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The Pfizer Competitive Awards Program provides grants to members of the medical community to be used for the study of doxazosin. In past years the program has involved internationally respected researchers and has yielded exciting scientific information.

Proposals for the 2003 Competitive Awards Program must be received by October 31, 2002.

Submission of a proposal under the 2003 Competitive Awards Program is not made in confidence, and shall not create or be conditioned on any obligation or restriction on the part of Pfizer with regard to its use.

For more information contact Pfizer via e-mail, doxazosinawards@pfizer.com.

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Madrid, Spain

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M. Ruiz-Ortega
Madrid, Spain

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Boston, MA, USA

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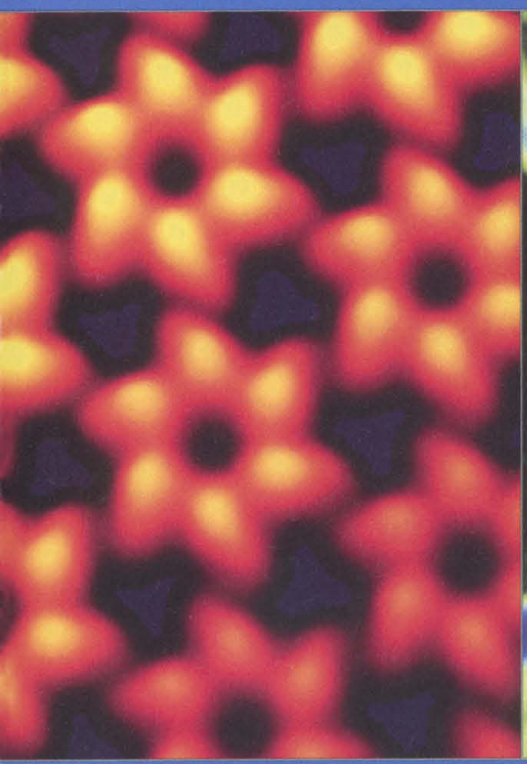
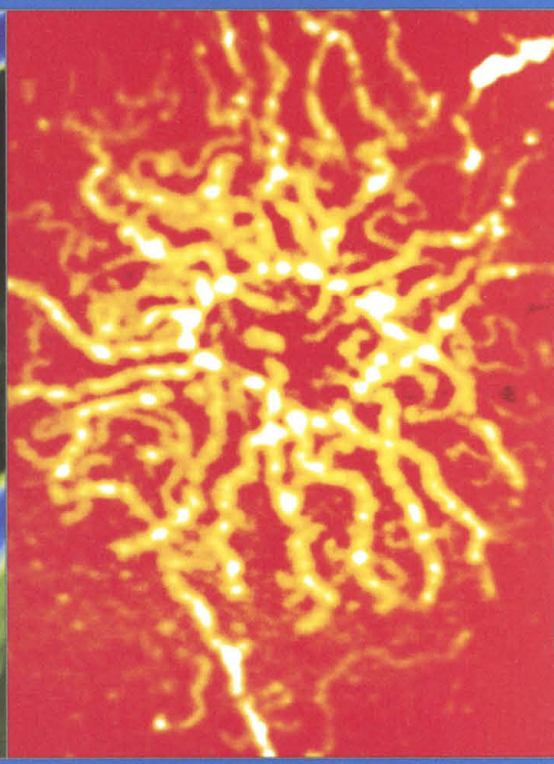
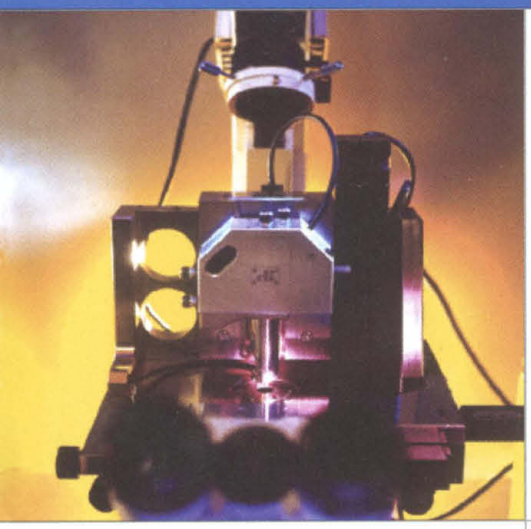


Asymetric unit membrane of urine bladder epithelium. 16nm scan courtesy M, Stolz, X.P. Kong, T.T. Sun, U. Aebi, D. Mueller, Basel Institute, Switzerland.

Lipid film on mica in fluid, 1.5μm scan courtesy of B. Ohler and C. Husted, University of California, Santa Barbara.



Microciona prolifera: circular proteogylcan, 100nm scan courtesy Xavier Fernandez-Busquets, PhD, Research Center for Bioelectronics and Nanobioscience, University of Barcelona.



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GENOME COMPARISONS

The completion of over 100 genomic DNA sequences and the promise of many more has driven the development of better computer programs for comparative genomics. The idea is to extract from the compared genomes useful functional and evolutionary information beyond a simple dot plot similarity. Second generation programs like National Center for Biotechnology Information's TaxPlot, The Institute for Genomic Research's Mummer, and Lawrence Berkeley National Laboratory's Vista provide many features useful to the bioinformaticist, such as identifying homologous regions in three or more genomes. PatternHunter does not sport the flashy features of these programs, but it can compare two very large genomes in a fast and sensitive homology search.

PatternHunter compares two genomic DNA sequences without regard to gene content. It returns matching DNA sequence regions as local gapped alignments similar to Blastn, and it also generates an overall dot plot. Search parameters, such as the scores for matches and mismatches, gap penalties, and model weight, can be adjusted. PatternHunter uses a different approach for analysis than similar products: instead of finding "seed" matches that are all identities, it requires matches at 11 fixed and optimized positions in a seed length of 18. The chief advantages of PatternHunter are its speed and sensitivity, especially compared with BLAST2Seq. It can generate a comparison between two *Arabidopsis* chromosomes in 15 min or two human chromosomes in a few hours.

PatternHunter achieves its speed through a BLAST-like algorithm that uses optimized, nonconsecutive seeds. Nevertheless, it easily finds homologous regions faster than and as accurately as BLAST. A more complete description of program details has been published [see B. Ma *et al.*, *Bioinformatics* **18**, 440 (2002)].

PatternHunter is limited to pairwise comparisons and self-versus-self comparisons. The text output file, which is merely a long list of alignment details, lacks annotations and links. Its rudimentary dot plot is also unlabeled and unannotated with no active links, which makes it difficult to match a dot with its corresponding alignment. PatternHunter currently offers no options for protein sequence comparisons or for database queries.

PatternHunter is a small (27 kb) Java program that runs on the user's local computer. Because it is Java-based, it should also run on Macintosh and Unix systems, although we tested it only on Windows PCs, where it must be run in the DOS command prompt window. The alignment data is exported to a text file, and the dot plot is sent to a PostScript file. To view the dot plot, this PostScript file must be printed, put on screen with a postscript viewer, or converted to another file format such as PDF. Such viewers and converters are not supplied with PatternHunter.

PatternHunter is free of charge for academic users, who must register at the Web site. The site also offers a trial version (both downloadable and online), but it is limited to genomes under 1 MB in size and allows only a subset of the search parameter values to be changed. PatternHunter lives up to its claim of performing fast, sensitive searches of very large genomic sequences. Users who have this need will find the program useful but must be prepared for a command-line interface, output that is difficult to interpret, and the requirement to download and install Java and program(s) for viewing the PostScript output.

—John. B. Spalding and R. L. Bernstein

J.B.S. is at the Southwest Biotechnology and Informatics Center, New Mexico State University, Las Cruces, NM 88003–8002, USA. E-mail: spalding@nmsu.edu; R.L.B. is in the Department of Biology, San Francisco State University, San Francisco, CA 94132, USA. E-mail: rbernste@sfsu.edu

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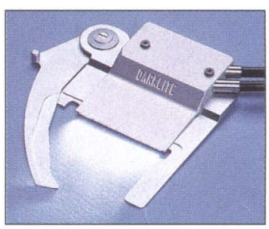

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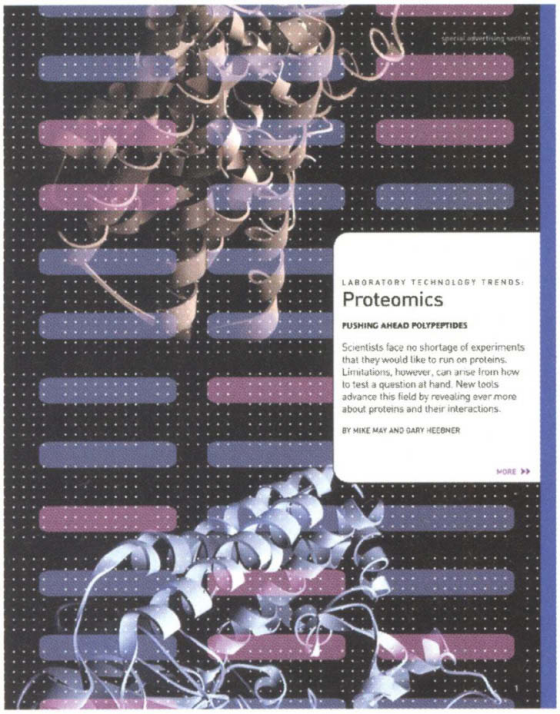

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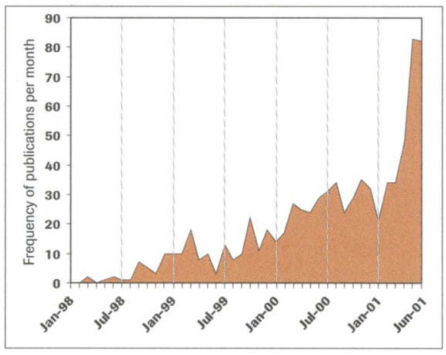

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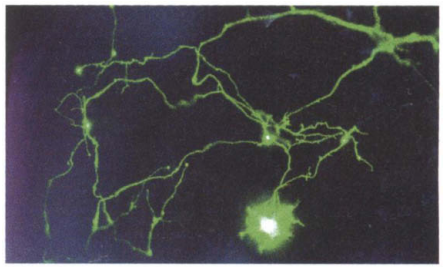

Rat hippocampal neuron expressing GFP 12 hours post transfection with FuGENE 6 Reagent. *Courtesy of the Vandongen Lab., Dept. of Pharmacology and Cancer Biology, Duke University.*

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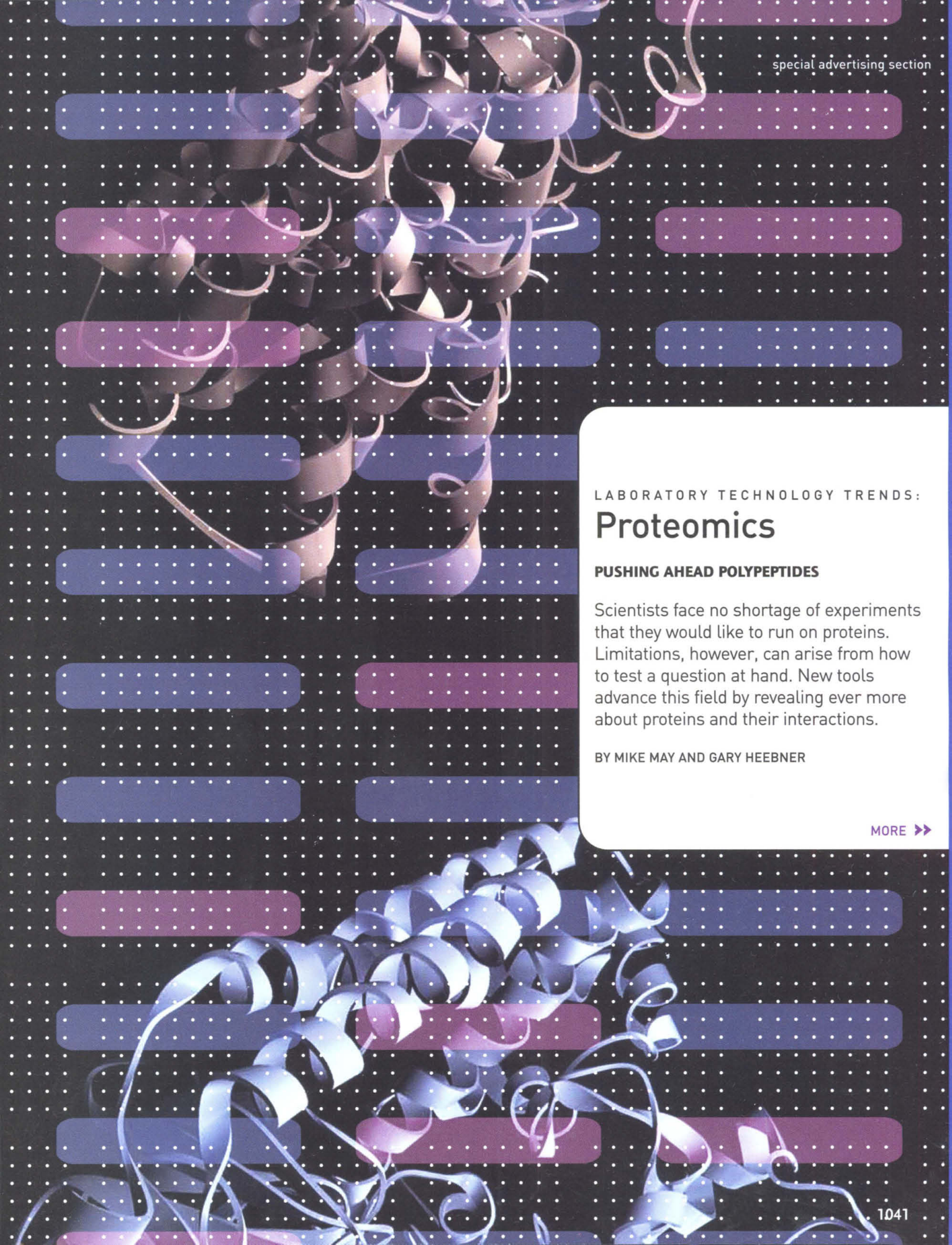

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BY MIKE MAY AND GARY HEEBNER

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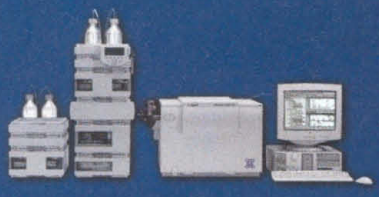

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SECTIONS:

- Many biologists see far-reaching potential for proteomics. This field emerges from several decades of discoveries from protein chemists exploring polypeptides, and today's technology supplies scientists with a growing array of tools for attacking even more complicated questions about proteins. Edward T. Maggio, chairman and chief executive officer at **Structural Bioinformatics**, said, "Proteins are fundamental to most biological processes, so they are a focus in life science and drug discovery."
- Proteomics describes the study of all the proteins in a cell or tissue. This science presents some interesting challenges, even when compared to genomics. Proteins are more complex than DNA in several ways. DNA consists of just four different bases, but 20 different amino acids make up proteins. Moreover, the linear sequence of DNA bases determines the information in genes, but a protein's activity relies on its amino acid sequence plus its three-dimensional conformation.
- The collective activities of proteins in a cell account for how a cell behaves in its environment, because proteins perform several jobs. Some proteins make cells motile. Others function as receptors for signals from outside a cell. Proteins also send signals from one location in a cell to another. In addition, other chemical moieties, including sugars, can attach to proteins and change their properties.
- Just as proteins can change quickly, so does the field of proteomics. Rudolf Aebersold, cofounder of the **Institute for Systems Biology**, sees two ongoing changes in proteomics. First, he said this field started by trying to simply identify all of the proteins—enough of a challenge in itself—but now scientists hope to determine the differential expression of proteins under varying circumstances, interactions between proteins, and the three-dimensional structure for all proteins. In addition, Aebersold said that two-dimensional (2-D) gel electrophoresis dominated proteomics research at first—and remains an integral technology to this field—but today's experiments also employ chip based measurements and high throughput mass spectrometry (MS).

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Cover image by Cameron Slayden

AN OLD FRIEND

In the mid 1970s, protein chemists started separating polypeptides with 2-D gel electrophoresis. These systems consist of two stages. The first dimension uses isoelectric focusing, and the second dimension utilizes a denaturing polyacrylamide gel matrix.

The first gel, or dimension, traditionally incorporated ampholytes into the gel. These free ampholytes migrate in the gel to form a pH gradient, which helps separate the proteins based on their isoelectric points. Preparing gels that produce consistent results is not easy, but immobilized pH-gradient strips from suppliers solve the drifting pH gradient that resulted from ampholytes.

After the first dimension, the separated proteins go to a vertical gel electrophoresis unit. This stage includes a uniform molecular sieve that can separate proteins based on their molecular weight. These gels denature the proteins. That is, the gel unwinds proteins—turning their three-dimensional conformation into more or less linear molecules, which can then migrate through the matrix. Smaller molecules move faster than the larger molecules through the gel, which further isolates different polypeptides.

A number of companies—including **Amersham Biosciences**, **Bio-Rad Laboratories**, and **Invitrogen Corporation**—offer complete systems to perform protein separations. Pieter Noordeloos, vice president of marketing for proteomics at Amersham Biosciences, said, "We have been involved with 2-D electrophoresis for more than 25 years. Our innovations make the results stable and reproducible." Amersham Bioscience offers essentially everything needed to apply 2-D electrophoresis to proteomics, including precast gels, instruments, reagents, and more.

According to Noordeloos, Amersham Bioscience's product line includes the Ettan DIGE which "provides quantification and increased speed by allowing a researcher to compare normal samples with diseased or treated ones at the same time, in the same gel." Although few would call 2-D electrophoresis simple or completely straightforward, Joakim Rodin, vice president of product development at Amersham Biosciences said, "We use innovative chemistry and smart software together with experimental design in our Ettan DIGE system to do true 2-D differential protein expression analysis, helping the customer generate more accurate data—actually making it possible to analyze subtle changes in the biology and not the experimental variation"

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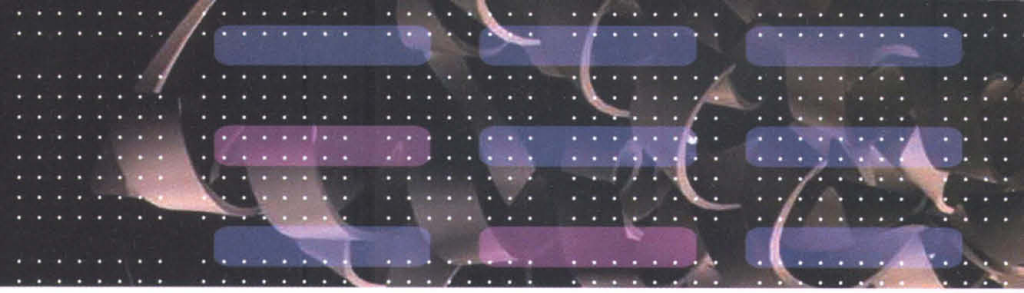

OTHER FAVORITES

Other favorite tools used in protein studies include antibodies, liquid chromatography, mass spectrometry, and X-ray crystallography. Over time, manufacturers continually improved the performance and capabilities of these products, with special attention to how they can be used to study proteins. Antibodies, for example, provide ideal tools for identifying and isolating proteins. **BD Biosciences**, **Chemicon**, **R&D Systems**, and others provide antibodies and related products for a broad range of applications.

QED Bioscience provides customized antibodies—from DNA sequences alone—including chicken antibodies. These antibodies are increasingly being used in large-scale proteomics studies because they are relatively inexpensive, nonmammalian in origin, which makes them more immunoreactive and specific, and can be generated quickly.

Antibodies generated to a specific protein can be used to find it in a cellular extract. Traditionally, chromatography media in columns secured antibodies to a solid support to capture a protein of interest. Then, antigen-antibody complexes pulled out the protein. These products are offered by Amersham Biosciences, **Pierce Biotechnology**, **Tosoh Biosep**, and others.

Some old favorites in protein studies can now be run and analyzed using multiplexed assays. Based on **Luminex Corporation**'s xMAP technology, **MiraiBio**'s (formerly a division of Hitachi Software Engineering America) Luminex 100 and **Qiagen**'s LiquiChip system run multiple tests simultaneously. Steve Lee, director of research and development at Hitachi, explained that this product includes several basic parts. It starts with an assay, which can be an immunoassay, such as ELISAs, receptor-ligand analyses, or nucleic acid assays, including single nucleotide polymorphisms. This system uses polystyrene beads—5.6 micrometers across—and two internal dyes in varying ratios that create up to 100 unique colors that can be simultaneously associated with 100 different assays. The beads flow single file past two lasers, where the first identifies the bead and the second excites a reporter dye. A digital signal processor captures the data, and MiraiBio's MasterPlex QT analyzes the data. This system has already been used on studies of cytokines and viral antibodies, including HIV.

MiraiBio's FMBIO III Fluorescence Imaging System, with both phosphor and fluorescence capabilities, provides multitasking. For 2-D gels, for example, this system can scan and analyze two different lysates labeled with two different dyes that go through electrophoresis simultaneously. Lee said, "This way you can quantify your results without any gel-to-gel variability." Making this work depends in part on this machine's multiple excitation capabilities with 488, 532, and 635 nanometer lasers resulting in multicolor fluorescence detection and high sensitivity. The very large scanning area, which is 55 by 40 centimeters, facilitates simultaneous scanning of multiple gels, microtitre plates, or up to 84 complete microarrays. The software program Image Analysis 3.0 is packaged with the scanning system.

PUTTING PRESSURE ON PROTEINS

High performance liquid chromatography, or HPLC, separates molecules under high pressure in a stainless steel column filled with a solid matrix. HPLC pulls out molecules of interest by using the attractive forces between molecules carrying charged groups of opposite signs. **Agilent Technologies**, **Alltech Associates**, and **Phenomenex** specialize in HPLC.

Emmet Welch, manager of product development and commercialization at Phenomenex, said, "The most exciting thing in today's world of HPLC for proteomics is multidimensional chromatography." He and his colleagues are working to improve this technology by increasing the so-called peak capacity, essentially increasing the number of data peaks resolved per unit time. To do that, this group of scientists looks at one dimension of HPLC at a time. They started with the reverse phase dimension, and the Jupiter Proteo HPLC Column increased peak capacity by 20 percent to 60 percent over previous technology. Welch said, "We're on the right track and must focus on each dimension." Now this company's scientists are working on improving the ion exchange dimension as well.

A WEIGHTY OPTION

Mass spectrometry can identify individual proteins. For example, scientists analyze 2-D gel profiles with mass spectrometry, such as the matrix-assisted laser desorption ionization time-of-flight (MALDI-ToF) technique. Proteins get digested, and mass spectrometry can analyze the resulting peptides. The data gathered from the digestion of a single protein spot can then be compared to properties of known proteins and an exact match, or identification, can be made. Amersham Biosciences, **Applied Biosystems**, **Micromass**, **PerkinElmer Life Sciences**, **Thermo Finnegan**, and others manufacture these instruments.

As the workload increases, single MS instruments such as Amersham Biosciences' Ettan MALDI-ToF Pro could help investigators screen proteins of interest. Noordeloos said, "In the first screening, a majority of proteins can be identified,

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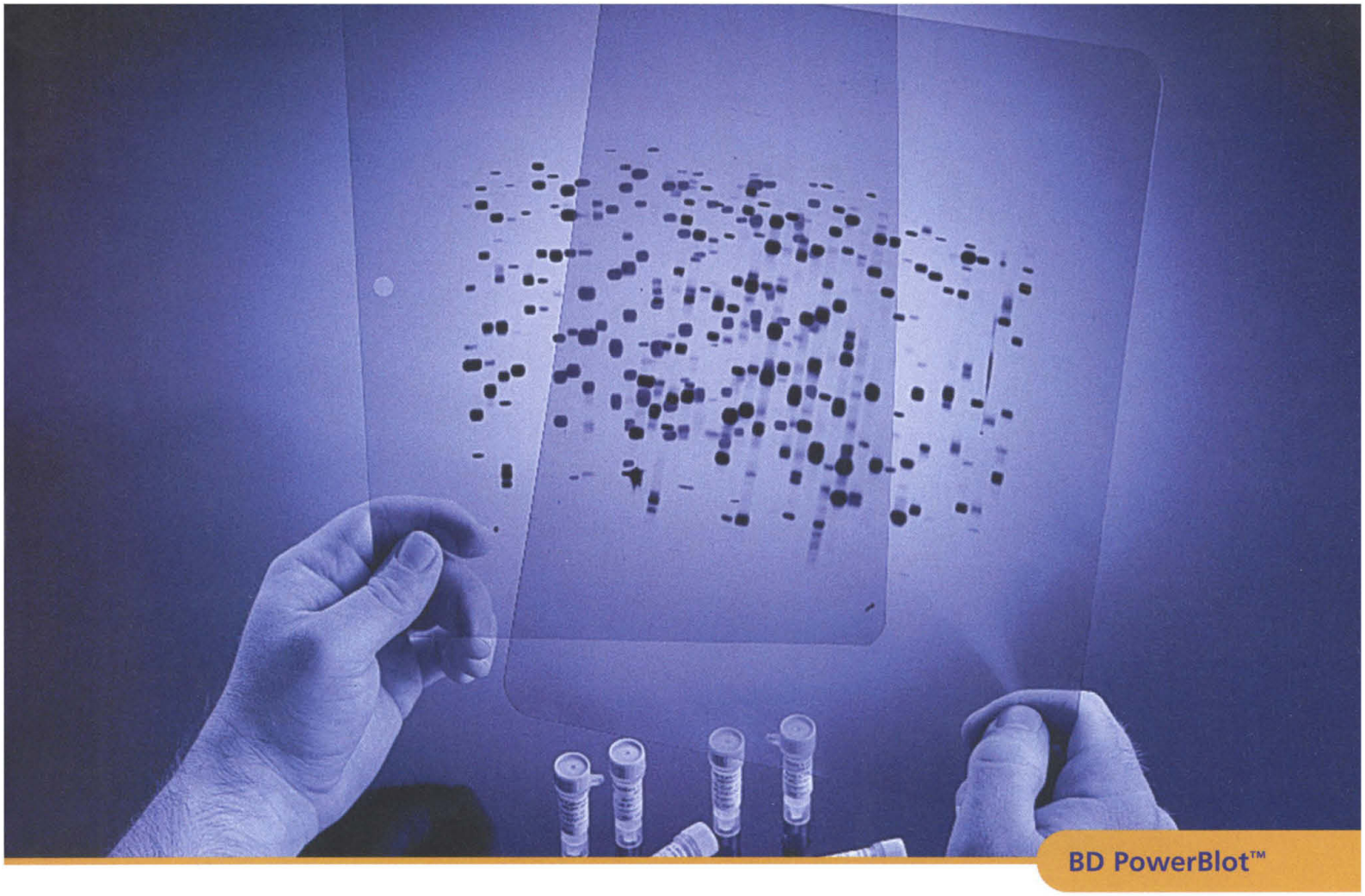

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and thus free up time on your high-end MS-MS systems for more difficult samples. In other words, we are seeing a shift from studying proteins with pure high-end sequencing applications to single mass spectrometry screening methods."

"To get more scientists to use mass spectrometry, though," Rodin said, "we have to bring it down to earth." That is, from a scientist's perspective, mass spectrometry must be easier to use and the data must be easier to interpret. Rodin and his colleagues hope to improve mass spectrometry along those very lines. He said, "We are pursuing ease of use, user friendliness, and getting answers instead of just spikes." In collaboration with Thomas Keough and R. Scott Youngquist at **Procter & Gamble**, Amersham Biosciences developed the Ettan CAF-MALDI Sequencing Kit—the first of its kind to use chemically assisted fragmentation (CAF) chemistry—and it significantly increases the rate of protein identification.

One of the widest lines of mass spectroscopy equipment for proteomics and drug discovery comes from Applied Biosystems. Steve Martin, director of the Proteomics Research Center, said, "Tandem mass spectroscopy, or MS-MS, is the real driver in proteomics." For example, scientists can identify and further characterize proteins with the API QSTAR, a hybrid quadrupole time-of-flight instrument. This product can also be used in drug metabolism studies.

Scientists can use Applied Biosystems' ICAT Reagent technology—developed by scientists at the Institute for Systems Biology—to compare levels of protein expression in complex samples, including human serum or diseased versus normal tissue homogenates. The technology works in concert with MS-MS based systems to analyze these complex mixtures and automatically quantify and identify the hundreds of proteins present. Martin said, "Scientists can use QSTAR with ProICAT software to automatically identify and quantify the proteins of interest."

For low-abundant proteins, Martin said, "A common approach is using multidimensional liquid chromatography for separation and then high resolution MS-MS systems to identify the proteins." Applied Biosystems' 4700 Proteomics Analyzer can analyze a complex protein sample that has been separated into many fractions and then rapidly do MS and MS-MS on the various fractions to identify and characterize the large number of peptides and proteins present. Martin said, "Low-abundant proteins are hidden by very abundant ones, so separation lets you pull apart different proteins." Getting enough sample fractionation depends on sample preparation. Applied Biosystems' VISION Workstation provides a wide variety of separation techniques, including ion exchange, reverse phase, affinity, and more.

In addition to the MALDI based 4700 system, Applied Biosystems also introduced the QTRAP, an electrospray-ionization system for protein and metabolite identification. It is the first commercial quadrupole linear ion trap-based system and expands the choices for selecting an appropriate mass spectrometry system. The QTRAP's higher performance capabilities allow for greater numbers of protein identifications from complex samples than traditional ion trap technology.

Scientists at **Eppendorf** also see the value in improved sample preparation. Joern Kirchhuebel, product manager of Eppendorf's molecular technology group, said, "There is a great demand for enhanced sample preparation for electrophoresis and chromatographic methods." Consequently, Eppendorf is developing products that make sample handling easier and more standardized. In addition, Kirchhuebel said, "We are trying to make products with a broad range, that can be used for 2-D electrophoresis, liquid chromatography, and mass spectrometry. We are planning one technology platform with different formats to fit the appropriate application."

NEWER ARRIVALS

Proteins usually function in families or pathways and interact with other related proteins. Researchers often begin studying proteins by attempting to understand how a protein with unknown function relates to other known proteins. A technique called the yeast two-hybrid method helps researchers identify related proteins.

In this technique, a transcription factor binds to a gene and causes it to produce RNA and then protein. This transcription factor consists of two parts: one that binds to a gene is called the binding domain, and the one that turns on RNA production is called the activation domain. The two domains can separate and each fuses to a different protein of interest. The two hybrid proteins can then be tested to see if they interact with each other. If they are related, the two domains will bind to each other and cause RNA production. This system is now offered by several companies like BD Biosciences, Invitrogen, and **Stratagene**.

New approaches to purifying proteins and studying expression also push proteomics ahead. Some expression systems insert small peptide sequences into a specific protein to identify and purify it. Scientists can find these systems at BD Biosciences, Qiagen, and **Sigma-Aldrich Corporation**. Kerstin Steinert, Qiagen's associate director of research and development in protein expression and proteomics, said, "As the number of proteins being studied increases, automation becomes essential. Using automated Ni-NTA [nickel-nitrilotriacetic acid] technology, 96 different recombinant proteins can be easily purified without a need to optimize individual purification conditions."

CASHING IN ON CHIPS

Protein arrays consist of large numbers of regularly arranged spots of discreet elements— antibodies, enzymes, substrates, and so on—that recognize a protein or protein binder of interest. This technique can be used to monitor a cell's metabolism and response to external stimuli. Moreover, any biological protein assay that uses a specific ligand-receptor interaction can be miniaturized into a protein chip.

Despite some years of experience with DNA microarrays, similar chips for proteins create new challenges. Karin Hughes, vice president of research and development at **Prolinx**, said, "A lot of the chip chemistries that work for DNA do not produce good results for proteins. Proteins are more sticky and fragile, so surface chemistry

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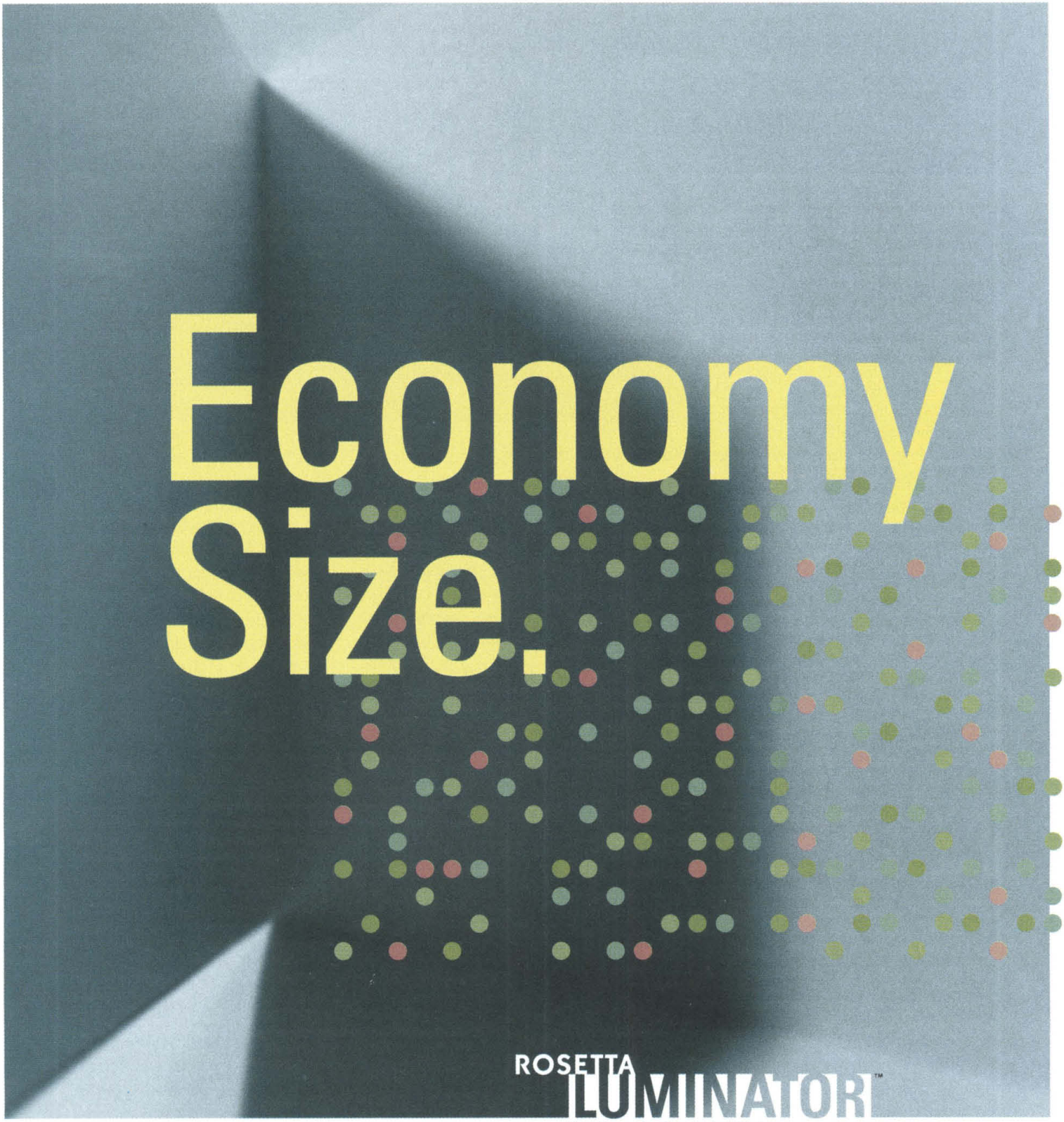

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is an issue." Prolinx battles that problem by making a slide that incorporates a three-dimensional polymer to help capture the desired proteins. Hughes said, "We designed this surface for proteins, and it works quite well. It gives a very high signal-to-noise ratio and there is little to no nonspecific protein binding."

Beyond this advance in surface chemistry, Prolinx added other new features to its protein microarray technology. Leslie Linkkila, director of sales and marketing, said, "Proteins vary in size, how fragile they are, and in other characteristics, so our system allows a user to select how to bind proteins to the array surface on a protein-by-protein basis. This makes the Prolinx method a diverse and robust screening technology." Despite these advanced features, Prolinx made sure to keep this product compatible with standard microarray equipment. Customers simply buy the slide and then spot, process, and detect the results with instrumentation originally designed for use with nucleic acid arrays.

Scientists at Prolinx hope that their technology helps biologists answer broader questions than they could address in the past. Robert J. Kaiser, Prolinx's chief technology officer, said "To this point much of biological science has been carried out in a rather isolated fashion. You'd find a particular characteristic of interest and dissect it one piece at a time, largely in vitro. Now we're trying to go from there to simultaneously investigating a huge number of interactions that must be understood in vivo to quantify a stimulus-response." He paused before adding: "These are very complex questions. Once such questions start to be answered, we'll have come a long way toward describing biology as biology, and not as a test-tube model."

Chasing such questions, though, produces megatons of information, such as protein sequence data. A number of companies—including **Compugen** and **Incyte Genomics**—offer analysis software for this situation. For example, MiraiBio's MasterPlex QT, mentioned above, takes multiple files and simultaneously analyzes them. The user gets a report that includes the ability to search all of the data.

Calling All Proteome People

The **Human Proteome Organisation** (HUPO) will hold its first global gathering in Versailles, France, 21–24 November 2002. According to Samir Hanash, president of HUPO, this organization hopes to bring together academia, industry, and government in a combined research effort in proteomics. The organizers expect about 1,500 people to attend this meeting, which will provide a wide variety of plenary sessions—including one called Human Proteomics Initiatives chaired by Hanash—plus forums on bioinformatics in proteomics, clinical applications of proteomics, expression profiling in health and disease. This meeting will also include poster sessions of ongoing research. Hanash said, "No one country and no one lab group can attack all aspects of the proteome. We want to energize people in this field and give them the resources and infrastructure that they need to realize the promise of proteomics." To register for this meeting or get more information, visit HUPO online at **http://www.hupo.org**.

DISCOVERING NEW DRUGS

Alex Vodenlich, vice president of contract services at **PanVera Corporation**, said, "Proteomics is already accelerating the process of developing therapeutic agents by identifying and validating new drug targets." Once new proteins get identified and validated, PanVera's scientists can create them—accurately, quickly, and in quantity. Vodenlich said, "The need for proteins is increasing dramatically, and we have a capability of taking validated gene sequences and turning them into proteins with an industrialized process." Currently, PanVera offers more than 100 recombinant proteins with off-the-shelf availability. Vodenlich said, "We generally focus on certain gene families that are of broad therapeutic interest, such as the protein kinases, which are involved in cell signaling and regulation. We've produced over 30 different kinases that can be used for high throughput screening for people who are looking for inhibitors of these kinases." This company also manufactures custom proteins, and it has created more than 1,000 specialized polypeptides.

Manufactured proteins from PanVera can also be used in structural proteomics. Investigators can more easily study a protein's structure if they have large quantities of it, and it must be the right protein.

Using proteomics to make better drugs often involves structure. Ming Li, president of **Bioinformatics Solutions**, said, "Software helps biologists speed up their study of proteins and cuts the costs. Instead of going to wet labs, they can use dry labs to find the structure of proteins." Before working on a protein's structure though, a scientist must know just what protein it is. Li and his colleagues provide their PEAKS software, which determines a peptide sequence by using data from mass spectroscopy. Li said, ""PEAKS consists of an automated de novo sequencing component and a semi-manual sequencing component. PEAKS significantly improves the accuracy of all existing commercial de novo sequencing software with a new algorithm." Li adds, "It also handles the troublesome posttranslational modifications including phosphorylation."

To determine an identified protein's structure, Li's company owns an exclusive license for PROSPECT, a package developed at Oak Ridge National Laboratory. This program uses the known structures of proteins with similar sequences—plus a variety of mathematical techniques—to predict a new protein's structure. Li said this program can determine the structure of about 50 percent of the proteins tested. "Researchers working in drug discovery can use this program as a prescreening step," Li said, "before they work on potential drug targets in the wet lab." As databases of protein structures improve, PROSPECT will find the structures of even more proteins.

SEEKING THE RIGHT SHAPE

Finding the best pharmaceutical often depends on how it fits its target, which is generally a protein. Maggio said, "Protein structure has been hard to come by in the past, because it depended on X-ray crystallography or nuclear magnetic resonance." The scientists at Structural Bioinformatics make it easier to determine a protein's shape through augmented homology modeling. In essence, this technique takes a protein with an unknown structure and uses its sequence to find a similar protein with a known structure.

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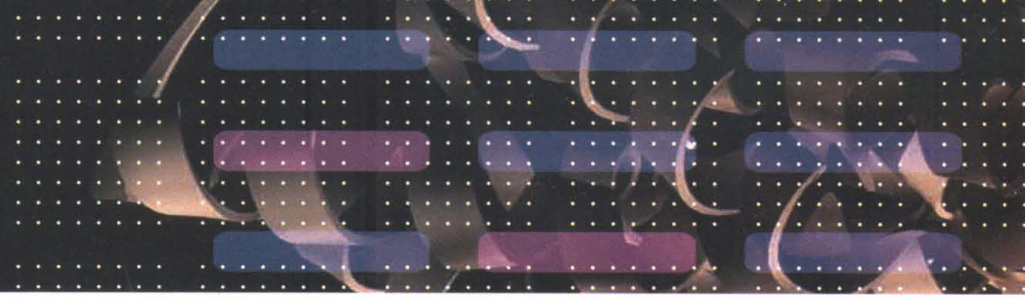

Structural Bioinformatics' proprietary algorithms use the relationship between the known sequence and structure to build an accurate internal core structure for a protein of interest. Then the software completes the structure using proprietary and patented algorithms to generate accurate surface loops, which overcomes the inaccurate surface structures that plagued earlier homology methods. After additional mathematical refinement, the resulting structures are comparable in quality to X-ray structures, but at a fraction of the time and cost. Structural Bioinformatics also created StructureBank, a system for large-scale management, data sharing, and comparative analysis of three-dimensional protein structures now in use by a growing number of drug discovery companies. According to Maggio, "StructureBank's simple but powerful, intuitive user interface provides access to protein structure at the touch of a few keystrokes. This makes rational experimental design practical across nearly all life science disciplines, increasing speed and efficiency in many aspects of drug discovery."

Kal Ramnarayan, Structural Bioinformatics' chief scientific officer, said, "To make this process work, you need an understanding of the three-dimensional structure of proteins and how they react with targets." Ramnarayan indicated that the crucial aspect of this process involves how the program represents the protein loops in the secondary structure that lead to the protein's tertiary, or three-dimensional, structure. This group's software computes the structures of short sequences of amino acids—usually six to 30 that compare well with known structures—to get the loops right. In addition, an expert protein modeling team goes over the results to be sure that loops align properly.

This technology works very well for proteins that come from families with well-known structures. For 98 percent of proteins examined in benchmark studies, Structural Bioinformatics' approach generated a structure in which amino acids lie within no more than two angstroms of where X-ray crystallography places them. For 96 percent of the proteins, this technique places the residues within 1.5 angstroms of the exact location.

In the past, this type of modeling failed in drug discovery. Past protein structure modeling provided reasonable results for a protein's core structure, but poor results for its surface, where drug interactions take place. Augmented homology, however, creates a very accurate model of the core and the surface. Consequently, scientists at Structural Bioinformatics take a potential drug target, determine its three-dimensional structure, and then look for active small molecules as potential drugs. David D. Muth, president and chief operating officer, said, "Beyond the target's structure, you also need the structure of closely related proteins in patients, because they cause the side effects. This is yet another powerful use of StructureBank."

So far, scientists at Structural Bioinformatics are batting a thousand. With 10 new targets, they found promising drug candidates. They are working on drugs against anthrax, asthma, cancer, diabetes, inflammation, and more.

BENEFITS FROM BREAKDOWNS

Experiments in drug discovery go beyond making new proteins. Scientists also study the destruction of proteins. Every cell contains proteases, or enzymes, that break down proteins. Proteases play a fundamental role in viral infections. In the infection process, viral RNA gets translated to polypeptides, and the assembled sequence of amino acids includes several proteins connected end-to-end. Proteases cut these proteins apart, which turns them on so that the virus can infect more cells. Protease inhibitors block the protease enzyme, and that can fight the spread of a virus. Investigators at **ICN Pharmaceuticals**, for example, focus on protease inhibitors.

Drugs can also attack viruses in other ways. Steven Dowdy and his colleagues at **Washington University School of Medicine** attacked HIV with another protein, called caspase-3. When this protein turns on, it causes a cell to commit suicide. Dowdy's team makes HIV cells take up this protein. When the virus tried to reproduce, it turned on caspase-3, which killed the cells. Dowdy pointed out that this approach could also attack other viral diseases, including hepatitis C and herpes.

Investigators at ICN Pharmaceuticals also see the potential of caspase and related proteins. Ron Mischak, director of research and development, indicated that his company provides fluorescent probes for caspases. He said, "Our novel probe design provides direct visualization of intercellular caspase activity. I think this is an excellent model system for reagents that might target other activated enzymes in a cell."

UPCOMING OBSTACLES AND ADVANCES

Aebersold pointed to a couple challenges in current proteomics research. First he said, "It's difficult to find the right technology to do certain types of protein measurements on a global scale, which is of particular biological importance." Posttranslational modifications, for instance, often change a protein's function, such as phosphorylation turning a protein on or off. Aebersold said, "There are no good tools to measure these modifications systematically." He also pointed out the ongoing challenge of informatics. He asked: "What do you do with all of the data? We measure multiple types of data from one type of protein, and all of these measurements create huge amounts of data and each must be processed. Eventually, all of the data must also be integrated."

Aebersold also wants to bring high throughput techniques for proteomics to academic laboratories. Academic scientists have little access to high throughput proteomic facilities. Aebersold hopes to change that by creating centralized facilities where academic scientists can go to use equipment as well as data gathering and analysis tools. He said, "It is not a question of money and buying lots of mass spectrometers. It is more complex, because you need equipment and personnel and a computational infrastructure." With such facilities academic researchers might also enjoy the high throughput capabilities, which are largely limited to today's industrial scientists.

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

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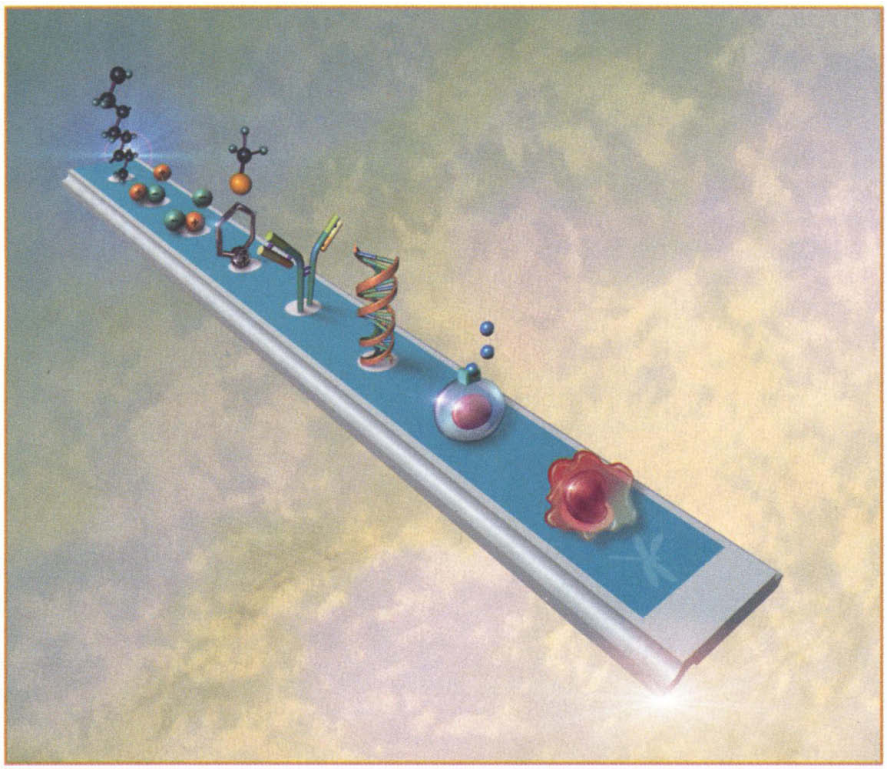

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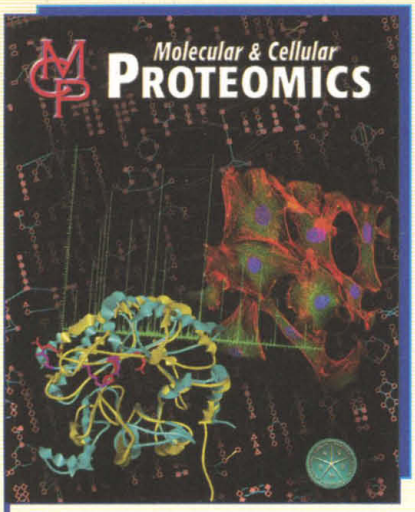

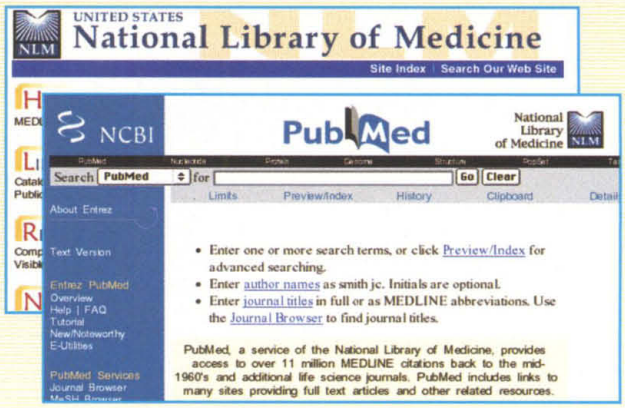

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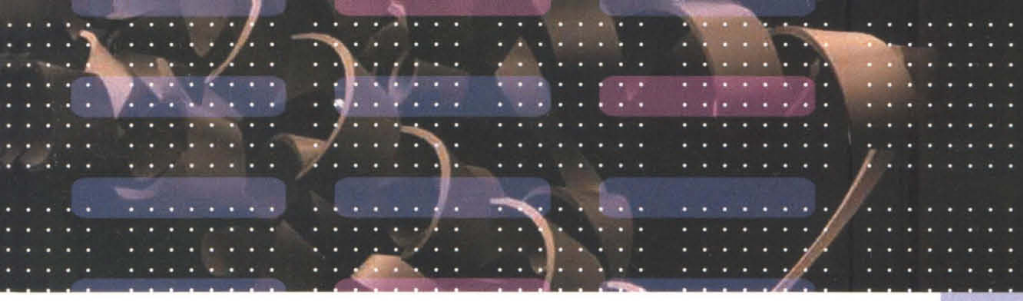

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Science

POSITIONS OPEN

DIRECTOR OF THE CENTER
University of Puerto Rico
Center for Research in Protein Structure, Function, and Dynamics

The University of Puerto Rico System announces a newly created position, **PROFESSOR AND DIRECTOR OF THE CENTER FOR RESEARCH IN PROTEIN STRUCTURE, FUNCTION AND DYNAMICS**, and seeks candidates for the position. The Center presently involves three campuses of the University, the Medical Sciences and Rio Piedras Campuses in San Juan and the Mayagüez Campus. The candidate must have a Ph.D. and expertise in the area of protein research, extensive experience obtaining and maintaining competitive NIH funding, experience in administrative responsibilities, such as recruitment of new faculty, attracting outside funding and budget administration, and supervision of scientific work, such as mentoring faculty to enhance their competitiveness in grantsmanship, managing scientific training programs and/or directing his/her own laboratory program. Fluency in Spanish will not be required. A competitive salary, laboratory space, and startup funds will be offered to the selected candidate. Review of applications will begin on October 1, 2002, and continue until the position is filled. Send curriculum vitae, summary of past accomplishments, and names of three references to: **Dr. Marisol Vera, CO-BRE II Program Co-director, Department of Chemistry, University of Puerto Rico, P.O. Box 9019, Mayagüez, PR 00681-9019. E-mail: mvera@uprm.edu** or **mvera@caribe.net**. See also: **http://www.uprm.edu/cobre2 and http://cobre2.uprm.edu**. *The University of Puerto Rico is an Equal Opportunity Employer. M/M/V/I.*

FACULTY POSITION
at Colorado State University

The Department of Biochemistry and Molecular Biology seeks applications for a tenure-track position at any academic level from individuals with training in structural biology, cellular biochemistry, or proteomics. Candidates should have a research interest that complements an existing strength of the department such as chromatin structure, gene expression, signal transduction, or cytoskeleton dynamics. The department occupies a modern building with excellent core facilities. Further information is available at **website: http://www.bmb.colostate.edu**. Candidates must have a Ph.D., postdoctoral experience, the ability to sustain an independent and productive research program, and the desire to participate effectively in undergraduate and graduate teaching. For full consideration, a complete application consisting of curriculum vitae, a statement of research interest and teaching interests, and three reference letters must be received by October 1, 2002. Applications will be accepted until the position is filled. Send to: **Dr. M. Paule, 316 MRB, Colorado State University, Fort Collins, CO 80523-1870**. Or on-line at **website: http://www.bmb.colostate.edu/jobs.cfm**. *CSU is Equal Employment Opportunity/Affirmative Action Employer; E.O. Office: 101 Student Services.*

POSTDOCTORAL POSITION
Stanford School of Medicine/
Research Institute
Palo Alto Medical Foundation

Position available immediately to study molecular mechanisms underlying type-2 diabetes and related metabolic disorders. Current projects focus on the molecular and cellular biology of protein-mediated fatty acid uptake. A broad range of modern biomedical techniques, including the characterization of knock out animals, will be used to determine the contribution of several candidate genes to normal energy homeostasis and disease. Postdoctoral candidates should hold recent Ph.D. and/or M.D. degrees. Experience in molecular biology and animal models is desirable. Send curriculum vitae and names of three references to: **Dr. Andreas Stahl, Cardiovascular Biology, Research Institute, Palo Alto Medical Foundation, Ames Building 795 El Camino Real, Palo Alto, CA 94301. E-mail: astahl@stanford.edu.**

POSITIONS OPEN

ECOLOGIST, GS–0408–12
(with a promotion potential to the GS–13 grade)
National Oceanic and Atmospheric Administration (NOAA),
National Ocean Service (NOS), National Centers for Coastal Ocean Science (NCCOS),
Center for Coastal Monitoring and Assessment (CCMA), Silver Spring, Maryland

The Center for Coastal Monitoring and Assessment (CCMA) seeks an Ecologist with expertise in nutrient over-enrichment and its consequences in coastal ecosystems. Within broad agency guidelines and mandates, the incumbent works independently and as a member of an interdisciplinary group that is responsible for conducting research leading to assessments of coastal environmental conditions and formulation of effective measures to protect, conserve, and restore coastal habitats and their biodiversity. The incumbent possesses a sound knowledge of coastal and estuarine ecology, demonstrated research experience in environmental sciences, and an understanding of ecological risk assessment, numerical and mathematical analysis of multi-disciplinary data, and nutrient management strategies. The incumbent plans, justifies, and implements a continuing program of environmental research, assessment, and monitoring in area of expertise; organizes, analyzes, and synthesizes data from different sources and prepares technical reports and manuscripts suitable for publication in peer-reviewed journals; and provides scientific counsel and documents to Scientists and managers on matters of mutual interests, including development of new procedures and technologies for environmental measurements.

The salary range for the GS–12 grade in the Washington, D.C. area is from $55,694 to $72,400. To apply, please visit **website: http://www.jobs.doc.gov** and submit your application via the Commerce Opportunities On-Line (COOL) system. Only the COOL electronic applications will be accepted. Please respond to vacancy number H–NOS–02.108.TMS. The position will be open from August 5, 2002, until August 26, 2002. *Only United States citizens may apply. NOAA is an Equal Opportunity Employer.*

The Department of Animal Sciences, Purdue University, West Lafayette, Indiana invites applications for two tenure-track positions with open rank (**ASSISTANT, ASSOCIATE** or **FULL PROFESSOR**) in animal growth and developmental biology, available in January 2003. The first position will conduct research on early events of mammalian development and generation of germline transgenic domestic animals. The second position will conduct research in molecular genetics and mechanisms of germline gene transfer and expression in domestic animals. Candidates must have a Ph.D. in genetics, reproductive biology, developmental biology, or a related field and should have appropriate postdoctoral experience with evidence of productivity. The incumbents will be members of the newly established Program of Comparative Medicine, which includes faculty members from Indiana University of School of Medicine and Purdue University, and will be expected to contribute to the program's mission of developing animal models for basic biomedical research in health and disease. Current interests of the program include pig, sheep, zebrafish, and rodents. Work with any animal species is applicable. Detailed information is available on our **website: http://www.ansc.purdue.edu**. Candidates should submit, by September 15, 2002, a letter of application, statements describing their research interests and educational philosophy, and a detailed curriculum vitae that includes education, experience, additional qualifications, and publications. Official transcripts and three letters of reference should be sent directly to: **Dr. Alan L. Grant, Head, Department of Animal Sciences, 1151 Lilly Hall, Purdue University, West Lafayette, IN 47907-1151. Telephone: 765-494-4809; FAX: 765-494-9346; e-mail: agrant@purdue.edu.** *Purdue University is an Equal Opportunity/Affirmative Action Employer.*

GLOBAL OPPORTUNITIES

SULTAN QABOOS UNIVERSITY
COLLEGE OF MEDICINE AND HEALTH SCIENCES

Sultan Qaboos University, the National university of the sultanate of Oman has the pleasure to invite applicants for academic posts in the **College of Medicine and Health Sciences**.

Department of Microbiology and Immunology

Assistant Professor of Microbiology
(ADV/MED/MCR/08/02)

Description: Medical Microbiology and Immunology are in one department. The current complement of Microbiology staff includes, 1 Professor, 2 Associate Professors, 3 Assistant Professors and 9 technical staff.

Qualifications: Should hold a Ph.D. degree or equivalent in Microbiology. The holder should have at least 2 years teaching experience in all aspects of Medical Microbiology. Experience in teaching B.Sc. in Biomedical Sciences is an advantage. Should have a good record of research publications.

Responsibilities:

a. Teaching: Will teach mainly B.Sc. and M.Sc. Microbiology students and organize the continuous evaluation and the examinations conducted by the department.

b. Research: Will conduct research in the department and supervise students' research projects.

c. Administration: Will administer the courses of Microbiology in the College of Medicine and Health Sciences as required by the Head of Department.

Associate Professor of Immunology
(ADV/MED/IMM/08/02)

Description: Immunology is at present combined with Medical Microbiology. The current complement of immunology positions includes 1 Professor, 2 Associate Professors, 1 Assistant Professor and 5 technical staff.

Qualifications: Should hold an M.D. degree and a higher qualification in Immunology (MRCPath/Ph.D). The holder should have good experience in all aspects of clinical and academic immunology. Should have a substantial record of research publications.

Responsibilities:

a. Teaching: Will participate in the review of the curriculum in immunology, teach undergraduate and postgraduate students and organize the continuous evaluation and the examinations conducted by the department.

b. Clinical: Will provide clinical services and expert advice in immunology.

c. Research: Will conduct research in the department and supervise research projects.

d. Administration: Will administer courses in the Immunology Unit in the College of Medicine and Health Sciences as required by the Head of Department.

Genetics Unit of the University Hospital/ College of Medicine and Health Sciences

Professor/ Associate Professor in Clinical Genetics/Cytogenetics
(ADV/MED/GEN_CYT/08/02)

The Genetics unit is seeking a faculty member with expertise in clinical genetics/ cytogenetics to direct the Genetics Unit. The appointee will be expected to play a role in the development of Human Genetics curricula at SQU and actively participate in all aspects of academic and clinical human genetics. The duties include clinical service, research and teaching. The applicant should have an M.D., Ph.D or M.D./Ph.D with Royal College of Pathologists or American Board of Medical Genetics certification in cytogenetics or equivalent, and should be currently engaged in clinical and/ or diagnostic Cytogenetics service laboratory.

The University offers an attractive tax-free base salary, free furnished accommodation, free medical care on campus and in government hospitals, end of service gratuity, subsidized schooling for up to two children and 60 days annual leave with return air-tickets. General information about the University and the College is available on the university's Web site www.squ.edu.om.

Interested candidates are requested to include a statement of interest, a detailed curriculum vitae and names and addresses of three referees to the following address quoting the reference of the required post to the following address:

The Director, Personnel Affairs, Sultan Qaboos University,P. O Box 50, Postal code 123, Al-Khod, Sultanate of Oman
Fax: (+968)513-255 E-mail:vacancies@squ.edu.om

Department of Biology Texas A&M University

As part of a University-wide expansion of life sciences at Texas A&M University, the Department of Biology invites applications for **two tenure-track faculty positions** at the **Assistant/Associate/Full Professor** levels. This search is open to any area of research and is accompanied by two parallel searches focused on plant genomics and biology education (see adjoining advertisements). We seek outstanding scientists addressing fundamental biological questions in model experimental systems. Biologists using modern or innovative approaches to basic research are encouraged to apply. We are particularly interested in applicants who will enhance existing programs in biological clocks, development, evolution, microbial genetics and genomics and neuroscience. Successful candidates will be expected to establish vigorous, extramurally funded research programs and to be active in graduate and undergraduate teaching.

For full consideration, applicants should submit curriculum vitae, statement of research and teaching interests, and three letters of recommendation by October 1, 2002 to: **Faculty Search Committee, Department of Biology, Texas A&M University, 3258 TAMU, College Station, TX 77843-3258.** Information about our department can be found at **www.bio.tamu.edu**.

Texas A&M is an Equal Opportunity Employer and has a policy of being responsive to the needs of dual-career couples.

Plant Genomics Department of Biology Texas A&M University

As part of a University-wide expansion of life sciences at Texas A&M University, the **Department of Biology** is seeking applications for a total of four tenure track positions in 2002 (see adjoining advertisements). An outstanding researcher working in the area of **plant genomics** will fill one of these positions. Special consideration will be given those individuals who are applying the tools of functional genomics and/or bioinformatics to a problem of basic importance in plant biology. In addition, preference will be given to applicants whose research complements or enhances existing strengths in the department in the areas of biological clocks, plant development, plant gene expression, plant/microbe interactions and plant molecular biology. Successful candidates will be expected to establish vigorous, extramurally funded research programs and to be active in graduate and undergraduate teaching.

For full consideration, applicants should submit curriculum vitae, statement of research and teaching interests, and three letters of recommendation by October 1, 2002 to: **Faculty Search Committee, Plant Genomics, Department of Biology, Texas A&M University, 3258 TAMU, College Station, TX 77843-3258.** Information about our department can be found at **www.bio.tamu.edu**.

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Combining talents to expand our vision

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High Throughput Biology

GlaxoSmithKline Discovery Research organization. The Department's mission is to provide high content and integrated biological and pharmacological information from gene and target function to compound activity at the molecular, cellular and organismic level. These are unique opportunities that combine basic research on novel drug targets with discovery of the full therapeutic potential of novel chemical entities. Ideal candidates will have backgrounds in cell physiology, signal transduction, biochemistry, molecular biology or molecular pharmacology. Experience in the functional analysis of novel proteins, or receptors with a record of published research and recognition as a leader in your field is desired. You will be responsible for creating and utilizing appropriate cell-based systems to characterize the effects of modulation of cellular pathways and phenotypes, and link potential drug targets to pathophysiology. Successful applicants will have the skills to use an integrative Systems Biology approach to incorporate data from multiple disciplines (e.g. genomics, proteomics, gene expression) to formulate hypotheses and develop research plans. These positions will require active interfaces with key collaborators within the GSK community (Genetics Research, Discovery Research, and the Therapeutic Research Groups).

GPCR Functional Analysis and Disease Association Senior Research Investigator

GSK is a leader in GPCR gene discovery and ligand-receptor pairing. We currently require Biological Scientists to elucidate the physiological and pathophysiological functions of novel GPCR's. You will synergize with the ongoing efforts within High Throughput Biology, Genetic Research, and Discovery Research to characterize ligand modulation of cellular transcriptomes, pathways and phenotypes and progress GPCR targets to the relevant therapeutic groups within GSK. Candidates will supervise and manage the daily activities and career development of Associate Scientists. You will contribute to internal GPCR target class workgroups and publish your findings when appropriate. Qualifications include a Ph.D. with at least 2 years' postdoctoral experience (academic or industrial) conducting innovative research focused on the discovery and functional analysis of G-Protein Coupled Receptors. A demonstrated ability to make scientific advances through the integration and prioritization of experimental information from multiple technologies is required, as is an ability and desire to matrix with scientists from diverse scientific disciplines. Must have strong interpersonal and communication skills and an ability to effectively direct the work of other scientists. Job Code 1478.

Scientist/Research Scientist

We're looking for an individual with intellectual and technical skills to conceive, design and implement detailed methodologies for cell-based drug-discovery assays. You will design and perform assays to explore disease pathology and compound efficacy using state-of-the-art cell physiology models based on primary tissue or cells; participate as an active member of interdisciplinary project teams; and utilize the literature, computer databases, and search services to remain current in the field. Qualifications include a B.S. or M.S. in Biological Sciences or related field with a minimum of 1-5 years relevant cellular physiology/cellular or molecular pharmacology research experience. Candidate will have experience in analysis of cellular signal transduction pathways in particular protein kinases, nuclear receptors or 7-transmembrane receptors. Ability to isolate and work with primary tissue or isolated primary cells derived from in vivo models is highly desired. Expertise in quantitative molecular biology (Taqman, QPCR), biochemical, immunological (ELISA, EIA, immunofluorescence), and quantitative imaging and microscopy-based assays desirable. Candidate will demonstrate excellent organizational, problem solving, and communication skills. Job Code 3235.

Cell Physiology and Molecular Pharmacology Senior Scientist/Research Investigator

As part of the Cell Physiology group of the department, your primary responsibility will be to conceive and implement cell-based assays with the goal of determining the ability of novel chemical entities to modulate signal transduction pathways having relevance to metabolic, musculoskeletal, cardiovascular or proliferative diseases. The position will allow opportunities for significant interactions within High Throughput Biology as well as Genetics Research, Discovery Research, and the Centers for Excellence for Drug Discovery. Successful candidates will have a Ph.D. and 2-5 years' post-doctoral, academic or equivalent industry experience. You will be technically versatile and demonstrate a working knowledge of state-of-the-art investigational tools used in genomics, proteomics, and quantitative single-cell imaging and microscopy. Experience with designing and implementing biological models using primary mammalian cells from a variety of tissue sources is required. As a successful candidate, you will show scientific leadership and a demonstrated breadth of intellectual skills, scientific interests, and practical experience. Job Code 3374.

For confidential consideration and efficient processing of your resume, please visit our Web site @ www.gsk.com. Indicating Job Code is essential to search. Principals only, no agencies, please. Developing talent through equality of opportunity, M/F/D/V.

If you are unable to visit our site, please call 1-888-493-6756.

To view current or future openings within High Throughput Biology (HTB) based either in NC or Philadelphia, please visit http://www.gsk.com/careers/gsk_frame-us.htm where you can search our current jobs or set up an e-mail job alert service via your personal profile. Key words for the job alert would include: cell physiology, systems biology, pathology, pharmacology, metabonomics, proteomics, biomedical statistics, bioinformatics.

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PENNSTATE

College of Medicine

POSTDOCTORAL POSITIONS

Several POSTDOCTORAL POSITIONS are immediately available with Faculty in the Department of Pharmacology at the Penn State College of Medicine in Hershey, Pennsylvania. The Department has strengths in signal transduction, cancer and cardiovascular biology, and drug development. These positions offer the opportunity to work in an interactive and collegial environment, with the support of strong core facilities and postdoctoral development initiatives. Hershey provides a semi-rural atmosphere with an outstanding quality of life, yet is within easy driving distance to a number of major metropolitan areas. Positions are available with:

Mark A. Kester, Ph.D. - cardiovascular pharmacology, especially the development of in vivo strategies to deliver cell-permeable anti-mitogenic lipids directly to the site of atherosclerotic or restenotic lesions. Requires experience in cellular and molecular biology of lipid-derived second messengers.

Kathleen M. Mulder, Ph.D. - TGFβ signal transduction, anti-cancer therapeutics and diagnostics, motor proteins, microtubules, and intracellular transport. Requires experience in molecular/cellular biology, fluorescence/video microscopy, or with in vivo tumorigenicity models.

Charles D. Smith, Ph.D. - cancer pharmacology, especially the development of novel anticancer drugs targeting protein lipidation enzymes, signaling enzymes and drug transporters. Possible opportunity to participate in spin-off company. Requires experience in organic synthesis, biochemistry or tumor biology.

Jong K. Yun, Ph.D. - cell and molecular biology associated with signal transduction molecules involved in mitogenesis and apoptosis. Experience with animal models is desirable.

Please send CV to one of the above individuals at: Postdoctoral Search, Department of Pharmacology, H078, Pos #: S-13825, Penn State College of Medicine, P.O. Box 850, Hershey, PA 17033-2391.

Penn State is committed to affirmative action, equal opportunity and the diversity of its workforce.

The Ernest Gallo Clinic and Research Center, a dynamic biomedical facility affiliated with the University of California, San Francisco, has an immediate opening for an outstanding

Postdoctoral Position - Signal Transduction

Qualified individual will study molecular neuroscience of addiction with emphasis on anchoring/scaffolding proteins. It is an exciting opportunity for highly motivated candidates with background in molecular biology and experience in signal transduction and protein-protein interaction (Yeast two hybrid). Neuroscience experience is a plus. Send Curriculum Vitae and names, addresses, and telephone numbers of three references to:

Dorit Ron Ph.D.
Assistant Professor
c/o Human Resources
The Ernest Gallo Clinic
and Research Center
5858 Horton St., Suite 200
Emeryville, CA 94608
e-mail: hr@egcrc.net
(specify position in subject line)

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UNIVERSITY OF MASSACHUSETTS MEDICAL SCHOOL

Brudnick Neuropsychiatric Research Institute
Tenure-Track Faculty Position

Applications are invited for a tenure-track faculty position at the Brudnick Neuropsychiatric Research Institute, Department of Psychiatry, University of Massachusetts Medical School. The Institute is located in a new state-of-the-art research building with extensive equipment, animal resources and office/conference facilities. As part of the continued growth of neuroscience initiatives we are seeking candidates with interdisciplinary backgrounds and "bench to bedside" research interests focusing on behavior, cognition and mental illness. Highly motivated individuals (MD, PhD and/or DVM) with molecular research interests in the areas of transgenic models, neural stem and progenitor cells, gene discovery and expression profiling, pharmacogenomics, statistical genetics of complex traits, systems neuroscience or proteomics are encouraged to apply. Successful candidates are expected to establish an innovative, independently funded research program and participate in mentoring graduate students and postdoctoral fellows. Secondary appointments in other clinical and basic science departments are possible. There is an attractive recruitment package with competitive salary and fringe benefits.

Applicants should send their curriculum vitae, the names and addresses of at least three references, and a description of current and future research interests to:

Edward Ginns, MD, PhD, Director
Brudnick Neuropsychiatric Research Institute, Room 107
University of Massachusetts Medical School
303 Belmont Street
Worcester, MA 01604

Web site (http://www.umassmed.edu/bnri/)

The University of Massachusetts Medical School is an Affirmative Action/Equal Opportunity Employer

THE BIOPHYSICS AND CHEMISTRY OF BIOLOGICAL SYSTEMS

Department of Biochemistry and Molecular Pharmacology
University of Massachusetts Medical School

The Department of Biochemistry and Molecular Pharmacology at the University of Massachusetts Medical School is pleased to announce the continuing expansion of its faculty and facilities. During the coming year, seven new tenure-track faculty positions at junior and senior levels will be available in areas that employ molecular approaches to biological problems and complement existing programs. Areas of interest include but are not limited to signal transduction, gene expression, membrane biology and macromolecular complex assembly, structure and function. Experimental and computational approaches to elucidate the structure-function relationships in these complex systems are encouraged. Candidates with a problem-oriented approach employing solution NMR spectroscopy or integrating organic synthetic chemistry into their programs are especially encouraged to apply.

Faculty will occupy space on the top two floors of a new 350,000 square foot research building that facilitates interactions with the neighboring Departments of Medicine, Cancer Biology and Neurobiology and Program in Gene Expression and Function. Departmental facilities include: Proteomics, Chemical Screening, Structural Biology and Computational Genomics. Salaries and start-up packages will be competitive and commensurate with accomplishment for both junior and senior applicants.

Junior applicants should send a cover letter explaining their interest in the department, a brief research plan and curriculum vitae. Senior applicants should also include a short description of current and future research activities and information on current grant support. Applicants should also provide the names and addresses of three individuals who are familiar with their work and potential for success. Applications will be reviewed expeditiously and interviews will begin in September. Materials may be sent electronically to: **bmpsearch@umassmed.edu** or by mail to:

Anthony Carruthers, Ph.D.,
Chair, Faculty Search Committee
Department of Biochemistry and Molecular Pharmacology
The University of Massachusetts Medical School
Lazare Research Building, Floor 9
364 Plantation St
Worcester, MA 01605

The departmental web site is located at: **http://www.umassmed.edu/bmp/**

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FACULTY POSITIONS

UNIVERSITY OF MASSACHUSETTS MEDICAL SCHOOL

Molecular Biology
Cell Biology
Genomics/Proteomics
Bioinformatics

A major expansion of the Program in Molecular Medicine at the University of Massachusetts Medical School includes openings for SENIOR TENURED and JUNIOR TENURE-TRACK faculty positions. The Program consists of basic scientists and physician scientists representing a broad range of disciplines in the biomedical sciences, and operates as an academic department in the Medical School. The Program will expand to fully occupy its current modern building of approximately 80,000 square feet. Core facilities for tissue culture, media preparation, DNA sequencing, protein chemistry and proteomics, fluorescence-activated cell sorting, digital imaging and confocal microscopy, genomics and transgenic/knockout mice are available.

The positions will be highly competitive with regard to start-up funds, laboratory space and salary. The Program seeks individuals of outstanding research potential in the broadly defined areas of cell, developmental, molecular or structural biology; genomics/proteomics and bioinformatics; chemical and structural biology. Translational research directed by physician scientists is also a high priority.

Applicants should send curriculum vitae, statement of research interests, and names and addresses of three references to:

Dr. Roger Davis, Search Committee Chair, or Dr. Michael P. Czech, Director
Program in Molecular Medicine
University of Massachusetts Medical School
373 Plantation Street
Worcester, MA 01605

Website (http://www.umassmed.edu/pmm/)

The University of Massachusetts Medical School is an Equal Opportunity/Affirmative Action Employer

EMPLOYMENT OPPORTUNITY

CHIEF, Pharmacokinetics Branch
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Experimental Toxicology Division
Pharmacokinetics Branch
Research Triangle Park, North Carolina

The U.S. Environmental Protection Agency (EPA) is seeking an established scientist to lead its nationally recognized Pharmacokinetics Branch in the Experimental Toxicology Division, National Health and Environmental Effects Research Laboratory, Research Triangle Park, NC (**http://www.epa.gov/nheerl/etd/**). The Branch is responsible for planning and conducting a comprehensive research program focused on understanding and describing the fate and disposition of chemicals in the body and ultimately developing quantitative models for extrapolation/prediction in the context of the Agency's risk assessment activities. The successful applicant will have a unique opportunity to develop and manage innovative research strategies to extrapolate xenobiotic exposure from animal to human effects. He/she will work with multidisciplinary research teams in conducting research and developing PBPK/dose-response models and other methods for enhancing our knowledge of the health effects of xenobiotics and improving risk assessment methods. The position includes significant administrative and management responsibilities. The incumbent will provide scientific and managerial leadership, facilitate program development to meet the mission-oriented needs of the EPA, present the program to EPA and non-EPA audiences, develop and manage budgets and related resources, and supervise staff.

As Branch Chief, we seek an individual who is a competent research leader/science administrator/manager as demonstrated by: the conception and formulation of productive research programs; administrative supervision, management and support of Ph.D.-level scientists who conduct independent and team-oriented research; budget management experience; and substantial peer reviewed publications in pharmacokinetics/pharmacodynamics or related areas. **The preferred candidate would possess an advanced degree in pharmacology, toxicology, mathematics, engineering, physical/biological sciences or a closely related field. Eligible candidates must be U.S. citizens.** This is a permanent, full-time position with an annual salary range of $76,271 to $116,633 commensurate with qualifications. In addition, we offer a great benefits package.

HOW TO APPLY: Vacancy announcement and application instructions are posted on the U.S. Office of Personnel Management (OPM) web site at **http://www.usajobs.opm.gov/a9epa.htm** under announcement number **RTP-DE-2002-0176**. Application deadline is **September 20, 2002**.

The U.S. EPA is an Equal Employment Opportunity Employer.

Biology Education
Department of Biology
Texas A&M University

The **Department of Biology**, Texas A&M University invites applications for a tenure-track position in biology and science education. Successful candidates will be expected to pursue research in the development of innovative approaches to the communication and teaching of biological science at all levels (K-12, Undergraduate, Graduate). The development of new strategies for **biology education** through distance learning and information technology is a high priority. A research program in biology that shows how active researchers can help increase a public understanding of research would strengthen the application. Successful candidates will establish a vigorous, extramurally funded program. We are particularly interested in applicants who will enhance existing programs in biological clocks, evolution, development, microbial genomics and neuroscience.

For full consideration, applicants should submit a letter of intent stating overall qualifications and career goals, a curriculum vitae, statement of research and teaching interests, and three letters of recommendation by November 1, 2002 to: **Faculty Search Committee, Biology Education, Department of Biology, Texas A&M University, College Station, TX 77843-3258.** Information about our department can be found at **www.bio.tamu.edu**.

Texas A&M is an Equal Opportunity Employer and has a policy of being responsive to the needs of dual-career couples.

Oklahoma State University
Division of Agricultural Sciences and Natural Resources
Sitlington Chair in Molecular Plant Biology

The Oklahoma State University (OSU) Division of Agricultural Sciences and Natural Resources invites applications at the Associate or Full Professor level to fill the Sitlington Chair in Molecular Plant Biology. Applicants must have a doctorate in a biological science and an internationally recognized research program that focuses on fundamental mechanisms in plant biology. Areas of interest include, but are not limited to, biotic and abiotic stress, metabolic engineering, signal transduction, genome evolution, development, and gene silencing. A strong background in functional genomics is desirable.

This full-time (11-month) position encompasses a 75% research and 25% teaching effort. A significant endowment is available to support ongoing research activities. The successful applicant is expected to: (1) develop a strong, externally funded research program, (2) provide innovative education and training at the undergraduate and graduate levels, and (3) foster strong academic ties among 25 interdisciplinary research groups associated with the OSU Plant Biotechnology Network (**http://plantbionet.okstate.edu**). State-of-the-art fully staffed core research facilities at OSU include Recombinant DNA/Protein Resource Facility, Microarray and Bioinformatics Facility, Hybridoma Center, Microscopy Center with TEM, SEM and confocal microscopes, and an NMR facility with 60 and 400 MHz instruments. Opportunity exists for significant research collaboration with the Plant Biology Division of the S.R. Noble Foundation in Ardmore, Oklahoma. Enhancement of areas of research strength in Oklahoma is a focus of this position.

Review of applications will begin October 1, 2002, but applications will be accepted until a suitable candidate is identified. Applicants should submit a letter addressing research and teaching philosophy and future research plans, a curriculum vitae, the names of four references along with contact information, and reprints of major publications to: **Charles M. Taliaferro, Chair, Search Committee for Sitlington Chair in Molecular Plant Biology, Division of Agricultural Sciences and Natural Resources, 368 Agricultural Hall, Oklahoma State University, Stillwater, OK 74078-6028; Telephone: 405-744-9627; Email: cmt@mail.pss.okstate.edu**.

Information on two other plant molecular biology positions at Oklahoma State University is available at **http://opbs.okstate.edu/~melcher/FGjob.html**.

Oklahoma State University is an Affirmative Action/Equal Opportunity Employer committed to multicultural diversity.

MAYO CLINIC

CLINICAL PSYCHIATRIC INVESTIGATOR
Rochester, Minnesota

The MAYO CLINIC is pursuing a national search for an outstanding psychiatric investigator to join a research team that is developing an integrated program of clinical research focusing on mood disorders but involving a broad spectrum of additional psychiatric disorders. Expertise in psychiatric genetics and interest in genomic investigations is important given the development of the programmatic priorities of the Department and Clinic. Demonstrated competence in the initiation and conduct of clinical research and evidence of successful extramural funding support is essential.

New research facilities within the Department at the Mayo Clinic have been developed and support for research staff and operations is available. The compensation package at the Mayo Clinic is highly competitive and includes exceptional professional benefits. The successful candidate will also receive an academic appointment at the Mayo Medical School.

For further information, please send a detailed letter describing your research interests and a complete curriculum vitae by e-mail or traditional mail to:

David A. Mrazek, M.D., F.R.C. Psych.
Professor and Chair
Department of Psychiatry and Psychology
Mayo Clinic
200 First Street SW
Rochester, MN 55905
E-mail: mrazek.david@mayo.edu

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UNIVERSITY OF MARYLAND

Postdoctoral Fellow / Research Assistant Professor Macrophage Molecular Biology

Positions for a postdoctoral fellow or a research assistant professor are available to study the transcriptional regulation of cytokine production in macrophages and dendritic cells. Applicants should have a PhD or equivalent degree, and a strong interest in infectious disease research. Individuals with experience in Immunology or Molecular Biology will be given first consideration. The University of Maryland at College Park, is the flagship campus of the University of Maryland System. It occupies a beautiful 1500 acre campus in the heart of the Washington-Baltimore high-tech corridor.

Please send curriculum vitae and a brief letter of intent with three names of reference to:

David M. Mosser, Ph.D.
Department of Cell Biology and Molecular Genetics
University of Maryland
College Park, MD 20742
(301) 314-2594 p
(301) 314-9489 f
dm268@umail.umd.edu

http://www.life.umd.edu/CBMG/faculty/mosser/homepage.htm

MAYO CLINIC

POSTDOCTORAL FELLOW
Gastroenterology and Hepatology
Rochester, Minnesota, U.S.A

A postdoctoral position is available immediately in the laboratory of **Nicholas F. LaRusso** at the Mayo Medical School for a highly qualified, experienced individual with an interest in cellular and molecular approaches to study the pathogenesis of infectious biliary diseases. The successful applicant will have an M.D. or Ph.D. degree, with experience in cellular and molecular biology. The research approaches utilize cells in culture, transgenic/knockout mice, sophisticated microscopy, and biochemical and molecular approaches to examine molecular aspects of microbial infection of biliary epithelial cells, especially aspects of organism attachment, entry and effects on host cell functions. The laboratory is equipped with state-of-the-art equipment, with the support of sophisticated institutional core facilities. Experience with basic research in microbiology/parasitology preferred.

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:

Dr. Nicholas F. LaRusso, MD
Chairman of Medicine
Gastroenterology & Hepatology
1727 Guggenheim
200 First Street SW
Rochester, MN 55905
507-284-1006 / 507-284-0762
hintz.debbie@mayo.edu

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SCIENCE WRITER

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), National Institutes of Health (NIH), Department of Health and Human Services (DHHS), is seeking applications from individuals who are currently in post-doctoral positions but who wish to leave laboratory research for a career as a science writer. Particularly encouraged to apply are individuals with post-doctoral experience in molecular biology, coupled with demonstrated writing and other communication skills. Incumbent will develop a wide range of documents that analyze and present the scientific accomplishments and plans of the NIDDK to the Congress, voluntary health organizations, and other lay audiences and must thus be able to convey in global, understandable terms the contributions of biomedical research to human health. Total salary is competitive and will be commensurate with the experience of the selectee.

Please submit current curriculum vitae to the attention of:

Ms. Deirdre Davis
Office of Human Resource Management
National Institute of Diabetes and Digestive and Kidney Diseases
National Institutes of Health
6707 Democracy Blvd., Room 785D
Bethesda, Maryland 20892-5451

Applications must be postmarked by August 16, and received by close of business August 21.

NIH IS AN EQUAL OPPORTUNITY EMPLOYER

CALL FOR POSITIONS
TELETHON SCIENTISTS

Telethon Italy has recently founded the Dulbecco Telethon Institute (DTI), a virtual research institution aiming at recruiting talented scientists and disseminating them among the best Italian laboratories. The "Telethon Scientists" share principles of rigour and excellence and are all committed to understanding, preventing and curing genetic diseases. Eighteen Telethon Scientists have been nominated so far.

Telethon Italy is now seeking applications for **7 new positions** within the DTI:

5 Assistant Telethon Scientists
Candidates must have finished post-doctoral training and should be able to show good scientific productivity. They are also expected to carry out an independent research program.

1 Associate Telethon Scientist
Applicants must have about 5 years of independent work experience and a strong publication record. They also should show the beginning of international reputation in their field of expertise.

1 Telethon Scientist
Candidates must be highly productive scientists with the potential of further scientific growth. They must have a well established international reputation for scientific excellence and be recognized leaders in their field. They must have the proven ability to initiate, stimulate and conduct innovative research and to provide scientific leadership both nationally and internationally.

Each position will be awarded a five-year extendable contract and will be supported by a substantial research grant. Prearranged and formal agreements with Italian research institutes or Universities are mandatory for these positions. There are no citizenship restrictions. For further information refer to the call for applications, at http://www.telethon.it/english/index.asp

Closing date for applications is September 9, 2002.

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- **Product Manager (Genomics)**
- **Manager, Business Development**
- **Director of Tech/Ops Support**
- **SQA Engineer**
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For the full story, visit our Web site at: **www.illumina.com**. Then, e-mail your resume to: **jobs@illumina.com**. Mailing address: **Illumina, 9885 Towne Center Drive, San Diego, CA 92121; Fax: 858-202-4545.**

EOE

www.illumina.com

University of California, Santa Cruz
Department of Chemistry and Biochemistry
Assistant Professorship in Proteomics

UC SANTA CRUZ

The **DEPARTMENT OF CHEMISTRY and BIOCHEMISTRY** invites applications from outstanding candidates for a tenure track position in **PROTEOMICS** at the **ASSISTANT PROFESSOR** level. Ph.D. in chemistry, biochemistry or related field required. The successful candidate will be expected to pursue innovative research at the interface of chemistry and biology and to have a commitment to and talent for teaching at both the undergraduate and graduate levels. In addition, this exceptional individual will be a member of the Center for Biomolecular Science and Engineering, an interdisciplinary group of researchers from both the Division of Natural Sciences and the School of Engineering. Areas of research that complement existing faculty strengths include, but are not limited to, proteomics using array technologies and mass spectrometry, rapid throughput techniques for proteome analysis and protein expression, rapid structural and/or functional analysis of protein libraries, analysis of protein-protein interactions and structural/computational modeling. The campus is especially interested in candidates who can contribute to the diversity and excellence of the academic community through their research, teaching and/or service.

Applicants who plan to pursue research in proteomics, or in which proteomics plays a significant role, should submit a letter of application, curriculum vitae, brief description of research, and arrange for three confidential letters of recommendation to be sent to: **Chair, Search Committee, Department of Chemistry and Biochemistry, University of California, Santa Cruz, CA 95064**. Refer to provision **#631-03** in all correspondence. Applications must be received by **December 2, 2002**. Visit our web sites at **http://chemistry.ucsc.edu/** and **http://www.cse.ucsc.edu/centers/cbe/**.

UCSC is an EEO/AA/IRCA Employer.
Women and minorities are encouraged to apply.

Emory University & Georgia Tech Joint Department

Endowed Chair in Biological Systems

The Wallace H. Coulter Department of Biomedical Engineering at Georgia Tech and Emory University invites nominations and applications from individuals with international prominence for an endowed professorship in Biological Systems that has been established by the Georgia Research Alliance and these academic institutions.

The research areas of interest include bioformatics, functional genomics, pharmacogenomics, proteomics, and genome based modeling of cell processes. This position offers unique opportunities for multidisciplinary research in basic life sciences and biomedical engineering. The successful candidate should have an established record of excellence in research and teaching in at least one of these areas as well as experience in cross-disciplinary collaborations.

The Department of Biomedical Engineering (BME) is a joint department of Georgia Tech (College of Engineering) and Emory University (School of Medicine) and is currently ranked 6th in the nation. A new BME building will be completed in August 2003. Located on the attractive Georgia Tech campus, this new building is contiguous with the Petit Institute for Bioengineering and Bioscience and near the College of Computing, School of Physics, Environmental Science & Technology and the School of Biology. The new supercomputer facility for BME will be also located in the new building.

Georgia Tech has established Masters and PhD programs in Bioinformatics coordinated by the Center for Bioinformatics and Computational Biology. Furthermore, Georgia Tech is undergoing a major expansion in basic life sciences and bioengineering with the recruitment of several outstanding senior scholars, the establishment of core laboratories in biomolecular mass spectrometry, and other recent investments in new facilities.

The State of Georgia has been a strong partner in this growth through the Georgia Research Alliance and new initiatives such as the Georgia Cancer Coalition.

Please respond to the address below with the curriculum vitae and research interest statement.

Professor Mark Borodovsky, Chair of Search Committee
Schools of Biology and Biomedical Engineering
Georgia Institute of Technology and Emory University
Atlanta, GA, 30332-0230
404-894-8432 • mark.borodovsky@biology.gatech.edu
Review of applications will begin September 30, 2002

Tenure/Tenure Track Faculty Position

Molecular Immunology and Inflammation Branch
National Institute of Arthritis, Musculoskeletal and Skin Diseases
National Institutes of Health

The Molecular Immunology Inflammation Branch, a newly created Branch in the Intramural Research Program at NIAMS, is recruiting to fill an independent, tenure/tenure track faculty position. Qualifications include a doctoral degree (M.D., Ph.D. or both), completion of postdoctoral training and a track record of productivity. The successful applicant should have the potential to develop an independent basic research program and may have expertise in a wide range of areas including: signal transduction, genetics, cell biology, structural biology or developmental biology as they pertain to adaptive and innate immunology or inflammation, in non-mammalian or mammalian systems. Ideally, the candidate's skills and experience would complement the existing interests in the Branch. Ample resources are available for a vigorous program and salary is commensurate with education and experience. Moreover, the Intramural Research Program provides a rich environment in which to conduct contemporary research, including the opportunity for interactions with a broad array of basic and clinical scientists and access to an established infrastructure of cutting edge technologies.

Applicants should submit a Curriculum Vitae (with publication list), a statement of current and future research interests (no longer than three pages) and arrange for three letters of reference to be sent directly to:

Dr. John O'Shea
c/o Cyrus Salazar
Building 31/Room 4C13
NIAMS, DHHS
National Institutes of Health
31 Center Drive, MSC 2350
Bethesda, MD 20892-2350
Email: salazarc@mail.nih.gov

NIH Tenure track investigators with educational debts may be eligible for the NIH Loan Repayment Program. The NIH is an Equal Opportunity Employer.

Applications to be post-marked by October 10, 2002.

MAYO CLINIC

Research Scientist: Cardiac and Vascular Biology
Rochester, Minnesota

The Department of Biochemistry and Molecular Biology, and the Division of Cardiovascular disease at Mayo Clinic Rochester have joint positions open for a junior or senior scientist with research interests in vascular or cardiac biology. The individual should have an MD or PhD and research interest in the broad field of cardiac or vascular biology as it pertains to heart failure or arteriosclerosis and thrombosis. Particular interests in cardiac development, bio-molecules that alter-regulate cardiac function, endothelial cell biology, and smooth or cardiac muscle biology are useful. Requirements include evidence of an ability to obtain extramural funding and to work in a collaborative environment with scientists, clinician-investigators and clinicians. Opportunities at Mayo include interaction with talented basic and clinical scientists with an outstanding track record in obtaining extramural federal funding, a longstanding cardiovascular training grant, and access to a wide array of clinical material and a research community. Women and minorities are encouraged to apply.

Applicants should send a curriculum vitae and a statement of research interests by e-mail or mail to:

Ms. Kristi Simmons
(CV Search)
Mayo Clinic
Guggenheim 1701
200 First St. S.W.
Rochester, MN 55905
simmons.kristi@mayo.edu

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UNIVERSITY OF MARYLAND

CHAIR
DEPARTMENT OF CHEMISTRY AND BIOCHEMISTRY
UNIVERSITY OF MARYLAND, COLLEGE PARK

The Department of Chemistry and Biochemistry at the University of Maryland, College Park invites nominations and applications for Chair of the department. We seek an individual with an outstanding record of scientific accomplishment, sustained federal funding, and a strong commitment to research and education. Experience with industry and outreach is desirable. Candidates in any area of Chemistry or Biochemistry with proven leadership, strong interpersonal skills and qualifications commensurate with a tenured appointment at the rank of full professor will be considered.

The department is a major academic unit with 43 tenure track faculty members. It is one of four departments within the College of Life Sciences. The department has over 300 undergraduate and 120 graduate students and in addition meets the instructional needs in chemistry and biochemistry of several undergraduate programs. Seven instructional faculty and 100 graduate teaching assistantships assist with undergraduate teaching. External funding for research has increased by 42% over the past four years and is currently $6.8M.

The department is undergoing substantial growth, and as a result of a number of anticipated retirements and new hires, expects to fill a significant number of faculty positions at all levels over the next five years. A new 63,000ft² wing of the Chemistry building that will house state-of-the-art teaching and research facilities will be completed in early 2003. Members of the faculty participate in several university centers and initiatives, including the NSF-funded Materials Research Science and Engineering Center, the Institute for Physical Science and Technology, the Center for Biological Structure and Organization, the Center for Bioinformatics and Computational Biology, the FDA-funded Joint Institute for Food Safety and Applied Nutrition and a university-wide initiative in Nanoscience and Nanotechnology. Many faculty members further enjoy close interactions and collaborations with several government labs, including NIH, NRL, and NIST. The University of Maryland, College Park is the flagship campus of the University of Maryland System and is ideally situated in close proximity to Washington D. C., Baltimore and Maryland's 270 Technology Corridor. For more information, visit our web site at **http://www.chem.umd.edu**.

For full consideration, applications, including a curriculum vitae, statements of research interests, academic vision and administrative style, and the names and addresses of four references, should be received by November 1, 2002. The search will continue until the position is filled. Please send materials to:

Chair, Chemistry/Biochemistry Search Committee
2300 Symons Hall
College of Life Sciences
University of Maryland
College Park, MD 20742

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

Postdoctoral position:
The Field Museum

The Field Museum seeks candidates for a two-year postdoctoral fellowship emphasizing interdisciplinary research as well as the central role of museum collections. The Boyd Fellowship program was created in honor of former Field Museum president Willard Boyd, who stressed the importance of interdisciplinary work to the intellectual strength of the Museum. The successful candidate will have a successful record of research in an area that bridges any of the Museum's scientific areas, including anthropology, archaeology, botany, systematics, evolutionary biology, conservation biology, paleontology, and zoology. Research must involve development and use of the Museum's collections, which span anthropology, botany, geology, zoology, as well as tissue collections for molecular work. Boyd fellows are expected to participate fully as part of the Field Museum's academic community, to undertake high-quality original research, and to present their work to both academic and public audiences. The fellowship runs for two years, carries full Museum benefits, and a modest research budget.

The Field Museum is an equal opportunity employer and actively encourages applicants from diverse backgrounds. Send cover letter, including outline of a project, C.V., and names of references to Chair, Boyd Postdoctoral Fellow Search Committee, Office of Academic Affairs, The Field Museum, 1400 S. Lake Shore Drive, Chicago, IL 60605. Applications will be accepted until Sept. 30, 2002. Position available starting January 2003. EOE

The Field Museum

POSITIONS OPEN

TENURE-TRACK FACULTY POSITION IN BIOCHEMISTRY
Department of Chemistry and Biochemistry Texas Tech University

The Department of Chemistry and Biochemistry at Texas Tech University invites applications for a tenure-track position in biochemistry at either the **ASSISTANT PROFESSOR** or **ASSOCIATE PROFESSOR** level, beginning with the fall 2003 semester. Texas Tech University, which is classified as a Doctoral Research University-Extensive by the Carnegie Foundation, has an enrollment of 26,500 students and is one of the major state-supported multidisciplinary universities in the Southwest. It offers approximately 100 Master's degree programs and 50 Doctoral programs, with schools of medicine and of law located on the main campus. Within the University, the Department of Chemistry and Biochemistry, with 28 tenure-track faculty positions, is among the top academic units in terms of funded research and graduate education. Additional information about the department can be obtained at **website: http://www.depts.ttu.edu/chemistry/**. Applications, which should include curriculum vitae and a proposal outlining the applicant's plans for research that he/she would carry out as a Texas Tech faculty member, should be sent to: **Dr. David B. Knaff, Paul W. Horn Professor, Department of Chemistry and Biochemistry, Texas Tech University, Lubbock, TX 79409-1061**. Applicants should also arrange to have three letters of recommendation sent to **Prof. Knaff**. Inquiries can be made to **Prof. Knaff at FAX: 806-742-1289;** or **e-mail: knaff@ttu.edu**. Review of applications will begin on October 15, 2002, but applications will be accepted until the position is filled. *Women and individuals from underrepresented groups are encouraged to apply. Texas Tech University is an Equal Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

ASSISTANT PROFESSOR
Cellular and Molecular Biology

The Department of Microbiology and Molecular Cell Sciences at The University of Memphis invites applications for two tenure-track Assistant Professor positions as part of a major department expansion. We seek outstanding candidates with postdoctoral experience who are using viral, prokaryotic, single cell, and multicellular systems to ask significant questions in any area of molecular, cellular, and developmental biology. Candidates will be expected to establish an externally funded research program and participate in our undergraduate and graduate programs. Competitive salary and startup package. A microscopy center, a microarray facility, and the department are housed in the Life Sciences building. Additional departmental information can be found at **website: http://www.memphis.edu/mmcs**. Applications from two career couples are welcome. Applicants should submit curriculum vitae, concise statement of research plans, and three letters of recommendation to: **Steven Schwartzbach, Search Committee Chair, Department of Microbiology and Molecular Cell Sciences, The University of Memphis, 201 Life Sciences, Memphis, TN 38152-3560**. Review of applications will begin September 30, 2002, and continue until the position is filled. *Equal Opportunity/Affirmative Action Employer.*

New: Arizona Genomics Institute At University Of Arizona. World-class opportunities for over 20 people: **PH.D., M.S.** and **B.S. SCIENTISTS.** For information, please see our **website: http://www.genome.arizona.edu** or contact: **Dr. Rod Wing, Department of Plant Sciences, The University of Arizona; e-mail: rwing@ag.arizona.edu.** For full position details and application instructions, see the University of Arizona job **website: http://www.hr.arizona.edu/jobs**. *The University of Arizona is an Equal Employment Opportunity/Affirmative Action Employer. Minorities/Women/Disabled/Veterans.*

POSITIONS OPEN

FACULTY POSITION IN CHEMICAL BIOLOGY/PHARMACOLOGY

The Department of Pharmacology and Molecular Sciences at the Johns Hopkins University School of Medicine is initiating a search for tenure-track faculty with research programs at the chemistry-biology interface. Targeted research areas include the developments/synthesis of novel chemical reagents for studies on gene regulation, molecular imaging, cell biology, and combinatorial approaches to ligand discovery. We are primarily interested in **ASSISTANT PROFESSOR** level candidates. We seek individuals with a record of significant accomplishment in research and high potential for creative scholarship. An interest in graduate and medical student teaching is also important. The Johns Hopkins University School of Medicine provides a stimulating and supportive environment to carry out research in the biomedical sciences. Strong research programs in chemical biology, virology, cancer biology, parasitology, neurosciences, and immunology exist within the Department of Pharmacology and Molecular Sciences, as well as in the University as a whole. A letter of inquiry, curriculum vitae, summaries (one to four pages) of up to two research proposals, up to two reprints, and three reference letters should be sent by interested applicants to:

Dr. Phillip A. Cole
Chair, Faculty Search Committee
Department of Pharmacology and Molecular Sciences
Johns Hopkins University School of Medicine
725 North Wolfe Street
Baltimore, MD 21205
FAX: 410-614-7717

The Johns Hopkins University is an Equal Opportunity Employer.

NATIONAL® CANCER INSTITUTE

Post-doctoral Fellow Position in Prostate Cancer Biology
Cancer Prevention Studies Branch
Center for Cancer Research

The Cancer Prevention Studies Branch at the National Cancer Institute is recruiting for a post-doctoral fellow to characterize and define the role of epigenetic changes in the progression of prostate and other hormone-related cancers. This position is intended for scientists seeking advanced training in the application of cutting edge molecular techniques and high throughput biotechnologies (real-time PCR, genomic and cDNA microarrays, proteomic methodology, and tissue microarrays) to the development of population- and clinic-based interventions for cancer prevention and early detection. The research will be carried out at the NCI Advanced Technology Center and there will be ready access to biological samples from human clinical and epidemiological studies. Qualified candidates should have a PhD in Molecular or Cell Biology or related field and an interest in developing and utilizing molecular methodologies for translational applications in cancer prevention and diagnosis.

Interested individuals should send a cover letter, curriculum vitae, brief summary of research interest and experience, and three letters of reference to:

Dr. Karen Woodson
Cancer Prevention Studies Branch
6116 Executive Bvd, MSC 8314
Suite 705
Bethesda, MD 20892
301-496-0651

MAYO CLINIC

Research Scientists: Cell Adhesion — Angiogenesis
Rochester, Minnesota

The Mayo Clinic Cancer Center, the Department of Medicine, and the Department of Biochemistry Molecular Biology announce openings for geneticists, and cell and molecular biologists at the Assistant, Associate, and Professor levels to study the molecular basis of cell adhesion, cell-cell contact, and angiogenesis. Qualified individuals are expected to initiate and maintain an outstanding, extramural-funded, research program in these fields as they apply to cancer or cardiovascular diseases. Requirements include evidence of an ability to obtain extramural funding and to work in a collaborative environment. Opportunities at Mayo include well-equipped core facilities, interaction with talented basic and clinical scientists with an outstanding track record in obtaining extramural federal funding, and access to a wide array of clinical material. Women and minorities are encouraged to apply.

Applicants should send a curriculum vitae and a statement of research interests by e-mail or mail to:

Ms. Kristi Simmons
(Cancer Cell Biology Search)
Mayo Clinic
Guggenheim 1701
200 First St. S.W.
Rochester, MN 55905
simmons.kristi@mayo.edu

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

NORTHWESTERN UNIVERSITY

Children's Memorial Hospital

STEM CELL BIOLOGY AND IMMUNOBIOLOGY PHYSICIAN SCIENTIST FACULTY POSITIONS

CHILDREN'S MEMORIAL INSTITUTE FOR EDUCATION AND RESEARCH (CMIER)

FEINBERG SCHOOL OF MEDICINE OF NORTHWESTERN UNIVERSITY

Children's Memorial Institute of Education and Research (CMIER) at Children's Memorial Hospital and the Feinberg School of Medicine at Northwestern University invite applications from physician scientists for a programmatic initiative in Stem Cell Biology and Immunobiology. The level of academic appointment will be commensurate with credentials. Applicants should have an M.D. degree and significant research training and experience. We expect to fill three positions for individuals interested in spending the majority of their time on research, while also maintaining a clinical effort. The successful candidate will be expected to establish an independent, externally funded research program, to participate in a clinical program at Children's Memorial Hospital, and to teach in the Northwestern graduate school or medical school. These full-time positions offer outstanding scholarly and scientific resources in a collegial and collaborative environment that includes strong ties to Children's Memorial Hospital, Northwestern Memorial Hospital, Northwestern's Center for Genetic Medicine and related basic science departments, the R. H. Lurie Cancer Center, and Northwestern's Institute for Neuroscience. Laboratory space will be located in the new Children's Research Center in the Disease Pathogenesis Program, adjacent to research groups in the CMIER Genetics, Neurobiology and Developmental Systems Biology Programs. The successful candidate will be provided with substantial resources and access to state-of-the-art facilities, including transgenic mouse and targeted mutagenesis, single and multi-photon confocal microscopy, digital darkroom, fluorescence microscopy and morphology, and gene microarray cores. Applicants with outstanding accomplishments, particularly in the areas of hematopoietic stem cell biology, cancer immunobiology, transplant biology, immunobiology related to pediatric diseases, genetic basis of complex diseases, and proteomics are encouraged to apply. Beyond the individual's area of expertise, the exceptional candidate will have the ability to bridge clinical and basic science. This recruitment is part of a growing commitment to pediatric research at Northwestern University and to Children's Memorial Hospital's research initiatives to increase the understanding and treatment of diseases and birth defects that affect children. Salary is competitive and commensurate with experience. The start date is expected to be early 2003, but is flexible.

Applications received prior to October 1, 2002 will receive full consideration. Applicants should send a CV, a 3 page statement of research accomplishments and future goals, and 3 letters of recommendation to:

The Directors Office
Children's Memorial Institute for Education and Research
2300 Children's Plaza, Box 205
Chicago, IL 60614

or email electronic submissions to
t-mcloraine@northwestern.edu.

Northwestern University is an Affirmative Action, equal Opportunity Employer. Hiring is contingent upon eligibility to work in the USA. Women and minorities are especially encouraged to apply.

POSITIONS OPEN

TENURE-TRACK POSITIONS
Molecular Endocrinology and Metabolism

Baylor College of Medicine is seeking outstanding Scientists (M.D., Ph.D., M.D./Ph.D.) with a strong record of research for tenure-track positions, at the **ASSISTANT** or **ASSOCIATE PROFESSOR** level, in molecular endocrinology and metabolism. Preference will be given to candidates with strong research in diabetes-related areas, e.g., islet cell biology, developmental biology, and insulin secretion and action, but qualified candidates in all areas of molecular endocrinology/metabolism will be considered. Physician-Scientist candidates have an option of limited clinical attending at a Baylor-affiliated hospital but excellence in research is the primary requirement. There is a core of outstanding Scientists in molecular endocrine research at Baylor; opportunities for interaction and collaboration are excellent. Applicants should submit curriculum vitae including a summary of current and future proposed research and arrange for three letters of recommendation to be sent to:

Lawrence Chan, M.D.
Chief, Division of Endocrinology and Metabolism
Department of Medicine
Baylor College of Medicine
One Baylor Plaza, N520.10
Houston, TX 77030

Baylor is an Affirmative Action/Equal Opportunity Employer.

California Institute of Technology invites applications for one tenure-track faculty position at the interface of chemistry with the biological sciences. Appointment in the Division of Chemistry and Chemical Engineering is anticipated. Candidates proposing interdisciplinary research programs in biochemistry and biophysics are of particular interest, and strong interactions with other Divisions of the Institute are expected. Initial appointment at the **ASSISTANT PROFESSOR** level will be for four years with serious consideration given to exceptionally well-qualified applicants at the **ASSOCIATE** and **FULL PROFESSOR** levels. Joint appointments in other Divisions may be arranged as appropriate. Appointment will be contingent upon completion of all requirements for a Ph.D. in chemistry or a closely related field. Outstanding candidates who have strong commitments to research and teaching are encouraged to apply. Submit, by October 15, 2002, curriculum vitae, a publication list, a concise description of proposed research, and three letters of recommendation to: **Chair of Biochemistry/Biophysics Faculty Search Committee, Mail Code 147-75, California Institute of Technology, Pasadena, California 91125.** *The California Institute of Technology is an Equal Opportunity/Affirmative Action Employer. Women, minorities, veterans, and disabled persons are encouraged to apply.*

FACULTY POSITION

The Department of Microbiology and Immunology at the University of North Carolina (UNC) at Chapel Hill, in conjunction with the Division of Pulmonary Medicine and the UNC Cystic Fibrosis Center, is recruiting a tenure-track or tenured Ph.D. Scientist with interest in transplant immunology to assist with the development of a research initiative in lung allograft rejection and mechanisms of tolerance. The individual should be experienced in transplant immunology, including T cell and dendritic cell isolation, phenotypic analysis, and functional assays. Outstanding research opportunities exist for developing areas of independent study and collaboration with numerous talented Investigators at UNC and surrounding institutions. Applicants should send curriculum vitae, statement of interests and future plans, and arrange to have four letters of reference sent to: **Robert Aris, M.D., Associate Professor of Medicine, Medical Director of the Lung Transplantation Program, C/O Sharon W. Rone, Department of Microbiology and Immunology, CB# 7290, UNC-Chapel Hill, NC 27599-7290.** Or **e-mail: aris@med.unc.edu.** *The University of North Carolina at Chapel Hill is an Equal Opportunity Employer.*

POSITIONS OPEN

NCAR

DEPUTY DIRECTOR
National Center for Atmospheric Research
Boulder, Colorado

The National Center for Atmospheric Research (NCAR) seeks an individual to advise and assist the NCAR Director in the scientific and executive leadership of NCAR. He/she will work with the Director to formulate strategic goals and programmatic priorities and participate in the deliberations of the NCAR Appointments Review Group. Provides advice and counsel on all matters relevant to the leadership and administration of NCAR, including scientific, technical, management, and personnel issues. Maintains effective communication with the university community and stays informed of national atmospheric science policy affairs.

Requires a Ph.D. or equivalent, experience in atmospheric, oceanic, or related physical sciences, or engineering and a significant record of scientific achievement, plus a minimum of 10 to 15 years of relevant experience. The successful candidate will possess a significant record of scientific or technical achievement in the atmospheric or related sciences.

View detailed job description and requirements at **website: http://www.ucar.edu.** Initial consideration will be given to applications received prior to October 18, 2002. Thereafter, applications will be reviewed on an as-needed basis. Apply on-line or via **e-mail: ucar.ncar@rpc.webhire.com,** or send scannable curriculum vitae to: **3450 Mitchell Lane, Boulder, CO 80307.** (Reference job #2215SCI). *UCAR's strength lies in the diversity of its people and the ways in which they contribute to the success and mission of the organization. Affirmative Action/Equal Opportunity Employer.*

ENDOWED CHAIR IN CANCER

Applications are sought from outstanding candidates for the position of **PROFESSOR AND ENDOWED CHAIR OF CANCER** in the Department of Pharmaceutical Sciences of Texas Tech University Health Sciences Center (HSC) School of Pharmacy. The position is part of a collaborative project between the Texas Tech School of Pharmacy, School of Medicine, Harrington Cancer Center, Amarillo VA Center, and Amarillo Women's Health Research Institute to develop the cancer research focus of the Amarillo Regional Medical Campus. Outstanding Scientists with interests in the cancer field are strongly encouraged to apply.

The Texas Tech School of Pharmacy is located in a 102,000-plus square-foot building adjacent to the regional campus of the School of Medicine. The Amarillo cancer research community includes 12 basic Scientists from Texas Tech and the VA as well as clinical Scientists from the Harrington Cancer Center. The School of Pharmacy currently funds a "Research Center in Cancer" to help build this area of strength. For more information about the School of Pharmacy, Texas Tech, and Amarillo, visit our **website: http://pharmacy.ama.ttuhsc.edu.** The successful candidate must have a strong history of independent grant funding, solid leadership and communication skills, and an established international reputation in the cancer field. Academic responsibilities will include teaching and mentoring students as well as maintaining a strong research program. A discretionary fund will be provided to support the Endowed Chair's research program. Interested applicants should submit (1) a curriculum vitae with list of publications, (2) a summary of research accomplishments and future goals, and (3) the names, addresses, and telephone numbers of three references to: **Dr. Quentin Smith, Search Committee Chair, Texas Tech University HSC, School of Pharmacy, 1300 Coulter Drive, Amarillo, TX 79106. FAX: 806-356-4034; e-mail: quentin@ama.ttuhsc.edu.**

Texas Tech University Health Sciences Center is an Equal Opportunity/Affirmative Action Institution. Minorities and women are encouraged to apply.

POSITIONS OPEN

TENURE-TRACK POSITION IN ANATOMY, PHYSIOLOGY, AND GENETICS
F. Edward Hebert School of Medicine
Uniformed Services University of the Health Sciences

The Department of Anatomy, Physiology, and Genetics, chaired by **Harvey B. Pollard, M.D., Ph.D.,** at the Uniformed Services University (USU) School of Medicine, Bethesda, Maryland, invites applications for tenure-track positions at the **ASSISTANT/ASSOCIATE PROFESSOR** level. The Department has a strong commitment to biomedical research and is located in an interactive scientific environment near the National Institutes of Health, Howard Hughes Medical Institute, and the National Library of Medicine. Applicants should have a Ph.D. and/or M.D. degree and will be expected to establish a productive, independent, extramurally funded research program. The successful applicant will contribute to the Department's award-winning teaching program in Clinical Head and Neck and Functional Neuroscience, an interdisciplinary Anatomy and Physiology curriculum for the first-year USU medical students. Outstanding core research facilities are available for state-of-the art EM and optical imaging, molecular biology, including genomics and proteomics, and veterinary science. Interested candidates should submit curriculum vitae, an outline of their proposed research program, and have three letters of reference sent to: **Rosemary C. Borke, Ph.D., Search Committee Chair, Department of Anatomy, Physiology, and Genetics, 4301 Jones Bridge Road, Bethesda, MD 20814-4799.** Applications must be received by November 1, 2002. Foreign nationals will be considered if qualified United States citizens are not available. *USU is an Equal Opportunity Employer with a strong commitment to racial, cultural and ethnic diversity.*

CHEMISTS (Two). GS–13/14/15 ($66,229 to $119,682). The Office of Naval Research is seeking two qualified individuals to manage sponsored basic/applied research, and advanced development programs/projects. **PROGRAM OFFICER**: Solid State and Materials Chemistry. Research areas include: synthesis of inorganic or hybrid organic/inorganic solid state compounds; materials and devices for solid state cooling and thermal management; synthesis, characterization, and assembly of nanoscale components into macroscopic materials; carbon nanotube synthesis, functionalization, and processing; novel concepts in conversion of thermal or photo sources into useful energy; phase change materials for thermal management; synthesis, characterization, and property measurements of new compositions of matter. **PROGRAM OFFICER**: Polymer, Organic, and Macromolecular Chemistry. Research areas include: polymer processing methodologies; synthesis of novel polymers; chemical methods and processes for degradation of chemical agents and contaminants; polymers for Navy-related coatings; novel membrane technologies; solid state electrolytes; electronic/optoelectronic materials/devices; new sensing materials/methods; and novel polymer based composites. For information on qualifications and how to apply, visit our **website: http://www.onr.navy.mil/hr** to view ONR's job vacancy announcements. **Tech Info: Dr. John Pazik at Telephone: 703-696-4404.**

DREYFUS POSTDOCTORAL FELLOWSHIP

University of California, Davis announces a two-year Dreyfus PDF in Atmospheric Chemistry with **Professors Wexler, Kleeman, and Anastasio.** Research focuses on particles in urban/regional air quality or global climate. In keeping with Dreyfus goals, applicants with chemistry or chemical engineering backgrounds without environmental expertise are especially encouraged to apply. Details can be found at **website: http://mae.ucdavis.edu/wexler/Dreyfus.** Please send curriculum vitae and three references by November 15, 2002, to: **Anthony Wexler, MAE, University of California, Davis, CA 95616.**

Assistant Professors in Functional Genomics
Oklahoma State University
Stillwater, Oklahoma

Two Assistant Professors are sought at Oklahoma State University. One position will be housed in the Dept. of Entomology and Plant Pathology (EPP), and the successful candidate will work on the functional genomics of plant pathogenic fungi and their host plants. The other position is in the Dept. of Biochemistry and Molecular Biology (BMB), and the program should focus on the functional genomics of the effects of variation in the physical environment on plants. Networking opportunities exist with a Functional Genomics Consortium (NSF-EPSCoR), the Samuel Roberts Noble Foundation and the Oklahoma Plant Biotechnology Network. Applicants must have an earned doctorate in plant pathology, biochemistry or a related field and achievements in an area of functional genomics.

Applications for tenure-track appointments (initial 90% research-10% teaching) should include a letter of application stating reasons for interest in this position and qualifications, a statement of research and teaching interests, curriculum vitae, academic transcripts, and the names of four references to the relevant search committee chair: **Dr. Carol Bender, EPP Dept., 127 NRC, or Dr. Ulrich Melcher, BMB Dept., 246 NRC, Oklahoma State University, Stillwater OK 74078**. Further information is available at **http://biochem.okstate.edu/~melcher/Fgjob.html**. Review of applications will begin September 1, 2002, but applications will be accepted until a suitable candidate is identified.

Oklahoma State University is an Affirmative Action/Equal Opportunity Employer committed to multicultural diversity.

MIT

FACULTY POSITION

Division of Health Sciences and Technology, and Department of Electrical Engineering and Computer Science

The Massachusetts Institute of Technology seeks candidates for a tenure-track faculty position offered jointly in the Harvard University-Massachusetts Institute of Technology Division of Health Sciences and Technology (HST) and the MIT Department of Electrical Engineering and Computer Science (EECS).

We seek candidates with backgrounds in interdisciplinary fields of biomedical engineering and/or the bio-medical sciences. Faculty duties will include teaching at the undergraduate and graduate levels, research, and supervision of theses. Collaborative opportunities with investigators at MIT, Harvard University, Harvard Medical School, and its teaching hospitals are abundant. In addition, with access to an exceptional student body, there are rich opportunities to build an interdisciplinary, biomedically oriented research group. There are currently 380 students enrolled in the HST's degree programs as MS, Ph.D., and/or MD candidates, and 750 students enrolled in EECS's MS and Ph.D. programs. We seek candidates who will interact productively with students and faculty in both HST and EECS, thereby fostering interdisciplinary research and teaching.

HST and EECS are strongly committed to diversity in their faculties and student populations. We encourage applications from men and women of all demographic backgrounds. All candidates should reply to the address below. The application should include curriculum vitae, statements of professional interests in both research and teaching, and the names and addresses of three or more individuals who will provide letters of recommendation. Please arrange to have such letters sent directly to the address below. The deadline for receipt of applications is November 15, 2002.

Please send applications to: **Martha L. Gray, PhD, Co-Director, Harvard-MIT Division of Health Sciences and Technology, Massachusetts Institute of Technology, E25-510, 77 Massachusetts Avenue, Cambridge, MA 02139-4307.** For more information on HST, please visit **http://hst.mit.edu.** For more information on EECS, please visit **http://www-eecs.mit.edu**

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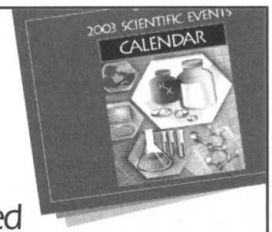

Will your event be listed in *Science*'s 2003 Events Calendar?

The 2003 Scientific Events Calendar will be published in our 13 December 2002 issue. The deadline for submissions is 8 November 2002.

To submit a free listing go to **www.sciencemeetings.org** For more information call your *Science* sales representative.

Calendar being published by *Science* Business Office.

For full details contact:

In the U.S. ..... Kathleen Clark
phone 202-326-6555
fax 202-289-6742
e-mail ..... kclark@aaas.org

In Europe ..... Richard Walters
phone ..... +44 (0) 1223 326 500
fax ..... +44 (0) 1223 326 532
e-mail ..... rwalters@science-int.co.uk

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AAAS

ASTRI

BIOTECHNOLOGY RESEARCH SCIENTIST

The Hong Kong Applied Science and Technology Research Institute (ASTRI) Company Limited invites applications for the position of Biotechnology Research Scientist.

Responsibilities include the formulation and implementation of R & D strategies; building up and managing a R&D team conducting technology and product development for transfer to industry or spin off ventures; and managing collaborations with industry and university partners. The Scientist will be fully funded by ASTRI and will be located at a collaborating university in Hong Kong.

Requirements: Ph.D. Degree in relevant disciplines, with more than ten years of industrial experience; exceptional knowledge of technology development and market trends; good interaction and management skills; and strong analytical and technical problem solving skills.

Remuneration: Annual salary starts at USD 200K, plus medical, dental and life insurance benefits. Royalty or equity sharing through IP licensing or spin off venture is expected. Appointment will be on a three-year renewable contract basis.

For application, submit your resume via mail, e-mail or fax to:

Director of Administration
Hong Kong Applied Science and Technology Research Institute Co Ltd
18/F, Tower 6, The Gateway, 9 Canton Road, Tsimshatsui, Kowloon,
Hong Kong
E-mail: **enquiry@astri.org;** Fax: (852) 3406 2802

See **www.astri.org** for detailed description of the position and the company.

FACULTY POSITION IN CANCER GENE THERAPY
LSU Health Sciences Center in Shreveport

The Department of Cellular Biology and Anatomy and the Feist-Weiller Cancer Center at Louisiana State University Health Sciences Center (LSUHSC) in Shreveport invite applications for a full-time, tenure-track position in all areas of cancer gene therapy, at the rank of **ASSISTANT** or **ASSOCIATE PROFESSOR**. The successful applicant will join the expansion of a statewide gene therapy research initiative that encompasses both basic and clinical research. A generous startup package for equipment, supplies, and personnel is available. LSUHSC in Shreveport also has major equipment in a shared core research facility and access to a GMP production facility under construction. The successful candidate will be expected to maintain a vigorously funded research program and to participate in graduate and medical education. Applicants are invited to submit curriculum vitae, a brief description of research directions, representative reprints, and the names and addresses of three references. Send all application materials to:

J. Michael Mathis, Ph.D.
Director, LSUHSC-S Gene Therapy Program
Department of Cellular Biology and Anatomy
LSU Health Sciences Center
1501 Kings Highway
Shreveport, LA 71130
e-mail: jmathi@lsuhsc.edu

LSU Health Sciences Center in Shreveport is an Equal Opportunity/Affirmative Action Employer.

TOXICOLOGY FACULTY POSITION
TOXICOLOGY CENTER
Creighton University Medical Center

Creighton University, a Catholic Jesuit Institution, invites applications for a full-time, tenure-track faculty position in toxicology. Rank and salary are commensurate with experience. A strong research background in mechanistic and molecular toxicology with grantsmanship expertise is required. Send curriculum vitae, a brief description of research interests and activities, and names of four references to: **Sidney J. Stohs, Ph.D., Professor and Dean, School of Pharmacy and Health Professions, Creighton University Medical Center, 2500 California Plaza, Omaha, NE 68178. E-mail: stohs@creighton.edu; Telephone: 402-280-2950; FAX: 402-280-5738.** *Creighton University is an Affirmative Actioin/Equal Opportunity Employer.*

California Institute of Technology invites applications for a tenure-track position as **ASSISTANT PROFESSOR** specializing in inorganic chemistry with an initial appointment of four years, contingent upon completion of all requirements for a Ph.D. in chemistry or other related field. Outstanding candidates with a strong commitment to research and teaching excellence are encouraged to apply. Submit curriculum vitae, publications list, a description of proposed research, and three letters of recommendation to: **Chair of the Inorganic Chemistry Search Committee, Mail Code 127-72, California Institute of Technology, Pasadena, CA 91125.** Applications should be received by November 1, 2002. *The California Institute of Technology is an Equal Opportunity/Affirmative Action Employer. Women, minorities, veterans, and disabled persons are encouraged to apply.*

POSTDOCTORAL POSITION
NEUROGENESIS AFTER STROKE

A position is available in the laboratories of **Dr. Robert Dempsey** and **Dr. Rao Vemuganti,** Department of Neurological Surgery, University of Wisconsin at Madison, to study the mechanisms of stem cell proliferation after cerebral ischemia using *in vitro* culture systems. The incumbent must have a Ph.D. with a strong background in neural cell cultures/molecular biology and will be expected to develop new projects and work independently. Send curriculum vitae and interest to **e-mail: dempsey@neurosurg.wisc.edu.**

POSITIONS OPEN

Neurologist with expertise in Alzheimer's Disease. The University of Florida's College of Medicine and McKnight Brain Institute are seeking an **ACADEMIC NEUROLOGIST** to direct a major new campus-wide initiative to enhance research and clinical care in Alzheimer's Disease (AD). The Initiative will be supported by a designated endowment and other College and Institute funding sources. We are seeking a Neurologist with expertise in Alzheimer's Disease research and clinical care to occupy a tenured faculty position at the Associate to Full Professor level in the Department of Neurology. It is expected that this faculty will help lead the Alzheimer's Disease initiative at the University of Florida, and help establish an extramurally funded AD research program. The faculty will also participate in the Department's clinical and educational programs. Among the many additional resources available to aid in this recruitment, we have a state supported AD research fund and memory disorder clinic, internationally recognized graduate programs, in behavioral neurology and neuropsychology, NIH and VA funded cognitive/motor brain rehabilitation centers, AD drug development programs, and a growing number of faculty members working on AD research in neurology and neuroscience, pharmacology, and other basic and clinical science departments. The MBI-UF's vast array of high technology imaging and other core facilities (including a human brain tissue bank) will also be available to the successful applicant. The start date for this position is between January and July 2003. Salary depends upon academic rank. Applicants should be received by November 1, 2002. Candidates who are interested in this position are encouraged to send a letter describing their major research interest, curriculum vitae, and three letters of recommendation to: **Kenneth M. Heilman, M.D., Department of Neurology, University of Florida College of Medicine, P.O. Box 100236, Gainesville, FL 32610-0236.**

Gainesville is a delightful place to live and work, with excellent schools and health care. Land is abundant and housing is very reasonable. While the city is still small (urban population a little over 200,000) it has a metropolitan culture and cosmopolitan attitude. Snow skiing and ice skating are terrible in Gainesville, but out city is ideal for all other outdoor activities, including personal and spectator sports. *The University of Florida is an Equal Employment Opportunity/Affirmative Action Employer.*

POSTDOCTORAL POSITION
IN NEUROBIOLOGY

An NIH-funded **POSTDOCTORAL RESEARCH ASSOCIATE** position is available immediately. A Ph.D. in neuroscience or related disciplines is required. A candidate with electrophysiology experience would be particularly welcome. The work will focus on monoamine modulation of synaptic transmission. Whole cell patch clamp recording and imaging techniques will be used in neocortical slices. Questions of interest include developmental regulation of serotonin's action and mechanisms of dopamine enhancement of synaptic transmission. Excellent facilities are available in our strong and active Department of Neurobiology. Applicants should send a copy of their curriculum vitae and names and addresses of three individuals who can serve as reference to: **John J. Hablitz, Ph.D., Department of Neurobiology, CIRC 510, University of Alabama at Birmingham, Birmingham, AL 35294. E-mail: jhablitz@uab.edu.**

UAB Is an Affirmative Action/Equal Employment Opportunity Employer.

ASSISTANT RESEARCH PROFESSOR
UCLA Center for Environmental Genomics (CEG)

The position is to work with CEG Investigators on the molecular basis of the causation of disease through environmental exposure. The task will be to interface with UCLA's state-of-the-art facilities for Gene Expression Profiling and Proteomics and CEG Investigators to perform research, apply for funding, and write research reports and publications. Please apply to: **Robert H. Schiestl, Ph.D.; e-mail: botayde@mednet.ucla.edu.**

POSITIONS OPEN

THE UNIVERSITY OF PITTSBURGH CANCER INSTITUTE
HILLMAN CANCER CENTER

The Hillman Cancer Center opened in July 2002 in a newly built, freestanding 350,000-square-foot facility, integrating basic, translational, and clinical cancer research with patient care. The Center serves as a critical resource in the region as the University of Pittsburgh Cancer Center (UPCI) is the only NCI-designated Comprehensive Cancer Center within a 100-mile radius. The Center features a Laboratory Pavilion devoted to basic research programs in biological therapeutics, immunology, molecular virology, molecular oncology, and molecular therapeutics and drug discovery. The Center also features an Ambulatory Pavilion devoted to treatment, prevention and early detection, screening, genetic counseling, nutritional counseling, behavioral medicine, grief counseling, and community outreach. The Center integrates full-time faculty with more than 50 office-based oncology practices, which currently exist as part of UPCI's extensive clinical network, that treat more than 25,000 patients annually. State-of-the art facilities include a small animal care facility, a BSL-3 laboratory, a flow cytometry suite, and vector production facilities. Faculty having laboratories in the Hillman Cancer Center are full members of University of Pittsburgh departments with ready access to University of Pittsburgh core facilities, graduate programs, and seminar series. The unique collegial and collaborative research environment at the Hillman Cancer Center promises to promote the search for fundamental causes and cures for cancers. The following positions are available. Individuals interested in applying should submit curriculum vitae with publication list, a short research proposal, and contact information for three references to the faculty indicated below.

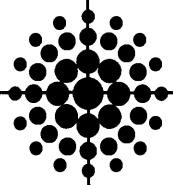
A **RESEARCH ASSOCIATE** position is available to study the therapeutic efficacy of antiangiogenic drugs and immunotherapy. Previous experience in angiogenesis or tumor immunology is required. Documents can be sent to: **Dr. Eli Gorelik, Department of Pathology, W-954 Biomedical Science Tower, 200 Lothrop Street, Pittsburgh, PA 15213.** Or via **e-mail: gorelik@pitt.edu.**

A **POSTDOCTORAL POSITION** for applicants possessing an M.D. or Ph.D. degree with strong interest in stem cell biology and solid background in molecular subcloning, vector construction, and gene transfer or epigenetic regulation of mammalian cells. Previous experience in hematopoietic assays, ES cell culture, or rodent animal models would be a plus. See **Cheng T et al.**, *PNAS* **93(23):**13158–63, 1996; *Science* **287(5459):**1804–8, 2000; *Nature Medicine* **6(11):**1235–40, 2000; *Blood* **98(13):**3643–9 and *Blood* **99(7):**2369–78. Documents can be sent to: **Tao Cheng, M.D., Department of Radiation Oncology, W-942 Biomedical Science Tower, 200 Lothrop Street, Pittsburgh, PA 15213.** Or via **e-mail: chengt@msx.upmc.edu.**

A **POSTDOCTORAL/RESEARCH ASSOCIATE** position is available to study mammalian DNA repair and damage avoidance. Research areas include: (1) function of X and Y-family polymerases; (2) signal transduction/cell cycle checkpoints elicited by DNA damage and repair intermediates; (3) DNA base damage-induced transcriptional profiles using DNA microarrays and SAGE; and (4) transgenic and knockout/knockin mice to study the role of polymerases in base excision repair, lesion avoidance, genome stability and tumorigenesis. See: **Sobol et al.**, *Proc. Natl. Acad. Sci. U.S.A.* **99:**6860–5. 2002; **Sobol et al.**, *Nature* **405:**07–10, 2000; and **Sobol et al.**, *Nature* **379:**183–6, 1996. Experience in biochemistry, molecular biology, cell biology, DNA repair, or knockout/transgenic mouse technology is desired. Documents can be sent to: **Robert W. Sobol, Ph.D., Hillman Cancer Center, 5117 Centre Avenue, Room 2.3, Pittsburgh, PA 15232. E-mail: rws9@pitt.edu.**

See our **website: http://www.upci.upmc.edu/internet/research/index.html.**

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



ARA
a focus on the science

Congratulations to the 2002 Awardees of the ARA Program!

Amino Acid Sequence Determinants of ApoB in VLDL Cholesterol Assembly
Zhouji Chen, PhD
Washington University School of Medicine
St. Louis, Missouri

SRBI Directed Cholesteryl Ester Hydrolysis
Margery Connelly, PhD
State University of New York, Stony Brook
Stony Brook, New York

Lipid Lysophosphatic Acid Regulation of Transcription Factor Egr-12 in Vascular Smooth Muscle Cells
Mei-Zhen Cui, PhD
University of Tennessee
Knoxville, Tennessee

Alteration of the Endothelial Plasma Membrane and Its Coagulant Properties by Atorvastatin
Dennis Dietzen, PhD
Washington University School of Medicine
St. Louis, Missouri

Endothelin-1 and Extracellular Matrix Dynamics in Diabetic Vascular Remodeling
Adviye Ergul, MD, PhD
Medical College of Georgia
Augusta, Georgia

SMAD 2 and SMAD 3 Inhibition of Vascular Smooth Muscle Cell Activation
Mark Feinberg, MD
Brigham and Women's Hospital
Boston, Massachusetts

Regulation of Adipocyte Fatty Acid-Binding Protein aP2 in Macrophages
Jihong Han, PhD
Weill Medical College of Cornell University
New York, New York

Mechanisms of Induction of Bone by Statins
Akiko Hata, PhD
Tufts University/New England Medical Center
Boston, Massachusetts

The Anti-Apoptotic Effect of Atorvastatin in Cerebral Ischemia by Inhibition of the JNK Signaling Pathway
Chia-Yi Kuan, MD, PhD
Children's Hospital Medical Center of Cincinnati
Cincinnati, Ohio

Effects of Modulating the Cellular Cholesterol Content on Regulation of the Wnt and Reelin Signaling: Implications for Tau Phosphorylation
Mathieu Lesort, PhD
University of Alabama at Birmingham
Birmingham, Alabama

Mechanisms of High Dietary Fat and Cholesterol-Mediated Increases in Serum Amyloid A (SAA)
Katherine Lewis, PhD
University of Washington, School of Medicine
Seattle, Washington

Targeting Angiogenic Signaling in Squamous Cell Carcinoma with Atorvastatin as an Angiogenesis Inhibitor
Mengfeng Li, MD, PhD
University of Pittsburgh Cancer Institute
Pittsburgh, Pennsylvania

Functional Aspects of Sterol Response Element Binding Protein Expression in Intact Skeletal Muscle
Paul MacLean, PhD
University of Colorado Health Sciences Center
Denver, Colorado

Statins, Cholesterol and HIV-1 Neuropathogenesis
Muhammed Mukhtar, PhD
Thomas Jefferson University
Philadelphia, Pennsylvania

Carbon Monoxide: Regulation of Inflammation Via the p38 Mitogen-Activated Protein Kinase
Leo Otterbein, PhD
University of Pittsburgh School of Medicine
Pittsburgh, Pennsylvania

Characterization of an Inducible Form of the Thiol-Specific Antioxidant Gene Aop2
Shelley Phelan, PhD
Fairfield University
Fairfield, Connecticut

Colony Stimulating Factor (CSF-1) in Transplant Arteriosclerosis
Nicolas Sibinga, MD
Albert Einstein College of Medicine
Bronx, New York

Protective Effect of Human Oxygenase in Vascular Injury
Miguel Soares, PhD
Beth Israel Deaconess Medical Center
Boston, Massachusetts

Inflammatory Modification of HDL Promotes Delivery of Oxidized Lipids to Macrophages
Nancy Webb, PhD
University of Kentucky Medical Center
Lexington, Kentucky

Nucleation of Cholesterol Crystals from LDL and Macrophage-Derived Model Foam Cells
Steven Wrenn, PhD
Drexel University
Philadelphia, Pennsylvania

Chronological Changes of Adipocytes in Insulin Sensitivity, Metabolism and Endocrine Functions
Yi-Hao Yu, MD, PhD
Columbia University
New York, New York

Immune Modulation by Atorvastatin Treatment of CNS Autoimmune Disease
Scott Zamvil, MD, PhD
University of California, San Francisco
San Francisco, California

DISCOVERY SCIENTIST
IMMUNOLOGY
Genomics Institute
of The Novartis Research Foundation
(GNF)
Website: http://www.gnf.org

Staff Scientist level position requiring three plus years of excellent postdoctoral training, a strong publication record, and an innovative research program addressing key topics in molecular and cellular immunology. The position includes funding for postdoctoral fellows and research associates and access to innovative resources, including high-throughput cell-based screening, genomics and proteomics tools, *in vivo* models, and a collaborative mouse ENU mutagenesis program. The GNF provides a unique and challenging opportunity to combine exploratory biomedical research with pharmaceutical drug development in a highly interactive, multidisciplinary environment. Please send a curriculum vitae and a short description of your research to **e-mail: jobs@gnf.org; Job Code: Dr. Michael Cooke, Department Head** (subject line must include Job Code). *Equal Opportunity Employer.*

RESEARCH LEADER
SUPERVISORY PLANT
PHYSIOLOGIST OR SUPERVISORY
RESEARCH GENETICIST (PLANTS)

Research Leader of the Plant Sciences and Animal Waste Utilization Unit of the USDA-ARS George E. Brown, Jr. Salinity Laboratory, a national research laboratory. Supervisory Plant Physiologist or Supervisory Research Geneticist (Plants) responsible for leading a team of five research Scientists plus technicians. The Unit is focused on understanding plant response to salinity and toxic trace elements, development of agronomic practices for irrigation with saline waters, and transport and fate of pathogens associated with animal wastes. Candidate is to conduct independent research focused on plant development under saline conditions utilizing physiological, biochemical, genetic, or molecular biological techniques. A Ph.D. in plant physiology, plant genetics, or related discipline is highly desired, as is evidence of managerial competence. *Candidates must be U.S. Citizens.* Salary commensurate with experience (GS–14 or GS–15, $81,473 to $124,588 per annum). Applications must be postmarked by September 30, 2002. For application information/forms contact **Margo Hess; Telephone: 909-369-4813**; or via **e-mail: mhess@ussl.ars.usda.gov**. A full text vacancy announcement may be obtained via Internet at **website: http://www.afm.ars.usda.gov/divisions/hrd/vacancy/resjobs/X2W-2390.HTM**. *USDA-ARS is an Equal Opportunity Provider and Employer.*

ASSISTANT SCIENTISTS

Brookhaven National Laboratory presently has two openings for heavy ion beamline Scientists to provide expertise and support to radiobiology Investigators at the Booster Application Facility and Alternating Gradient Synchrotron. Extended and irregular hours and travel involved; must live locally to provide off-hours support. Requires a Ph.D. in radiation, cell, or molecular biology and postdoctoral work, as well as cell culture experience, good communications skills, and willingness to work with U.S. and international Investigators from a variety of backgrounds. Strong background in radiation biology and accelerator-based radiology desirable. Other funding may be available for research on clustered DNA damages under direction of **B. Sutherland** (*Rad. Res.* **157**:161, 2002).

Interested candidates should submit curriculum vitae, three letters of reference indicating position # MK NNNN to: **M. Kipperman, Brookhaven National Laboratory, Building 185, Upton, New York 11973–5000**. *BNL is an Equal Opportunity Employer committed to workforce diversity.*

POSITIONS OPEN

MASS SPECTROMETRIST POSITION

The Center for Designing Foods to Improve Nutrition is seeking a Mass Spectrometrist to operate and maintain (1) a Micromass Optima gas isotope ratio mass spectrometer and related interfaces which include a gas manifold, triple trap, dual inlet, gas chromatograph-combustion, breath gas, and elemental analyzer; (2) an HP 6890 GC-FID; and (3) a Fisons Trio 1000 GC-MS. The Mass Spectrometrist will analyze samples generated by projects of the Center, consult with Researchers, and train users of the facilities. Applicants should have an M.S. in chemistry, biochemistry, nutrition, or related field and two years of experience in the operation and maintenance of mass spectrometers or a B.S. degree and four years of experience. Experience with isotope ratio mass spectrometer and continuous flow interfaces is highly desirable. Send a letter of interest, résumé, and the names, addresses, and telephone numbers of three references to: **Dr. Murray Kaplan 1127 HNSB, Food Science and Human Nutrition Department, Iowa State University, Ames, IA 50011-1120. Telephone: 515-294-9304; e-mail: mkaplan@iastate.edu**. *Iowa State University is an Affirmative Action/Equal Opportunity Employer.*

INDUSTRIAL MICROBIOLOGIST: Arch Chemicals, has an opening in Cheshire, Connecticut, for Master's or Ph.D.s in microbiology with two-plus years of industrial experience. Involves product development and interface with tech-service groups to design/enhance antimicrobial products. Knowledge of and experience with antimicrobial screening methods required. Experience in preserving substrates such as metal working fluids, coatings, adhesives, sealants, wood, and personal care products desirable. Background in mycology a plus. Requires excellent communication, project management skills, and ability to work independently and in a team. Arch Chemicals is a global producer of products and services for microelectronic materials, performance chemicals, and treatment products, which include pool disinfectants, industrial biocides, wood treatment products, and personal care active ingredients. Contact: **Human Resources, Arch Chemicals, Inc., P.O. Box 30205, Rochester, NY 14603-3205. E-mail: bioicides.hr@archchemicals.com**. *Equal Opportunity Employer.*

A **RESEARCH ASSOCIATE** position at the University of Virginia, Department of Pathology is available to study molecular Basis of Human Hematopoiesis and Leukemia. Major projects involve identification of signaling pathways and transcription factors involved in megakaryocyte lineage commitment. A Ph.D. and/or M.D. degree in biological sciences or medicine with at least two years of experience in molecular biology, cell culture, and animal study are required. Interested individuals should send curriculum vitae with names and phone numbers of three references to: **Dr. Adam Goldfarb, University of Virginia Health System, Department of Pathology, P.O. Box 800904, Charlottesville, VA 22908. E-mail: ang3x@virginia.edu.** Position open until filled. *The University of Virginia is an Equal Opportunity/Affirmative Action Employer.*

FACULTY POSITIONS
DEPARTMENT of BIOCHEMISTRY
and MOLECULAR BIOLOGY

As part of a major Structural Biology initiative we seek to recruit two **X-RAY CRYSTALLOGRAPHERS** at any professorial level with research interests in protein structure/function. Candidates must have excellent potential and/or an established research program and will be provided with very competitive startup support. Details at **website: http://www.finchcms.edu/biochem/Biochem.html**. Send curriculum vitae and names of three references to: **Dr. K. E. Neet, Chairman, Finch UHS/Chicago Medical School, 3333 Green Bay Road, North Chicago, IL 60064.**

POSITIONS OPEN

KECK SCHOOL OF MEDICINE USC — USC NORRIS

FACULTY POSITIONS
IN BIOMEDICAL SCIENCE

The USC/Norris Comprehensive Cancer Center of the Keck School of Medicine at the University of Southern California is undergoing a major expansion and seeks applicants for faculty positions at the **ASSISTANT, ASSOCIATE,** and **FULL PROFESSOR** level in biomedical sciences. Areas of particular interest include, but are not limited to, chromatin structure, apoptosis, virology, signal transduction, angiogenesis, transcription, cancer immunology, structural biology, DNA repair, replication, and methylation. The positions are to be filled starting in November 2002 and thereafter. All applicants should send curriculum vitae, research plan, and names of three references to: **Dr. Peter Jones, Director, USC/Norris Comprehensive Cancer Center, 1441 Eastlake Avenue, Los Angeles, CA 90089-9181**. *USC is an Equal Opportunity Employer.*

TROPICAL ECOLOGY OR FORESTRY

The Pacific Southwest Research Station of the USDA Forest Service seeks an internationally recognized Scientist to direct its Institute of Pacific Islands Forestry in Honolulu, Hawaii. The **DIRECTOR** will provide the vision, leadership, and coordination for the Forest Service's programs in Research and Development, State and Private Forestry, and International Programs in Hawaii and U.S.-affiliated islands in the Pacific. Current research programs and technical assistance target invasive species, wetlands, and forest restoration. The Director will conduct research as a member of one of these teams. Salary range is $82,580 to $107,357 plus 25 percent cost of living allowance. *Applicants must be U.S. citizens.* A vacancy announcement that includes required qualifications and application procedures is available on the USA Jobs **website: http://www.usajobs.opm.gov** and from: **Personnel Management, PSW Research Station, Attn: Pat Steverson, P.O. Box 245, Berkeley, CA 94701. Telephone: 510-559-6300; FAX: 510-559-6352; e-mail: psteverson@fs.fed.us**. Refer to **PSW-Demo-599-02**. Deadline for receipt of applications is September 6, 2002. Questions regarding the position should be directed to: **Julie S. Denslow; Telephone: 808-933-8121, extension 16; e-mail: jdenslow@fs.fed.us**. *USDA is an Equal Opportunity Employer.*

RESEARCH ASSOCIATE. An NIH-funded, postdoctoral position is available immediately in an interdisciplinary project aimed at the structural and biophysical investigation of RNA-proteins interactions in HIV. Experience in molecular biology is a must. Send a letter of application, curriculum vitae, and two reference letters to: **Dr. D. Fabris, Department of Chemistry and Biochemistry, UMBC, 1000 Hilltop Circle, Baltimore, MD 21250**. Position will be open until filled. *UMBC is an Equal Opportunity/Affirmative Action Employer and applications from women, minorities, and individuals with disabilities are especially encouraged.*

NIH-funded **POSTDOCTORAL POSITION** to study structure and function relationships in a superfamily of amine oxidases that contain covalently bound flavin and catalyze various biologically important reactions (see **website: http://www.drexel.edu/med/biochemistry/resume_jorns.htm**. Candidates should have a Ph.D. and strong background in biochemistry and molecular biology. Send curriculum vitae, summary of research experience, and the names and telephone numbers of three references to: **Dr. Marilyn Jorns, Drexel University College of Medicine, Department of Biochemistry, 245 North 15th Street, Philadelphia, PA 19102. E-mail: marilyn.jorns@drexel.edu**.

GRANTS

POSITIONS OPEN

POSTDOCTORAL RESEARCH POSITIONS: Two Postdoctoral positions are available immediately for research on the microcirculation. One position will study the rheological properties of blood in the microcirculation, using high-speed video microscopy, fluorescence imaging, and image analysis techniques. Studies will focus on flow properties in arterioles and venules and the effect of normal levels of red cell aggregation, as well as elevated levels seen in disease states in humans. A second position will examine microcirculatory responses in an animal model of sleep apnea, a clinical condition implicated in hypertension and heart failure. The studies employ video microscopy and phosphorescence dye techniques to examine short- and long-term effects on arterioles and oxygen levels in the microcirculation with intermittent hypoxia. Candidates with a Ph.D., M.D., or equivalent and background in physiology or engineering are invited to apply. Please submit curriculum vitae and names of three references to: **Paul C. Johnson, Ph.D., Department of Bioengineering, University of California, San Diego, La Jolla, CA, 92093-0412. E-mail: pjohnson@bioeng.ucsd.edu.**

We have an opening for a **POSTDOCTORAL POSITION** in our laboratory studying the molecular genetics of breast and ovarian cancer. We aim to identify and characterize individuals at increased genetic risk of cancer through family studies and other epidemiologic designs. Current projects include analyzing DNA repair gene SNPs in case-control and other studies, basic biochemical characterization of variants, and mRNA and protein expression studies to identify patterns associated with various cancer or cancer-predisposed phenotypes.

Interested applicants must possess a Ph.D. and/or M.D. and have no more than five years of postdoctoral experience. Individuals with experience in protein analysis or mRNA expression studies are especially encouraged to apply. Please submit a cover letter, curriculum vitae, and three letters of reference to: **Dr. Jeff Struewing, Laboratory of Population Genetics, NCI, NIH, DHHS, Building 41, Room D701, Bethesda, MD 20892-5060.** Or **e-mail: js140a@nih.gov. Telephone: 301-435-8955; FAX: 301-435-8963.**

NIH is an Equal Opportunity Employer.

POSTDOCTORAL POSITION available immediately to study electrical disturbances in ventricular hypertrophy and myocardial ischemia. The candidate should have a Ph.D. and experience with single cell voltage-clamp technique. Send curriculum vitae and three references to:

Dr. Gan-Xin Yan
Basic Cardiovascular Research Lab
Main Line Health Center
558 Lankenau MOB East
100 Lancaster Avenue
Wynnewood, PA 19096.
E-mail: yanganxin@cs.com

RESEARCH ASSOCIATE/POSTDOCTORAL POSITIONS available immediately to study molecular signaling pathways and gene regulation of human lipoprotein receptors and their role in cardiovascular diseases. Experience in molecular biology, transgenic animals, and cell culture techniques required. Send curriculum vitae and names of references to: **Dr. Kamal D. Mehta, Department of Molecular and Cellular Biochemistry, Ohio State University College of Medicine, 1645 Neil Avenue, Columbus, OH-43210. E-mail: mehta.80@osu.edu.**

POSTDOCTORAL POSITION is available to study the proliferation capacity and radiobiology of human and murine hematopoietic stem cells. Applicants must have a recent Ph.D. degree and a strong background in cellular biology, especially extracellular markers and cell culturing. Send curriculum vitae and references to: **Prof. Peter Mauch, M.D., Brigham and Women's Hospital, Department of Radiation Oncology, 75 Francis Street, ASB1, L2, Boston, MA 02115. FAX: 617-632-4115; e-mail: kalindi_parmar@dfci.harvard.edu.**

POSITIONS OPEN

POSTDOCTORAL RESEARCHER

A Postdoctoral position is available immediately to analyze the expression and function of a new growth factor in prostate cancer. The study involves cell molecular biology methodologies to determine the effect of the growth factor on human prostate cancer cells proliferation, cell death protection, migration and invasion, and signal transduction pathways. Ph.D. in cell/molecular biology, biochemistry, or equivalent degree with major course work in molecular biology is required.

Candidates must possess an extensive laboratory experience and solid background in molecular/cellular biology techniques (e.g. northern analysis, western analysis, immunoprecipitation, cell adhesion, PCR, cloning, mutagenesis, etc.). Salary mid-point is $38,000. Depending on qualifications, publications, and experience, salary may be higher. Send résumé, a brief summary of research experience, and three references (names, telephone numbers, and e-mail addresses) to: **Assistant Business Manager, Stanley S. Scott Cancer Center, Louisiana State University Health Sciences Center, 2025 Gravier Street, New Orleans, LA 70112.** Or **e-mail: emares@lsuhsc.edu.**

LSUHSC is an Equal Opportunity Employer/Affirmative Action.

BIOCHEMISTRY POSITION. The Department of Chemistry and Biochemistry at New Mexico State University, Las Cruces, seeks a Ph.D. in biochemistry or closely related field with postdoctoral experience for a full-time, nine-month, tenure-track position at the **ASSISTANT PROFESSOR** level beginning August 2003. This position includes teaching core courses at the undergraduate and graduate level in biochemistry, establishing a nationally recognized, externally funded (NIH, NSF, DOD, etc.) research program, and participating in graduate training. Applicants must submit copies of undergraduate and graduate course transcripts, curriculum vitae, three letters of reference, a brief description of proposed research, a statement of teaching philosophy, and representative reprints of published research. For more information see **website: http://www.chemistry.nmsu.edu/BioChemPosition.html.** Send applications to: **Dr. Glenn Kuehn, Chair, Biochemistry Faculty Search Committee, New Mexico State University, Department of Chemistry and Biochemistry, P.O. Box 30001, MSC 3C, Las Cruces, NM 88003-8001.** Review of applications will begin October 15, 2002, and will continue until the position is filled. *New Mexico State University is an Equal Opportunity/Affirmative Action Employer.*

California Institute of Technology: Applications are being accepted for a tenure-track position as **ASSISTANT PROFESSOR OF CHEMICAL ENGINEERING** with an initial appointment of four years, contingent upon completion of all requirements for a Ph.D. in Chemical Engineering or other related field. Outstanding individuals with a strong commitment to original research and teaching excellence are encouraged to apply. A curriculum vitae including a list of publications, a brief description of proposed research activities, and three letters of recommendation should be sent to: **Chair of the Faculty Search Committee, Chemical Engineering, Mail Code 210-41, California Institute of Technology, Pasadena, CA 91125. Applications should be received by January 1, 2003.** *The California Institute of Technology is an Equal Opportunity/Affirmative Action Employer. Women, minorities, veterans and disabled persons are encouraged to apply.*

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.**

POSITIONS OPEN

POSTDOCTORAL POSITIONS
at the Mayaguez and Medical Sciences Campus

Two Postdoctoral positions available immediately to study proteins structure, function, stability, and dynamics to provide molecular level information that will serve to further understand protein-protein interactions. Research projects are focused on elucidating the role of a soluble isoform of epidermal growth factor receptor (110 kD-sEGFR), a serum biomarker for epithelial ovarian cancer. Requirements for Position (1): Experience in scintillation proximity assay, a variation of the ALISA, and surface plasmon resonance techniques necessary. Requirements for Position (2): Experience in FT-IR spectroscopy of proteins and microcalorimetric techniques.

Review of applications will begin on October 1, 2002, and continue until the positions are filled. Send curriculum vitae, description of research interest, and names of three references to: **Dr. Marisol Vera, COBRE II Program Co-director, Department of Chemistry, University of Puerto Rico, P.O. Box 9019, Mayagüez, PR 00681-9019. E-mail: mvera@uprm.edu** or **mvera@caribe.net.** See also: **websites: http://www.uprm.edu/cobre2 and http://cobre2.uprm.edu.** *The University of Puerto Rico is an Equal Opportunity Employer.* M/M/V/I.

A POSTDOCTORAL POSITION is available immediately for a project involving the application of gene therapy to prevent graft rejection. This joint project between the gene therapy and cardiothoracic surgery research groups at Children's Hospital requires experience in stem cell isolation, transduction, and flow cytometry. Candidates with a recent Ph.D. that are interested in developing an independently funded research program should send their curriculum vitae and the names of three references to: **Dr. Mary Kearns-Jonker, Department of Cardiothoracic Surgery, Children's Hospital of Los Angeles, 4650 Sunset Boulevard MS#66, Los Angeles, CA 90027. E-mail: mkearns@chla.usc.edu.**

Two **POSTDOCTORAL POSITIONS** are available immediately to study signal transduction pathways in neural gene regulation, drug addition, and the cell cycle. Candidates with a recently obtained Ph.D. in life sciences are welcome to apply. Strong background in molecular biology, neuroscience, and cell culture is required. Knowledge of signal transduction, neuronal differentiation, and neuropharmacology is a plus. Contact: **Dr. Michael S. Lidow (e-mail: mlidow@umaryland.edu),** or **Dr. Guang Bai (e-mail: gnb001@dental.umaryland.edu), Department OCBS, University of Maryland, HHH, 5–A–12, 666 West Baltimore Street, Baltimore, MD 21201.**

POSTDOCTORAL POSITION is available to study human factor VIII (antihemophilic factor) structure and interactions with other macromolecules. Candidates should have a strong background in protein biochemistry and molecular biology. Send curriculum vitae and contact information for three references to: **Dr. Philip J. Fay, Department of Biochemistry and Biophysics, P.O. Box 610, University of Rochester School of Medicine, Rochester, NY 14642. E-mail: philip_fay@urmc.rochester.edu.**

Full-time **POSTDOCTORAL RESEARCH POSITION**: angiogenesis and vascular biology laboratory (**Roberto Nicosia, M.D., Ph.D.,** Principal Investigator) seeks applicants with expertise in molecular and cell biology to study mechanisms of blood vessel growth and survival. Knowledge of proteomics, DNA array technology, and *in vivo* transgenic studies desirable. Position requires a Ph.D. plus zero to three years of laboratory research experience. Competitive salary plus benefits. Send curriculum vitae to: **Eric Fogel, Mailstop S–151, 1660 South Columbian Way, Seattle, WA 98108.** Or by **e-mail: fogel.eric@seattle.va.gov.** *Equal Opportunity Employer.*

POSITIONS OPEN

POSTDOCTORAL RESEARCH FELLOWSHIPS IN FOOD SAFETY: Risk Assessment and Molecular Analysis of Foodborne Pathogens

We seek two individuals interested in participating in a multidisciplinary, USDA-sponsored collaboration to determine risks of foodborne illness associated with poultry.

Minimum qualifications: Earned Doctorate in microbiology or closely related field; skills in bacteriology and molecular assessment of bacterial origin and virulence; research experience with evidence of recent research accomplishments; and good oral and written communication and interpersonal skills are necessary.

Additional preferred qualifications: Knowledge of statistics, computer analysis, and food safety risk analysis; grantsmanship ability; and stated interest in food safety and risk assessment are preferred.

Application deadline: Review of applications will begin 2 September 2002 and will continue until the positions are filled.

Application procedure: Please send curriculum vitae, a statement of career goals, and the names, addresses, telephone numbers, and e-mail addresses of three references to:

Lisa K. Nolan D.V.M., Ph.D.
Chair, Search Committee
Department of Veterinary and Microbiological Sciences
North Dakota State University
Fargo, ND 58105
Telephone: 701-231-8530
FAX: 701-231-9692
E-mail: lisa.nolan@ndsu.nodak.edu

POSTDOCTORAL POSITION Joslin Diabetes Center/Harvard Medical School

Immediate opening for a Postdoctoral Scientist to participate in NIH-funded studies to bioengineer glucose-sensing properties into surrogate β cells for the treatment of diabetes. Studies will involve use of state-of-the-art gene therapy (viral transduction and transgenic mouse) techniques as part of a multidisciplinary team. Individuals with a recent Ph.D. and/or M.D. and a strong background in biochemistry, molecular, or cell biology should provide a statement of research interests, curriculum vitae, and the names of three references to: **Dr. Myra Lipes, Joslin Diabetes Center, One Joslin Place, Room 495, Boston, MA 02215. E-mail: myra.lipes@joslin.harvard.edu**. *Equal Opportunity Employer.*

FELLOWSHIPS

BECKMAN SENIOR RESEARCH FELLOWS California Institute of Technology

The Beckman Institute at Caltech invites applications for the Arnold and Mabel Beckman Senior Research Fellowship program. This program is intended to identify, support, and help develop the next generation of outstanding Scientists. Fellows will be selected in part on the basis of a novel and independent research proposal. The field of research is open, but should be relevant to the mission of the Beckman Institute: to invent methods, instrumentation, and materials that will open new avenues for fundamental research in the chemical and biological sciences. Each Fellow will be expected to carry out a research program in affiliation with one or more research groups at Caltech. Fellows will receive an annual salary of $50,000, including a full benefits package, and a research fund of $40,000 per year.

Applications must be received by December 10, 2002, for fellowships to begin in summer/fall 2003. For application procedures, information that may help identify potential collaborations, and further general information about the Beckman Fellowship program, please visit our **website: http://www.its.caltech.edu/~bi/fellows.html**.

Caltech is an Equal Opportunity/Affirmative Action Employer. Women, minorities, veterans, and disabled persons are encouraged to apply. The Beckman Foundation requires that Fellows supported by its funds be citizens or permanent residents of the United States.

GLOBAL OPPORTUNITIES

RESEARCH POSITION IN THE DEPARTMENT OF POULTRY SCIENCE

Applications are invited for a permanent position in the department of Poultry Science that will be available in mid-2003. Applicants should have a Ph.D. with at least one year of postdoctoral experience. The applicant should have experience in whole animal biology in the field of physiology, endocrinology, embryology, management, or quality. Application including curriculum vitae, list of publications, outline of further research, and three letters of recommendation should be sent directly to: **Dr. Israel Bruckental, Institute of Animal Science, The Volcani Center, Bet Dagan, P.O. Box 6, Israel 50250**. For more information, please contact: **Dr. S. Yahav; e-mail: vlyahav@agri.gov.il**.

WORKSHOPS

BIOINFORMATICS TOOLS FOR COMPARATIVE GENOMICS November 4–8, 2002 University of California Berkeley/LBNL/NHLBI

For postdoctoral, medical, and especially cardiovascular Researchers wishing to apply bioinformatics tools in their research. Techniques include database searches, annotation, SNPs, microarray analysis, VISTA, and more. *No tuition.* See **website: http://pga.lbl.gov/workshop; e-mail: pgaworkshop@lbl.gov** or call **Telephone: 510-486-4162**. Apply before September 22, 2002.

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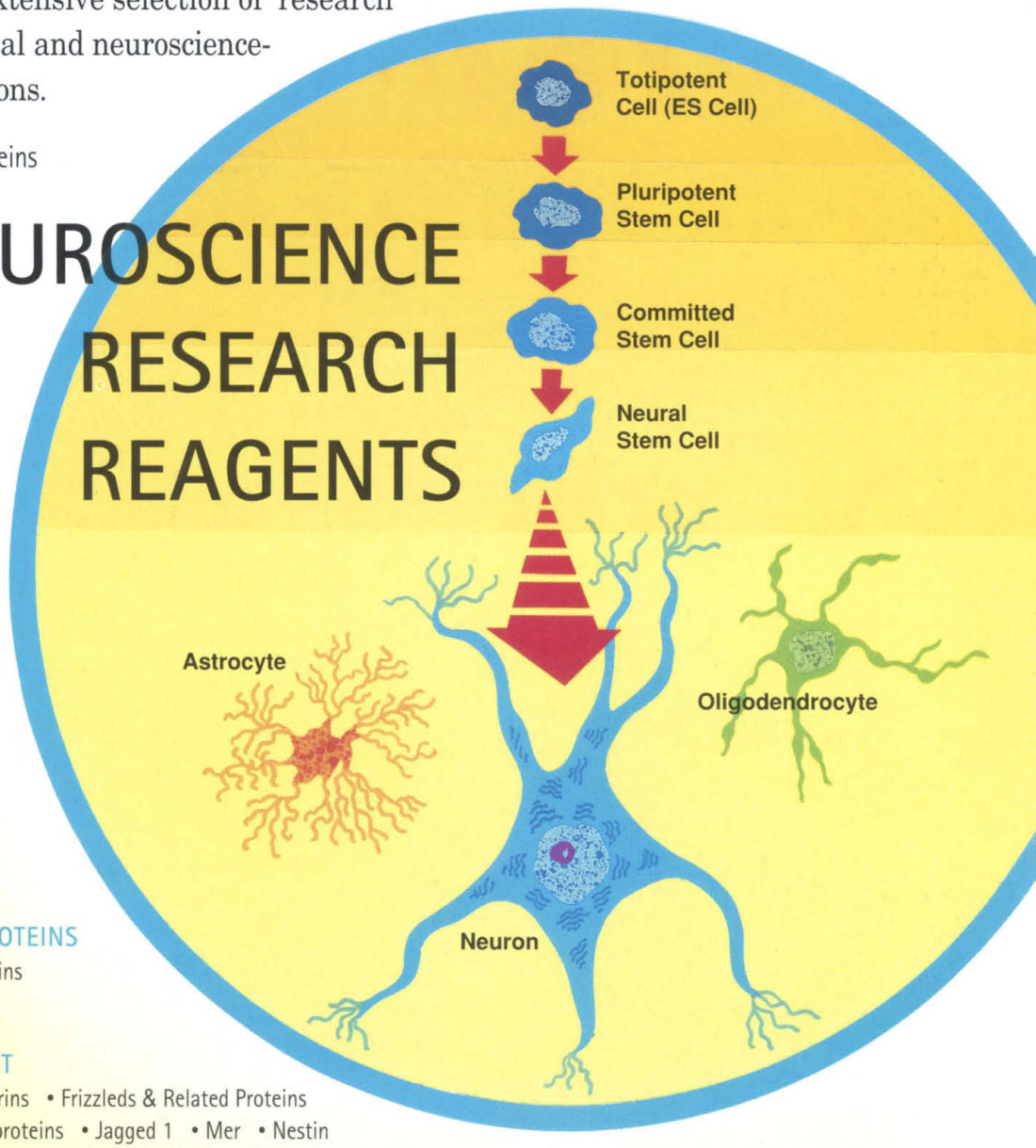
NEUROSCIENCE RESEARCH REAGENTS



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