee, FL 32306.** Application review will begin on 1 January 2003. *The University is an Equal Opportunity/Access/Affirmative Action Employer.*

FACULTY POSITION IN CANCER RESEARCH
Rutgers, The State University of New Jersey

The Susan Lehman Cullman Laboratory for Cancer Research in the Department of Chemical Biology, Ernest Mario School of Pharmacy, Rutgers, The State University of New Jersey, is seeking an outstanding Investigator for a tenured or tenure-track faculty position at the **ASSOCIATE** or **FULL PROFESSOR** level. Applicants should hold the equivalent of a Ph.D. and/or M.D. degree and have a strong commitment and track record for research on mechanisms of cancer causation and/or prevention. The successful candidate will also be a member of The Cancer Institute of New Jersey and join a growing life sciences community with opportunities to participate in a variety of research and teaching programs. The position is highly competitive with regard to start-up funds, laboratory space, salary, and benefits. Please send curriculum vitae, brief research plan, current and past grant support, and the names and addresses of three references to: **Dr. Allan H. Conney, Chair of the Search Committee, Department of Chemical Biology, Ernest Mario School of Pharmacy, 164 Frelinghuysen Road, Piscataway, NJ 08854-8020.** *Rutgers, The State University of New Jersey, is an Affirmative Action/Equal Opportunity Employer.*

ECOLOGIST
ASSISTANT PROFESSOR

The Department of Biology at East Carolina University (**website: http://www.ecu.edu/biology**) invites applications for a tenure-track position in community, landscape, or theoretical ecology beginning academic year August 25, 2003. Candidates with interests in conservation and/or expertise working with birds or mammals are particularly encouraged to apply. Responsibilities include teaching at the undergraduate and graduate levels and maintaining a vigorous, extramurally funded research program. Before 2 January 2003, send hard copy of curriculum vitae; a statement of teaching and research interests; up to three representative reprints; and three letters of reference to: **Dr. Claudia L. Jolls, Department of Biology, East Carolina University, Greenville, NC 27858-4353. E-mail: jollsc@mail.ecu.edu.** *Proper documentation of identity and employability is required at the time of employment. East Carolina University is an Equal Opportunity/Affirmative Action University and accommodates persons with disabilities.*

POSTDOCTORAL RESEARCH ASSOCIATE needed to study the effect of bacterial redox proteins on the induction of apoptosis in human cancer cells leading to cancer regression. (See October 29 *PNAS* paper.) The candidate will be working in an entirely new and uncharted field. Experience in apoptotic and protein interaction studies will be required. Résumés should be forwarded to: **Dr. Tapas K. Das Gupta, Department of Surgical Oncology, 840 South Wood Street M/C 820, Chicago, IL 60612. Telephone: 312-996-6134; FAX: 312-996-9365; e-mail: tkdg@uic.edu.**

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

POSTDOCTORAL FELLOWSHIP

Texas A&M University at Galveston (TAMUG) seeks applications for two competitive two-year Postdoctoral Fellowships from highly qualified candidates interested in any aspect of marine biology, oceanography, coastal/ocean engineering, marine geology, or marine policy and management. For details, see **website: http://www.tamug.edu/postdoc; Telephone: 409-740-4810.** *Equal Opportunity Employer/Affirmative Action.*

FACULTY POSITIONS
Cell and Molecular Physiology
The University of North Carolina at Chapel Hill

The Department of Cell and Molecular Physiology in the School of Medicine invites applications for faculty positions at the level of **ASSISTANT** or **ASSOCIATE PROFESSOR**. We seek candidates using genetic approaches to integrative and disease-related physiology. Attractive start-up packages and new laboratory space are offered. Faculty members are expected to develop a strong, externally funded research program and contribute to teaching graduate and medical students. Applicants must hold a Doctoral degree. Review of applications will end January 15, 2003. Please submit four letters of reference and e-mail curriculum vitae and statement of your proposed research program and career goals to:

James M. Anderson, Ph.D., M.D.
Chair, Department of Cell and Molecular Physiology
266 Medical Sciences Research Building
CB Number 7545
School of Medicine
University of North Carolina at Chapel Hill
Chapel Hill, NC 27599-7545
E-mail: facsearch@medexch.med.unc.edu

UNC is an Equal Opportunity/Americans With Disabilities Act Employer.

ASSISTANT PROFESSOR
Department of Neurobiology and Behavior
University of California, Irvine

Applications are invited for a tenure-track position at the level of Assistant Professor. The Department of Neurobiology and Behavior engages in interdisciplinary approaches to the study of neurobiology with an emphasis on neural plasticity and behavior. Preference will be given to applicants whose research interests integrate with current Departmental research themes, which include mechanisms underlying age-related neurodegenerative disorders or injury; learning and memory; neuroendocrinology; integrative neuroscience (including molecular/genetic, synaptic, and systems levels); development; and the neurobiology of substance abuse. Please submit curriculum vitae; description of research interests; and the names and addresses of three potential references by January 1, 2003, to: **Chair, Department of Neurobiology and Behavior, University of California, 2205 McGaugh Hall, Irvine, CA 92697-4550. Website: http://neurobiology.uci.edu.** *The University of California, Irvine, has an active career partner program; is an Equal Opportunity Employer committed to excellence through diversity; and has a National Science Foundation Advance Gender Equity Program.*

ASSISTANT/ASSOCIATE PROFESSOR
Bacteriology

Louisiana State University Health Sciences Center in New Orleans is seeking applicants for a 12-month, tenure-track faculty position at the Assistant or Associate Professor level in the Bacteriology Section of the Department of Microbiology, Immunology, and Parasitology. Applicants should have a Ph.D. in microbiology and be committed to research in pathogenic bacteriology with skills in genetics and/or physiology. The position requires teaching medical and dental students and the teaching/mentoring of graduate microbiology students. Strongest consideration will be given to those with current research funding. Interested candidates should submit curriculum vitae; statement of present and future research goals; and names and addresses of three references by March 1, 2003, to: **Dr. Richard J. O'Callaghan, Chief of Bacteriology, Adjunct Professor of Ophthalmology, Department of Microbiology, Immunology, and Parasitology, LSUHSC, 1901 Perdido Street, Box P6-1, New Orleans, LA 70112. FAX: 504-568-2918.** *LSUHSC is an Equal Employment Opportunity/Affirmative Action Employer.*

MAYO CLINIC

POSTDOCTORAL FELLOW
Molecular Neurobiology
Rochester, Minnesota, U.S.A

Positions available immediately to study the delivery of therapeutic/diagnostic peptides or proteins across the blood brain barrier into the nervous system for treatment/diagnosis of neurodegenerative diseases. Focus is on preclinical studies using transgenic mouse models of AD or ALS. Particular emphasis is on the molecular targeting of Alzheimer's amyloid plaques for contrast-enhanced MRI. Also see website for further details: **www.mayo.edu/research/molecular_neurobiology**. Applicants must have a Ph.D. or equivalent degree with appropriate experience.

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 multi-campus environment. For further information please visit **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:

Joseph F. Poduslo, Ph.D.
Professor and Director
Neurol., Neurosci., and Biochem/Molec. Biol.
Guggenheim 15
200 First St. SW
Rochester, MN 55905
507-284-1784
poduslo.joseph@mayo.edu

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

Faculty Positions in Genetic and Translational Medicine

The Division of Genetic and Translational Medicine at the University of Alabama at Birmingham is a newly established, conjoint division supported by the Departments of Medicine, Pediatrics, and Human Genetics. The Division is seeking highly qualified MD, PhD, or MD/PhD candidates for three tenure-track faculty positions at the rank of Assistant or Associate Professor. Successful candidates will be expected to establish and maintain vigorous, extramurally funded, independent research programs directed at the genetic mechanisms underpinning single-gene or polygenic disorders with an emphasis on translational applications. Research programs that focus on the mouse as an experimental model system are particularly preferred. Departmental affiliations will be determined according to the clinical expertise of the candidate and/or the clinical relevance of the research program. Joint and/or secondary appointments within basic science departments are possible and the opportunity to develop targeted clinical programs is available for clinicians. Collaborative affiliation with the new Heflin Center for Human Genetics will be strongly encouraged. Salary and start-up funds will be competitive and commensurate with the candidate's qualifications. Excellent laboratory space will be provided in the newly completed Hugh Kaul Human Genetics Building.

Applicants should submit their curriculum vitae, a statement of research interests, and three letters of reference to:

Lisa M. Guay-Woodford, MD
Director, Division of Genetic and Translational Medicine
Kaul Building 740
University of Alabama at Birmingham
1530 3rd Avenue South
Birmingham, AL 35294-0005
e-mail: lgw@uab.edu

University of Alabama is an Equal Opportunity/Affirmitive Action Employer committed to excellence through diversity.

THE UNIVERSITY of WISCONSIN MADISON

Faculty Positions in Stem Cell Biology and Regenerative Medicine

The University of Wisconsin-Madison is seeking to hire 5 or more new faculty at the **Assistant, Associate** or **Full Professor** level with expertise in the general area of stem cells and regenerative medicine. Candidates should have a PhD and/or MD degree with appropriate post-graduate training. Using a multidisciplinary cluster hiring process, new faculty will be recruited to departments across campus based on their qualifications as part of the integrated Wisconsin Program for Stem Cell Biology. Targeted areas include, but are not limited to biomaterials and matrixes facilitating tissue engineering; endothelial cell tissue engineering; somatic or adult stem cells; immunology of stem cell-derived tissues; stem cells in bone and cartilage regeneration; and public policy of regenerative medicine. We provide unique opportunities for expanded research tracks and collaborative ventures that promote interdisciplinary excellence through diversity. Additional information is available at: **http://www.grad.wisc.edu/stemcells**.

Interested candidates should submit a curriculum vitae, a statement of research interests, and three letters of recommendation by **January 10, 2003**, to:

Timothy J. Kamp MD, PhD
Chair of Search Committee
Cluster Hire in Stem Cells and Regenerative Medicine
Box 3248 CSC, 600 Highland Ave.
Madison WI 53792-3248
or electronically **tjk@medicine.wisc.edu**

The University of Wisconsin is an Equal Opportunity Employer. We promote excellence through diversity and encourage all qualified individuals to apply.

UTMB
The University of Texas Medical Branch

FACULTY POSITIONS
SEALY CENTER FOR CANCER CELL BIOLOGY
UNIVERSITY OF TEXAS MEDICAL BRANCH (UTMB)

The Sealy Center for Cancer Cell Biology, a privately funded Cancer Research Center within UTMB, seeks candidates for two tenure track faculty positions at the **Assistant, Associate** or **Professor** level in the molecular and cellular biology of cancer. Preference will be given to candidates interested in working in a highly collaborative, interdisciplinary environment and whose interests enhance those of current Center faculty. Current areas of interest include the PI3-kinase signaling pathway in normal and neoplastic conditions, the role of cell cycle regulatory proteins in cancer, mechanisms of TGF-ß/SMAD signaling, the development of transgenic mouse models of cancer, the molecular dissection of Hedgehog signaling in cancer, the role of cadherin- and integrin-mediated signaling in carcinoma progression, inflammatory mechanisms of carcinogenesis, the role of intestinal hormones in gastrointestinal cancers, G-protein coupled receptors and the molecular mechanisms by which environmental factors influence carcinogenesis. Successful candidates will be expected to establish and maintain independent, externally funded research programs. Candidates will be provided with generous start-up packages, competitive compensation and benefits, modern laboratory space within the Center, and access to state-of-the-art core facilities. Candidates will hold tenure track appointments in a basic or clinical department within the School of Medicine. Applicants for an Assistant Professor position should have at least three years of post-doctoral or equivalent experience and a strong publication record. Candidates for an Associate Professor or Professor position should have established, funded research programs and a strong publication record. Please send an electronic curriculum vitae, statement of research interests and goals, and the names of three references to: **B. Mark Evers, M.D., Sealy Center for Cancer Cell Biology, University of Texas Medical Branch, Galveston, Texas; email: reply.scccb@utmb.edu**

UTMB is an EO/AA Employer, M/F/D/V. UTMB is a smoke free/drug free work place and hires only individuals authorized to work in the U.S.

VERTEX

ASSOCIATE SCIENTIST (pharmacology): Use skills in cell culturing and high-throughput screening (HTS) to set up an HTS for permeability screens using the cell line. Use skills in molecular biology and ligand binding to characterize the effect of novel drug candidates to express specific mRNAs, proteins, and related gene products; work with math tools such as EXCEI, PRISM, Sigma Plot. M.Sc. in pharmacology, chemistry, or related field plus one year of experience (or B.Sc. plus five years). Job Code: 1120.

INVESTIGATOR (cell biology): Work on projects that emphasize viral generation (e.g., adenovirus and retrovirus); plaque purification; and titration. Use advanced skills to design/implement viral inhibition assays. Use skills in molecular biology techniques such as *in vitro* mutagenesis. Conduct animal experiments using viral and/or cancer models. Ph.D. in molecular and micro- or cell biology; no experience (or M.Sc. plus three years). Job Code: 4100.

INVESTIGATOR (process chemistry): Use skills in scalable chemical synthesis and problem-solving analysis to develop viable, simplified, and cost-effective manufacturing processes. Use laboratory skills in HPLC for purity assessment and other equipment such as pressurized reactor vessels and reactor IR for real time reaction analysis and automated process development work stations for route screening and optimization. Support medicinal chemistry SAR programs. M.Sc. in chemistry or relevant biomedical discipline plus two years of experience. Job Code: 2010.

STAFF INVESTIGATOR (pharmaceutics): Use skills in pharmaceutics and physical chemistry to conduct preformulation studies for new chemical entities. Develop formulations for preclinical *in vivo* studies and human clinical studies. Use skills in oral and paretenral drug formation development and knowledge of GMPs. Ph.D. in pharmaceutics or related; no experience (or M.Sc. plus three years). Job Code: 2000.

PROGRAM EXECUTIVE: Implement track record of mastering scientific projects for drug development processes blended with skills in market analysis and building large-scale strategic partnership management. Act as the principal internal/external advocate for molecular drug development programs. Manage the scientific teams and marshal the necessary resources to achieve effective/efficient drug development. Ensure the overall coherency and appropriateness of programs encompassing commercial and strategic perspectives. M.D. or Ph.D. in physiology or related area plus four years of program management experience. Job Code: 3120.

PRINCIPAL BIOSTATISTICIAN: Lead the development of mathematical statistical methodology for experimental design, protocol development, statistical analysis plans, clinical studies, INDs, NDAs. Use skills for design of statistical approaches and related research for clinical trials/studies in pharmacokinetics employing mathematical techniques (e.g., crossover design/analysis, nonparametric statistics, categorical models, sequential design, survival analysis, etc.). Use skills in SAS/STAT and relevant trial design simulation tools. B.Sc. in math, statistics, or related plus eight years of experience that includes international pharmaceuticals industry, team leadership, and CRO work experience. Job Code: 1010. Please send résumé to **e-mail: resumes@bo.hodes.com; FAX: 617-576-2361**. *We are an Equal Opportunity Employer who makes diversity the foundation of all success.*

POSTDOCTORAL FELLOW/STAFF to study growth factor-induced drug resistance. Background in molecular biology is essential; experience in receptor binding, signal transduction, gene expression, antisense technology, microarray technology, and apoptosis is desirable. Send curriculum vitae and names of three references to: **Dr. Jessie Au, Ohio State University, 496 West 12th Avenue, Columbus, OH 43210. FAX: 614-688-3223; e-mail: au.1@osu.edu**.

POSITIONS OPEN

NMR FACILITY MANAGER
Johns Hopkins NMR Center

The Johns Hopkins University is seeking a Ph.D.-level NMR Spectroscopist to supervise its new intercampus NMR facility. The Center is equipped with five state-of-the-art, high-field NMR spectrometers with field strengths ranging from 500 to 800 MHz with specific plans for acquisition of three more high-field instruments within the next five years. Although previous experience as an NMR Facility Manager is ver desirable, all qualified candidates with a minimum of three years of postdoctoral experience as an NMR Spectroscopist will be considered. An individual is sought who will be committed to the success of the facility and will play an active role in its growth. The successful candidate will have experience with the application of modern heteronuclear NMR techniques to elucidate the structure and function of biomolecules. Responsibilities will include supervision of facility staff, equipment maintenance, pulse sequence design, and user training. Excellent interpersonal and instructional skills are essential. Applicants should send curriculum vitae and three letters to: **Chair, NMR Search Committee, WBSB 314, Department of Pharmacology and Molecular Sciences, Johns Hopkins University, 725 North Wolfe Street, Baltimore, MD 21202-2185**. Review of applications will begin in December 2002. *Affirmative Action/Equal Employment Opportunity.*

FACILITY MANAGER
BIOMOLECULAR NMR

A **PERMANENT STAFF POSITION** is available immediately for a well-qualified applicant to manage a new NMR facility at University of California, Irvine. The facility is equipped with a new Varian Inova 800 MHz four-channel NMR instrument and will support a new initiative in structural biology at the University of California, Irvine. The manager will interact with a diverse group of users from the Schools of Biological Sciences, Physical Sciences, and Medicine. Beginning to midpoint salary range: $54,400 to $74,800. The successful candidate will have a Ph.D. in structural biology, chemistry, or a related discipline. Experience solving solution structures of biopolymers using NMR techniques or equivalent combination of education and experience is also required. Previous experience running and maintaining high-field instruments is preferred. Please apply online, referencing Job Number 2002-0916, at **website: http://www.hr.uci.edu. UCI Human Resources, Berkeley Place Building, Suite 1000, Irvine, CA 92697-4600**. *UC Irvine is an Equal Opportunity Employer committed to excellence through diversity.*

RESEARCH SCIENTIST/TECHNICIAN

Van Andel Research Institute (VARI) is an independent, not-for-profit, cancer research organization in Grand Rapids, Michigan. VARI provides a state-of-the-art X-ray facility, a stimulating research atmosphere, and opportunities for career development. Two positions are open immediately to study structure and function of key growth factor/receptor kinase complexes involved in cancer. These positions require a Ph.D. or an M.S./B.S. degree in biological sciences. Candidates with strong skills in molecular biology, protein biochemistry, crystallization, and X-ray structure determination are encouraged to e-mail their curriculum vitae as well as the names and addresses of three references to **e-mail: vari-employment@vai.org**. *Equal Opportunity Employer.*

POSTDOCTORAL POSITION is currently available for a candidate with Ph.D. who is interested in translational research program whose aim is to develop a cancer vaccine strategy against lung cancer based on expression of MAGE antigen. Solid background in cellular immunology and molecular biology essential. Mail or e-mail résumé to: **Sue Lambert, Bioimmunotherapy Department Unit 422, University of Texas M.D. Anderson Cancer Center, 1515 Holcombe Boulevard, Houston, TX 77030. E-mail: sulamber@mdanderson.org**. *Equal Opportunity Employer.*

POSITIONS OPEN

NOVARTIS

RESEARCH FELLOWSHIP

A research position is immediately available for an Electrophysiologist who will initially be based at the MetroHealth Campus of Case Western Reserve University School of Medicine followed by periods at Novartis Respiratory Research Center in Horsham, United Kingdom. Using patch clamp techniques and modern molecular approaches, the Investigator will explore the structure, function, regulation, and pharmacology of Ca^{2+}-permeable cation channels. The initial two-year appointment would suit an experienced Electrophysiologist who wishes to ultimately apply his/her scientific expertise to drug discovery in either academic or pharmaceutical laboratories. An excellent salary and benefits package is available. Send curriculum vitae, description of current research, and names of three references to: **Dr. William P. Schilling, Rammelkamp Center for Education and Research, Room R322, MetroHealth Medical Center, 2500 MetroHealth Drive, Cleveland, OH 44109-1998. E-mail: wschilling@metrohealth.org**.

RESEARCH
Core Facilities Supervisor

Queens College seeks Ph.D. with demonstrated research record to supervise core facilities for imaging and molecular and cellular biology; experience in operation of confocal microscope or other computer-assisted imaging instrumentation required. Responsible for operation/maintenance of core instruments within facilities, assist/collaborate in research, develop cost analysis for facilities usage fee schedule, and take part in grant writing for facilities support. Complete details at **website: http://www.qc.edu/HRES/index.htm.** Salary: $29,538 to $80,000. Send letter and curriculum vitae to: **Dr. Thomas Strekas, Math and Natural Sciences Division, Queens College, CUNY, 65-30 Kissena Boulevard, Flushing, NY 11367**. Review of applications will begin immediately and continue until the position is filled. Three letters of reference required prior to interview. *Affirmative Action/Equal Opportunity Employer/Immigration Reform and Control Act/Americans With Disabilities Act.*

RESEARCH AND DEVELOPMENT

Promega Corporation, a worldwide leader in applying biochemistry and molecular biology to develop solutions for Life Science Researchers, is seeking senior research and development Scientists with previous experience in genomics or proteomics and with at least a Master's degree in a life science discipline, preferably in chemistry or biology. We seek intelligent and innovative candidates who demonstrate an eagerness to explore new ideas and ways of thinking and possess the unique scientific skills necessary to embark on the next generation of technology and products. Interested candidates should forward their résumé to: **Gayle Paul; e-mail: gpaul@promega.com**. Reference Job Code Number 101. *Promega is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL FELLOW
Chromosome Dynamics

We use advanced molecular-genetic and biochemical methods to study aspects of meiotic development in fission yeast. Position is available to study (1) structure and function of recombination enzyme complexes or (2) temporal and spatial regulation of recombination events. Salary will be highly competitive. Applicants must have experience in molecular biology/protein purification, peer-reviewed publications, and be fluent in written and spoken English. Experience with yeast methodologies, mass spectrometry, or DNA microarrays would be helpful but is not essential. Send curriculum vitae and references to: **Dr. Wayne Wahls, BMA/University of Arkansas for Medical Sciences (Slot 516), Little Rock, AR 72205. E-mail: wahlswaynep@uams.edu**.

FairIsaac.

Staff Scientist
Bioinformatics

Seeking a highly talented researcher to develop/deploy advanced bioinformatics algorithms/software platforms supporting nucleotide probe-based diagnostics for pathogens. Will be a co-PI on Govt. R&D grant to develop next-gen diagnostic techniques. Specific responsibilities include nucleotide probe design/analysis, bioinformatics algorithms research, sequence analysis platform design, and leadership of research grants. Requires Ph.D. in Bioinformatics/Computer Science/Engineering, Mathematics/Physics/Statistics. 3 yrs Bioinformatics experience in a biotechnology/pharmaceutical research company desired. Strong knowledge of viral/bacterial biology and RNA/DNA sequence analysis with bioinformatics tools. Working knowledge of physical chemistry, particularly as pertains to modern genomic assay processes a big plus. Experience with microarray data analysis, machine learning, information theory, statistical modeling & information retrieval a plus. Excellent communication skills. Candidate must be a US Citizen or Permanent Resident. Compensation based on achievement, seniority and experience.

Fair Isaac's Advanced Technology group performs research into frontier applications of machine learning and artificial intelligence in bioinformatics/information retrieval. We offer attractive compensation packages including stock options, stock purchase plans, 401(k), medical and other benefits. Website: **http://www.fairisaac.com**; e-mail: **dawnridz@fairisaac.com**. Address: **Fair Isaac & Company, 5935 Cornerstone Ct. West, San Diego, CA 92121. FAX: 858-799-8062.**

EEO Employer.

Memorial Sloan-Kettering Cancer Center

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Research Faculty in Computational Biology

Join the new interdisciplinary Computational Biology Center at Memorial Sloan-Kettering Cancer Center (MSKCC) in New York City as tenure-track or tenured faculty. Solve biological problems using computational methods and build bridges to clinical research. Participate in a major expansion of research programs at one of the best clinical-scientific institutions in the world. Collaborate with partners and be involved with the graduate schools at nearby Rockefeller University and Weill Medical College of Cornell University on the Manhattan Upper East Side tri-institutional campus.

Computational biology research at MSKCC aims to (1) analyze and simulate biological processes at different levels of organization, (2) predict the results of interventions in biological systems and (3) help improve the prevention, diagnosis, prognosis and therapy of cancer. Close collaboration with experimental and clinical groups using high-throughput and functional genomics data is essential. Potential areas of research areas include:

Computational and theoretical approaches in:

- **cell and developmental biology**
- **genetics and chemical genomics**
- **physiology and disease biology**
- **systems biology**

Excellent startup packages are available. To apply send CV and bibliography, research plan and the names of 3 references to cbiofaculty@mskcc.org, preferably by Dec 15, 2002. Scientific questions to Chris Sander sanderc@mskcc.org, Chair of the Computational Biology Program. EOE/AA.

Smithsonian Tropical Research Institute

IS SEARCHING FOR A MARINE SCIENTIST

The Smithsonian Tropical Research Institute (STRI), headquartered in the Republic of Panama, is seeking a marine scientist interested in pursuing independent research programs based upon the unique opportunities resulting from the rise of the Isthmus of Panama three million years ago. Panama's coasts are rich in coral reefs, sea grasses, mangroves, sandy and rocky beaches and archipelagos. Facilities on both coasts of the Isthmus as well as a 30m coastal oceanographic vessel are available to researchers.

All branches of marine sciences will be considered. Applicants should have a record of achievement with promising research questions. Interested candidates should submit a statement of research interests, curriculum vitae, three relevant reprints and the names, addresses and telephone numbers of three potential references.

Salary range, depending upon experience, is $60,000-$107,000. Laboratory set-up, relocation and overseas allowance are paid by the Smithsonian.

Review of applications will begin in January 2003 and will continue until the position is filled. Send applications to the **Director of STRI, c/o Mrs. Luz Latorraca, Office of Human Resources, STRI, Unit 0948, APO AA 34002, USA. E-mail: latorral@tivoli.si.edu**. For additional information about STRI, please consult **http://www.stri.org**.

STRI is an Equal Opportunity Employer and appointments can be made without consideration of nationality.

Research Opportunities at the National Institutes of Health Tenured and Tenure Track Positions in Laboratory of Biological Modeling

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), National Institutes of Health (NIH), Department of Health and Human Services, invites applications for both tenured and tenure track positions in the newly established Laboratory of Biological Modeling. The Laboratory will be comprised of scientists who use computational approaches to understand cell biological and physiological systems. Specific areas of research interest will include mathematical modeling at the subcellular, cellular, tissue and system levels. Excellent computational facilities and resources for rapid achievement of research goals are available. The position offers unparalleled opportunities for interdisciplinary collaboration within NIDDK and throughout NIH. Applicants should have an outstanding record of research accomplishments and will be expected to propose and pursue an independent research program.

The Laboratory of Biological Modeling, NIDDK will be located on the main intramural campus of the NIH in Bethesda, Maryland, a suburb of Washington, D.C.

Interested applicants should send a Curriculum Vitae and list of publications, copies of five major publications, a summary of research accomplishments, a plan for future research, and three letters of recommendation to: Dr. William A. Eaton, Chair, Search Committee, Laboratory of Chemical Physics, NIDDK, Building 5, Room 104, NIH, Bethesda, MD 20892-0520.

NIDDK

DHHS and NIH are Equal Opportunity Employers

POSITIONS OPEN

POSTDOCTORAL POSITION

Postdoctoral position available immediately in the Department of Pathology and Laboratory Medicine at the University of Louisville, Louisville, Kentucky U.S.A. Responsibilities include studying the prevention of breast and lung cancer by inhibition of procathepsin D production (*Cancer Gene Therapy* **9**:854, 2002). Minimum qualifications are experience in cell culture, basic biochemical techniques, and strong background in molecular biology. Overview of the laboratory's efforts and records are at a laboratory **website: http://www.louisville.edu/~v0vetv01**. This position is fully funded by an NIH grant. Salary and benefits are competitive based on qualifications and experience. The University of Louisville is a highly interactive research institute with emphasis on cancer research, immunology, and transplantation. The University is located in the heart of this charming southern city. Please send a cover letter, curriculum vitae, statement of research interests, and two letters of recommendation to: **Vaclav Vetvicka, Ph.D., University of Louisville, School of Medicine, Department of Pathology and Laboratory Medicine, 511 South Floyd Street, Louisville, KY 40202. E-mail: vasek@louisville.edu**. *The University of Louisville is an Equal Opportunity/Affirmative Action Employer that is committed to diversity.*

STONY BROOK UNIVERSITY

POSTDOCTORAL POSITIONS are available within the Institute of Molecular Cardiology at Stony Brook University. Ph.D./M.D. required. This Institute is focused on a multidisciplinary approach to understanding cardiac function. Candidates with preferred training in any of the following areas are encouraged to apply: electrophysiology, molecular biology, or protein chemistry of ion channels or transporters. Salary range: $31,500 to $45,000. Interested applicants should write to: **Dr. Peter Brink, Dr. Ira Cohen, Dr. Irvin Krukenkamp,** or **Dr. David McKinnon, HSC, Institute of Molecular Cardiology, Department of Physiology and Biophysics, Stony Brook University, Stony Brook, NY 11794-8661**. *Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL RESEARCHERS, ribozyme biochemistry and biophysics, University of Vermont. Two positions available for studies of structure, mechanism, and dynamics of the hairpin and hammerhead ribozymes. Candidates should have a strong background in experimental biochemistry, biophysics, and/or molecular biology and an interest in applying their talents to fundamental problems in RNA structure and catalysis. Outstanding scientific, cultural, and outdoor environment. Please send curriculum vitae and three references to: **Professor John M. Burke, University of Vermont, 306 Stafford Hall, Burlington, VT 05405. E-mail: john.burke@uvm.edu**.

POSTDOCTORAL POSITIONS in prostate cancer research to investigate growth factor receptor signal transduction and chromatin remodeling. A recent graduate with a background in molecular and cellular biology and/or experience in proteomics is preferred. Send curriculum vitae and names of references to: **Dr. Young E. Whang** or **Dr. David K. Ornstein, Lineberger Comprehensive Cancer Center, CB Number 7295, University of North Carolina, Chapel Hill, NC 27599-7295. FAX: 919-966-8212; e-mail: ywhang@med.unc.edu; ornstein@med.unc.edu**.

POSTDOCTORAL POSITIONS are available to study cytokine signal transduction, transcription factors, hypoxia, and heart development (*JBC* **277**: 8091–8098, 2002; *PNAS* **99**:10488–10493, 2002). Candidates with experience in molecular biology and/or knockout/transgenic animals should send their curriculum vitae to: **Dr. Yu-Chung Yang, Department of Pharmacology, Case Western Reserve University School of Medicine, 2109 Adelbert Road, W353, Cleveland, OH 44106-4965. E-mail: yxy36@po.cwru.edu**.

POSTDOCTORAL FELLOW is needed to isolate and characterize multidrug-resistant HIV-1 isolates and to develop optimal methods for interpreting HIV-1 reverse transcriptase (RT) protease and gp41 sequence data related to drug resistance. Responsibilities will include the following: (1) cloning and sequencing of suspected multidrug-resistant clinical HIV-1 isolates, (2) creating recombinant virus isolates and developing novel methods for assessing *in vitro* replication and drug susceptibility, (3) performing heteroduplex mobility assays on cDNA from HIV-1 isolates to characterize the extent of diversity within the virus quasispecies, and (4) participating in the analysis of RT and protease sequences performed at Stanford University Hospital for clinical purposes. There will be many interactions with other Researchers at Stanford and at collaborating institutions. The individual will play a lead role in presentations and in writing manuscripts. Supervision of LSRAs is anticipated. An M.D., M.D./Ph.D., or Ph.D. degree in biological sciences is required, and the successful candidate will have had research experience with HIV. The candidate should also have previous experience with cell culture, basic molecular biology techniques, DNA sequencing, and sequence analysis. Please contact: **Robert Shafer, M.D., Stanford University. E-mail: rshafer@stanford.edu**.

POSTDOCTORAL POSITIONS
Virology, Synthetic Organic Chemistry

Two Postdoctoral positions are available for vaccine research. For the position in virology, a Ph.D. in biomedical science is required. The candidate must be willing to work with animal models, viruses, and immunoassays. For the position in chemistry, a Ph.D. in synthetic organic or medicinal chemistry is required. The candidate will be responsible for designing and synthesizing novel glycoconjugates for targeted vaccine delivery. Salary will be commensurate with experience. Send your curriculum vitae and names of three references to: **Dr. Maria Salvato** (Job Posting Number R30309 for virology,) or **Dr. Lai-Xi Wang** (Job Posting Number R30310 for chemistry), **Institute of Human Virology, University of Maryland Biotechnology Institute, 725 West Lombard Street, Baltimore, MD 21201. E-mail: salvato@umbi.umd.edu** or **wangx@umbi.umd.edu**. Review of applications will begin December 2002 and continue until a suitable candidate is selected.

POSTDOCTORAL POSITION
Vascular Cell and Molecular Biology
Harvard Medical School

Immediate opening for Postdoctoral Fellowship in The Vascular Research Division, Department of Pathology, Brigham and Women's Hospital, to study T lymphocyte-endothelial cell adhesion and signaling with emphasis on biochemical and molecular identification of selectin ligands (*Nature* **398**:718; *J. Immunol.* **162**:3193; *J. Immunol.* **167**:4476; *Eur. J. Immul.* **32**:2766; see **website: http://fwl.bwh.harvard.edu**). Requires recent Ph.D., M.D., M.D./Ph.D. and strong background in molecular biology, intracellular signaling, and biochemical techniques. Send curriculum vitae, brief description of research, and names of three references to: **Dr. Bill Luscinskas, Brigham and Women's Hospital, Boston, MA; e-mail: fluscinskas@rics.bwh.harvard.edu**. *We are an Equal Opportunity Employer.*

POSTDOCTORAL POSITIONS are available to study antidepressant-induced adrenergic receptor mRNA regulatory mechanisms and the nucleocytoplasmic export of ARE-containing mRNAs and nuclear export receptors. Ph.D. and/or M.D. with training in cell biology, biochemistry, or neuroscience and skills in molecular biology. RNase protection, immunocytochemistry, and primary neuronal culture. Send curriculum vitae, research interests, and three references to: **Dr. Curtis A. Machida, Oral Molecular Biology, Oregon Health and Science University, School of Dentistry, 611 S.W. Campus Drive, Portland, OR 97239; FAX: 503-494-8772; e-mail: machidac@ohsu.edu**. *Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL POSITION
Reproductive Sciences

An NIH-funded Postdoctoral position is currently available for research on the mechanism underlying progestin-induced breakthrough (endometrial) bleeding in nonhuman primates at the Oregon National Primate Research Center (ONPRC). Applicants need a background in reproductive endocrinology with knowledge of the female reproductive tract and its steroid hormonal regulators and receptors. Up-to-date skills in molecular biology are required including experience with immunocytochemistry, *in situ* hybridization, and microarray analysis. Interest in factors affecting the endometrial vasculature including matrix metalloproteinases is essential. The laboratory is a well-established one in the Division of Reproductive Sciences, ONPRC, a component of Oregon Health and Sciences University (OHSU) in Beaverton, just outside of Portland, Oregon. Portland offers unique recreational opportunities including skiing at Mt. Hood and hiking/fishing at the Oregon coast, each only 70 miles from the city. Salary will be commensurate with experience and NIH standards. Send letter describing background and research interests along with résumé and the names of three references to: **Robert M. Brenner, Senior Scientist, Oregon National Primate Research Center, 505 N.W. 185th Avenue, Beaverton, OR 97006. E-mail: brennerr@ohsu.edu; website: http://www.ohsu.edu/orprc/current/brenner.htm**. Applications will be received until the position is filled. *Oregon Health and Sciences University is an Equal Opportunity Employer.*

POSTDOCTORAL POSITION
Microbial Pathogenesis

Available immediately to study pathogenic mechanisms of the oral anaerobe *Porphyromonas gingivalis*. Project will focus on the expression and regulation of recently characterized virulence factors using oligonucleotide arrays and proteomics. *In vitro* pathogenicity models will include biofilm formation and intracellular invasion. Applicants should have a Ph.D. in microbiology, molecular biology, or a related field. Experience in microbial genetics and tissue culture required. E-mail or send cover letter, curriculum vitae, and three references to: **Richard J. Lamont, Ph.D., Department of Oral Biology, College of Dentistry, University of Florida, Gainesville, FL 32610-0424. E-mail: rlamont@dental.ufl.edu**.

POSTDOCTORAL POSITION. Studies of mechanisms that maintain genome stability, including the basis of repeat sequence expansion, and the signaling and protein assembly processes that direct repair to precede replication of damaged DNA. Strong background in biochemistry and genetics desirable. Send curriculum vitae and three recommendations to: **Dr. Robert Bambara, Biochemistry and Biophysics, Box 712, University of Rochester, Rochester, NY 14642. Website: http://dbb.urmc.rochester.edu/; e-mail: robert_bambara@urmc.rochester.edu**.

FELLOWSHIPS

FELLOWSHIP PROGRAM
Smithsonian Institution

GRADUATE STUDENT, PREDOCTORAL, POSTDOCTORAL, and **SENIOR FELLOWSHIPS** in animal behavior, ecology, and environmental science including an emphasis on the tropics; Earth sciences and paleobiology; evolutionary and systematic biology; and history of science and technology. Tenable in residence at the Smithsonian facilities. Stipends and tenure vary. Awards are contingent upon the availability of funds. Deadline: January 15 annually. Contact: **Office of Fellowships, Smithsonian Institution, Desk S, 750 Ninth Street N.W., Suite 9300, MRC 902, P.O. Box 37012, Washington, DC 20013-7012. Telephone: 202-275-0655; e-mail: siofg@si.edu; website: http://www.si.edu/research+study**. *An Equal Opportunity Employer.*

LIFE SCIENCES AND BIOTECHNOLOGY INSTITUTE

Mississippi State UNIVERSITY

7 Postdoctoral Research Positions

The Life Sciences and Biotechnology Institute (**www.mafes.msstate.edu/biotech**) announces the immediate availability of the following 7 postdoctoral research positions:

Position to develop a proteomics project to study abnormal plant development associated with insect feeding. This project will provide excellent opportunities in 2D-LC and MALDI MS. Experience in analytical HPLC and molecular biology techniques is desirable. Contact **Dr. Peter Ma** at **pma@entomology.msstate.edu**.

Two positions to study the molecular biology of insect neuroendocrine system and insect neuropeptide functions. Experience in molecular biology techniques is required. Contact **Dr. Peter Ma** at **pma@entomology.msstate.edu**.

Position to alter fiber properties in annual crop species through gene introduction approaches. Candidates with experience in plant tissue culture and molecular biology are encouraged to apply. Contact **Dr. Nancy Reichert** at **nreichert@onyx.msstate.edu**.

Position to investigate the interaction between *Aspergillus flavus* and corn at the molecular and cellular level. The scientist will be responsible for developing immunological methods for quantifying the amount of *A. flavus* infection on inoculated ears. Candidates with experience in molecular biology, immunology, plant pathology or related plant sciences are encouraged to apply. Contact **Dr. Dawn S. Luthe** at **dsluthe@ra.msstate.edu**.

Position to study the signaling pathway in a novel, host plant resistance system that leads to the production of a unique defense protease that accumulates in response to caterpillar feeding in corn. Applicants with expertise in plant molecular and cellular biology are encouraged to apply. Contact **Dr. Dawn S. Luthe** at **dsluthe@ra.msstate.edu**.

Position to study plant response to stress using a proteomic approach. Candidates with background in plant biochemistry or molecular biology are encouraged to apply. Contact **Dr. Zhaohua Peng** at **zp7@ra.msstate.edu**.

A Ph.D. degree or equivalent is required. Please send CV and names of three references to the person listed after each position description. Applications will be accepted until **January 1, 2003** or until the positions are filled.

MSU is an Equal Opportunity Employer and encourages applications from women and members of minority groups.

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The University of Tennessee
HEAD, Department of Chemistry

Applications are invited for persons qualified for appointment as full professor to serve as Head of the Department of Chemistry at the University of Tennessee, Knoxville. Candidates must have a Ph.D. in the chemical sciences, excellent interpersonal and communication skills, and a nationally or internationally recognized record of scholarly research. The successful candidate is expected to provide strong leadership in enhancing the stature of the research and instructional programs of this nationally recognized Department, and in representing the Department to outside constituencies. Applicants should have a demonstrated commitment to and knowledge of equal employment opportunity and affirmative action. The Head is also expected to maintain a competitive, externally funded research program. The Department currently consists of 32 faculty, 23 staff, 40 post-doctoral associates, and 100 graduate students. The faculty has a strong commitment to quality graduate and undergraduate education, is associated with many interdisciplinary centers of excellence, and maintains close research relationships with Oak Ridge National Laboratory (which is co-managed by the University).

Applicants should submit a letter of interest describing how their qualifications meet the position requirements, a vitae, and electronic contact information for four references. Review of applications will begin on **January 15, 2003**, and will continue until the position is filled. Material should be sent to:

Department Head Search Committee
Department of Chemistry
University of Tennessee
Knoxville, TN 37996-1600

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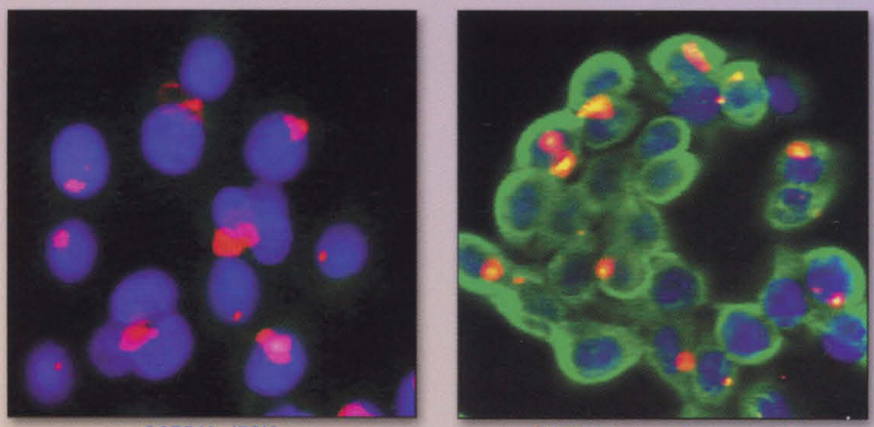

GAPDH siRNA | GAPDH Scrambled Control

siRNA Silencing of GAPDH Gene Expression. siRNA to human GAPDH (Cat #4602) and a scrambled control were fluorescently labeled with Cy™3 using the *Silencer*™ siRNA Labeling Kit (Cat #1632), transfected into HeLa S3 cells, and analyzed by fluorescence microscopy. **LEFT:** siRNA silencing of GAPDH expression. **RIGHT:** Control siRNA had no effect on GAPDH protein levels. RED: Cy3 labeled siRNA; GREEN: Anti-GAPDH antibody detected with fluorescein labeled secondary antibody; BLUE: DAPI stained nuclei.

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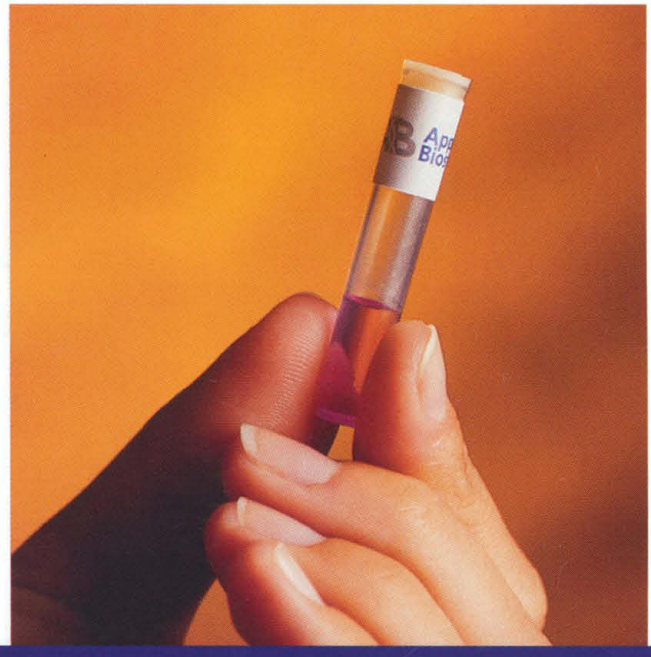

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