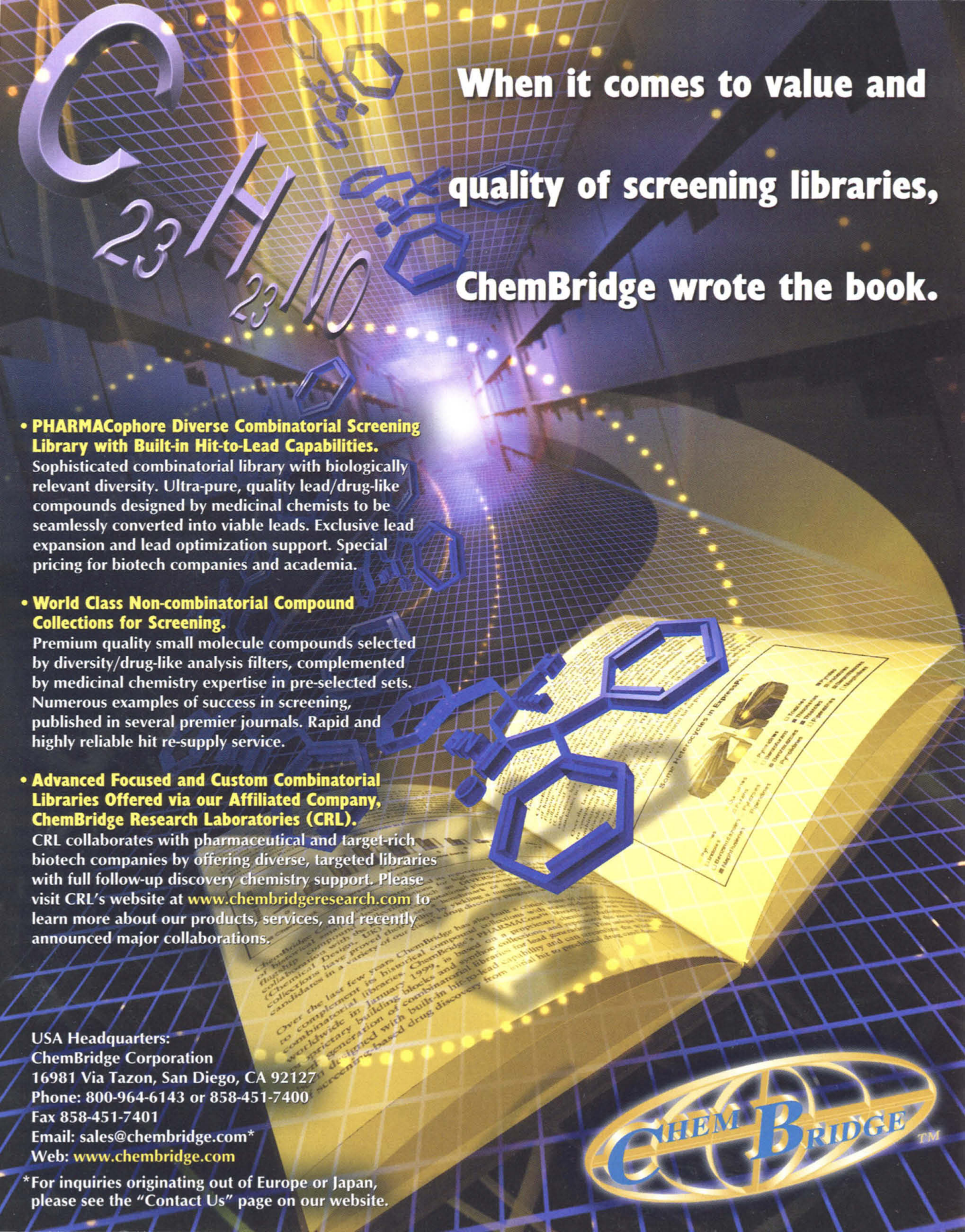
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DRAWING ON EXPERIENCE

CambridgeSoft Corporation's (CSC's) ChemOffice Suite, which incorporates ChemDraw and related applications, has long been one of the most popular chemical drawing programs for personal computers. The recent release of ChemDraw Ultra for Mac OS X extends the company's most powerful programs to Apple's newest operating system.

The ChemDraw Ultra program contains numerous intelligently designed tools for illustrating chemical structures. These include drawing items, such as ring structures, lines, bonds in and out of the plane, and dozens of scalable clip art structures. Clip art categories include useful biochemicals, such as amino acids, DNA and RNA, and hexoses. Standard chemical clip art includes aromatics, bicyclic compounds, and cycloalkanes. Also available are stereochemical forms, orbitals, conformers, functional groups, and numerous rotated rings and miscellaneous scientific icons. Each CSC-provided chemical structure is linked to a data set that can be easily accessed (by selecting the object and picking the appropriate menu command) and either pasted into the drawing or exported. Data categories include general chemical properties of the compound, chemical structure information, and ^{1}H and ^{13}C nuclear magnetic resonance (NMR) spectra. The program contains an impressive pair of databases that can either provide structures for a large number of user-input names or give the names of many compounds drawn from scratch. A test of the program's ability to draw common biochemicals from a supplied name was successful for all compounds tested. If one tries to violate the laws of chemistry, e.g., by drawing five bonds on a carbon, the program warns about the error but permits the user to go ahead with it, if desired.

Miscellaneous features include coloring options, a wide range of text settings, a large number of export formats, and standard drawing program functions, such as alignments and object distributions. A review of this length cannot do justice to the program's long list of functions. ChemDraw Ultra's combination of clip art, data, and free-form drawing tools make it the most powerful chemical drawing program for personal computers on the market and will satisfy almost anyone needing to create chemical structures.

About the only complaint with the CSC suites is the company's confusing set of products, many with similar names and overlapping functions—ChemDraw Ultra, ChemOffice Ultra, ChemDraw, ChemOffice Standard 2001, ChemOffice Ltd. 2000, ChemOffice Ultra 2002 Trial, ChemOffice Plug-In, and others. This very minor shortcoming can easily be overcome, however, by communicating directly with CSC. Chemists and biochemists, as well as educators and anyone working with chemical structures, will welcome the latest offering of ChemDraw Ultra.

—Kevin Ahern

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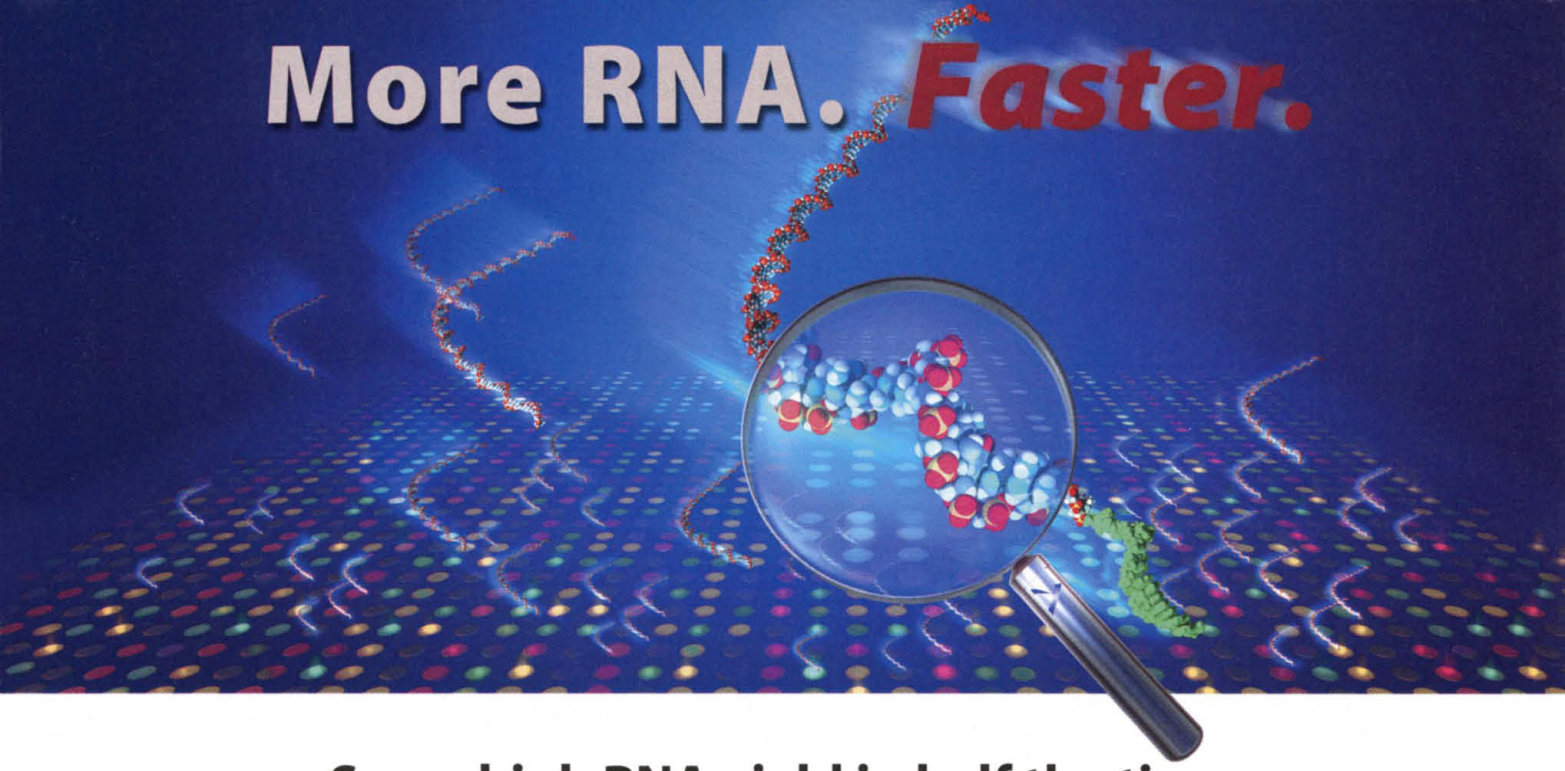

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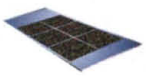

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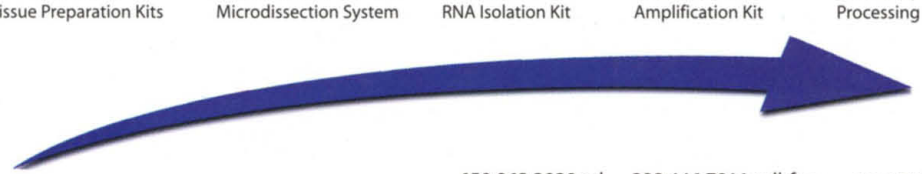

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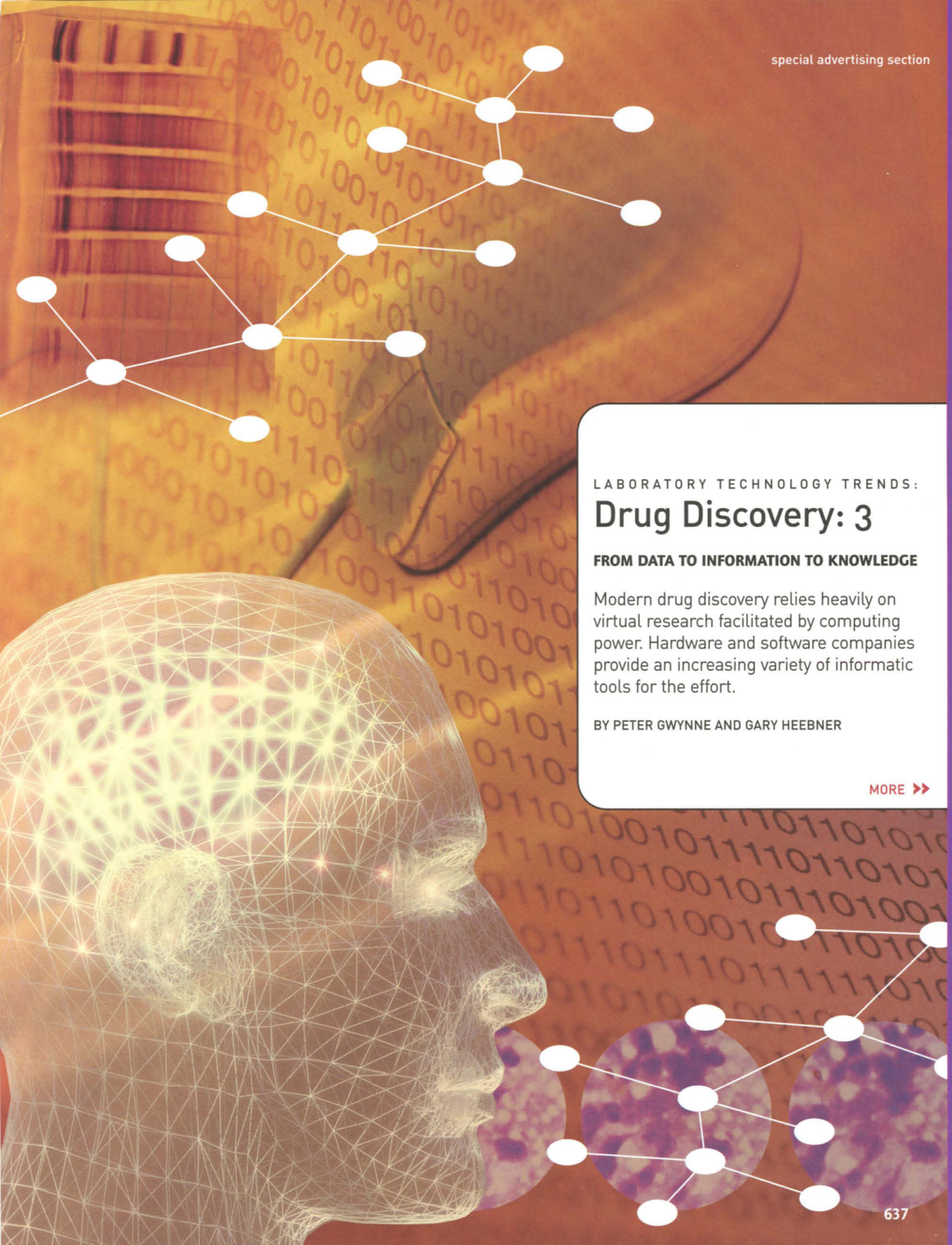

LABORATORY TECHNOLOGY TRENDS:

Drug Discovery: 3

FROM DATA TO INFORMATION TO KNOWLEDGE

Modern drug discovery relies heavily on virtual research facilitated by computing power. Hardware and software companies provide an increasing variety of informatic tools for the effort.

BY PETER GWYNNE AND GARY HEEBNER

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>> In the good old days of the pharmaceutical trade, just a few years ago, the development of drugs followed a slow and predictable pattern. Researchers had first to identify and characterize a specific biological target. Then they set out to develop drugs that responded to the target. Since life scientists had discovered only a small proportion of humans genes at the time, that traditional era of drug development involved just a small number of potential targets, even fewer compounds that had drug potential, and a minimal supply of drugs that actually reached the market.

>> That situation changed with the completion of the joint project to sequence the human genome. Today, with the successful sequencing of genomes of humans and several other organisms, drug developers have a huge number of potential drug targets available to them. But, as in the case of many scientific advances, this achievement has brought with it its own unique challenges. More data means more difficulty finding the information most relevant to a specific disease, biological pathway, or molecule.

>> "We're seeing a tremendous explosion of information," says Sharon Nunes, director of solution development for **IBM Life Sciences**. Ten years ago, she explains, about seventeen hundred bases per hour were deposited in GenBank, a key repository of genetic data run by the **National Center for Biotechnology Information** (NCBI). "Today," Nunes continues, "the rate is about one million per hour. Our estimate is that the amount of data is doubling every six months in this one databank alone."

SECTIONS:

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This is the third of a five-part series. The first two parts appeared in the 15 February and 29 March issues of Science. *The fourth part will be published in the 20 September issue.*

EXPANDING RESERVOIR

Numbers of all types tell the tale of a hugely expanding reservoir of information that must be collected, analyzed, and interpreted. "Until a few years ago most drug companies aimed their drug development at five hundred known biological targets. Within the next year or so there will be fifty thousand to a hundred thousand," says Nunes. "About 483 proteins are the targets of therapeutics in the market today," adds Steve Blose, specialist in bioinformatics at **Bio-Rad Laboratories**. "But half a million have to be understood."

How has the growth in data impacted drug discovery and development? "For the longest time white powder testing facilitated by combinatorial chemistry was dominant in drug discovery; scientists said: 'Let's see what happens,'" explains John Schneider, vice president of informatics marketing for **Amersham Biosciences**. "Then gene sequencing revealed a lot of targets – an embarrassment of riches for the drug discovery process. So the question becomes: How do we identify the right targets and then understand the pathways and the relationships to the right biological aspects, and figure out the effects of adding chemicals?"

A large part of the answer stems from bioinformatics. This field deals with the collection, storage, and analysis of genetic and protein-related data that can be applied to gene based drug discovery. By permitting drug developers to organize and present relevant information, bioinformatics helps to facilitate their selection of drug targets.

"Bioinformatics is one of the key new technologies as you consider how the drug industry is changing," says Scott Kahn, general manager and senior vice president, life science for software company **Accelrys**. "As people look to get into new methods to treat diseases that haven't been treated yet, they need new targets that are interesting and relevant and have a level of depth. The challenge of bioinformatics is to embellish what we need to know about targets." George Purvis, vice president of the CAChe Product Line at Fujitsu America's **CAChe Group**, agrees. "Bioinformatics is absolutely critical," he says. "From the logistical perspective of keeping up with the onslaught of information that can come from sequencing, from assays, and now from crystallographic information, bioinformatics is essential for keeping up the data – storing it and retrieving it in patterned formations."

A POWERFUL FORCE

A discipline almost unknown a decade ago, bioinformatics has become such a powerful force in pharmaceutical laboratories that scientists would be almost unable to manage the data that they gather for drug discovery without it. "It's the glue that holds everything together," says Doug Williams, executive vice president and chief technology officer for **Immunex**, a biotechnology firm recently acquired by **Amgen** that specializes in products that fight inflammatory diseases. "If you think of the volumes of data we work with now, the ability to analyze that data and transmit it back and forth between scientists is the underlying basis of what life science has become."

Bob DuBose, senior director of enterprise informatics at Immunex, outlines the issue from the point of view of individual scientists. "In the

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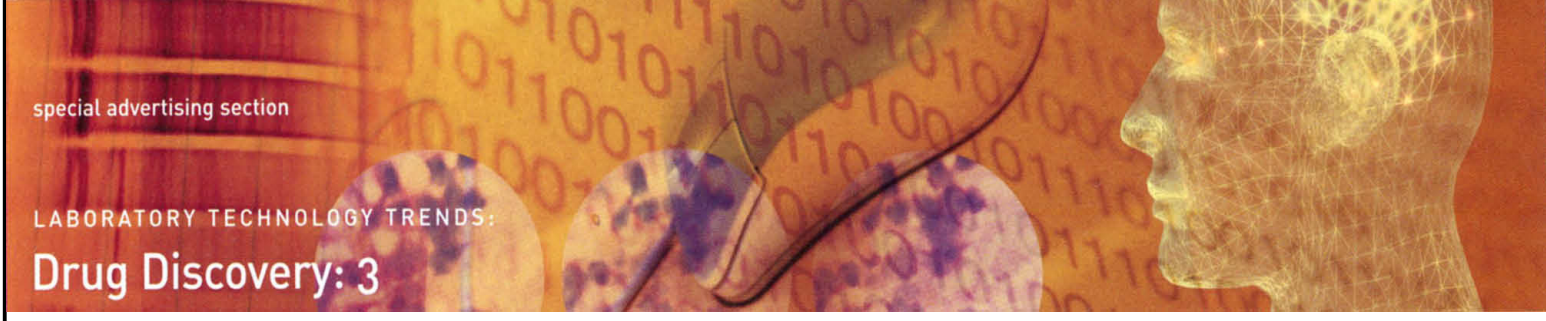

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LABORATORY TECHNOLOGY TRENDS:

Drug Discovery: 3

old days you might generate 100 data points in a typical experiment," he says. "Now you generate hundreds of thousands. Your ability to represent and analyze those numbers becomes a pretty tough computing issue."

Specialists in bioinformatics face two main tasks. First, they must deal with the extraordinary rate at which biological information is growing. "The amount of data out there is expanding faster than Moore's law [the observation, originally applied to the computer industry, that the amount of data doubles roughly every 18 months]," says Tim Burland, vice president and general manager of biotechnology software company **DNAStar**. "We have to invent software algorithms that overcome the limitations that Moore's Law places on the hardware."

That's not all. "Even more than the volume is the complexity of the information," explains Seth Pinsky, senior vice president and chief technology officer of **MDL Information Systems**. "If you compare us to a commercial bank, the volume is not as frightening as some make it out to be. But the complexity is frightening." What causes the complexity? Because data that describe a biological molecule or process can exist in many different formats, bioinformaticians face the problem of having to integrate disparate types of data from various sources. "You'll get the most information out of your own data if you integrate it with outside data," explains Robert Coleman, chief scientific officer of **Pharmagene**. "You've got to interface." And since information on biological molecules is always changing and growing, bioinformatic programs and systems must be able to accommodate constant changes.

GROWTH INDUSTRY

Those issues mean business opportunities for companies that specialize in software and other products for the discipline. "The application of analytic informatics to rapidly growing scientific areas will grow in importance," predicts Bill Ladd, senior director for analytic applications marketing at **Spotfire**, a vendor of analytic information products. "Bioinformatics is becoming a growth industry as people like us add applications," agrees David Butler, Spotfire's vice president for product strategy. "Our role is to make it really easy for scientists to do smart decision making and smart analysis of their data."

This new method of approaching drug discovery and drug design relies heavily on computing heft. "Computational power is very important and is becoming more important because of interest in high level modeling," says IBM's Nunes. "We know all the physics and math behind modeling microprocessors with 40 million individual processors. We don't know the rules of biology today. But we're learning them. And the faster we learn, the more computational power we need."

That learning process involves several strands of development. "Our focus is on three areas," says Nunes. "High performance infrastructures involve computing power and storage. Data management means data integration and knowledge management. And e-clinical work recognizes the fact that fewer than 10 percent of clinical trials are now done electronically rather than sending truckloads of paper to the Food and Drug Administration."

Nunes emphasizes the need for scalable computer systems. "We have a unique solution to this," she says. "DiscoveryLink allows you to rapidly optimize queries and get fast responses." But however effective the solution, difficulties remain. "There's still a challenge in managing the growth of information when it is in different locations, databases, and formats," she continues. Thus IBM also offers knowledge management portals to connect user communities worldwide. "We're working with a lot of partners to find applications," Nunes adds.

DESIGN IN SILICO

The exponential growth in the amount of data has shifted scientists' efforts from basic work in the laboratory to virtual research. Drug discovery increasingly relies on virtual studies of bioactive molecules and the design of drug candidates that have attributes similar to those of known bioactive compounds. The application to life science of those approaches, known as molecular modeling and computational chemistry, is in its infancy. But it represents the future of the field.

Molecular modeling uses sophisticated computer programs that can determine structures and properties of molecules of interest and then intelligently analyze the data to predict the structure of an ideal drug candidate. "In a sense, bioinformatics is a science in which we say 'Let's form a hypothesis and test it in silico,'" says Schneider of Amersham Biosciences. This is no simple feat. The fact that the data that characterize molecules can exist in many formats makes integrating and analyzing the information extremely challenging. Beyond the inherent difficulty of integration, the process demands powerful, fast computers to perform the analyses. Companies such as Accelrys and **Hypercube** have developed software programs for molecular modeling.

Computational chemistry has also changed the drug discovery process. Researchers can now spend time at the computer, exploring possible molecular configurations for their potential drug candidates. The use of these programs to predict and design molecules saves both time and the expense of actually screening a huge library of compounds for activity against a target. Accelrys, **Tripos**, and other companies have developed computer programs to facilitate the design of synthetic molecules likely to have both the desired biological properties and minimal risks of toxicity and other adverse effects. "We are developing a structure based design tool for the

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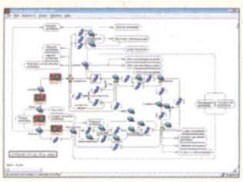

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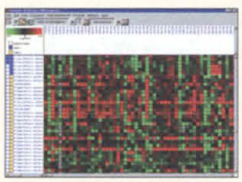

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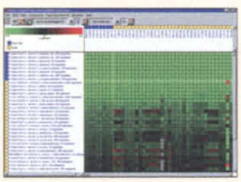

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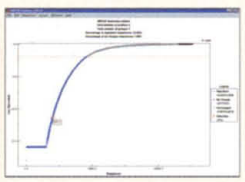

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Science is rapidly changing. As the biological sciences look deeper and deeper into cell function, the tools they use to explore become more and more dependent on the latest technology. And evaluating the huge volume of data being generated by successes and discoveries requires new approaches in the form of software support and high-speed computing resources.

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experimental medicinal chemist who does the drug design," says Purvis of CAChe. "We're integrating sequence information along with protein structure information, allowing for more rapid discovery of binding sites and the design of specific ligands that can bind and help to lead more rapidly to drugs."

THE EARLY YEARS

Bioinformatics didn't emerge full-blown from a computer laboratory. In fact the use of computers to solve biological problems began in the 1960s with the pioneering work of George Bell, a physicist at **Los Alamos National Laboratory**. Bell recognized that the rapid developments in molecular biology would change the face of biology and medicine, creating unprecedented demands for information storage, handling, and analysis. With Bell's support and encouragement of genetic sequence analysis, Walter Goad at Los Alamos developed the first DNA sequence database. This database evolved into GenBank.

Another move toward bioinformatics occurred in 1982 when Charles DeLisi, a physicist turned immunologist who had spent some time at Los Alamos before moving to the **National Institutes of Health**, developed the first relational database system. "It centralized all the data in sequences, using software to predict the functions of proteins and secondary structures," says DeLisi, who is now professor of engineering at **Boston University**. "We also worked on a method of going beyond sequence analysis to deal with sequences of no known function." In the same year DNAStar started commercial development of desktop sequence analysis software and GCG, a company that operated under the auspices of the University of Wisconsin at the time, began to offer server based sequence analysis tools for VAX VMS computers. Those events marked the beginning of demand for bioinformatics software in life science research.

Three years later, by which time he had moved to the **Department of Energy**, DeLisi set in train the Human Genome Project, which developed exactly according to plan. Even then, scientists recognized the need for effective data handling. "One of the original criticisms by biologists was that we would have so much sequence information that we wouldn't be able to analyze the data," DeLisi says. "But it was clear to some of us that methodological development is not static. Major breakthroughs since have resulted from the fact that full genome sequences are available. The more data we have, the better the methodology we can develop to understand it."

Similarly, new methodologies open up new opportunities for understanding. "Now we need to understand how the parts of the cell are related and how networks of cells work together," DeLisi explains. "A lot of the new methods help to work out the network structures."

THREE TYPES OF TECHNOLOGY

Bioinformaticians group those new methods, and the general tools and technologies used in the field, into three main categories. They are genetic sequencing instruments, analytical software, and database providers.

Scientific teams currently carry out DNA sequencing using dideoxy chain termination or chemical degradation. Both methods rely on polyacrylamide gel electrophoresis (PAGE) to separate the sequencing reaction products and phosphorescence or radioactivity to determine the locations of DNA in the gels.

Several companies design and manufacture systems for PAGE. They include Bio-Rad Laboratories, **Invitrogen**, and **Sigma-Aldrich**. These suppliers offer a wide range of products for sequencing work, from precast gels to electrophoresis units and power supplies. Obtaining a complete system from any one supplier offers the benefit of component compatibility. Each system is optimized for performance; that makes it easier for researchers new to electrophoresis to become quickly proficient with this technique.

Automated DNA sequencers can streamline the process of sequencing DNA. These often incorporate capillary electrophoresis (CE) as the separation medium. Because they can operate at very high voltages, CE based systems allow substantial increases in the speed with which samples can be separated. As CE based systems are more powerful and more expensive than gel electrophoresis, modern DNA sequencers are usually found in core facilities that service several individual research laboratories.

Schneider of Amersham Biosciences explains the rationale behind the design of Laboratory Workflow Software. "We realized that high throughput sequencing technology was producing a lot of information that wasn't necessarily being controlled in the best way to guarantee success in customers' laboratories," he notes. "In other words, many people would do experi-

Focus on Microtechnology

The 9th annual Chips to Hits event, a meeting organized by **IBC USA Conferences**, will take place in Philadelphia from October 28 to 31 this year. "The conference focuses primarily on the development and emergence of new microtechnologies as applied to genomics and proteomics," says Derek Kealey, project leader and research director for the event. "It was originally built on DNA arrays and subsequently protein arrays. This year we've worked on expanding the focus on new technologies from academic and pharmaceutical research. We're looking at true cutting edge technology and following others through applications and use by pharmaceutical corporations."

Those new technologies include bioinformatics. The event will feature a one-day preconference forum on microarray informatics chaired by John Quakenbush of **The Institute for Genomic Research**. "The forum will look at bioinformatics and genome sciences, with a particular focus on gene expression," says Kealey. Other preconference sessions will cover microarrays, deal making and partnering, and sample preparation.

Scientific sessions, meanwhile, will focus on emerging technologies, cell based assays and high content screening, protein arrays and proteomics, and microfluidics, among other subjects. In addition, the conference will feature an exhibition with more than 115 participants, a career expo, more than 70 scientific posters, and a startup showcase that will give new companies the opportunity to make 10- to 15-minute presentations about their technology. According to Kealey, organizers expect more than 1,500 people to attend the event.

Individuals interested in further details can obtain information from the conference's website: www.chipstohits.com. Alternatively, they can phone 508-616-5550 for IBC's customer service department or e-mail Derek Kealey at dkealey@ibcusa.com.

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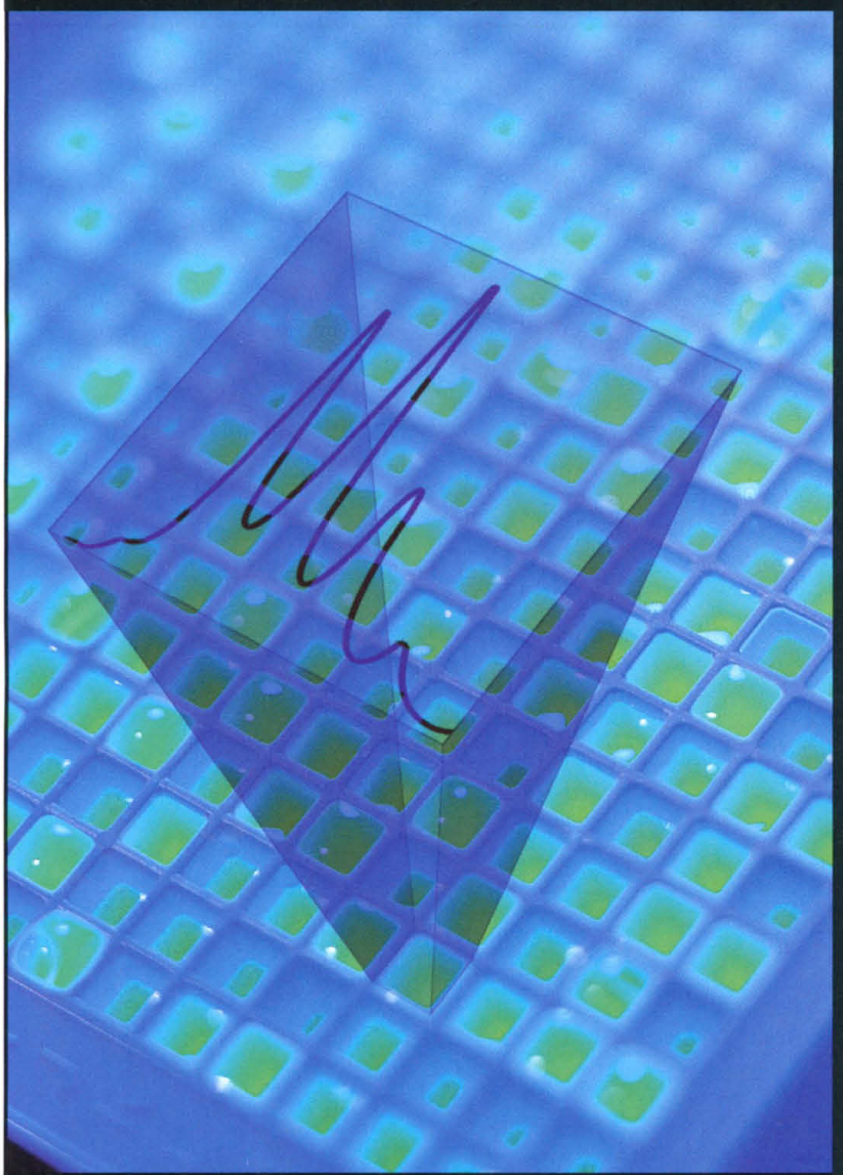

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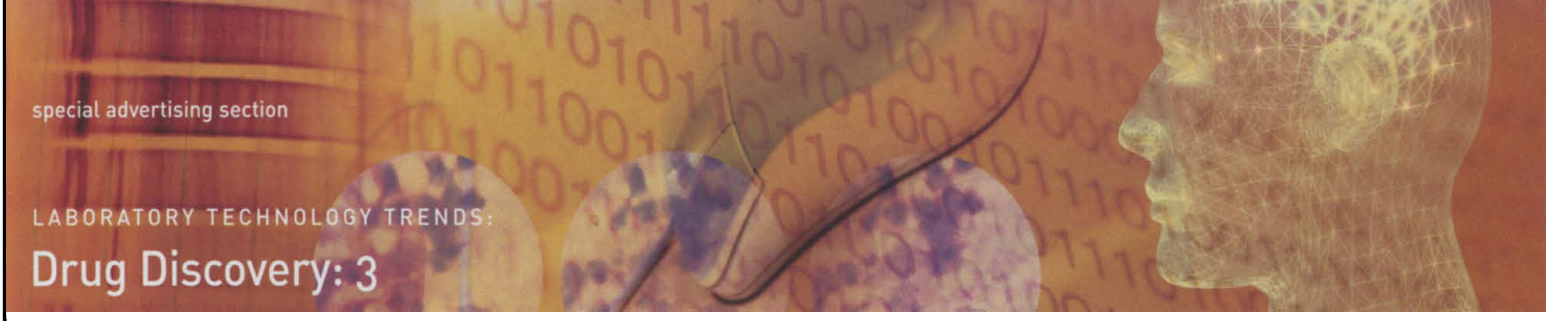

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ments and not know whether the sample correlated with the results coming out. We wanted a system that would permit customers to take a sample in the front door and have results related back to the specific samples. We're setting out to provide systems that remove the variances from laboratory experimentation." Other companies that offer automated DNA sequencing instrumentation include **Applied Biosystems**, **Beckman Coulter**, and **LI-COR**.

SOFTWARE FOR SEQUENCE ANALYSIS

The volumes of DNA sequence data that had to be collected and then analyzed for the human genome sequencing effort challenged even the best of scientific minds. It was the generation of amounts of scientific data on this scale that helped to stimulate the formation of bioinformatics and then fueled the discipline's growth.

One key to the success of sequencing is the existence of the standalone analytical software programs used in many automated sequencing laboratories. The programs, which exist apart from the sequencer systems, can analyze molecular information and sequencing data in genomics, proteomics, and cheminformatics. Each of these fields plays a role in informatics based drug discovery programs.

Growing numbers of companies offer software for analysis of DNA sequences and protein structures. These products and services often include access to proprietary databases with large volumes of sequence data. Some systems can be accessed through the Internet, which allows researchers to manipulate large data sets without the need for extensive investments in computer hardware. Others reside in the users' facilities, offering greater security.

Accelrys, **Biomax Informatics**, DNAStar, **InforMax**, and **LION Bioscience** are among the companies that offer suites of bioinformatics programs. These software suites allow users to work with families of multiple modules using similar commands. That gives scientists a greater comfort level when they use the software, an increasingly important factor among researchers who want to get on with the job of doing science rather than having to understand in detail how their software works.

Accelrys, launched in June 2001 by combining Molecular Simulations, Synopsys Scientific Systems, Oxford Molecular, and GCG, has a computational portfolio that combines modeling and visualization software with powerful methods to predict properties and interpret the behavior of molecules and materials. "Our recently released DSGene product is a desktop tool that is both analytical and communicative in the way that biologists can react with information, enrich it, and share it with their chemical and biological colleagues," says Kahn. "It is linked with SeqStore, a genomic data management system in Oracle that can store a number of sequences. We also have a proteomic version of SeqStore."

PROBES FOR PROTEOMICS

Proteomics research has, indeed, driven the development of new software for analyzing peptide sequences and two-dimensional and three-dimensional protein structures. Protein identification and characterization typically involve the use two-dimensional gel electrophoresis and mass spectrometry. As with DNA sequencing, protein analysis can require the storage and handling of large data sets.

Several companies, including Amersham Biosciences, Applied Biosystems, and Sigma-Aldrich, have developed families of instruments, reagents, and software for proteomics research. Many offer software for protein analysis via mass spectrometers. Thus Bio-Rad Laboratories and **Micromass** are working together to provide Micromass's spectrometry system in concert with Bio-Rad's products for proteomics research. "Especially in proteomics, the ability to collect data, collate it with other sources, and make sense of it is critical," says Norman Schwartz, Bio-Rad's vice president and group manager, life science.

The company also offers the ProteomeWorks System, an integrated set of tools and technologies that enables scientists to explore protein function. "Customers log in samples and do several preparations to get proteins out and preserve them so that they are not damaged," explains Blose. "Then they separate them on our gels and make judgments on what proteins are of interest. They cut those proteins out of the gels with our spot cutter, fragment them, and spot them onto plates for mass spectrometry. During the entire time our bioinformatics system, WorksBase, is monitoring and organizing all the data."

DNAStar has its own technology. "Our primary offering is Lasergene," says Burland. "It's like the Office Suite for DNA and protein analysis." The software suite includes a protein analysis module called Protean that permits users to predict and display motifs, secondary structural characteristics, and physicochemical properties of proteins using the comprehensive built-in library of analytical methods. Protean can also locate antigenic determinants and predict protease digestion patterns. When pertinent structures are identified, an integrated BLAST tool can be used to search the NCBI databases for related sequences.

Other companies, among them **GeneProt**, **MDS Proteomics**, and **Oxford GlycoSciences**, are developing proteomics software programs for their own in-house use. Several of these companies will partner with other organizations to work on a collaborative basis or will license their software to clients.

CHEMICAL AND BIOLOGICAL VIEWPOINTS

Firms that create software for life science don't focus exclusively on bioinformatics. Cheminformatics also plays a role in drug discovery and information technology firms work hard to serve that market.

Why cheminformatics? Researchers who deal with large numbers of chemicals in such applications as high throughput screening would struggle to categorize, store information on, track, and locate the chemicals they need for their work if it were not for the software products available to them from Accelrys, **CambridgeSoft**, MDL Information Systems, Tripos, and other providers. The programs feature capabilities such as chemical structure searching and information integration that enable a scientist to work with several attributes of chemical compounds even if they exist in different formats.

This type of software does more than handle chemical information. It helps biologists and chemists who work in drug discovery to integrate their efforts. "We focus on cheminformatics, bioinformatics, and even downstream manufacturing," says Spotfire's David Butler.

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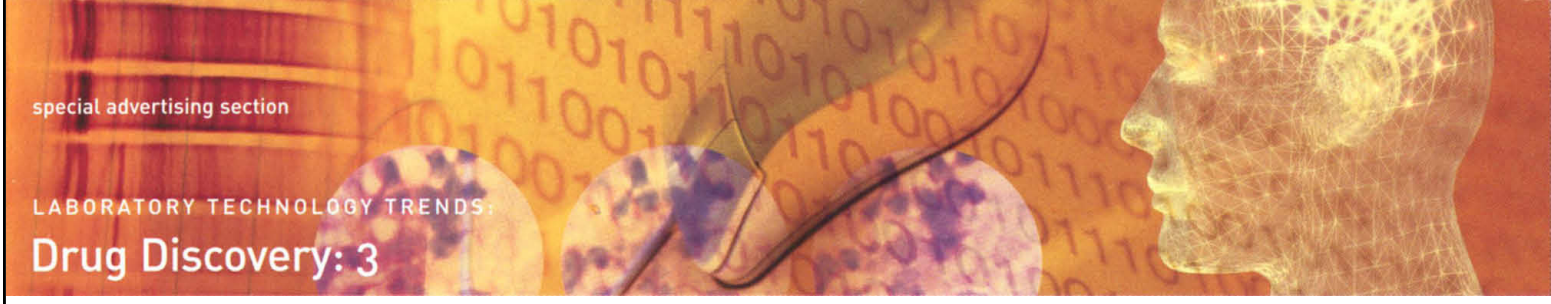

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"Our product mostly can be configured based on who is using it – a biologist or a chemist. Our role is to provide an analytic application environment that can be configured to all the different tools in the life science arena."

Chemists and biologists don't always see things in the same way. "There's a natural tension between them," says Pinsky of MDL Information Systems. "They also think differently. In applications we have to give them a viewpoint that caters to their way of thinking. Biologists tend to see and use different aspects of the information than medicinal chemists who have to figure out what compound to synthesize next. So we need to bring together all the data and develop software tools for individual users." Accelrys takes a similar approach. "One of our goals is building a platform to link together the world of biology and chemistry," says Kahn. "This allows information to be communicated to scientists in the manner they need it communicated."

DISPARATE DATABASES

The rapidly expanding volume of data generated by life science research has created a new challenge: developing systems that can read and make sense of information in a variety of formats on many disparate platforms. Companies such as **Celera Genomics** and **Curagen** offer access to biological databases on a for-fee basis. These databases offer many kinds of data, including raw and processed sequence data, gene expression profiles, SNP information and three-dimensional protein structures.

"Our main product is GeneExpress, a database that contains gene expression data generated at Gene Logic by running microarray experiments on a very rich collection of human and animal samples," says Victor Markowitz, senior vice president and chief information officer of **Gene Logic**. "All this information is useful to pharmaceutical and biotechnology companies in understanding the mechanisms of various diseases and subsequently identifying drug targets. Our data is delivered on a data management platform developed at Gene Logic. The system provides support for integrating customer gene expression data together with Gene Logic data and mining gene expression data using a variety of analysis methods in the context of sample annotations and gene annotations. The latter allow proper interpretation of the analysis results from a biological point of view."

Incyte Genomics, meanwhile, offers a human gene transcript database called LifeSeq that allows researchers to access a stable set of pharmaceutically relevant genes. This product facilitates the drug discovery process and allows creation of more viable drug targets. The software allows searches for genes by molecular function or pathway.

An emerging issue in the world of databases is that of standards. Ideally, researchers want information that they obtain from biological databases to exist in open rather than proprietary formats. "If we don't resolve the issues of how one program can talk to another and how we must structure the results of one experiment so that it can be merged with others, we're going nowhere," says Schneider of Amersham Biosciences.

The industry has started to respond to the demand. "IBM is working in the Interoperable Informatics Infrastructure Consortium," says Nunes. "This is based around XML [extensible markup language] and web services. It will permit you to classify the format of the data output and will allow for much easier formatting. It will also provide an open interface for software and will allow integration." Bio-Rad is slightly more cautious. "We'll work with two emerging formats: Fast A and XML," says Bio-Rad's Blose. "We think the customers and the market should decide on the standard."

INCREASING CAPABILITIES

As the need for bioinformatics tools and skills becomes more evident, academic and commercial institutions are ramping up their capabilities in the field. "We have a universitywide Ph.D. program in bioinformatics that started three years ago," says Boston University's DeLisi. "Our first student just went out, and we'll graduate about six or seven per year."

Bioinformatics departments are also growing at a rapid pace in most pharmaceutical and biotechnology companies. And when circumstances demand more than is available in-house, plenty of firms that specialize in bioinformatics are available as vendors or partners. "Depending on the need, we either build or buy bioinformatics tools," says DuBose of Immunex. "We try to stay on the cutting edge to create tools unique to our research program," adds his colleague Williams. "We contract out the other work."

Pharmagene aims for the best of both worlds. "We are a drug company working for ourselves and other people," explains Coleman. "We are trying to validate targets that already exist or to use information that others have gleaned from the vast data sources or their own work to identify the targets worth pursuing." The company restricts its work to 72 human tissues from three donors, whose details go into its Target Evaluator database. "At the minimum our clients get an Excel type spreadsheet with the levels of the tissues," says Coleman. "But we do a lot more in terms of information about the donors. We incorporate clinical and pathological information in the database, although as far as possible we try to take pathologically uninvolved tissue."

Another biotechnology company, **Millennium Pharmaceuticals**, has taken an informatics based approach to its drug discovery projects. It has established programs to identify and validate novel drug targets based on knowledge of the human genome. The company identifies novel, pharmaceutically relevant genes and proteins and associates them with specific diseases using biological methods that include hypothesis-driven disease models, drug response models, gene and pathway mining approaches, and human genetics. Once associated with diseases, these genes and proteins are validated as targets through cellular assays and animal model systems.

Organizations worldwide, from computer hardware firms to software related companies, are working with researchers and with each other to provide specialized information technology support for the life science industry. If the development of bioinformatics resembles that of the computer industry in recent years, the field will see remarkable advances in the future.

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

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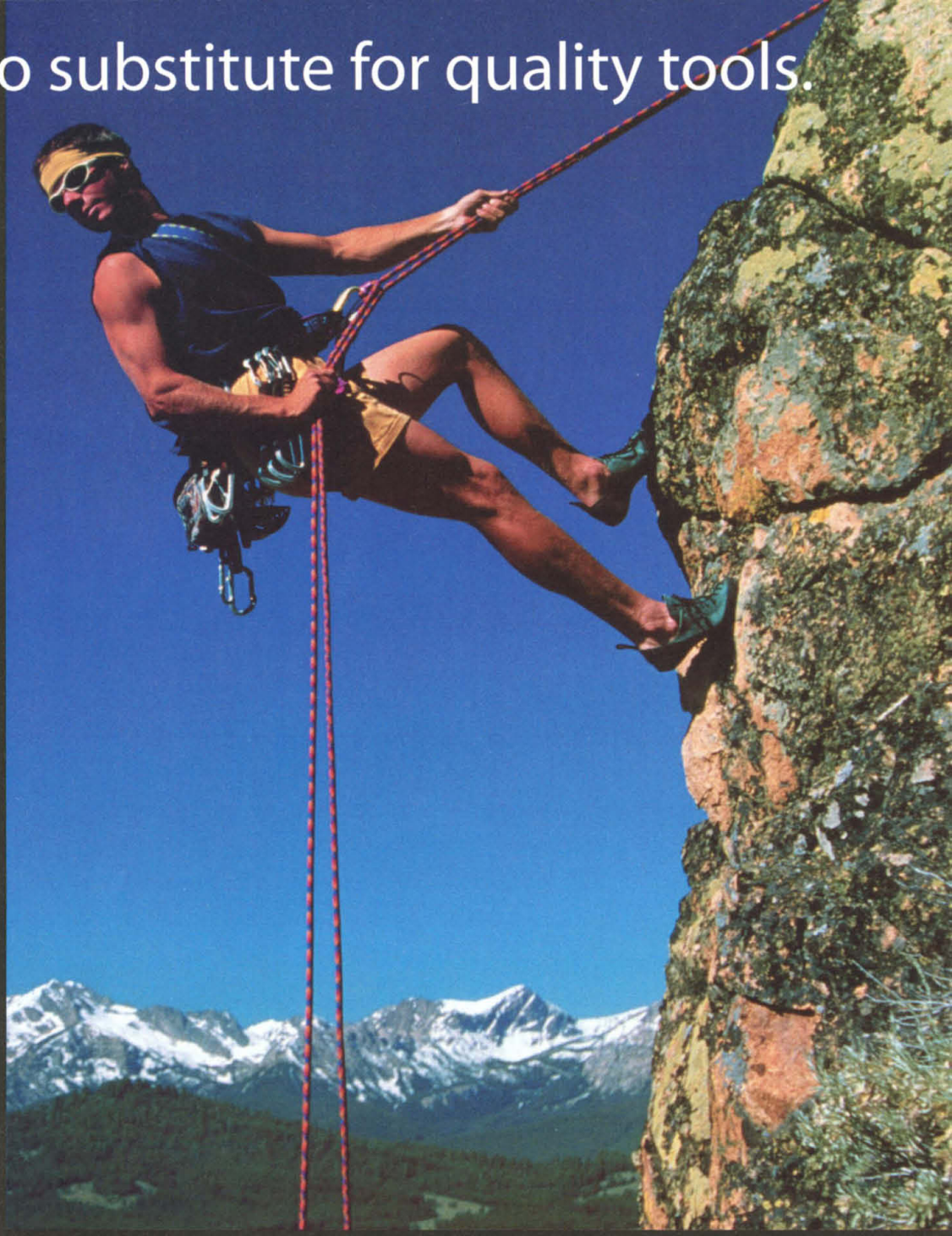

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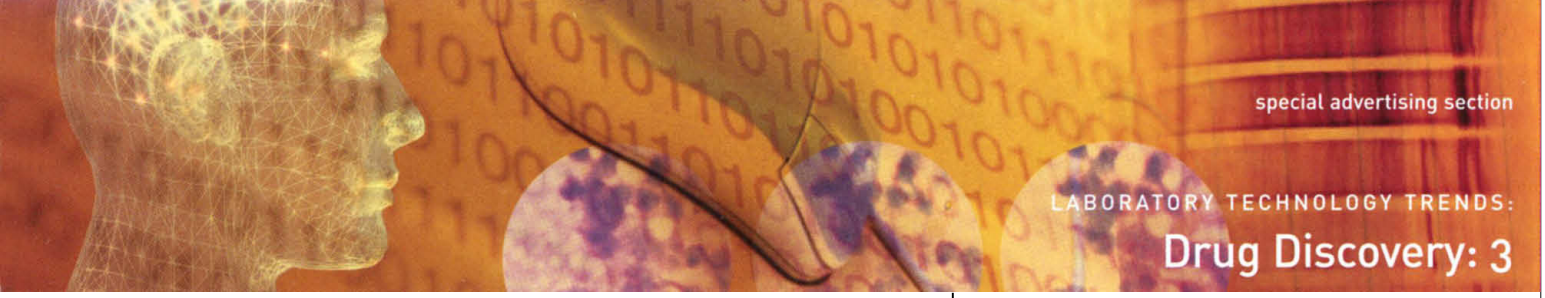

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1 *Science*, December 2001, BPA Publisher's Statement.
2 *Science* Harvey Research Readership surveys: 14 January 2000, 4 February 2000, 4 June 1999 (Japan) as applied to *Science* December 2001 BPA Publisher's Statement, publisher's own data.

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Life scientists with B.S. and M.S. degrees do more than provide the backbone for R&D programs. Opportunities await them in marketing, regulatory affairs, technical assistance, and — for the top achievers — management. BY PETER GWYNNE

A Master's or Bachelor's degree in life science opens up a wide range of career options. Work at the laboratory bench remains the most common choice, but several other possibilities exist, among them jobs in marketing, sales, regulatory affairs, patent issues, and technical support, as well as teaching.

Management is also emerging as an opportunity for non-Ph.D.s. While running a laboratory generally demands the background of a doctorate, B.S. and M.S. scientists can increasingly find executive roles in areas such as production and business development. Small biotechnology companies in particular encourage Bachelor's and Master's graduates to advance as far as their knowledge and skills will take them.

Getting on a solid career track demands more than a certificate of graduation. Most employers expect their recruits to have gained research experience through internships or academic research projects. They also demand communication skills and the ability to work in scientific teams. Job interviewers look for evidence of applicants' self-motivation and passion for science in applications.

Here we talk to representatives of two universities, one government institute, and five life science companies about the demands and prospects for B.S. and M.S. students. They outline the career options for M.S. and B.S. holders and the qualifications, both scientific and nonscientific, that those individuals are expected to possess for success.

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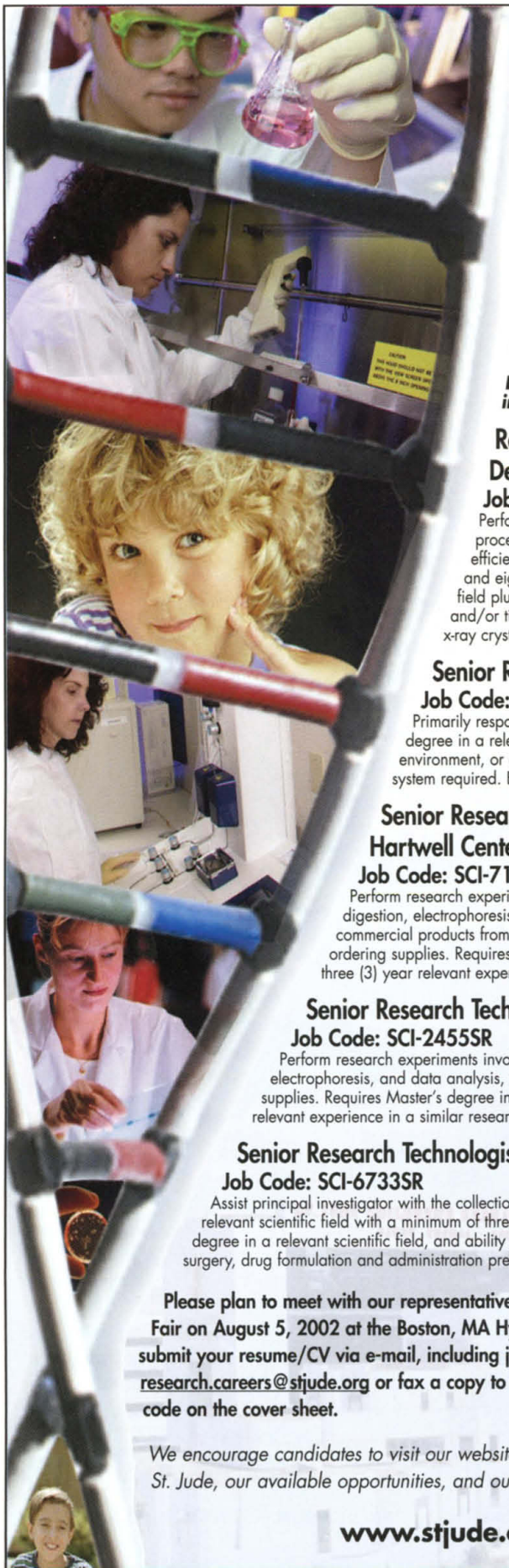

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Job Code: SCI-4984SR

Primarily responsible for maintenance of *Baculovirus* stocks and insect cell cultures. Requires Bachelor's degree in a relevant scientific field plus three (3) years relevant experience in a similar research environment, or a Master's degree in a relevant scientific field. Experience with *Baculovirus* expression system required. Experience with protein purification a plus.

Senior Research Technologist, Hartwell Center for Bioinformatics and Biotechnology

Job Code: SCI-7182SR

Perform research experiments involving molecular cloning, RNA/DNA extraction, PCR/RT-PCR, enzyme digestion, electrophoresis, microarray hybridization and data analysis, comparing different techniques and commercial products from vendors, maintaining laboratory equipment, monitoring laboratory inventory and ordering supplies. Requires Master's degree in relevant scientific field, or Bachelor's degree with a minimum of three (3) year relevant experience in a similar research environment.

Senior Research Technologist, Department of Experimental Hematology

Job Code: SCI-2455SR

Perform research experiments involving molecular cloning, RNA/DNA extraction, PCR/RT-PCR, enzyme digestion, electrophoresis, and data analysis, maintaining laboratory equipment, monitoring laboratory inventory and ordering supplies. Requires Master's degree in relevant scientific field, or Bachelor's degree with a minimum of three (3) years of relevant experience in a similar research environment.

Senior Research Technologist, Department of Molecular Pharmacology

Job Code: SCI-6733SR

Assist principal investigator with the collection and analysis of data for specified research projects. Requires Bachelor's degree in a relevant scientific field with a minimum of three (3) years of relevant experience in a similar research environment, or a Master's degree in a relevant scientific field, and ability to supervise the running of the xenograft core facility. Experience in small animal surgery, drug formulation and administration preferred. Will be required to maintain database and perform data analysis.

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Careers and Graduate Programs for B.S. and M.S. Scientists

Opportunities KNOCK


LARRY NOODÉN

ANN ARBOR, Michigan: Life science students in Master's degree programs at the University of Michigan have two favorite areas of study: biotechnology and systematics/evaluation. "The two have something in common," says Larry Noodén, professor of molecular, cell, and developmental biology. "To be an important practitioner in each, you need more than a Bachelor's degree."

The program encourages students to develop essential skills during the 18 to 24 months that it typically takes to obtain an M.S. degree. "Almost every student does a research project," Noodén says. "Most are authors on publications. They also support themselves by teaching, which helps them to gain possible career experience."

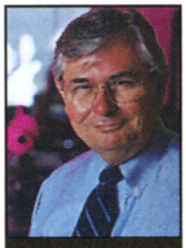
The program provides its students with a variety of career options. "People with Master's degrees can do a wide range of things," says Noodén. "My experience as an adviser with them is that the only limitation is their own imagination and their desire to tackle it."

What about specific job options? "Cell and molecular biologists often go into industry when they graduate," says Noodén. "The more field oriented students can go into careers ranging from interpretative services (naturalists) to teaching at the high school and community college level." Indeed, he continues, "To teach in community colleges you really have to have a Master's level degree."

Stopping one's training at the Master's level does not preclude later resumption of education. That applies particularly to life scientists interested in higher level laboratory management. "For day to day lab management such as glassware and supplies, an M.S. would be sufficient," says Noodén. "My impression is that students who want to go into management have to get that Ph.D. You need it if you're going to oversee research. You can often get it with an employer's backing."

Noodén and his departmental colleagues take several factors into consideration when they select students for their Master's courses. "We use grade point averages, graduate record exam scores, and recommendations as our primary sources," he says. "Intangible factors appear in the recommendations." What intangibles? "There is one other factor that we consider very important: students' motivation and interest," he says. "It appears in their statements and recommendations. Master's candidates often bring something special into the department."

Noodén's advice for undergraduates interested in pursuing courses similar to his department's: "Make sure that you obtain a strong academic background. That means analytical skills as well as basic knowledge. Those skills are highly transferable to other disciplines and jobs. The students can then develop those skills in a Master's program, making them more comfortable to be diving into challenging problems."


THOMAS HARRIS

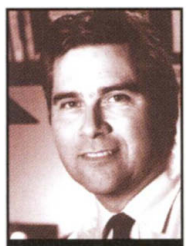
NASHVILLE, Tennessee: In 1999, Vanderbilt University became the host of the first Engineering Research Center supported by the National Science Foundation dedicated to biomedical engineering education. In collaboration with their peers at Harvard University, the Massachusetts Institute of Technology, Northwestern University, and the University of Texas, the Vanderbilt faculty aim to develop educational methods to prepare for the future of bioengineering.

Vanderbilt's biomedical engineering department itself offers courses at the Bachelor's, Master's, and Doctorate levels. It gives students the opportunity to carry out research. "All undergraduates have the option to earn credit for research experiences," says Thomas Harris, professor of biomedical engineering, medicine, and chemical engineering and chair of the biomedical engineering department. "Paid programs are available for the summer. All Bachelor's students must take a one-year course in design that requires a project. All Master's students must complete a research thesis. In addition we have a large program of industrial and related internships for students focused on the summer after their junior year."

The undergraduate curriculum aims to prepare students for graduate school, including medical school, and careers in biomedical engineering and related health fields. The Master's program, meanwhile, readies students to carry out research and advanced practice in the field. "Biomedical engineers with Master of Engineering and Bachelor of Engineering degrees have good opportunities in the medical device industries, pharmaceutical firms, biotechnology, hospitals, and medical technology management companies," says Harris.

Once embarked on their careers, graduates at the M.E. and B.E. level have opportunities to move into management. "Laboratory management may require a Ph.D.," says Harris. "However, the general biomedical device industry would offer significant opportunities for advancement for Bachelor's and Master's graduates."

Overall, Harris sees strong prospects for graduates in the field. "Major in biomedical engineering," he advises. "That's where the action is, especially for B.S. and M.S. students."


DEMETRIUS ALBANES

BETHESDA, Maryland: The National Cancer Institute's Division of Cancer Epidemiology and Genetics seeks candidates with B.S. and M.S. degrees for both educational programs and support positions. "In addition to examining characteristics and exposures that may alter the risk for a cancer, epidemiologists also evaluate genetic makeup and expression and increasingly incorporate biochemical and molecular processes into research studies," says Demetrius Albanes, dean of the division's Office of Education. "Recruitment and training programs must change to identify the best candidates and train them for the changing demands of molecular epidemiology."

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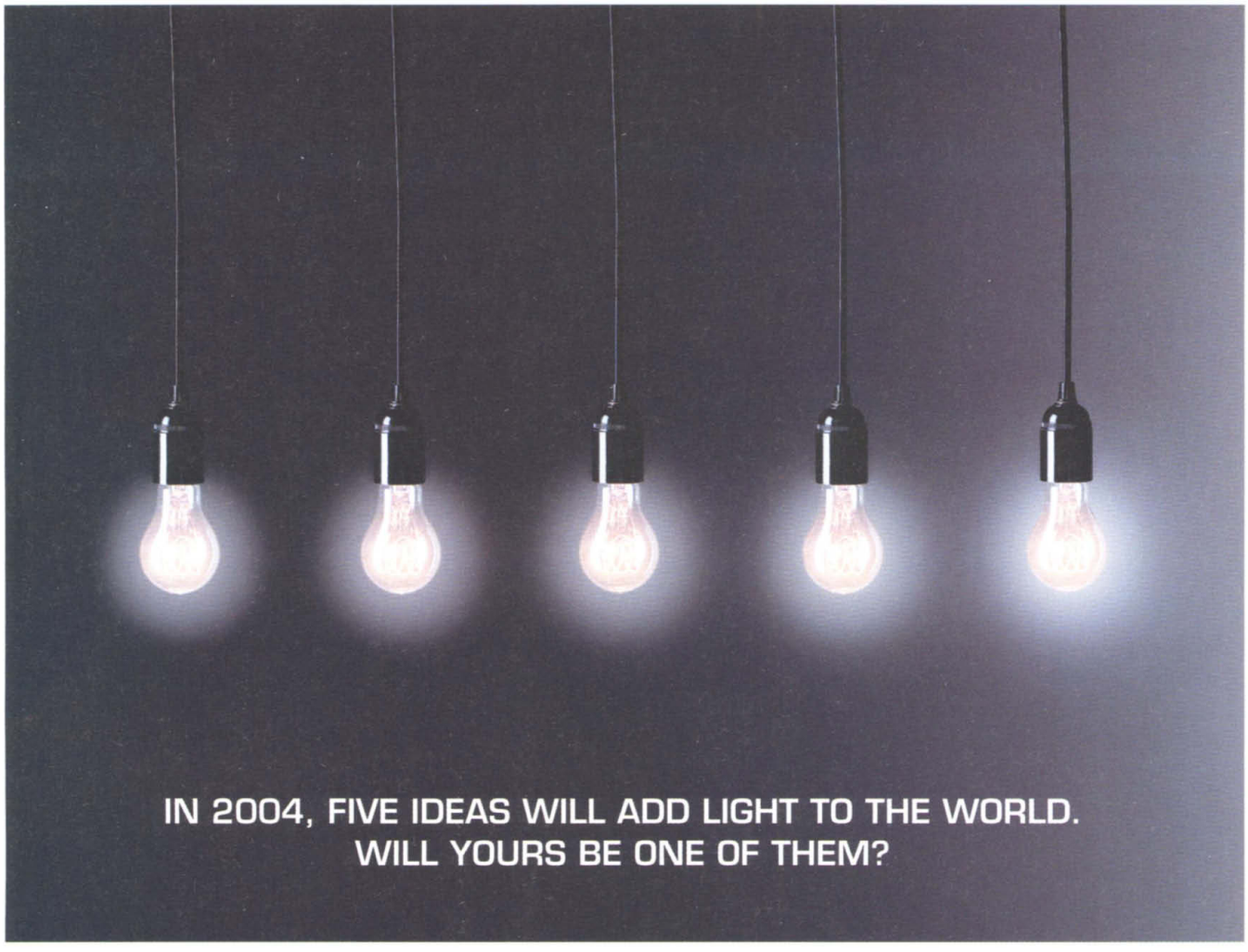

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Careers and Graduate Programs for B.S. and M.S. Scientists

Opportunities KNOCK

ELLIOTT GRUSKIN

HAWTHORNE, New York: "There are often times when you look for specialists, but it depends on the level at which you're hiring," says Elliott Gruskin, vice president of R&D for privately held biotechnology firm Acorda Therapeutics. "For applicants right out of university, I look for good, strong general capabilities. I've had very good hires of graduates with degrees in biotechnology. They have a good general knowledge and understanding and a more advanced appreciation of the technology aspect and the application of science for industry."

Acorda, which develops therapeutic products for spinal cord injuries and other disorders of the central nervous system, takes a nonhierarchical approach to employment. "We have a flat organization in which the B.S. and M.S. scientists work side by side with Ph.D.s. That increases the productivity of both groups," says Gruskin. "My strategy is to have as many of the new hires as possible spend as much of their time as possible being productive in the laboratory. I try to minimize hierarchical situations and have a team environment."

This gives opportunities to B.S. and M.S. scientists that they may not have in larger companies. "We work hard to define our expectations for each level," Gruskin points out. "If we have an associate scientist performing at the same level as Ph.D. scientists, the associate will move up. It's all about performance, tangible contributions, and being able to collate information – making connections between the scientific literature, technology, the business environment, and the clinical landscape. If you can make all those connections, you should move up in the organization."

The company willingly helps employees to do that. "The organization is committed to training staff," Gruskin adds. "A B.S. or M.S. recruit can come in and receive training in strategy."

When recruiting, Gruskin seeks applicants with research experience. "It's an important criterion," he says. "There's a big difference between didactic course work and actual hands-on experience. There's also a difference between real live research and the laboratory experiment in which everyone will get the same result."

Gruskin also expects applicants to possess communication and teamwork skills. "To work in a team environment you have to be a good communicator," he declares. "Beyond that, if your work is going to be folded into that of others, you have to be prepared to take criticism and react to it. You have to be reliable and have the capability to work effectively in a team. And since most of our projects are managed by project management teams, you have to be effective in project organization and negotiation. You might find yourself on several teams, each with its own priorities. You have to be effective in negotiating among teams about your own priorities."

What advice does Gruskin have for students starting their careers? "Give some thought about the type of environment you want to enter," he says. "It's very important to be interested in the science that's going on in the company."

As to candidates, "We'll accept Bachelor's and Master's level students for training purposes, particularly into the summer program," Albanes continues. "A Master's in public health is one key degree that qualifies, but other life science degrees are also OK. We'll also accept a Master's in statistics, for example." Training programs offered by the division include the 6- to 10-week summer fellowships that give graduates the opportunity to undertake mentored research, and occasionally projects for Bachelor's and post-Bachelor's level graduates that last up to a year or more.

"In addition," says Albanes, "we have a variety of support positions for Bachelor's or, more commonly, Master's degree holders. These include administrative and operational positions, as well as staff scientist positions in support of individuals or groups of investigators; in essence, research assistant positions."

When recruiting for training programs or staff positions, Albanes looks for research experience. "The broader and more extensive the experience students have had in addition to their course work, the more they appeal to us," he says. "Many candidates work in a research setting at their schools in summers. Even at the undergraduate level they can get teaching experience and research support experience. That kind of exposure at an academic research institution is good. So is an industry position – a summer internship or part-time work as a research assistant or in a support role. Even working in a hospital as a support intern is useful. In all cases, students might have the opportunity to participate in publications. The most motivated might even do so as first authors. We want the most highly motivated, skilled, and smart candidates who have had good career advisement."

Albanes has the goal of stimulating enthusiasm. "We try to expose a certain number of Bachelor's and Master's level entrants to our research organization to get them excited about the field," he says. "We believe that the earlier we can train some of these bright, motivated, inquisitive individuals, the more they'll want to have an impact on cancer and will see that epidemiology can be stimulating and challenging."

CONTINUED »


JOHN HOWARD

COLLEGE STATION, Texas: When chief scientific officer John Howard recruits scientists for biotechnology company ProdiGene, he looks for evidence of laboratory experience. "It can be a Master's thesis based on research in the lab," he says. "A Bachelor's degree with undergraduate research also gives applicants an edge. A lot of people can do well in school and that's a prerequisite. But I need to know if they can really function in a lab."

Bachelor's and Master's level recruits at ProdiGene, a private firm that pioneers the use of transgenic plants to produce recombinant proteins for the pharmaceutical, animal health, and industrial protein markets, can expect to function that way for some time. "Starting off, it's pretty much the lab for the first three to five years, usually in research," says Howard. "That's where they get the best training." After that, several options open up. "People can go into production or process development, product management, or market research," Howard continues. "We also have possibilities in regulatory affairs and patents. Most of those people have Master's or Bachelor's degrees and have worked in the laboratory."

B.S. and M.S. scientists can also remain in research. "We don't discriminate by degree. We discriminate by knowledge," Howard explains. "Given the knowledge, they can work as scientists or senior scientists." Management also represents a possible career option, although generally outside the lab. "It's very unusual for someone with a Bachelor's or Master's degree to take on a senior management role in research," Howard says. "But in areas of production it's quite common for Bachelor's and Master's degree holders to be in management."

ProdiGene expects applicants to possess specific abilities beyond research credentials. "People skills are critical in biotechnology," Howard points out. "So are excellent communication skills and really good coordination or team skills. Teamwork is important when you're getting work out the door. Traditionally people and team skills have not been highly sought for Bachelor's degree holders coming out in research. Now those qualities are much more important to us."

The firm also looks for one other key factor. "We try to identify who has the ability to push and drive a product to market," Howard continues. "It doesn't take a whole company of these people, but you need them in the right places."

Howard believes that scientists should not take the attitude that their training has ended once they receive a B.S. or M.S. degree. "Their most common mistake is to think that they know what to do with the good training they have received," he says. "They should realize that their education has not ended. They are there to continue learning for the next few years."


BARBARA CARTER


ORN ALMARSSON


COLIN GARDNER


MEEGAN LEMOTT

WALTHAM, Massachusetts: Founded in late 1999, TransForm Pharmaceuticals has developed high throughput automated platform technologies that enable the pharmaceutical industry to optimize drug form and formulation and to increase the clinical and commercial value of their pharmaceutical products. "We have 70 people now," says Barbara Carter, TransForm's vice president for human resources and public relations. "We're hiring chemists, along with other disciplines, to do novel science and to think of new ways to apply our technology."

These chemists need more than fundamental academic skills. "Our work is really a cross between engineering and chemistry," says Orn Almarsson, director of solid state chemistry. "People have to have an appreciation of other disciplines." These disciplines include materials science, mechanical, electrical, and chemical engineering, biology, and cheminformatics. "The cross-functional scientific perspective is very important," says Carter.

New recruits overwhelmingly start out at the bench. "Everyone does the work in the lab," says chief scientific officer Colin Gardner. "The more hands-on experience you obtain, the better you become at understanding the fundamentals. Our Ph.D.s spend more of their time in planning but non-Ph.D. scientists also play an important role. We expect everybody to have an impact in the organization – to be as creative and entrepreneurial as everyone else." Indeed, adds Carter, "We try to reduce the hierarchy between Ph.D.s and M.S./B.S. scientists."

Eventually, executives expect that new opportunities will open up for scientists with Bachelor's and Master's degrees. "Some might want to stay as scientists. Some will move into management. And some will go into business areas as we grow," Gardner explains. The company already encourages its B.S. employees to advance their education. "We have a tuition assistance program that will cover them for Master's level programs," says Carter.

Meegan O'Brien LeMott, an engineer with an M.S. in chemical engineering practice from MIT who recently joined TransForm as an associate scientist, outlines the prospects for new employees. "There's a myriad of possibilities in front of me," she says. "Currently I split my time between working in the lab and planning assay development. The door is open for me to obtain more responsibility in either a technical or a managerial role."

Applicants to the company can expect to benefit from prior experience in industrial internships or academic research projects. "They are certainly a big plus," says Gardner. "You want people to be excited about new science and to have sought out experience as undergraduates."

The company also seeks collegiality and enthusiasm in recruits. "During the interview process we look for motivation and intellectual curiosity in their questions," Carter says. "References are also important. We rely heavily on the input we get from references. We are looking for the top performers who have excelled academically and have proven leadership skills."

BOULDER, Colorado: "We're hiring about 60 scientists this year, and 40 percent of them will have Bachelor's or Master's degrees," says Kevin Koch, president and chief science officer of Array BioPharma. As a developer of small-molecule drugs by integrating chemistry, biology, and informatics, the company specifically recruits biologists and chemists at the predoctoral level.

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- The Molecular and Cellular Biology Group is responsible for the design and expression of target and related proteins for screening, x-ray crystallography and mechanism of action studies. It is also responsible for the design and execution of cell-based/functional assays, mechanism of action studies, validation of targets, *ex vivo* experiments and identification of new target proteins. A broad understanding of recombinant expression systems is required and experience with genomic and proteomic programs is a plus. Familiarity with cell-based efficacy and toxicology will be expected. Expertise in Oncology and/or Inflammation is required and experience with 'reverse pharmacology' and animal studies is desired.

- The Drug Metabolism Group is responsible for the design and execution of *in vitro* and *in vivo* PK assays, metabolite profiling, and cytotoxicity screening. This multi-disciplinary group consists of analytical chemists, biochemists, and cell biologists. We seek an exceptional scientist with substantial experience in cell based and *in vivo* ADME, as well as a working knowledge of toxicology. By directing this group, s/he will play a critical role in lead optimization efforts and the selection of drugs for development, including designing and implementing pre-clinical development plans. Strong management skills, initiative, leadership and scientific excellence are a must.

- The Pharmacology Group is responsible for the design and execution of *in vivo* studies to test the efficacy of small molecules, as well as working with the Cell Biology Group on *ex vivo* biomarker studies and with the Drug Metabolism Group on ADME studies. By directing this group, s/he will play a critical role in target evaluation and lead optimization. In addition, this person will help manage the vivarium, as well as outsourcing. The therapeutic areas of interest to Array include Oncology, Inflammation and Metabolic diseases, and this person will be familiar with animal models in these areas. Strong management skills, initiative, leadership and scientific excellence are a must.

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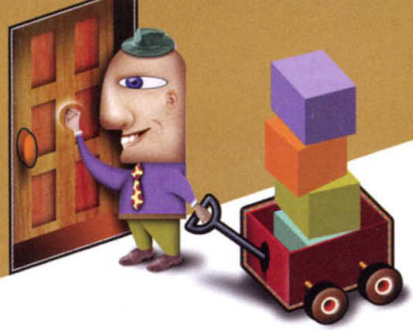

Careers and Graduate Programs for B.S. and M.S. Scientists

Opportunities KNOCK


KEVIN KOCH

"Among biologists, we want people with good molecular and cellular skills and experience in using those skills," says Jim Winkler, Array's director of biological sciences. "We also want people who have in vivo experience with animal models. Scientists who understand pharmacology through research at the undergraduate level are valuable." Adds Koch: "Chemistry is the same way. We typically look for somebody who has spent time in a chemistry lab doing research with a professor as an undergraduate or graduate student. That's generally a prerequisite for a job in our company."

Any achievements beyond that base help candidates for employment. "The more recruits bring to the table, the better their chances," says Winkler. "If they have had a summer job or a rotation with a pharma or a biopharmaceutical company, that makes them shine in our eyes. Networking is also important. We look for personal recommendations from people we respect."

Array expects those recommendations to include references to candidates' intangible qualities. "We look for the 'professional scientist' personality trait," Koch says. "They really enjoy the science, have the ability to learn new things, are well read, continue to educate themselves, show real enthusiasm, and have a lot of integrity in their science. Those characteristics create what we call a confident scientist – one willing to take risks and to collaborate with other scientists."


JIM WINKLER

The company looks for the traits when it interviews candidates. "We try to separate skill sets from personality traits, without which we don't hire people," says Winkler. "The first thing is to have the right personality. The second is: Where does the candidate fit in the organization?"

The fit depends on ability. "Many companies have a glass ceiling for B.S. and M.S. scientists," Koch says. "We encourage them move up to whatever levels their skill sets take them. They can manage certain areas and work in business development. B.S. and M.S. scientists have people reporting to them in virtually every scientific discipline."

How should a young scientist prepare for work in a company such as Array BioPharma? "Get experience during your academic career to let you rise above the rest. Take summer jobs and internships and network," advises Winkler. "You also need to build the confidence it takes to show that you have the right personality."


PAT AVERETT

FOSTER CITY, California: Applied Biosystems, a division of the Applera organization that supplies reagents and other products to the life science industry, typically hires scientists with Master's and Bachelor's degrees as research associates or junior scientists. "Because the market sector is changing, we're moving into high throughput genomics," says Sherry Olsan, director of genomics operations. "We're employing a lot of B.S. and M.S. scientists in this area. Biotechnology is a good major for this, but many other types of biology add to our mixture of experience."

Olsan's recruits mostly perform lab work. "They can do it at many different levels," she explains. "There is the production level at the bench and a higher level for protocol and process improvement. Scientists can also act as internal and external technical project managers who deal with clients." Beyond the lab, adds Pat Averett, Applied Biosystems' director of talent acquisition and development, "we have opportunities in product management, sales, support, and field applications work."

Individuals don't necessarily lock themselves into specific jobs. "We have flexibility for them to move back and forth between the lab and outside," says Averett. "Much depends on the relevance of their past experience. We are encouraging more cross-functionality of experience. In the future we will look at enabling people who have the interest to take internal and external courses that will help them develop in different areas."

Upgrading their education level helps employees to retain their flexibility. "B.S. scientists can take many different M.S. courses at night," Olsan says. "I encourage people to get interested in the financial area. And computers are critical. A majority of scientists transitioning out of the lab go into some sort of computational role that involves learning UNIX or some other computer language."

Lack of a Ph.D. is no barrier to advancement. "We have Bachelor's and Master's people manage, based on their ability to work through the process and to learn at different levels," says Olsan. "They can become team leaders and eventually lab managers."

Applied Biosystems' executives expect applicants to show strong communication abilities. "I typically hire based on some communication skills," Olsan says. "For production level work you have to be able to communicate effectively or the work doesn't get done." Once in the company, recruits will have the chance to hone those and other abilities. "This year," reports Averett, "we are launching development programs that will offer people the opportunity to develop their skills as team members, team leaders, and communicators."

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

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For more information and to apply online, search jobs at **www.whatdrivesyou.com.** Select search jobs, enter keyword information, select **RESEARCH & DEVELOPMENT** business division and click on submit. Or mail your resume, referencing job code PAD/SCJ/SRI, to: Schering-Plough c/o Resume Processing, P.O. Box 549248, Suite 187, Waltham, MA 02454-0248. *By responding to this ad, you may be considered for other potential opportunities throughout the Schering-Plough organization. If a potential match exists, you will be notified.* An equal opportunity employer.

Schering-Plough
Research Institute

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www.whatdrivesyou.com

Graduate Training in Infectious Diseases

The Infectious Diseases Training Program at the University of Virginia provides a rich interdisciplinary experience in infectious diseases research. Themes encompass the immunology, epidemiology and pathogenesis of infectious diseases. The centerpiece of our program is side-by-side education of predoctoral students, M.D. and Ph.D. postdoctoral fellows.

RESEARCH THEMES INCLUDE:

- Bacterial Infections
- Biodefense and Emerging Infections
- Epidemiology of Infectious Diseases
- Parasitology & Tropical Medicine
- Virology & HIV Medicine

Infectious Diseases Division
Department of Internal Medicine
UVA Health System
PO Box 801340
Charlottesville, VA 22908-1340
Phone: (434) 243-9552

UNIVERSITY of VIRGINIA HEALTH SYSTEM

http://www.med.virginia.edu/inf-diseases

Graduate Training in Immunology

The training program in Immunology at the University of Virginia reflects the diverse research interests our training faculty. These range from the basic cell and molecular biology of lymphocyte function to mechanisms of Autoimmune Diseases and Allergy. Our training program is designed to provide an outstanding educational environment for predoctoral students pursuing the Ph.D. degree and for M.D. and Ph.D. postdoctoral fellows.

RESEARCH THEMES INCLUDE:

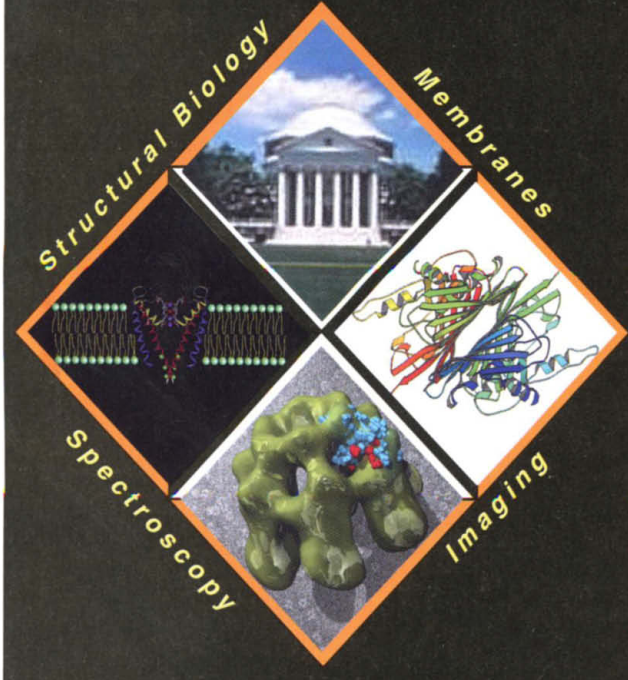
- Lymphocyte Development and Activation
- Immune Responses to Infectious Agents
- Cancer Immunology
- Autoimmune Diseases
- Allergy and Asthma
- Innate Immunity

Carter Immunology Center
UVA Health System
PO Box 801386
Charlottesville, VA 22908-1340
(434) 924-9233

http://www.med.virginia.edu/cic

Interdisciplinary Ph.D. Program

BIOPHYSICS
University of Virginia



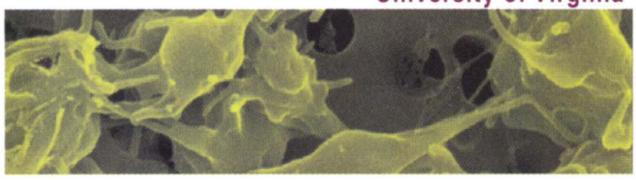
Biophysics Faculty at the University of Virginia

R. Bryant: Molecular dynamics and magnetic relaxation
J. Bushweller: Protein structure by NMR spectroscopy
D. Cafiso: Protein-membrane interactions; EPR spectroscopy
D. Castle: Mechanisms of protein sorting and secretion
C. Creutz: Basic mechanisms of exocytosis
Z. Derewenda: Protein structure by X-ray diffraction
E. Egelman: Structure of macromolecular assemblies
E. Fernandez: Interactions of pharmaceutical proteins
R. Ford: Bacterial migration and adhesion
W. Guilford: Molecular mechanics and laser traps
D. Hunt: Proteomics by mass spectrometry
M. Johnson: Computer modeling of biophysical processes
R. Kadner: Bacterial membrane transport
S. Khorasanizadeh: Protein structure by NMR spectroscopy
R. Kretsinger: Structure and evolution of proteins
H. Kutchai: Mechanism of the sarcoplasmic Ca2+-ATPase
J. Landers: Bioanalytical chemistry on microchips
W. Minor: X-ray diffraction methodology
R. Moorman: Regulation of ion channels
R. Nakamoto: Mechanism of the FOF1-ATP synthase
W. Pearson: Computational biology and bioinformatics
E. Perozo: Structure of ion channels by EPR spectroscopy
F. Rastinejad: X-ray crystallography of nuclear hormone receptors
Z. Shao: High-resolution imaging; scanning probe microscopy
AP. Somlyo: Compositional imaging in smooth muscle
AV. Somlyo: Signal transd. and myosin kinetics in smooth muscle
G. Szabo: Receptor-mediated regulation of ion channels
L. Tamm: Structure and interactions of membrane proteins
J. White: Mechanisms of cell adhesion and membrane fusion
M. Wiener: X-ray crystallography of integral membrane proteins

www.med.virginia.edu/biophysics

medgpo22@virginia.edu

University of Virginia



Biotechnology Training Program

connecting students
with some of world's most
innovative biotech companies

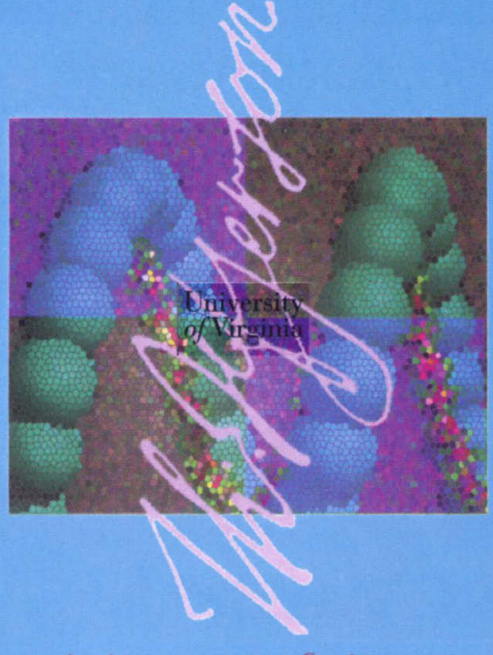
benefits for our students include

- mentoring from an interdisciplinary faculty team
- externships at innovative laboratories
- training is provided in a host of fields such as

biodetection
bioprocessing
contraceptive vaccines
drug purification
mass spectroscopy
drug clearance

for a complete overview of our program visit our website at
www.med.virginia.edu/biotech

Cell & Molecular Biology
Training Program



visit our website at
www.med.virginia.edu/cmb

If you've got the time

We've got the science!

Medical Scientist (MD/PhD)
Biochemistry & Molecular Genetics
Cancer Research
Developmental Biology
Cell & Molecular Biology
Biotechnology
Biophysics
Infectious Diseases
Molecular Medicine
Cell Biology
Immunology
Microbiology
Neuroscience
Cardiovascular Research
Cellular & Molecular Pharmacology
Molecular Physiology & Biological Physics

Graduate Education — Interdisciplinary PhD's

UNIVERSITY of VIRGINIA
HEALTH SYSTEM

Graduate Education in the Biomedical Sciences
www.med.virginia.edu/ed-programs
medgpo29@virginia.edu

Training Tomorrow's Leaders in Biomedical Science

Consider these distinctive features of our program:
Integrated Curriculum—Basic science students complete molecular and cell biology, biochemistry, and interdisciplinary electives in the first year, leading to a choice of any of 8 basic science programs. With a student to faculty ratio of less than 1:1, students can choose from more than 400 faculty mentors.

Basic Science programs offer research training:

- Cell Biology—cell communication and signaling; cancer; stem cells and spinal cord regeneration; chronic pain; stroke; pregnancy, reproduction and endocrinology; Alzheimer's disease, vertigo and musculoskeletal problems in aging; space biology
- Cellular Physiology & Molecular Biophysics—structure and function of membrane proteins (channels, transporters and receptors); cellular and molecular basis of disease; neural repair; membrane trafficking
- Experimental Pathology—tropical and emerging infectious diseases and biodefense; environmental toxicology; disease mechanisms
- Human Biological Chemistry & Genetics—cell signaling; hormones and cancer; DNA repair and mutagenesis; oxidative stress and aging; apoptosis and wound healing; protein folding; structural biology; genomics; bioinformatics
- Microbiology & Immunology—cellular and molecular basis of bacterial, parasitic and viral pathogenesis; innate, adaptive and auto-immune processes; mucosal immunology; vaccines; biodefense research
- Neuroscience—interdisciplinary research in fields as diverse as pain; brain and spinal cord injury; stroke; aging; vestibular and auditory function; synaptic physiology and plasticity; epilepsy; substance abuse
- Pharmacology & Toxicology—anxiety; drug abuse; schizophrenia; learning and memory; skin, colon and breast cancer; cyclic AMP signaling; cholesterol metabolism; dioxin toxicity; active sites of drug metabolizing enzymes; cell cycle; drug design
- Preventive Medicine & Community Health—disease causation and prevention; environmental toxicology and clinical investigation; epidemiology and biostatistics

Other research training programs:

- Medical Humanities—bioethics; history of medicine; health law; literature and medicine; religion and medicine; humanism and the medical humanities; medicine in visual arts and theater; humanistic gerontology
- Nursing—prepares scholars and researchers who will further develop specialized clinical knowledge and professional leadership competencies in the field
- Sociomedical Sciences—epidemiology and health outcomes; sociomedical and behavioral sciences

"Since clinical samples are a necessity in my research, studying basic science next door to UTMB hospitals offers invaluable collaborative opportunities."

–Kendra Stisser, GSBS student

Special training opportunities:

- Biophysical, Structural and Computational Biology in conjunction with the Keck Center for Computational and Structural Biology
- Space Biomedicine—fueled by our proximity to NASA's Johnson Space Center
- Training grants in Environmental Toxicology, Mucosal Immunology, Drug Abuse, and Tropical and Emerging Diseases

About UTMB, the GSBS and Galveston:

The GSBS has 276 students from 20 countries and 26 states. The yearly stipend of $21,840 (with comprehensive health coverage) allows for a comfortable standard of living in historic Galveston (pop. 60,000). UTMB is within walking distance of Gulf Coast beaches, and Houston is only an hour away, with theatres, performing arts, restaurants, museums and professional sports.

Visit us at **www.gsbs.utmb.edu/science.** Or call us at (409) 772-2665. Our address is 301 University Blvd., Galveston, TX 77555-1050.

UTMB
Graduate School of Biomedical Sciences
The University of Texas Medical Branch

UCSF

Program in Quantitative Biology

A graduate training program in Quantitative Biology at the interface of biology and the physical sciences

Advances in genomics, proteomics, and structural and chemical biology are reshaping biomedical research. A fundamental challenge for the future is to integrate the vast amount of available information into coherent models of molecular, cellular, and organismal biology. In response to this challenge, UCSF has created the Program in Quantitative Biology (PQB).

PQB offers outstanding students trained in the physical, mathematical, chemical, engineering or computational sciences the opportunity to apply their talents and abilities to some of the most challenging research questions in biomedicine today:

- The functioning of networks of genes, regulatory molecules, neurons and cells
- The structure and mechanism of molecular machines
- Prediction and analysis of protein and RNA folding
- Mechanisms of ligand binding and conformational change

Students wishing to enter the Program in Quantitative Biology will apply to one of its constituent Ph.D. programs — Graduate Group in Biophysics, Biological and Medical Informatics, Chemistry and Chemical Biology, and Neuroscience — choosing the PQB option. Participating programs offer their own core curriculum plus a PQB-specific pathway geared for those choosing the quantitative focus. A number of Burroughs Wellcome Fellowships are awarded to PQB students each year. These provide full funding of stipend and fees, as well as a supply and travel allowance.

CONTACT THE PQB
Julie Ransom, *Program Administrator*
Program in Quantitative Biology
University of California at San Francisco
San Francisco, CA 94143-0448

www.pqb.ucsf.edu

ransom@cgl.ucsf.edu

A Burroughs Wellcome Interfaces of Science Program

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www.lsc.psu.edu

PENNSTATE

Life Sciences Consortium

INTEGRATIVE BIOSCIENCES GRADUATE PROGRAM

The Pennsylvania State University's Life Sciences Consortium (LSC) is pleased to offer an interdisciplinary graduate program in Integrative Biosciences. This program spans the Colleges of Agricultural Sciences, Engineering, Health and Human Development, Liberal Arts, the Eberly College of Science on the University Park campus and the College of Medicine in Hershey. The goal of this program is to foster collaborative, innovative research in the life sciences and to provide unique training experiences for graduate students.

Options include:

- Biomolecular Transport Dynamics
- Cell and Developmental Biology
- Cellular and Molecular Mechanisms of Toxicity
- Chemical Biology
- Ecological and Molecular Plant Physiology
- Immunobiology
- Molecular Medicine
- Neuroscience
- Nutrition Sciences

40 Fellowships are available to candidates with outstanding credentials. Information and applications can be obtained from the LSC web site: www.lsc.psu.edu/GradEd/home.html or from Janice Kennedy, 519 Wartik Laboratory, The Pennsylvania State University, University Park, PA 16802. E-mail address: lscgradadm@mail.biotec.psu.edu and phone: (814) 865-3155.

Penn State is an Affirmative Action/Equal Opportunity Employer. Women and minorities are encouraged to apply.

Graduate Programs At Finch University of Health Sciences/ The Chicago Medical School

The University comprises three schools: The Chicago Medical School, the School of Related Health Sciences, and the School of Graduate and Postdoctoral Studies (SGPDS). SGPDS was established in 1968 and offers programs leading to the Ph.D. degree in Biochemistry and Molecular Biology, Cell Biology and Anatomy, Cellular and Molecular Pharmacology, Medical Radiation Physics, Microbiology and Immunology, Neuroscience, Pathology, Physiology and Biophysics, and Psychology. Students may also be admitted into either the Interdepartmental Neuroscience Ph.D. program or the Molecular Cell Sciences Ph.D. program, which allow them to choose a thesis advisor from approximately 30 active research scientists in the disciplines of biochemistry, cell biology, molecular biology, neuroscience, pharmacology and physiology. In addition, together with the Chicago Medical School, combined M.S./M.D. and M.D./Ph.D. programs are also offered in most subject areas.

The objective of our graduate programs is to prepare Ph.D. and M.D./Ph.D. students for careers in research and teaching. The course of studies is guided by an integration of molecular, cellular, systems, and clinical perspectives. Our faculty is committed to maintaining high quality graduate programs in which every effort is made to maximize the potential of each student. A significant number of our recent graduates received extramural fellowships from NIH or DOD, and are presently in postdoctoral fellowships or residencies at top universities.

Stipends are competitive ($17,000 for 2002-2003). The campus is located close to Lake Michigan in the suburban North Shore region of Chicago. There is ready access to the cultural and scientific resources of Chicago and the recreational opportunities in northern Illinois and nearby Wisconsin.

Please consult our website for information on specific programs **(www.finchcms.edu)**.

Graduate Programs in

Science & Engineering

THE OHIO STATE UNIVERSITY

College of Biological Sciences
www.biosci.ohio-state.edu
Entomology
Evolution, Ecology, and Organismal Biology
Microbiology
Molecular Genetics
Plant Biology

College of Dentistry
www.dent.ohio-state.edu
Oral Biology

College of Engineering
www.eng.ohio-state.edu
Aeronautical and Astronautical Engineering
Architecture
Chemical Engineering
City and Regional Planning
Civil Engineering
Computer and Information Science
Electrical Engineering
Engineering Mechanics
Food, Agricultural, and Biological Engineering
Geodetic Science and Surveying
Industrial and Systems Engineering
Landscape Architecture
Materials Science and Engineering
Mechanical Engineering
Nuclear Engineering
Welding Engineering

College of Food, Agricultural, and Environmental Sciences
cfaes.ohio-state.edu
Agricultural, Environmental, and Development Economics
Animal Sciences
Food, Agriculture, and Biological Engineering
Food Science and Nutrition
Horticulture and Crop Sciences
Human and Community Resource Development
Natural Resources
Plant Pathology
Soil Science

College of Human Ecology
www.hec.ohio-state.edu
Consumer and Textile Sciences
Human Development and Family Science
Human Nutrition and Food Management

College Of Mathematical and Physical Sciences
www.mps.ohio-state.edu
Astronomy
Biostatistics
Chemistry
Geological Sciences
Mathematics
Physics
Statistics

College Of Medicine and Public Health
http://medicine.osu.edu
Allied Medical Professions
Anatomy
Health Services Management and Policy
Integrated Biomedical Science Program
Medical Scientist Program
Public Health

College of Pharmaceutical Sciences
www.pharmacy.ohio-state.edu
Pharmacy

College of Veterinary Medicine
www.vet.ohio-state.edu
Veterinary Biosciences
Veterinary Clinical Sciences
Veterinary Preventive Medicine

Interdisciplinary Programs
www.gradsch.ohio-state.edu
Biomedical Engineering
Biophysics
Chemical Physics
Environmental Science
Integrated Biomedical Science Program
Molecular, Cellular, and Developmental Biology
Neuroscience
Ohio State Biochemistry Program
OSU Interdisciplinary Ph.D. Program in Nutrition

For further information contact:
The Ohio State University, Graduate School
247 University Hall, 230 North Oval Mall
Columbus, OH 43210-1366
(614) 292-6031 www.gradsch.ohio-state.edu

GRADUATE PROGRAMS

Cornell/Rockefeller/Sloan-Kettering
Interdisciplinary Graduate Training in Chemical Biology

The Training Program in Chemical Biology (TPCB) is a joint undertaking between Cornell University - both the Ithaca campus and the Weill Medical College in New York City (NYC) - and The Rockefeller University and the Sloan-Kettering Institute in NYC. The TPCB is part of a larger Tri-Institutional Program in Chemical Biology, which draws on the unparalleled resources that are available to the three institutions to create a unique research and educational environment. The Tri-Institutional Program fosters groundbreaking achievements in biomedical science by providing access to the most advanced state-of-the-art technologies and opportunities for the discovery that few institutions can provide by themselves.

The TPCB is available to a limited number of outstanding students who enter the program through admission into the graduate program in Chemistry and Chemical Biology at Cornell on the Ithaca campus. It is designed for students who wish to work at the interface between chemistry and biology. The faculty of all the participating institutions provides instruction. TPCB students take courses in chemistry and chemical biology while in Ithaca, and courses in the biological sciences while in NYC. TPCB students may pursue their thesis research either in Ithaca and/or in NYC under the guidance of the participating faculty listed below.

Olaf Andersen
Barbara Baird
Tadhg Begley
Jochen Buck
Rick Cerione
Brian T. Chait
Jon Clardy
Brian Crane
Sam Danishefsky
Seth Darst
Steve Ealick
David Eliezer
Bruce Ganem
Jonathan Goldberg
Lorraine Gudas
Tarun Kapoor
Stanislas Leibler
Christopher Lima
Min Lu
Roderick MacKinnon
Fred Maxfield
Tim McGraw
Tyler McQuade
Gero Miesenbock
Tom W. Muir
Diana Murray
Dimitar Nikolov
Dinshaw Patel
Nikola Pavletich
Luis Quadri
Neal Rosen
Benoit Roux
Tim Ryan
Thomas P. Sakmar
Andrej Sali
Stewart Shuman
Erec Stebbins
Derek Tan
Paul Tempst
Milton Werner
Hao Wu

Students accepted into the TPCB are fully funded for the duration of their graduate training.
For more information, please go to: **www.med.cornell.edu/tpcb**
To request application materials, please send a message to **tpcb@med.cornell.edu** or **chemgrad@cornell.edu**
Application Deadline: **January 10, 2003**

GRADUATE PROGRAMS

Graduate Studies in Chemistry in a multidisciplinary program:

"Pharmaceutical and Chemical Sciences"

Degree Programs:

- **Ph.D.** 4-year program; preparation for research in academic, governmental and industrial teams.
- **M.S. with thesis**. 2 year program; prepare for doctoral-level training or jobs in industry.
- **M.S. without thesis**. 16-month program provides training for careers in industry.

- Work with chemistry faculty in organic, medicinal, physical, analytical, bioinorganic, and biochemistry as well as with faculty in our School of Pharmacy.

Teaching Assistantships Available with Tuition Waivers

University of the Pacific
Department of Chemistry
3601 Pacific Avenue
Stockton, CA 95211
(209) 946-2271

e-mail: jpaine@uop.edu
http://chemistry.cop.uop.edu

Graduate Research Assistantships (Ph.D.)
Department of Entomology
Texas A&M University
College Station, TX

The Department of Entomology at Texas A&M University has Graduate Assistantships available for outstanding students beginning fall semester 2003. With faculty throughout Texas, and many with international programs, most areas of entomological study are well supported. Awards will be based on merit and include up to four years of support.

Assistantships include an $18,000 per year stipend, paid tuition, and individual medical insurance. Individuals who submit their complete applications by February 1, 2003 are eligible for Fall 2003 awards.

For further information see:
http://insects.tamu.edu/academic/gradprogram.html
and contact:
Dr. James B. Woolley
voice: 1-800-368-6662
email: JimWoolley@tamu.edu

MIAMI CHILDREN'S HOSPITAL®
We're here for the children

DIRECTOR OF RESEARCH

Miami Children's Hospital is seeking a Director of Research to oversee our 30,000 sq. ft., state of the art free standing Research Facility.

The Research Director will plan, organize, staff, and directly coordinate a budget for the hospital's research support services within the authority delegated by the Chief of Staff/Senior Vice President for Medical Affairs. Serve as a member and staff the Institutional Review Board (IRB) and the Institutional Animal Care and Use Committee (IACUC). This individual will develop a Clinical Trials Office (CTO) to promote and foster clinical trials at Miami Children's Hospital.

Applicants must be M.D. and/or Ph.D. (or comparable doctoral degree) in a scientific/biomedical field that is relevant to the scope of research programs at Miami Children's Hospital. Post-doctoral training in a relevant field is desirable. At least 4 years of experience, either at a granting agency (e.g., NIH) or as a grant awardee, obtaining extramural research funding.

For more detailed information on this position please contact, **Human Resources, at (305) 662-8295** or e-mail your resume to **resume@mch.com** AA/EOE

Life Sciences at Missouri

Outstanding Training for Careers in Science

* See information below.

Interdisciplinary collaboration is the cornerstone of life sciences research at the University of Missouri-Columbia (MU). Our research credentials are outstanding: MU is one of only 34 public universities selected for membership in the Association of American Universities and is also classified as Doctoral/Research Intensive by the Carnegie Foundation. Your doctoral training at MU will include coursework at the frontier of science taught by leaders in the field, who also serve as mentors for doctoral research.

Research facilities at MU support centralized services for protein purification and sequencing, peptide synthesis and recombinant protein expression; automated DNA sequencing and DNA microarraying; monoclonal antibody production and cell sorting; transgenic mice and rats; transgenic plants; confocal and deconvolution microscopy and image processing; scanning and transmission electron microscopy, X-ray crystallography and NMR spectroscopy. The campus is also home to the nation's largest university research reactor. **And** — a 200,000 square foot, $60 million Life Sciences Center, designed for state-of-the-art interdisciplinary research, is currently under construction.

"The department I chose at MU has a prestigious reputation and I believe that is due to the PROFESSIONALISM of our faculty and student researchers."

Nathan Hancock
Doctoral Fellow in Biochemistry

Commitment to Student Success

Biological sciences graduate student Jeamelia Davis says it best: "I chose MU because the faculty-student interactions seem so relaxed. The faculty members seemed really interested in keeping me in the degree program, not just accepting me. It is important to attend a university that has its students' best interests at heart."

A Great Place to Live . . .

MU is located in the center of the I-70 corridor through Missouri — just 2 hours from Kansas City or St. Louis. Columbia is a vibrant, well-educated community of diverse cultures and is consistently ranked as one of the nation's most livable cities. Missouri is a beautiful state, with recreational opportunities including the sophistication of big cities, the charm of small towns, and outdoor favorites — hiking and biking trails, lush forests, and the clear waters of the Ozark National Scenic Riverways.

* Ribbon drawing of human N-TIMP-1 (PDB code 1d2b) inhibitor of angiogenesis and inhibitor of tumor growth. *Courtesy of Steven Van Doren, MU Dept. of Biochemistry. Published in the Journal of Molecular Biology. January 14, 2000, Vol. 295:257-268.*

"I chose to attend graduate school at MU because of the INTERDISCIPLINARY APPROACH TO RESEARCH and the COOPERATIVE ATMOSPHERE . . . "

Latisha Love-Gregory, PhD
Dr. Love-Gregory received a PhD in Genetics from MU and is now a postdoctoral fellow in the Dept. of Endocrinology, Metabolism and Diabetes at Washington University, St. Louis, MO.

Doctoral and Postdoctoral Fellowships and Degree Programs

Doctoral degrees are offered in 28 life science-related departments at MU. A variety of fellowships are available which include a competitive stipend, tuition waiver and health insurance. Graduate students in life science departments may also be eligible to participate in interdisciplinary NIH Training Grants. Post-doctoral fellowships are available in many departments and programs, as well.

A sampling of fellowship-granting life science programs can be found below. For information about other departments and general campus information, visit the MU website at **http://www.missouri.edu**. (Life science departments can also be found at **http://www.biotech.missouri.edu/lsfellows**.) The MU Minorities in Science website is a great resource as well, and is located at **http://www.biotech.missouri.edu/mbp/minority**.

Biochemistry
Web: http://www.biochem.missouri.edu • **Phone toll free:** (800) 647-2414

Biological Sciences
Web: http://www.biology.missouri.edu • **Phone toll free:** (800) 553-5698

Biomedical and Health Informatics Research Training Fellowships
Web: http://www.hmi.missouri.edu/academic_programs/mirt • **Phone:** (573) 882-1849

Center for Gender Physiology
Web: http://www.missouri.edu/~physiwww • **Phone:** (573) 882-4957

Conservation Biology
Web: http://www.conserv.missouri.edu • **Phone toll free:** (800) 553-5698

Genetics Area Program
Web: http://www.biotech.missouri.edu/genetics • **Phone toll free:** (877) Gene-PhD (436-3743)

Interdisciplinary Neuroscience Program
Web: http://www.neurosci.missouri.edu • **Phone toll free:** (800) 553-5698

Interdisciplinary Plant Group
Web: http://www.plantgroup.org • **Phone:** (573) 882-4847

Life Sciences Fellowships
Web: http://www.biotech.missouri.edu/lsfellows • **Phone toll free:** (877) 436-3743

Molecular Biology Program NIH Training Grant
Web: http://www.biotech.missouri.edu/mbp • **Phone toll free:** (877) 436-3743

Molecular Microbiology & Immunology
Web: http://www.missouri.edu/~mmiwww • **Phone:** (573) 882-8152

NIH Minority Biomedical Researchers Training Initiative
Web: http://web.missouri.edu/~gradschl/financial/mbrti/mbrti.htm • **Phone:** (573) 882-4397

Pathology and Anatomical Sciences
Web: http://www.muhealth.org/~pathology • **Phone:** (573) 882-1201

Physiology
Web: http://www.missouri.edu/~physiwww • **Phone:** (573) 882-4957

Plant Sciences (Agronomy, Entomology, Horticulture, Plant Microbiology & Pathology)
Web: http://www.psu.missouri.edu • **Phone:** (573) 882-3001

Veterinary Pathobiology
Web: http://www.cvm.missouri.edu/vpbio/index.html • **Phone:** (573) 882-5034

an equal opportunity/ADA institution

To request ADA accommodations, call (573) 882-2816 or send e-mail to mbp@missouri.edu.

Graduate Studies

Department of Biomedical Sciences
School of Public Health
State University of New York at Albany

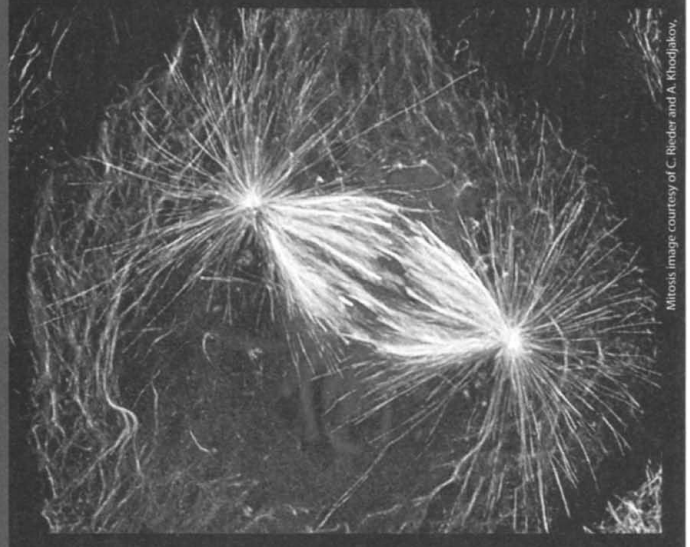
Wadsworth Center,
New York State Department of Health

Students can select a program of study for the Ph.D. or the M.S. degree from the following areas of research:

IMMUNOLOGY & INFECTIOUS DISEASES
MOLECULAR GENETICS
NEUROSCIENCE
STRUCTURAL AND CELL BIOLOGY

The Department of Biomedical Sciences offers gradute-level training in basic sciences including molecular, cellular, structural and computational biology. The department is located at the Wadsworth Center, a state-of-the-art comprehensive research institution that also serves as the public health laboratories of the New York State Department of Health. Our faculty has a unique diversity of research interests and actively encourages cross-disciplinary approaches to research problems.

We are seeking outstanding students with backgrounds in the biological, chemical, or physical sciences. Ph.D. Graduate student stipends range from $18,000 to $21,000 with full tuition waiver.



Mitosis image courtesy of C. Rieder and A. Khodjakov.

For further information:
- visit us on-line at **www.wadsworth.org/BMS/**
- send an email to **bmsdept@wadsworth.org**
- call us at **518-473-7553**

GRADUATE STUDIES

The Department of Environmental Health and Toxicology
School of Public Health
University at Albany, State University of New York
and
the Wadsworth Center, New York State Department of Health
Albany, NY

invite applications for Ph.D. and M.S. graduate studies from undergraduates with backgrounds in the chemical, biological, and physical sciences, to start in September 2003, with an application deadline of **February 1, 2003**.

Students can select a program of study for the Ph.D. degree from the areas of:
- **TOXICOLOGY**
- **ENVIRONMENTAL CHEMISTRY**
- **ENVIRONMENTAL AND OCCUPATIONAL HEALTH**

and will receive stipends ranging from $18,000 to $21,000 per annum, with full tuition waiver.

M.S. students can select from among the following sub specialties: • Pharmo/Toxicogenomics • Xenobiotic and Drug Metabolism • Environmental Chemistry • Biomonitoring • Environmental Health and Environmental Epidemiology.

The Department's faculty is situated in the Wadsworth Center and the Center for Environmental Health, part of the New York State Department of Health.

The Wadsworth Center's unique mission as both a public health and basic research laboratory has given rise to a vibrant, diverse and inherently interdisciplinary institution with unique technological capabilities. Instrumentation for use in environmental toxicology and chemistry research includes high and low resolution mass spectrometers interfaced to gas and liquid chromatographs, electron microscopes and a 600 MHz NMR spectrometer, as well as molecular biology and biochemistry cores.

In the Center for Environmental Health, scientific, medical, engineering and public health expertise are applied to the identification, understanding, prevention and mitigation of environmental risks to human health.

For further information:
• Visit us online at: **www.wadsworth.org/eht** • e-mail: **ehtdept@wadsworth.org** • Telephone: **518 473-7553**

Graduate Program in Cell and Molecular Biology

We invite you to join the dynamic Cell and Molecular Biology Graduate Program at the University of Texas at Austin. The entire field of biological science is experiencing an unprecedented period of discovery, and UT Austin is at the forefront of these events. Ours is a uniquely broad and multidisciplinary graduate program that brings together faculty from more than ten different academic departments. We have approximately 145 graduate students enrolled as of Spring, 2002 and more than 90 faculty with whom individual students can pursue their doctoral research. Training encompasses a wide range of research interests that span many different subdisciplines within cellular and molecular biology, including biochemistry, biotechnology, cell biology, developmental biology, microbiology, molecular genetics, molecular evolution, plant biology, neurobiology, and structural biology. Upon graduation, a high proportion of our students accept postdoctoral positions in prestigious laboratories or positions in industry.

The philosophy of our program is to prepare students for a career in research, either combined with university teaching or as a full time investigator, and to provide ample financial support to our students for the duration of their graduate education. UT Cell and Molecular Biology graduate students are well funded and receive intensive training through a core curriculum, small seminar courses and access to a variety of seminar speakers. Each student may choose to conduct thesis research in the laboratory of any one of the participating faculty members.

The program's cornerstone, the Institute for Cellular and Molecular Biology, was established to expand and foster the development of molecular biology at The University of Texas at Austin. Over the past several years, the Institute has hired over 25 new faculty, in association with University academic departments. ICMB is centered in the new 150,000 square foot Molecular Biology Building. It supports state-of-the-art laboratories, staffed core facilities for nucleic acid sequencing and synthesis, peptide sequencing and synthesis, flow cytometry, electron, deconvolution and confocal microscopy, molecular modeling, graphics, computing and mouse genetic engineering.

The University of Texas is centrally located in Austin, which is nestled in the beautiful and rugged Texas hill country. Austin recently ranked second nationally in *Money* magazine's "Best Places to Live."

For more information, please visit our Web site:
www.esb.utexas.edu/molbio/
You may also write or call:

Postdoctoral opprotunites also exist.
inquiries for these positions should be
directed to individual faculty members or to:

Graduate Program in Cell and Molecular Biology
The University of Texas at Austin
Molecular Biology Building
Austin, Texas 78712
512-471-2150

Institute for Cellular and Molecular Biology
The University of Texas at Austin
Molecular Biology Building
2500 Speedway
Austin, Texas 78712

Institute for Drug Research
University of Toronto

Faculty Positions

As part of an expansion in research programs at the University of Toronto, the Faculties of Medicine and Pharmacy have founded the Institute for Drug Research (IDR). The IDR is a novel joint initiative that builds upon the existing strengths and interactions in research and educational programs among the drug-related sciences at the University. The missions of the IDR are: to be a preeminent international center for fundamental research and training in pharmacology and the pharmaceutical sciences; to facilitate research collaborations and communication among IDR members throughout the University of Toronto community; and to promote the more effective translation of novel research discoveries into improved therapeutics.

Faculty expansion of the IDR is now underway, and our goal is to recruit a total of 7 academic leaders into its tenure-stream and full tenured faculty ranks over the next 3-5 years. These individuals will complement the current research of 75 core and cross-appointed faculty supervising more than 150 graduate students within the Departments of Pharmacology and Pharmaceutical Sciences, and an even larger number of faculty in the broader University community with research interests related to the actions, development and uses of drugs.

The current search is for two outstanding individuals with the ability to develop original and competitively funded research programs, and to contribute significantly to undergraduate, graduate and professional education in pharmacology and pharmaceutical sciences. The two main IDR research themes are: (1) Drug Safety from Molecules to Markets (including molecular toxicology; drug disposition and metabolism; pharmacogenetics; adverse drug reactions; clinical pharmacology); and (2) Signal Transduction Pathways and New Target Development (including receptor pharmacology; second messenger pathways; drug target discovery and development technologies). We will also consider applications from individuals with potential or demonstrated excellence in research and training in all areas related to the actions and development of drugs. We welcome applications from individuals who are able to apply a range of integrated experimental approaches to the study of drug action, ranging from the basic to the clinical and outcomes-based sciences.

Appointments will be tenure-track or tenured at the Assistant, Associate or Full Professor level, and will reside within the Department of Pharmacology in the Faculty of Medicine, with cross-appointment to the Department of Pharmaceutical Sciences in the Faculty of Pharmacy and with staff membership in the IDR. Requirements include a Ph.D. degree or equivalent in a relevant research discipline, significant post-doctoral experience, and an established record of research achievement.

A letter of application together with a CV, a statement of current and future research interests and the names and addresses of three referees should be sent to: **Denis M. Grant, Ph.D., Director, Institute for Drug Research, Department of Pharmacology, University of Toronto, 1 King's College Circle, Toronto, Canada M5S 1A8. email: denis.grant@utoronto.ca**. The deadline for applications is September 30, 2002.

The University of Toronto is strongly committed to diversity within its community. The University especially welcomes applications from visible minority group members, women, Aboriginal persons, persons with disabilities, and others who may contribute to further diversification of ideas. All candidates are encouraged to apply; however, Canadians and permanent residents will be given priority.

University of SASKATCHEWAN

Canada Research Chair
Protein Crystallographer

The College of Pharmacy and Nutrition invites applications from outstanding individuals to be nominated for a Tier II Canada Research Chair in Biomolecular Design. The successful candidate will have extensive experience in x-ray crystallography of biological macromolecules and will be expected to participate in synchrotron-related research. The ideal candidate will have an interest in structure-based drug design with expertise in protein chemistry, crystallization and structure analysis.

The existence of new facilities, the Canadian Light Source (www.cls.usask.ca/), Canada's national synchrotron light facility, and the Saskatchewan Structural Sciences Centre (www.usask.ca/sssc/) will provide appointees with access to state-of-the-art equipment. The University of Saskatchewan has identified Biomolecular Structure as a priority area thus offering an excellent opportunity for possible collaborations with a university-wide group in biological structure and function.

The successful applicant will be expected to develop an independent research program, attract funding from national granting agencies and participate in graduate student education.

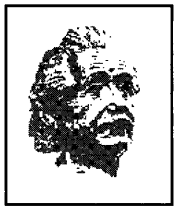
The successful applicant will have a faculty position in the College of Pharmacy and Nutrition (www.usask.ca/pharmacy-nutrition/) and appointment is conditional upon the award of a Canada Research Chair. Tier II candidates should be assistant or associate professors and be emerging researchers with the potential to achieve international recognition as a leader in 5-10 years. For more information on the Canada Research Chairs program, consult www.chairs.gc.ca. The College will begin considering applications on September 15, 2002 and will continue until a suitable nominee has been identified.

This position has been cleared for advertising at the two-tier level. Applications are invited from qualified individuals regardless of their immigration status in Canada. The University of Saskatchewan is committed to Employment Equity. Members of designated groups (women, Aboriginal people, people with disabilities, and visible minorities) are encouraged to self-identify on their applications.

Please send curriculum vitae, the names of three referees and a brief summary of a proposed research program to

Dr. Dennis Gorecki, Dean
College of Pharmacy and Nutrition
University of Saskatchewan
110 Science Place
Saskatoon SK S7N 5C9 Canada
Ph: (306) 966-6328
Fax: (306) 966-6377
E-mail: goreckid@duke.usask.ca

The University of Saskatchewan belongs to the people of Saskatchewan. As an academic community, our mission is to achieve excellence in the scholarly activities of teaching, discovering, preserving, and applying knowledge.



Students in the *Sue Golding Graduate Division* of the **Albert Einstein College of Medicine** study and carry out basic research in the biomedical sciences in a stimulating and collegial atmosphere. With approximately 200 full-time faculty members and state-of-the-art shared scientific facilities, Einstein provides world-class research opportunities for over 350 graduate students who acquire the knowledge and skills to obtain the Ph.D. and M.D./Ph.D. degrees and to become independent scientists holding academic, industrial and government positions worldwide. In addition to courses, first-year students do a series of laboratory rotations that afford the opportunity to work in different research areas and departments before deciding on a thesis project. All students receive a generous stipend ($23,000 for 2002), tuition remission, subsidized on-campus apartments, and health insurance.

At Einstein the student will find outstanding research and teaching at a residential campus in the north Bronx, with easy access to all parts of the New York metropolitan region.

For more information, please visit our webpage: **www.aecom.yu.edu/home/SGGD/** or e-mail **phd@aecom.yu.edu**.

ANNOUNCEMENTS

FULL-TIME TENURE-TRACK POSITIONS, FACULTY OF PHARMACEUTICAL SCIENCES, THE UNIVERSITY OF BRITISH COLUMBIA

The University of British Columbia, Faculty of Pharmaceutical Sciences, invites applications for the following full-time tenure-track positions. The successful candidates will contribute to teaching and training in the Pharmaceutical Sciences undergraduate and graduate programs, and will develop an active extramurally funded research program. Applicants must possess a Ph.D. degree and preferably a minimum of two years post-doctoral experience:

ASSISTANT PROFESSOR IN BIOMOLECULAR AND PHARMACEUTICAL CHEMISTRY

The applicants should have a strong interest in chemistry/biochemistry/genetics of drug action and should be employing chemical genetic or biochemical approaches to areas such as drug synthesis, xenobiotic metabolism, receptor characterization, drug transport or enzyme analysis. **The closing date for applications is Dec. 1, 2002; preferred start date is June 1, 2003.**

ASSISTANT/ASSOCIATE PROFESSOR OF PHARMACEUTICS & BIOPHARMACEUTICS

The applicants should have expertise in biomaterials and drug delivery, controlled/targeted drug release and/or drug transport phenomena, especially as this relates to biopharmaceutics at the cellular and/or whole organ level. **The closing date for applications is Oct. 31, 2002; preferred start date is January 1st, 2003.**

ASSISTANT PROFESSOR IN PHARMACOLOGY AND TOXICOLOGY

The applicants should have expertise in an area of pharmacology or toxicology that will complement our existing strengths in cardiovascular and neuropharmacology, drug metabolism and toxicology. An emphasis on molecular biological approaches would be preferred. **The closing date for applications is Dec. 1, 2002; preferred start date is June 1, 2003.**

The salaries for these positions are negotiable, commensurate with experience and subject to final budgetary approval. UBC hires on the basis of merit and is committed to employment equity. We encourage all qualified persons to apply, however Canadian citizens and permanent residents will be given priority. **For more information about these positions visit: www.ubcpharmacy.org.**

To apply, please send a letter of application with a brief description of overall research interests, curriculum vitae, copies of up to five publications, a statement of teaching interests/accomplishments, & names of four referees to: **Dr. Robert Sindelar, Dean, Faculty of Pharmaceutical Sciences, The University of British Columbia, 2146 East Mall, Vancouver, British Columbia, V6T 1Z3 Canada. Phone: (604) 822-2343. Fax: (604) 822-3035. Email: mlangton@interchange.ubc.ca**

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/)

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The U.S. Department of Agriculture (USDA), Center for Plant Health Science and Technology (CPHST) is accepting applications for the following full-time positions:

Plant Pathologist - National Plant Germplasm Quarantine Laboratory - Beltsville, MD: PhD level position providing expert leadership in the investigation and implementation of sophisticated state-of-the-art technology for the detection, identification, and differentiation of plant pathogens, specifically plant viruses that threaten U.S. agriculture. Applicants must have a Bachelor's degree from an accredited college or university in plant pathology or related scientific discipline that included at least 20 semester hours in basic botany or plant science and 10 semester hours in plant pathology. In addition, applicants must have one year of specialized experience in the range of duties outlined in the published announcement. Salary is commensurate with experience ($55,694 to $86,095). Applications in response to this position vacancy must be marked *Announcement #24-77-948 and postmarked by August 26, 2002.*

Ecologist - Pest Survey Detection and Exclusion Laboratory - Otis, MA: Responsibilities entail advising scientists on statistical and measurement issues related to survey research, experimental design and the creation of programmatic biometric and statistical management systems requiring sound, reliable data. This is an interdisciplinary position and a Bachelor's degree in Ecology, Entomology, Botany, Plant Pathology or Operations Research will meet basic requirements for qualification. Certain deviations from this requirement are acceptable and are outlined for each discipline in the published announcement. In addition to the educational requirement, applicants must have one year of specialized experience in the range of duties outlined in the published announcement (PhD substitutes for specialized experience). Salary is commensurate with experience ($45,285 to $70,555). Applications in response to this position vacancy must be marked *Announcement #24-77-940 and postmarked by August 26, 2002.*

A separate application is needed to each announcement number. US citizenship is required. Complete vacancy announcements containing more information on experience and competencies can be obtained at the website: **www.usajobs.opm.gov** or call **(919) 513-2918** to request a copy of the announcement. All applications must be mailed or faxed by due date to: **USDA, MRP, Minneapolis Business Site, Staffing, 100 North Sixth Street, Suite 510C, Minneapolis, MN 55403, or Fax: (612) 370-2209**. Do not use government postage paid envelopes. *USDA is an Equal Opportunity Employer.*

GRADUATE PROGRAMS

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Graduate Training Programs: Biochemistry and Molecular Genetics, Cell Biology and Molecular Physiology, Cellular and Molecular Pathology, Human Genetics, Immunology, Molecular Pharmacology, Molecular Toxicology, Molecular Virology and Microbiology, Neuroscience.
Funding: Fully funded program with annual stipend of $18,000, tuition remission and a $2,000 Educational Enrichment Account for new students.

Application Deadline: January 15, 2003

For more information, please contact:

Maria K. Dunn
524 Scaife Hall, 3550 Terrace St.
Pittsburgh, PA 15261
(412) 648-9003
mdunn@medschool.pitt.edu
www.gradbiomed.pitt.edu

Canadian Centre for Behavioural Neuroscience

Positions in Neuroscience

The **Canadian Centre for Behavioural Neuroscience** at The University of Lethbridge is seeking to fill two tenure stream faculty positions appointed to the Department of Psychology & Neuroscience. At least one position will be funded by a **Canada Research Chair** (http://www.chairs.gc.ca/english/About/factsheet/index.html), the **Alberta Heritage Foundation for Medical Research** (http://www.ahfmr.ab.ca), and/or the **Natural Science and Engineering Research Council of Canada** (http://www.nserc.ca/guide/sf/3g_e.htm). Both positions are at the Assistant or beginning Associate Professor level. The successful candidates will have outstanding records of research accomplishment, including proven records of collaboration, extramural grant support, and successful mentoring of students. We seek applicants from any area of neuroscience. Preference will be given to applicants with molecular neuroscience expertise for one position.

The Canadian Centre for Behavioural Neuroscience (http://ccbn.uleth.ca) is a recently constructed, state-of-the-art research facility, built to house nine principal investigators in neuroscience. The Centre currently houses seven PIs, five of whom hold research chairs or extramural personnel awards. The group has strengths in developmental neurobiology, visual neuroscience, neural plasticity, learning and memory, movement disorders; all at the systems-level.

Successful candidates will join a behavioural neuroscience group with an outstanding international reputation, excellent grant support, and a flourishing PhD progamme. Preference will be given to applicants whose research expertise would strengthen existing collaborative research activities. Neuroscientists have access, not only to international and national funding, but to Alberta's excellent provincial research funding sources. Consideration of applications and nominations will begin September 1, 2002 and will continue until the positions are filled. Send CV, research and teaching statements, and at least three letters of reference to:

Dr. Robert J. Sutherland
Director, Canadian Centre for Behavioural Neuroscience,
The University of Lethbridge, 4401 University Drive,
Lethbridge, AB, Canada, T1K 3M4
403-394-3979 (robert.sutherland@uleth.ca)

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Postdoctoral Fellowship in the laboratory of Dr. Israel F. Charo to study chemokines and their receptors. Projects focus on the role of chemokines in the immune response, host defenses, and immunological aspects of atherosclerosis, and will make extensive use of knockout and transgenic mice. Candidates should have experience with molecular biology and immunology. Job #C02-01S

Postdoctoral Fellowship in the laboratory of Dr. Fen-Biao Gao to study dendrite morphogenesis in development and neurological disorders, and participate in scientific activities at Gladstone and UCSF. Candidates should have a background in neuroscience, molecular biology or developmental biology. Job # N02-07S

Postdoctoral Fellowship in the laboratory of Dr. Robert Mahley to study the role of the apoE protein in Alzheimer's disease. Job #C02-04S

Postdoctoral Fellowship in the laboratory of Dr. Robert Pitas to study mechanisms by which the apoE isoforms exert differential effects on lipid metabolism and on the development of neurological and cardiovascular disease. Experience in cell culture and lipid analysis a plus but not essential. Job #C01-08S

Postdoctoral Fellowship in the laboratory of Dr. Eric Verdin to study the role of histone deacetylases in transcriptional regulation. Current work is focused on the HDAC3 complex, on the biology of class II HDACs, on the deacetylation of non-histone proteins and on the biology of human SIR2-like proteins. Candidates should have a background in molecular biology and/or protein biochemistry. Job #V02-09S

Postdoctoral Fellowship in the laboratory of Dr. Eric Verdin to study HIV transcriptional regulation. Current work is focused on the role of the chromatin environment at the site of integration on HIV transcription, the mechanism of Tat-induced chromatin remodeling and the acetylation-deacetylation of the HIV transactivator Tat. Candidates should possess a Ph.D., M.D. or both and have a strong background in molecular biology and/or protein biochemistry. Job #V02-10S

All positions require a Ph.D., M.D., or both. Please send cover letter indicating job number along with CV and references to:

The J. David Gladstone Institutes
John LeViathan - Postdoctoral Fellows Advisors
P.O. Box 419100
San Francisco, CA 94141

Apply online: http://gladstone.ucsf.edu/hr/
Email: postdoc@gladstone.ucsf.edu

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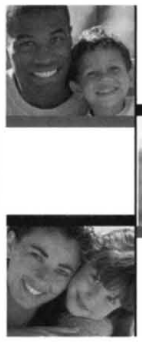

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- PhD in Neuroscience, Psychology, Pharmacology or Animal Behavior with up to two years experience in a behavioral pharmacology laboratory.
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- Experience with small animal surgery and transgenics/knockouts preferred.
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At Fort Dodge Animal Health, a Division of Wyeth, our work results in happier, healthier animals, including horses, dogs, cats and others. Developing and manufacturing the world's top pharmaceutical treatments for animals, we make them feel better, and enable them to live longer, more enjoyable lives. For those who truly care about animals, our organization is a great way to build a lasting sense of professional satisfaction. An exceptional opportunity is currently available in the Technology Transfer/Process Improvement Department at our ***Charles City, IA location.***

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CLINICAL PHARMACOLOGY

Sr. Clinical Pharmacologist

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Staff Investigator(s) & Sr. Staff Investigator

Bioanalytical Sciences
Investigator/Staff Investigator(s)

TOXICOLOGY

Principal Investigator

RESEARCH PHARMACOLOGY

Assistant/Associate Scientist, Immunohistochemist

Oncology
Investigator/Staff Investigator

Immunology
Sr. Staff Investigator

CELL BIOLOGY

Antibody Production & Characterization
Associate Scientist/Investigator

Oncology
Principal Investigator, Signal Transduction Specialist

ENZYMOLOGY & HTS

Investigator/Staff Investigator

PROTEIN EXPRESSION

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Full Professor of Aquatic Ecology

with focus on freshwater fish ecology. The position offers exceptional opportunities to develop, in collaboration with researchers from social sciences and humanities, integrative approaches to important issues in an inter- and transdisciplinary field.

The professor will be affiliated jointly at the University of Bern (Zoological Institute and Interdisciplinary Centre for General Ecology) and at EAWAG, Swiss Federal Institute for Environmental Science and Technology (where she/he will be head of the Fishery Sciences Department). EAWAG is a research institute specializing in basic and applied science with water as its central focus. It provides modern research facilities in Kastanienbaum, situated at the lakeshore near Lucerne. The University of Bern hosts a centre of competence in interdisciplinary ecology and environmental sciences, to which numerous research groups in all faculties contribute. The new professor will be a member of the Zoological Institute and the Interdisciplinary Centre of General Ecology.

We seek a person with the following profile:
- Excellent scientific record
- Experience and skills in academic teaching
- Ability and willingness to develop a strong academic profile at an international level while maintaining the fisheries expertise needed within Switzerland
- Ability to promote inter- and transdisciplinary research and to communicate research findings to a broad public

Submit letter of application, curriculum vitae, list of publications, copies of the 3 most important publications and an outline of past and future research (in English) **no later than September 15, 2002 to: Prof. Dr. Peter Gehr, chairman of the search committee, Institute of Anatomy, Bühlstrasse 26, P.O. Box, CH-3000 Bern 9, Switzerland; Tel. +41 31 631 46 20, Fax +41 31 631 38 07, e-mail: gehr@ana.unibe.ch.** For further information please contact the chairman of the search committee or visit the websites of the University of Bern (www.unibe.ch) and EAWAG (www.eawag.ch).

The University of Bern and the EAWAG particularly encourage women to apply for this position.

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Ron Conaway, Ph.D.
Molecular mechanism and regulation of gene transcription
Chunying Du, Ph.D.
Control of apoptosis in mammalian systems
Jennifer Gerton, Ph.D.
Mechanisms ensuring fidelity of chromosome distribution
Scott Hawley, Ph.D.
Control of meiotic chromosome behavior in Drosophila
Linheng Li, Ph.D.
Regulatory networks in hematopoietic stem cell development
Olivier Pourquié, Ph.D.
Regulation and timing of vertebrate segmentation
Paul Trainor, Ph.D.
Tissue interactions regulating cranial and facial development
Ting Xie, Ph.D.
Molecular regulation of germline stem cells in Drosophila and mouse
Arcady Mushegian, Ph.D.
Computational analysis of genes and proteins
Brian Sauer, Ph.D.
Biochemical genetics of the Cre/lox system; gene targeting in mice

More information may be found at:

www.stowers-institute.org

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- Health Specialists
- Veterinarians
- Immunologists
- Microbiologists
- Chemists
- Health Scientist Administrators
- Product Safety Experts
- Protocol Specialists
- Senior Research Assistants
- Scientific Review Administrators
- Research/Clinical Fellows
- Program Officers
- Clinical Trial Specialists
- Biologists
- Pharmacologists
- Nurse Specialists
- Regulatory Affairs Specialists (Vaccines/Drugs)
- Medical Technologists
- Biostatisticians

*Non-scientific support positions will also be available- access the Internet and simply type: careerhere.nih.gov

Permanent residents or aliens with employment visas from allied countries may be considered only if at the M.D. or Ph.D. level. Some positions may be tenure-track. Most other positions require U.S. Citizenship.

The NIH offers the comprehensive, Federal benefits package to include health insurance, life insurance, thrift savings plan (retirement), sick/annual leave, holidays, long-term disability insurance, and training programs.

All efforts are made to offer maximum competitive salaries, for certain occupations, and several recruitment and/or physician allowances are also available.

Variations of this advertisement will also be featured in several scientific journals in upcoming months. We invite you to explore current and future job openings, most of which will be located in the Bethesda, MD area. Several positions in Frederick, MD, and in Hamilton, MT, will also be available. Please contact us and/or submit your resume via one of the contact routes convenient for you:

NIH-National Institute of Allergy and Infectious Diseases (NIAID)
Fax resumes to: 301.493.0106
E-mail resumes to: BioT@niaid.nih.gov
Please reference: 'Science Magazine' on your resume

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SR. RESEARCH ASSOCIATES

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- **GPCR/Inflammation Pharmacology**
- ***In Vivo* Imaging • Drug Safety & Disposition**

SCIENTIST

- **Synthetic Organic Chemistry**
- **Receptor Pharmacology/Immunology**
- **Cancer Biology • Metabolic Disease/Mechanism of Action**
- **Metabolic/*In Vivo* Pharmacology**
- **Protein Mass Spectrometry • Drug Safety & Disposition**

To respond to any of our Cambridge opportunities, please email your resume, indicating Source Code PUB/SCI/JUL, to millennium@rpc.webhire.com.

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Through our recent merger with COR Therapeutics, our new Cardiovascular Diseases franchise focuses on the discovery, development and commercialization of novel cardiovascular therapeutics.

- **Senior Scientist/Group Leader, DMPK (Job Code: B076)**
- **Senior Research Associate, Analytical Development (Job Code: C012 & C042)**
- **Scientist I/II, Analytical Development (Job Code: C026)**
- **Associate Director, Validation Services (Job Code: C045)**
- **QC Manager (Job Code: C044)**
- **Sr. Research Associate, Vascular Biology (Job Code: C039)**
- **GMP/GLP Auditor Specialist QA III (Job Code: C030)**
- **Scientist, Cardiovascular Lead Discovery (Job Code: B030)**

To respond for these South San Francisco-based positions, please email your resume, indicating in the subject line the appropriate Job Code and Source Code: SCI2, to: hrmsf@mpi.com.

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Product Safety & Metabolism

Safety Evaluation Manager/Toxicologist

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The successful candidate will possess a Ph.D. in a toxicology-related field and have extensive experience in a toxicology department of a research organization or a pharmaceutical company.

Pharmacology

Research Associate (MC)

This position requires a working knowledge of neurophysiology and experience with extracellular and patch-clamp recording in sensory neurons. A BS or MS in biology with 1-3 years of experience in a laboratory setting is essential. Excellent written and oral communication skills and the ability to work independently in a team-oriented environment are necessary for this position.

Research Associates

We have several openings for Research Associates with *in vitro* and *in vivo* experience. Requirements for these positions are a BS or MS in biology or immunology with 1-4 years experience in industry.

Cell & Molecular Biology

Research Associate

This position requires experience with DNA/RNA/protein manipulation analysis and expression as well as cell culture expertise. A BS/MS degree and at least two years of research experience in molecular/cellular biology is desirable, and industrial experience is a plus.

Bioanalytical Sciences

Clinical Veterinarian

The successful candidate will posses a DVM/VMD with ACLAM certification or eligibility, excellent small animal surgical skills and strong interpersonal, organizational, and communication skills, with the ability to work in a dynamic team environment.

Medicinal Chemistry

Principal Scientist

This position requires a Ph.D. in Synthetic Organic Chemistry along with post-doctoral training in the same area. In addition, a minimum of 6 years of successful, small molecule, drug discovery experience in an industrial environment as evidenced by patents and publications is required. Applicants must also have at least 3 years of experience supervising other Ph.D. and MS chemists.

Senior Scientists/Research Associates

We have several openings for candidates who have experience in multi-step organic synthesis and contemporary purification techniques.

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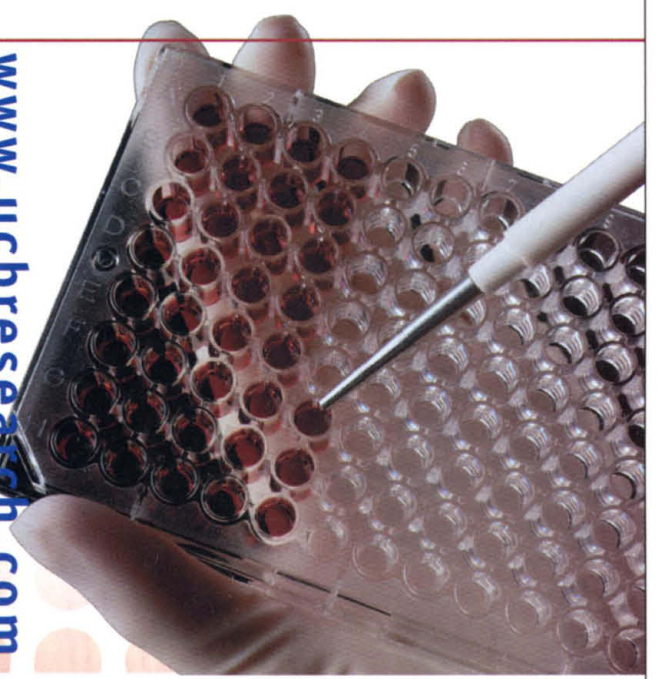

For additional details on each position, please refer to the careers page of our Web site located at www.ucbresearch.com. If qualified, please forward your resume and salary requirements to: research.recruiter@ucb-group.com

FACULTY POSITION IN VIROLOGY

The Department of Oral Sciences of the School of Dentistry and the Department of Microbiology of the Medical School invite applications for a joint appointment at the rank of Associate/Full Professor with tenure in the area of virology, either bacteriophages or animal viruses. Preference will be given to candidates who take an integrated genetic, biochemical and biophysical approach to studies of viral morphogenesis. The individual selected for the position will be responsible for directing a nationally competitive research program, teaching microbiology to dental students, training graduate students and postdoctoral fellows, and engaging in outreach and public service.

The candidate must have a doctoral degree in a health-related discipline, a strong publication record, past and current extramural funding, and experience in teaching. Salary will be commensurate with experience, and expertise, and generous start-up support will be provided.

Please submit: 1) a curriculum vitae that includes a list of all publications and grants, 2) a concise description of research background and goals, and 3) names of three references. Please send the application electronically by September 1 to:

Don Simone, PhD, Interim Chair
Department of Oral Sciences
University of Minnesota School of Dentistry
515 Delaware Street SE, 17-252 Moos Tower
Minneapolis, MN 55455
Email: simon003@umn.edu

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SCIENTISTS

Dade Behring Inc. is a leading global provider of medical diagnostic instruments and reagent systems. Our medical diagnostic instrument and reagent systems and related products are found in clinical laboratories worldwide and in 90% of American hospitals. We have immediate needs for individuals interested in a technical leadership career at our Newark, DE facility.

Responsibilities include in-vitro diagnostics assay development projects. You will design assay formats, select techniques, and optimize reagent conditions for assays. Must have a Ph.D. in Biochemistry, Immunochemistry or any related field. Postdoctoral experience in Clinical Chemistry is desirable but not required.

For consideration, please send resume and salary requirements, including job title, to one of the following: **dadechem@dadebehring.com or FAX: (302) 631-0348; or mail to: Dade Behring, Inc., P.O. Box 6101, M/S 517, Newark, DE 19714-6101.**

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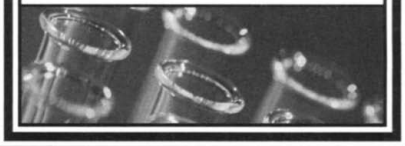

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- **BEHAVIORAL NEUROBIOLOGIST**
  Job Code: SCI000535
  Candidate must possess a Ph.D.
- **STAFF BIOLOGISTS (BEHAVIORAL NEUROBIOLOGY)**
  Job Code: BIO000108
  Candidates must possess an MS/BS with experience in Behavioral Neurobiology.
- **STAFF BIOLOGIST**
  Job Code: SCI000527
  Candidate must possess an MS/BS with experience in Electrophysiology and/or molecular/cellular biology.

The successful candidates will support novel therapeutic approaches in neurodegenerative and neuropsychiatric areas. Responsibilities will include establishing and validating relevant models/assays, conducting and supervising studies in support of ongoing efforts and characterizing new approaches for the treatment of neuroscience related disorders. An appropriate degree in neuroscience or related discipline, relevant experience in an academic or industrial basic research environment, experience with a broad variety of experimental paradigms, and the ability to work effectively in both an independent and team environment are required.

Please visit us at the *Science* Career Fair, August 5th, 2002 in Boston, MA.

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THE OHIO STATE UNIVERSITY

Junior Faculty Position
Department of Chemistry
The Ohio State University

The Department of Chemistry at The Ohio State University is soliciting applications for an anticipated tenure-track position to begin during the summer or autumn of 2003. The department prefers to hire in the area of **synthetic organic chemistry** or **physical chemistry** (with emphasis on **theoretical chemistry**) at the assistant professor level, but applications from exceptional individuals in all areas of organic chemistry and physical chemistry, and at all levels, are welcome.

Applications received before **October 15, 2002** will be given full consideration. Candidates should submit a curriculum vitae, undergraduate and graduate transcripts, a short description of future research plans, a statement of teaching interests, and arrange for three letters of recommendation to be sent directly to the search committees at the addresses given below.

Organic Chemistry Search Committee
c/o Ms. Kathy Veit
Department of Chemistry
The Ohio State University
100 W. 18th Avenue
Columbus, OH 43210
(614) 292-6504
kveit@chemistry.ohio-state.edu

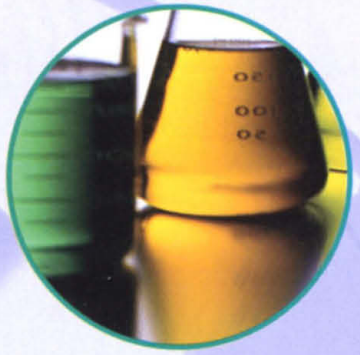
Physical Chemistry Search Committee
c/o Ms. Marcia Gordon
Department of Chemistry
The Ohio State University
100 W. 18th Avenue
Columbus, OH 43210
(614) 292-0534
mgordon@chemistry.ohio-state.edu

Fax: (614) 292-1685

Visit our Website at: http://www.chemistry.ohio-state.edu

The Ohio State University is an Equal Opportunity, Affirmative Action Employer. Women, minorities, veterans, and individuals with disabilities are encouraged to apply.

www.grantsnet.org



GrantsNet is a one-stop resource for biomedical funding information for undergraduates, graduate students, postdocs, faculty and higher education institutions. It's not only a funding database, but also a valuable informational tool for grant-seekers. Each month features news on funding trends, tips on applying for biomedical research, and links to funder's Web sites and applications. And best of all, it's **FREE**.

GrantsNet is a collaboration of the American Association for the Advancement of Science and the Howard Hughes Medical Institute. Check out GrantsNet (www.grantsnet.org) today, and let your search start here.

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Your Search Starts Here
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Vita Per HHMI Scientiam

AAAS
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Serving society

Science's Next Wave is a weekly online publication dedicated to career development and job market news for early career scientists. All of the articles, written by experts and role models from the international scientific community, seek to prepare Next Wave readers for today's ever-changing employment market.

Whether you are planning a career in academia or want to explore other options, Next Wave will help guide you in the right direction. Log on today at www.nextwave.org and find out what many other early career scientists have already discovered.

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As one of the world's top five pharmaceutical organizations, AstraZeneca is on the front lines of drug discovery and development. Together with our eight R&D centers around the world, we have delivered some of the most effective and widely used pharmaceuticals available. And today, with the addition of our state-of-the-art **AstraZeneca R&D Boston** center in **Waltham, Massachusetts,** we are better equipped than ever to deliver new drugs in the areas of Cancer and Infectious Diseases that ensure a higher quality of life for people around the globe.

Today, our aggressive drug discovery efforts continue to expand further through our US-based Cancer Discovery Research, Infection Discovery Research and leading-edge Enabling Science and Technology groups at AstraZeneca R&D Boston. This innovative new facility is home to excellent intellectual, scientific, and technological resources. Our work spans the full spectrum of drug discovery, from exploratory and medicinal chemistry to genomics, helping us to rapidly move from the gene to the clinic with high quality candidate drugs.

As part of the Global Chemistry effort at AstraZeneca, the Waltham Chemistry Community has both senior and entry-level positions open in the Infection Discovery Area, the Cancer Discovery Area, and in the Enabling Science and Technology Center.

Our **Cancer Discovery Area** is a rapidly growing group that will strengthen the global AstraZeneca presence in cancer therapeutics. The cancer chemistry group is utilizing leading-edge technologies such as informatics, protein crystallography and NMR, HTS, and combinatorial chemistry to guide drug design in our pursuit of life-enhancing medicines for cancer patients.

Our **Infection Discovery Area** has the mission to discover novel agents for unmet medical needs in bacterial and fungal infection. Employing a genomic, target-directed strategy, state-of-the-art technologies (including protein crystallography and NMR, HTS, and combinatorial chemistry) are applied by medicinal chemists to identify and optimize lead compounds.

Our **Drug Metabolism and Pharmacokinetics Areas** have a central role in the discovery of new therapeutic entities. We are now expanding this expertise and are seeking a number of scientists who can contribute to the effectiveness of the group as a key element of Cancer and Infection discovery projects.

Our **Enabling Science and Technology Center** is part of this innovative, leading-edge venue, providing powerful capabilities in state-of-the-art, high throughput technologies and novel scientific approaches in Combinatorial and Parallel Chemical Synthesis; Cheminformatics and Bioinformatics; Mathematical Modeling of Human Physiology and Disease; and Drug Target Identification and Validation.

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CANCER DRUG DISCOVERY

- **Principal Scientist/Medicinal Chemistry, ON-01-110-15**
- **Scientist/Cheminformatics, ON-02-110-26**
- **Scientist/Computational Chemistry, ON-02-110-10**

INFECTION DRUG DISCOVERY

- **Principal Scientist/Medicinal Chemistry, INF-02-213-01**
- **Research Associate/Medicinal Chemistry, INF-02-213-02**
- **Research Associate/Molecular Sciences INF-02-213-03**

DRUG METABOLISM & PHARMACOKINETICS

- **Principal Scientist/Scientists/DMPK - significant experience of Discovery DMPK, ON-01-110-19**
- **Research Associates/DMPK - small molecule analysis/in vitro metabolism/pharmacokinetics, ON-01-110-20**

ENABLING SCIENCE AND TECHNOLOGY

- **Statistical Scientist, EST-02-313-01**
- **Bioinformatics Group Leader, EST-02-311-01**
- **Principal Scientist - Medicinal/Synthetic Chemistry, EST-01-102-02**

Join AstraZeneca R&D Boston in our dynamic scientific environment, as we work to bring life-enhancing medicines to patients around the globe.

For a more detailed description of the above positions, please visit our website:
www.astrazeneca-boston.com

Candidates interested in contributing to the momentum of success at AstraZeneca, please forward your resume, **referencing Job Code,** to: **AstraZeneca R&D Boston, 35 Gatehouse Drive, Waltham, MA 02451; E-mail: hr@astrazeneca.com;** Diversity is the essence of our science, our careers and our lives. We are an equal opportunity employer.

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One powerful source for your career: www.astrazeneca-boston.com

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Infinity Pharmaceuticals is a chemistry-based drug discovery company that uses Diversity Oriented Synthesis (DOS) to develop radically different (diverse and complex) molecules as starting points for the drug discovery process. These molecules will be used for chemical genetic screening of pathways and phenotypes in addition to target-based approaches.

Join us, and harness the power of chemical diversity to discover new and important medicines; use cutting-edge technologies at the interface of Biology, Chemistry and Information Technology; help build a great culture while performing break-through science!

We currently have opportunities for the following positions:

Cellular Imaging/Screening (PhD)
Enzymology/High Resolution Protein Separation (PhD)
Systems Engineer
Research Associate, Assay Development
Research Associate, HTS
Synthetic Organic Chemists
Medicinal Chemists
Informatics

To learn more about these and other opportunities, and to apply online, please visit our website at:

www.ipi.com

Infinity Pharmaceuticals is currently located in Boston, Massachusetts, but will relocate to Cambridge in late 2002.

Visit us at the Science Career Fair in Boston on August 5th!

Infinity PHARMACEUTICALS

NIMH National Institute of Mental Health

Statistical Genetics
Tenure-Track Investigator
Mood and Anxiety Disorders Program
National Institute of Mental Health
Bethesda, MD, USA

The Section on Developmental Genetic Epidemiology, Experimental Therapeutics and Pathophysiology Branch in the Mood and Anxiety Disorders Program at the National Institute of Mental Health, Intramural Research Program is recruiting a scientist for a tenure-track position to develop research in statistical genetics in a new cross-institute program in neurogenetics. The candidate will have the opportunity for collaboration with scientists in diverse research areas in genetics (i.e., genetic epidemiology, biostatistics, statistical genetics, molecular genetics), as well as neuroscience and relevant clinical disciplines. The candidate is expected to have an M.D. or a Ph.D.in (1) biostatistics; (2) population or human genetics; or (3) genetic epidemiology. The applicant should have experience and interest in statistical analysis of genetic studies, and in developing new methods or adapting traditional statistical methods to identify the role of genes in the etiology of complex disorders. This position includes an attractive start-up package and operating budget in an exciting multidisciplinary research environment. Preference will be given to candidates with a background and interest in complex disorders, particularly neuropsychiatric disorders. Applicants should send a curriculum vitae, statement of research interests, and three letters of recommendation to Dr. Kathleen Merikangas (kathleen.merikangas@nih.gov), Search Committee, National Institutes of Health, 15 K North Drive, MSC#2670, Bethesda, MD 20892, by November 1, 2002.

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Our employees are one of our greatest assets. Our size is another. We are big enough to maximize the potential of our diverse product portfolio, yet small enough to be innovative and agile. Professional opportunities are available in our Long Island, NY locations in a range of disciplines, including:

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Quality Control
Regulatory Affairs
Pharmacokinetics
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Clinical Research
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We are the largest hospital in New England. A nationally-renowned center for research, progressive medicine and professional expertise. Home to singular talents in a broad spectrum of fields...and a place where patients and employees from every walk of life are welcomed with open arms. At Massachusetts General Hospital, the quality of our care - and our careers - is defined by the character of the people who deliver it.

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You will be responsible for developing state-of-the-art HIV antiviral testing methodologies, using a full range of tissue culture and viral replication concepts/approaches. This will include actively participating in a team environment to achieve goals/objectives. We require a PhD in human infectious disease biology or equivalent and 0–2 years postdoctoral experience. Significant experience in tissue culture systems, viral replication and reporter gene assays is also required. Experience working under containment level 3 is desired.

We are pleased to provide a competitive compensation program. To apply, send your resume, indicating Job Code RBS2534, to **paloalto.hr_staffing@roche.com**. As an equal opportunity employer, we are committed to workforce diversity.

Visit our website at **http://paloalto.roche.com**.

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FMC Corporation's Agricultural Products Group is embarking on a genomics-based research program to discover proprietary target-sites and, ultimately, world-class pesticides that are safe for the environment. This is an opportunity to be a part of the biotechnology revolution and apply your skills to leading-edge science. Positions are available at all levels at our state-of-the-art research facility in Princeton, NJ, in the following area:

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Be part of an interdisciplinary team focused on optimization of discovery insecticidal compounds. Candidates must have the ability to independently prepare milligram to multi-gram quantities of small organic molecules. Must be able to plan and execute the synthesis of small organic molecules and be able to interpret NMR (^1H and ^{13}C) and MS data. Must have at least 2 years of industrial experience in synthesis chemistry or a Master's in Chemistry plus one year of industrial experience in synthesis chemistry. Experience in insecticide discovery desired. Experience in parallel synthesis or some aspect of combinatorial chemistry a plus.

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Research Scientists - Assay Development

Research Scientist - Cell Assay Development

Product Manager - Genotying

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FACULTY SEARCH
Department of Bioengineering
University of Utah

Applications are invited for an assistant- or associate-level, tenure-track **FACULTY POSITION** in bioengineering. The candidate will be responsible for developing and teaching a cornerstone upper undergraduate-level course in biomedical instrumentation covering topics in biosignals/systems and biosensors, participating in the graduate-level core curriculum, and developing an externally funded, independent research program. Individuals with expertise in biosensors and applied neuroscience are encouraged to apply; however, highly qualified applicants in other areas of bioengineering will also be given consideration. A Doctoral degree with a background in the physical sciences or bioengineering, demonstrated research productivity, and a commitment to undergraduate/graduate education are required. Applications are particularly encouraged from individuals who have experience in working with and teaching undergraduate and/or graduate students. The appointee will be expected to secure ongoing extramural research support and establish or maintain an international presence in his or her field. See **website: http://www.bioen.utah.edu** for further information.

Complete curriculum vitae, names of three references, and a short description of current research activities, teaching experience, and career goals should be sent to:

Faculty Search Committee
Department of Bioengineering
University of Utah
50 South Central Campus Drive, Room 2480
Salt Lake City, UT 84112-9202

Review of applications will begin August 31, 2001, and continue until a qualified candidate is selected.

The University of Utah, an Affirmative Action/Equal Opportunity Employer, encourages applications from women and minorities and provides reasonable accommodation to the known disabilities of applicants and employees.

ASSISTANT PROFESSORSHIPS IN ORGANIC CHEMISTRY AND CHEMICAL BIOLOGY
Harvard University Department Of Chemistry And Chemical Biology

Applicants are invited to apply for Assistant Professorships in organic chemistry and chemical biology. Fields of particular interest include organic synthesis, catalysis, organic materials, chemical biology, and macromolecular structure and function, though candidates in all areas of organic chemistry, broadly defined, will be considered. Applicants should arrange to have three letters of recommendation sent independently and should provide curriculum vitae, a list of publications, and an outline of their future research projects. Applications and supporting materials should be sent to: **Chair, c/o Ms. Carol Gonzaga, Department of Chemistry and Chemical Biology, Harvard University, 12 Oxford Street, Cambridge, MA 02138-2902.** The deadline date for receipt of applications and supporting materials is November 30, 2002. *Harvard University is an Affirmative Action, Equal Opportunity Employer and welcomes applications from women and minority group members.*

MOLECULAR GENETICIST. The National Marine Fisheries Service is seeking candidates for a permanent position at the Santa Cruz Laboratory in Santa Cruz, CA, studying the molecular genetics of Pacific salmon. Research will determine genetic diversity of salmon populations to address ecological adaptations, endangered species, and fishery management issues. Applicants must be U.S. citizens, have a Ph.D. or equivalent education and experience, and have a strong record of molecular genetics research and publication. Salary range is $59,471 to $77,309. To apply, see **website: http://www.usajobs.opm.gov, Announcement W/NMF/SWC/020208.JC** or call **Telephone: 206-526-6420** for more information. Closes August 17, 2002. *Equal Opportunity Employer.*

POSITIONS OPEN

FACULTY POSITIONS IN BIOTECHNOLOGY
THE UNIVERSITY OF MICHIGAN
COLLEGE OF ENGINEERING

Biotechnology is a strategic initiative within the University of Michigan College of Engineering (CoE). As part of this initiative, there are several openings for interdisciplinary, tenure-track faculty positions at all levels. Successful candidates will have a primary appointment in either the Departments of Biomedical Engineering, Chemical Engineering, or Materials Science and Engineering. A significant secondary appointment is expected in one of these departments or another department within the CoE, Medical School, Life Sciences Institute, or Dental School. Applicants must have a Ph.D. degree, be qualified to teach undergraduate and graduate courses in the CoE, and be able to develop independent and cooperative research programs. A demonstrated research record is required. In addition to welcoming applications in all areas of biotechnology, the CoE seeks applicants in the following specific areas: biomaterials, biosensors, polymers, tissue engineering, biomolecular engineering, bioprocess technology, bioinformatics, and micro/nano fabrication.

Send curriculum vitae and a list of references to:

Chair, Biotechnology Search Committee
College of Engineering
The University of Michigan
Robert H. Lurie Engineering Center
1221 Beal Avenue
Ann Arbor, MI 48109-2102

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

ASSISTANT/ASSOCIATE/FULL PROFESSOR
Cell Signaling Research
The University of Vermont
College of Medicine
Department of Pharmacology
Vermont Cancer Center

The Vermont Cancer Center and the Department of Pharmacology at the University of Vermont (UVM) College of Medicine invite applications for a 12-month, tenure-track faculty position at the level of Assistant, Associate or Full Professor. We are interested in individuals with funded research programs focused on cell signaling research with potential for translating basic research into targeted approaches for the treatment and prevention of cancer. Candidates should have an M.D., Ph.D., or equivalent; an established research program; and a record of achievement and recent productivity in cancer-related signaling research. The Vermont Cancer Center is an NCI-designated Comprehensive Cancer Center with a highly interactive faculty, new research laboratories, contemporary core facilities, and significant private foundation support. Current funded areas of investigation include signaling in environmental carcinogenesis, cell proliferation, metastasis, apoptosis, cell cycle checkpoints, fibrosis and premalignant conditions, nuclear transport, and structure/function of kinases and other signaling proteins. The Department of Pharmacology has significant research interest in vascular biology, ion channels, calcium signaling, and regulation of gene expression. Evaluation of applications will begin September 15, 2002, and will continue until suitable candidates are identified. Please send curriculum vitae and three references to: **Karen Lounsbury, Ph.D., Chair, Cell Signaling Search Committee, Department of Pharmacology, University of Vermont, Burlington, VT 05405. Telephone: 802-656-1319; e-mail: klounsbu@zoo.uvm.edu.** *Applications are encouraged from women and individuals of diverse racial, ethnic, and cultural backgrounds. An Equal Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

DIRECTOR OF NEUROSCIENCE
at The University of Texas at Austin

The University of Texas at Austin invites applications and nominations for Director of its Institute for Neuroscience, an interdisciplinary organized research unit and graduate program. The University has recently made major commitments to the development of Neuroscience. A recent reorganization of biological sciences departments resulted in the formation of a new unit of Neurobiology in the College of Natural Sciences in 1999. Since its inception, Neurobiology has added eight new faculty and is expected to continue to grow rapidly. In addition, the University administration and participating colleges have committed 12 new faculty lines in neuroscience and new funding for graduate student and program support. Institute faculty have academic appointments in a number of sections/departments including neurobiology, psychology, pharmacology, molecular genetics, and microbiology, and the successful candidate would be expected to hold an appointment of Professor in one or more of these units. For more information about the Institute, see **website http://www.utexas.edu/neuroscience**. The successful candidate for Director of the Institute will play a pivotal role in furthering the Institute's mission of promoting interdisciplinary studies and graduate training in neuroscience and will be expected to work with participating units in the recruitment of additional new faculty. He or she must have a Doctoral degree and a demonstrated record of accomplishment in neuroscience research and in administration. The position is available 1 September 2003, or as negotiated. Review of applications will begin immediately and will continue until the position is filled. Please submit a letter of interest, statement of experience, curriculum vitae, and names of three references (including address, phone, and e-mail) to: **Professor Wilson Geisler, Chairman, INS Director Search Committee, Department of Psychology, 108 East Dean Keeton Street, University of Texas, Austin, Texas 78712.** *The University of Texas at Austin is an Equal Opportunity/Affirmative Action Employer. All qualified candidates are encouraged to apply.*

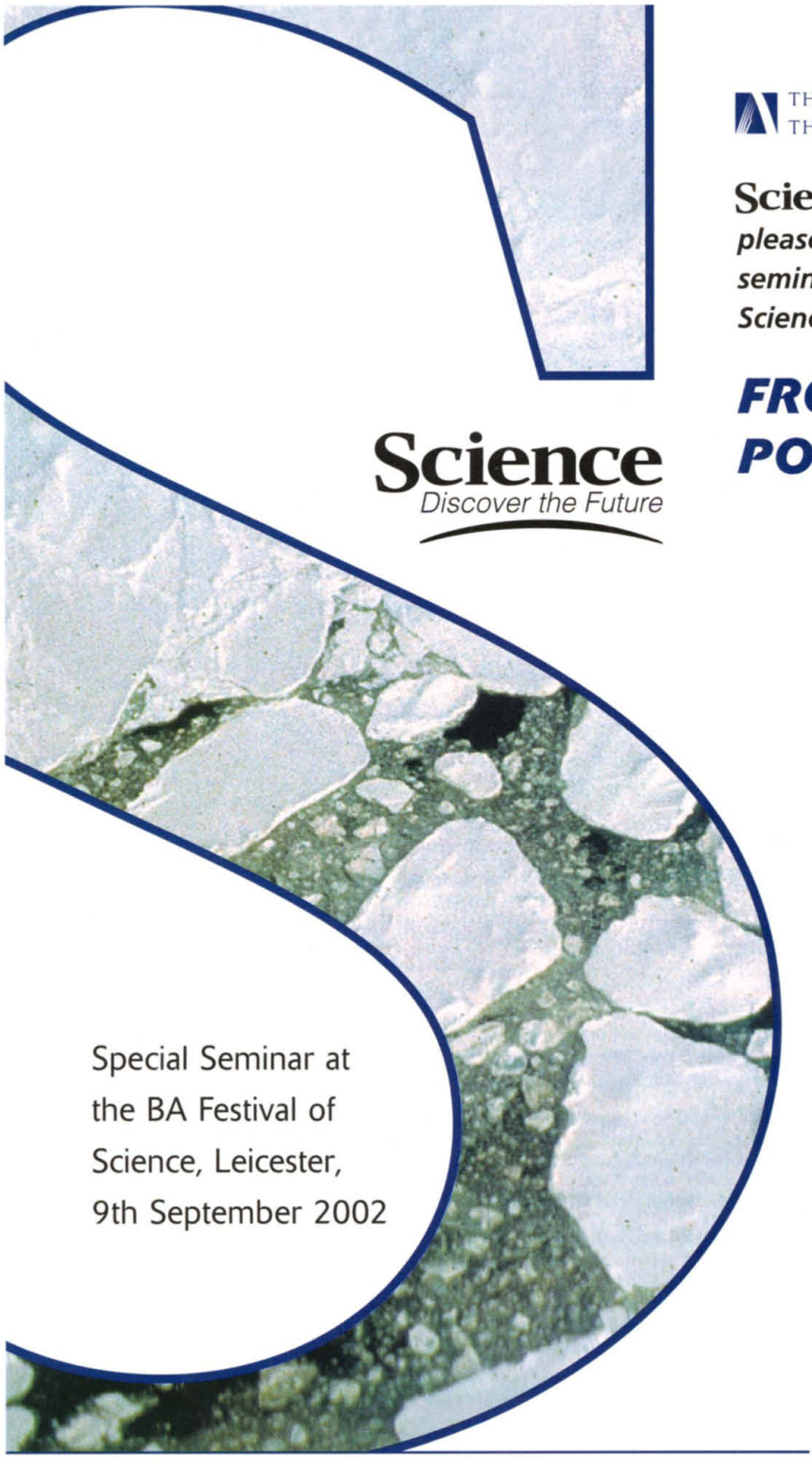
FACULTY NEUROSCIENCE
Department of Cell Biology and Anatomical Sciences
The Sophie Davis School of Biomedical Education

Applications invited for full-time, tenure-track **ASSISTANT/ASSOCIATE PROFESSOR** to teach; develop; maintain independent, externally funded research program; and co-direct course for medical students. Requirements: M.D. and/or Ph.D. and postdoctoral experience in neuroscience or related discipline and demonstrated record of academic accomplishments; expertise in neuroanatomy, neurohistology, and basic neuroscience; and research interest in neuroscience. Details at **website: http://www.ccny.cuny.edu/positions**. To apply, send a letter of accomplishments, career goals including current and long-term research plans, curriculum vitae, and names and addresses of three professional references to: **SBE Neuroscience Faculty Search Committee, The City College, CUNY 138th Street at Convent Avenue, J-903, New York, NY 10031.** *An Affirmative Action/Equal Employment Opportunity/ADA/IRCA Employer.*

FACULTY POSITION

Tenure-track Faculty position is available in Department of Pharmacology, University of Connecticut Health Center. Applicant must have a strong research program and be committed to teaching. Rank and salary depend on experience. Send complete curriculum vitae, description of research program, and three letters of recommendation. Send all correspondence to: **Dr. Maurice Feinstein, Chairman, Search Committee, Deparment of Pharmacology MC-6125, University of Connecticut Health Center, 263 Farmington Avenue, Farmington, CT 06030.**

UCHC is an Equal Opportunity Employer; Minorities/Females/Veterans/Persons with Disabilities.



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Monday 9th September 2002
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Lecture Theatre 2

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British Antarctic Survey

Dr Andrew Brierley
University of St. Andrews

Professor Micheal McIntyre
Cambridge University

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FACULTY POSITION
Bacterial Pathogenesis

The Department of Molecular Virology and Microbiology at Baylor College of Medicine invites applications for a tenure-track faculty position in bacteriology at the **ASSISTANT PROFESSOR** level. All research interests will be considered, but applicants with an interest in the molecular pathogenesis of bacterial infections are especially sought. Applicants should have postdoctoral experience and demonstrated research productivity. The successful candidate will be expected to maintain an extramurally funded research program and to participate in graduate training. This is an opportunity to join a strong, interactive department in the rich scientific setting of the renowned Texas Medical Center. Current research interests of an exceptional faculty focus on microbial genomics and proteomics, viral and bacterial gene expression and pathogenesis, RNA and DNA viruses of human diseases, and vaccine evaluation. An attractive startup package, modern laboratory space, and access to outstanding core facilities are available. Send your curriculum vitae, names and contact information for three references, a statement of current research activities, a summary of future plans, and arrange to have three letters of recommendation sent by September 23, 2002, to: **Dr. Timothy Palzkill, Faculty Recruitment Committee, Department of Molecular Virology and Microbiology, Mail Stop: BCM280, Baylor College of Medicine, Houston, TX 77030. E-mail: mvm-facultypos2@bcm.tmc.edu.** *Baylor College of Medicine is an Affirmative Action/Equal Opportunity Employer.*

FACULTY POSITIONS

The Department of Physiology Louisiana State University Health Sciences Center, New Orleans seeks outstanding candidates for tenure-track positions at the **ASSISTANT, ASSOCIATE,** or **PROFESSOR** levels. The successful candidate must have a Ph.D. or equivalent and a strong record of research accomplishments. We are seeking individuals with expertise in vascular cell biology, electrophysiology, angiogenesis, or in a unique area that can complement present research strengths. The successful candidate will be expected to develop an active extramurally funded research program and to participate in the Department's graduate and professional teaching programs. Excellent start-up package, competitive salary, state-of-the-art instrumentation, and opportunity to affiliate with a growing Cardiovascular Center of Excellence are available. Candidates should submit, by September 1, 2002, curriculum vitae, brief statement of research interests and career goals, and provide names of at least three individuals who know the work of the candidate to: **Dr. W. M. Chilian, Professor and Head, Department of Physiology, LSU Health Sciences Center, 1901 Perdido Street, New Orleans, LA 70112. E-mail: chilian@lsuhsc.edu.** *LSUHSC is an Affirmative Action/Equal Opportunity Employer.*

ASSISTANT PROFESSOR
Arthropod Vector Biology–Public Health

The Department of Entomology at Purdue University invites applications for an academic-year, tenure-track, research/extension faculty position. We seek outstanding candidates in the field of arthropod vector biology and management, focused on pests of public health importance, who will establish a research program that applies modern tools to advance understanding of the biology, ecology, genetics, or behavior of arthropod vectors and/or the vector-pathogen interface. A Ph.D. in entomology or suitable area of biological science is required. Send curriculum vitae; reprints; Ph.D. dissertation summary; a statement of research, extension, and teaching experience; and names and addresses of five references by October 11, 2002, to: **Peter E. Dunn, Search Committee Chair, Department of Entomology, 1158 Smith Hall, Purdue University, West Lafayette, IN 47907-1158.**

Purdue University is an Equal Opportunity/Affirmative Action Employer.

POSITIONS OPEN

PROFESSOR OF NUTRITIONAL BIOCHEMISTRY
Harvard School of Public Health

The Department of Nutrition is seeking candidates for the position of Professor of Nutritional Biochemistry. Candidates should have an ongoing research program with emphasis on molecular mechanisms in the etiology of diabetes and obesity. Preference will be given to individuals with a research interest of potential public health importance and demonstrated capacity for multidisciplinary research. The successful candidate will be expected to interact with the faculty of the Department of Nutrition and the Division of Biological Sciences and to contribute to their teaching and training programs. Please send curriculum vitae, a short statement of research interests and field activities, and the names of three references to:

Chair, Nutritional Biochemistry Search
c/o Eleanor Livingston
Department of Nutrition
Harvard School of Public Health
665 Huntington Avenue
Boston, MA 02115

The Harvard School of Public Health is committed to increasing the representation of women and minority members among its faculty and particularly encourages applications from such candidates.

ASSISTANT PROFESSOR
Biochemistry and Molecular Biology
Joan C. Edwards School of Medicine
Marshall University

Applications are invited for a new 12-month tenure-track position in the Department of Biochemistry and Molecular Biology to start January 1, 2003. The Department is seeking an accomplished individual to complement strengths in cancer research and signal transduction. Preference will be given to candidates with interests in the area of lipid signaling. Applicants should have an advanced degree (Ph.D. and/or M.D.) and relevant postdoctoral experience in biochemistry or a related field. The successful candidate will be expected to establish an externally funded research program and to participate in the instruction of medical and graduate students. Additional information about our program is available on our **website: http://musom.marshall.edu/bio/index.htx**, or e-mail inquiries to **Dr. Delidow; e-mail: delidow@marshall.edu.** To apply, please send curriculum vitae, research plan, and three letters of reference to: **Beverly C. Delidow, Ph.D., Search Committee Chair, Department of Biochemistry and Molecular Biology, Joan C. Edwards School of Medicine, Marshall University, 1542 Spring Valley Drive, Huntington, WV 25704.** Application review will begin Sept. 15, 2002, and continue until the position is filled. *Marshall University is an Equal Opportunity Employer. All qualified candidates are encouraged to apply.*

ASSISTANT PROFESSORSHIPS IN INORGANIC, ORGANIC, AND PHYSICAL CHEMISTRY
Harvard University Department Of Chemistry And Chemical Biology

Applicants are invited to apply for Assistant Professorships in inorganic, organic, and physical chemistry. Applicants should arrange to have three letters of recommendation sent independently and should provide curriculum vitae, a list of publications, and an outline of their future research plans. Applications and supporting materials should be sent to: **Chair, c/o Ms. Carol Gonzaga, Department of Chemistry and Chemical Biology, Harvard University, 12 Oxford Street, Cambridge, MA 02138-2902.** The deadline date for receipt of applications and supporting materials is November 30, 2002. *Harvard University is an Affirmative Action, Equal Opportunity Employer and welcomes applications from women and minority group members.*

POSITIONS OPEN

FACULTY POSITION
Viral Pathogenesis/Immunology

The Department of Microbiology and Immunology at The University of Texas Health Science Center at San Antonio invites applications for tenure-track faculty positions at the **ASSISTANT, ASSOCIATE** or **FULL PROFESSOR** levels. Expertise in viral pathogenesis and/or viral immunology is preferred. Candidates whose research incorporates genomic and proteomic approaches, or individuals with outstanding backgrounds in other areas of immunology with an interest in extending their research to medically relevant infectious agents, are especially encouraged to apply. The successful applicants will have Ph.D. and/or M.D. degrees and will be expected to establish and maintain a high quality, extramurally funded research program and participate in graduate student training and medical/dental school teaching. This is an exceptional opportunity to join a strong academic department in a desirable geographic location. In addition to competitive startup funds, state-of-the-art core facilities and instrumentation, as well as BSL-3 and insectary laboratory space, are available. Send curriculum vitae, summary of research interests, and the names and addresses of three references by November 30, 2002, to: **Virology Search Committee, Department of Microbiology and Immunology, The University of Texas Health Science Center at San Antonio, 7703 Floyd Curl Drive, Mail Code 7758, San Antonio, TX 78229-3900. Information concerning the UTHSCSA and the Department of Microbiology and Immunology can be found at website: http://www.uthscsa.edu.** *The UTHSCSA is an Equal Employment Opportunity/Affirmative Action Employer.*

FACULTY POSITIONS
Microbial Pathogenesis
New York Medical College

The Department of Microbiology and Immunology at New York Medical College invites applications for several tenure-track Faculty positions in the broad area of Microbial Pathogenesis. It is expected that appointments will be made at all faculty ranks. Our focus will be on candidates who will employ molecular approaches to pathogenesis/immunopathogenesis of microbial infections. Areas of particular interest include, but are not limited to, newly emerging pathogens, microbial genomics/bioinformatics, and cellular microbiology. We are seeking individuals with a commitment to teaching and the establishment of a vigorous, independent research program, and the willingness to interact with other members of the department and medical school faculty. The search process will begin immediately and will continue until the available positions are filled. Interested individuals should submit curriculum vitae, selected reprints, a description of current and future research plans, and should arrange to have three letters of recommendation sent to: **Dr. Ira Schwartz, Chairman, Department of Microbiology and Immunology, New York Medical College, Valhalla, NY 10595. E-mail: schwartz@nymc.edu.**

The Department of Pharmacology at the University of Texas Health Science Center at San Antonio invites applications for tenure-track positions at the **ASSISTANT/ASSOCIATE/FULL PROFESSOR** level. Outstanding individuals who work at an integrative/system level in the areas of neuroendocrine regulation, central autonomic regulation, feeding and energy metabolism, psychopharmacology, or substance abuse are encouraged to apply. Applicants at the Full/Associate Professor level are expected to have an established, extramurally supported research program and a strong publication record. Attractive startup and benefit packages are offered.

Submit a letter of application, curriculum vitae, statement of research interests, and the names, addresses, telephone/FAX numbers of three references to: **Mrs. Cathie Franks, Department of Pharmacology, University of Texas Health Science Center at San Antonio, 7703 Floyd Curl Drive, San Antonio, TX 78229-3900.** *UTHSCSA is an Equal Employment Opportunity/Affirmative Action Employer.*

CHAIR OF PHYSIOLOGY

David Geffen School of Medicine at UCLA

The David Geffen School of Medicine at UCLA invites applications for Chair of the Department of Physiology. The successful candidate must have an exceptional record of research accomplishment in Physiology or a related discipline and a commitment to medical and graduate student education.

The Department is committed to integrating genetic and molecular approaches to physiological and biophysical problems with medical relevance. The Department has international stature with particular strengths in cardiovascular, neuro-, and gastrointestinal physiology and biophysics. The position provides a unique opportunity to define physiology in the 21st century.

Nominations or letters of interest and curriculum vitaes should be sent to: **Physiology Chair Search Committee, c/o Jeanette Lim, David Geffen School of Medicine at UCLA, 10833 LeConte Avenue, 12-138 CHS, Los Angeles, CA 90095-1722.**

UCLA is an Equal Opportunity/ Affirmative Action Employer.

GLOBAL OPPORTUNITIES

VACANCY

The Basic Science Department at the University of Health Sciences Antigua School of Medicine is seeking qualified individuals for a 4-week Visiting Faculty appointment from **October 7 - November 4, 2002** for Neuroanatomy, Histology, Embryology, Medical Terminology, Anatomy and Physiology; **January 6 - February 3, 2003** for Biochemistry, Microbiology/Immunology, Anatomy, Physiology, Neuroanatomy and Histology; **April 7 - May 5, 2003** for Pathology, Pharmacology, Neuroanatomy, Physiology, Histology, Microbiology/Immunology and Biochemistry; **July 7 - August 4, 2003** for Pathology, Microbiology/Immunology, Biochemistry and Pharmacology; **October 6 - November 3, 2003** for Pathology and Pharmacology.

Applicants must have a Ph.D. or M.D. or a combination of both Ph.D. and M.D. with teaching experience in the field.

The salary is **US$4,000.00** for the 4-week period with round trip airfare and accommodation in one of our guesthouses at the campus.

Send C.V. to:

The Search Committee
UHSA School of Medicine
Dowhill Campus, Piccadilly
Box 510, St. John's, Antigua
TEL: (268) 460-1391
FAX: (268) 460-1477
E-MAIL: (1) fmcp@uhsa.edu.ag
(2) uhsa@candw.ag

GLOBAL OPPORTUNITIES

KUWAIT UNIVERSITY
FACULTY OF MEDICINE
HEALTH SCIENCE CENTRE

Pre-clinical and Clinical Appointments

Applications are being sought for the following appointments in the Faculty of Medicine:

ANATOMY: Assistant/Associate/Professor	Human Gross Anatomy Applied & Developmental Anatomy Histology
BIOCHEMISTRY: Assistant/Associate/Professor	Biochemistry
COMMUNITY MEDICINE: Assistant/Associate/ Full Professor	Medical Sociologist Health Planning and Administration Specialist and/or Health Economist Environmental and Occupational Health Specialist Epidemiologist Biostatisticians
MEDICINE: Associate/Professor	Neurology Infectious Diseases
PHYSIOLOGY: Assistant/Associate	Respiratory/Exercise Physiology Neuro-endocrine Physiology General/Molecular Physiology
PHARMACOLOGY: Assistant/Associate/ Professor	Neuropharmacology Clinical Pharmacology/Toxicology Molecular Biologist
PATHOLOGY: Assistant/Associate Professor	Cytopathology
PEADIATRICS: Associate/Professors	Paediatric Neurology Paediatric Endocrinology/ Metabolic Medicine Paediatric Clinical Immunology
PSYCHIATRY: Assistant/Associate/Professor	General Psychiatry Child and Adolescent Psychiatry Psychopharmacology and Substance Abuse
OBST. & GYNAECOLOGY: Associate/Professor	Maternal Fetal Medicine Gynaecological Oncology Urogynaecology Reproductive Medicine
RADIOLOGY: Associate/Professor	Radiologists
SURGERY: Professor	Anaesthesia/Intensivist Colon and Rectal Surgery Urology

REQUIREMENTS FOR APPOINTMENT: Applicants should possess a Ph. D or an equivalent high professional qualification i.e. FRCS/MRCP/MRCOG/MRCPath/MRCPsych./MD/American Board in their respective speciality and have conducted and published research in their field.

CONDITIONS OF APPOINTMENT: Total monthly salaries will be within the following scales according to qualifications and experience (1KD = 1.9 St. Pound, US$ 3.3 approximately).

	Professors Min-Max	Associate Min-Max	Assistant Min-Max
Clinical	KD. 2585-2745	KD. 2290-2450	KD. 2010-2170
Non-Clinical	KD. 1670-1830	KD. 1320-1480	KD. 1030-1190

A Social Allowance will be paid in addition to the monthly salary as per the University regulations.

OTHER BENEFITS: Conference attendance. Gratuity. Housing/housing allowance. Free medical treatment in Kuwait. Free annual round-trip air tickets from country of Citizenship or permanent residence for self and family up to three dependent children. Baggage and freight allowance. Education fees for a maximum of three children in Kuwait from elementary through high school. No taxation. Currency is transferable without restriction. 60 days paid annual leave.

METHOD OF APPLICATION: Curriculum vitae which should include the names of three referees; personal particulars; copy of the relevant pages of passport; qualifications with dates, career history, teaching experience, research accomplishments and where appropriate clinical experience should be sent no later than October 31, 2002 to: **THE VICE-DEAN ADMINISTRATION (RECRUITMENT OFFICE), FACULTY OF MEDICINE, KUWAIT UNIVERSITY, P.O. BOX 24923, 13110 SAFAT, KUWAIT, FAX: 965 5318454**

GLOBAL OPPORTUNITIES

CSIRO Atmospheric Research,
Aspendale, Victoria, Australia

CSIRO

Chief of Atmospheric Research

Attractive Package including Relocation

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) is seeking to appoint an outstanding professional to the position of Chief of CSIRO Atmospheric Research to succeed the current Chief who retires from the position at the end of October 2002. One of 21 Divisions, Atmospheric Research delivers outcomes based on its research in sustainable climate, global atmospheric environment and air quality and health. The Division has 120 staff and an annual budget of $18 million. It is headquartered in Aspendale (a suburb of Melbourne), Victoria and has a laboratory in Canberra.

The Role

- Responsible for leading the Division's research, planning, customer and stakeholder relations, education and public outreach and business development, as well as growing the Division's commercialisation capabilities.
- Manages the Division's staff and resources and effectively represents CSIRO in interacting with industry, other R&D providers, governments and the community.
- Stimulates new areas of R&D in response to sector opportunities and needs; and works closely with the CSIRO Executive Team to contribute at the highest level to development and implementation of the CSIRO Strategic Action Plan.

The Qualifications

- Outstanding research leadership experience, vision and management skills; with strong strategic planning skills.
- A record of achievement in working with industry, universities and governments in developing research partnerships and delivering outcomes; excellent communication skills.
- Both a thinker and a leader with strong people skills, and with a personal mission to continue improving CSIRO's performance to best in the world in the Division's area of operation. Commercially strong with a good understanding of contracts and the management of intellectual property.

Contact

For further information relating to this position please contact Dr Graeme Pearman 61 3 9239 4650 or email: Graeme.Pearman@csiro.au or Mr John Baistow on 61 2 9247 4031 or email Jbaistow@SpencerStuart.com

For information and details on how to apply for this position visit

www.csiro.au/careers

Alternatively contact 61 2 6276 6326

Australian Science, Australia's Future

GLOBAL OPPORTUNITIES

KUWAIT UNIVERSITY
FACULTY OF MEDICINE
Department of Anatomy

Positions are available at the level of Assistant or Associate Professor and Full Professor. The applicant should possess M.D., Ph.D., or M.Sc., Ph.D. qualifications. Applicants must present evidence of a productive, high quality and current (cellular/molecular) research program and appropriate teaching experience in the Anatomy disciplines: Gross Anatomy, Applied and Developmental Anatomy and Histology.

The department is offering a Master's programme in Anatomy. The department serves the Medical, Dental, Pharmacy and Allied Health Faculties. English is the language of instruction. The departmental research is concentrated in neurobiology of glia neuronal regeneration, and diabetic neuropathy. Research support is available from a variety of governmental sources, including Kuwait University, KFAS, KISR, etc.

Salaries and Benefits:

Professor	1670-1830
Associate Professor	1320-1480
Assistant Professor	1030-1190

In addition a social allowance of KD 65-87 per month. (1 KD = US $3.30, UK £2) There is no income tax in Kuwait and currency is transferable without restriction.

1. Baggage and freight allowance.
2. Education allowances for up to three children attending school in Kuwait.
3. Free furnished accommodation or housing allowance (KD 350 or 450) and a one time furniture allowance (KD 3500 or 4500) depending on the marital status.
4. 60 days (2 months) paid summer leave and two weeks mid-year break.
5. Annual round-trip air tickets.
6. End-of-service gratuity (one month's basic salary for each year of service).
7. Attendance at one approved conference per year.

Letters of application accompanied by complete curriculum vitae and the names, addresses and fax numbers of three referees should be sent to: **Prof. Hussein Dashti, Vice-Dean Administration, Chairman, Dept. of Anatomy, Faculty of Medicine, P.O. Box 24923, Safat 13110, Kuwait; Fax: +965 5318454.**

E-mails should be sent to: Mrs. Bernadine Pinto at **pinto@hse.kuniv.edu.kw**.
Applications should be sent before **December 31, 2002**.

New South Wales Government, Australia
NSW Bio*First* Awards Round 2
Call for Applications

The New South Wales Government's Bio*First* Awards are a major initiative arising from the whole-of-Government biotechnology strategy "Bio*First*", launched by the NSW Premier, The Hon Bob Carr MP in August 2001.

A NSW Bio*First* Award will top up a package being created by a publicly funded research institution in NSW to attract a biotechnology research worker to NSW. An Award will be a one-line grant of $100,000 a year for three years. Up to five new Awards will be offered each year. Institutions will be permitted to use the Bio*First* Award funding flexibly.

In Round 1 four Bio*First* Awards were given. The NSW Government is again looking to attract to New South Wales outstanding individuals with exceptional, internationally renowned research careers in disciplines relevant to biotechnology in areas such as health, agriculture, environment, and bioinformatics.

Individual research workers who are interested in applying for a NSW Bio*First* Award should contact appropriate NSW institutions to discuss opportunities to work in NSW. **Research workers already resident in New South Wales are not eligible.** One joint application completed by the research worker and the institution should be submitted to the Bio*First* Awards Committee.

Closing Date for applications: Friday 18 October 2002.

Further information and the format of the application may be obtained from the following NSW Government department websites: **www.health.nsw.gov.au, www.biofirst.nsw.gov.au, www.agric.nsw.gov.au, www.business.nsw.gov.au.**

Enquires about the Bio*First* Awards may be addressed to: **Rowena Tucker, Research & Development Policy Branch, NSW Department of Health, 73 Miller Street, North Sydney NSW 2059, Australia; Tel: +61 2 9391 9208; Fax: +61 2 9391 9556; Email: rtuck@doh.health.nsw.gov.au.**

KUWAIT UNIVERSITY
DEPARTMENT OF PSYCHIATRY
FACULTY OF MEDICINE

VACANCIES AVAILABLE
- Professors
- Associate Professors/Senior Lecturers
- Assistant Professors/Lecturers

QUALIFICATIONS
- M.R.C. Psych. (U.K.)
- North American Board or Equivalent
- The applicants should have adequate clinical, teaching, and research experience. Candidates in the field of general psychiatry, child and adolescent, psychopharmacology and substance abuse are welcome.

(The knowledge of spoken Arabic language will be an advantage.)

SALARY SCALES
2010-2170 KD. monthly for Assistant Professor; 2290-2450 KD. for Associate Professor; and 2585-2745 KD. for Professor. An additional clinical allowance of KD. 200-400 will be paid monthly. One KD. (Kuwaiti Dinar) = approx 3.30 US$. No taxation. Currency is transferable without restriction.

OTHER BENEFITS
Yearly conference attendance. Gratuity. Housing/furnishing allowance. Free medical treatment in Kuwait. 60 days paid annual leave. Free annual round-trip air tickets from country of Citizenship or permanent residence for self and family up to three dependent children. Baggage - and freight allowance. Education fees for a maximum of three children in Kuwait from elementary through high school.

Applicants should send curriculum vitae which should include the names of 3 referees; personal particulars; copy of the relevant pages of passport; qualifications with dates, career history with dates; teaching experience, research accomplishments and clinical experience, **NO LATER THAN 60 days from the date of this advertisement to: The Vice Dean, Administration (Recruitment Office), Faculty of Medicine, Kuwait University, P.O. Box 24923, 13110 Safat, Kuwait. Fax: (965) 5318454.**

FOR MORE INFORMATION, CONTACT
Dr. A.A. Fido, Chairman, Department of Psychiatry, Tel: (965) 5330467, Fax: (965) 5338904, E.Mail: Fido@hsc.kuniv.edu.kw

KUWAIT UNIVERSITY
Faculty of Medicine
Department of Obstetrics and Gynaecology

Applications are invited for the posts of Assistant Professors, Associate Professors and Full Professors in the subspecialties of Maternal Fetal Medicine, Gynaecological Oncology, Urogynaecology and Reproductive Medicine.

Qualifications: Interested applicants should have the MRCOG or FRCOG (UK) or North American Board (FACOG or FRCS in Canada). For Assistant Professors applicants should have at least 2 years of accredited subspecialty training with certification, and evidence of interest in research and teaching.

Applicants should have adequate clinical, teaching and research experience of at least 5 years and 10 years post-subspecialty certification for the posts of Associate Professor and Full Professor respectively. A good research background and output in the subspecialty area of individual interest is essential.

The applicant should be of an amiable character who should be able to work with others in a team.

Salary and Benefits:

Rank	Salary range in Kuwait Dinars
Professor	2585-2745
Associate Professor	2290-2450
Assistant Professor	2010-2170

In addition there are a social allowance of KD 65-87 per month. A clinical allowance of KD200 for Assistant Professors, KD300 for Associate Professors and KD400 for Professors is paid per month from September to June by Ministry of Health (1KD = approx. US $3.30, UK £2). There is no income tax in Kuwait and currency is transferable without restriction.

1. Baggage and freight allowance
2. Education allowances for up to three children attending school in Kuwait
3. Free furnished accommodation or housing allowance (KD 350 or 450) and a one time furniture allowance (KD 3500 or 4500) depending on marital status.
4. 60 days (2 months) paid summer leave.
5. Annual round-trip air tickets
6. End-of-service gratuity (one month's basic salary for each year of service).
7. Free general medical care in Kuwait government hospitals.
8. Attendance at one approved conference per year.

Letter of application, copies of relevant pages of passport, accompanied by a complete curriculum vitae and the names, addresses and fax numbers of three referees should be sent to:

The Vice-Dean Administration
Recruitment Office
Faculty of Medicine
P.O. Box 24923, Safat 13110
Kuwait
Fax: 965-531-8454

For more information contact:

Dr. Alexander Omu
Professor and Chairman
Department of Obstetrics and Gynaecology
Faculty of Medicine, Kuwait University
Tel: +965 5319601 Fax: +965 5338906
e-mail: omu@bsc.kuniv.edu.kw

Drexel University
College of Medicine
In the tradition of Woman's Medical College of Pennsylvania and Hahnemann Medical College

Drexel University College of Medicine
Chair, Department of Microbiology and Immunology

Drexel University College of Medicine (formerly MCP Hahnemann School of Medicine), the largest private medical school in the United States, seeks a highly qualified individual to chair the Department of Microbiology and Immunology. Faculty in the department are research-intensive and well-funded, and are actively involved in graduate and medical student education, and in service to the University. Research activities within the department include: the molecular and cell biology of malaria parasites and pathogenic fungi; immunological analysis of malaria and viral pathogenesis and vaccine development; Neisseria host-cell interactions; anthrax pathogenesis; yeast cell cycle and cellular metabolism; strategies to enhance the role of CD8(+) T cells in anti-HIV immunity; molecular and genetic characterization of autoimmune diseases; and the relationship between aging and the immune response. In addition, the department operates the College of Medicine's molecular genomics core facility, with a complete microarray laboratory.

Applicants should have an M.D., Ph.D. or an equivalent degree, significant competitive research funding, a commitment to education, the necessary skills and experience to manage a highly successful basic science department, and the qualifications necessary for appointment at the rank of a Professor. Applicants' research interests are expected to complement and expand upon the areas listed above. A highly competitive start-up package is offered, as are opportunities to hire new faculty.

Please send a letter of application including a one-page summary of research interests, your curriculum vitae, the names of at least three references and their contact information, and copies of three representative papers to: **Daniel V. Schidlow, M.D., Search Committee Chair, Professor and Chair, Department of Pediatrics, Drexel University College of Medicine, St. Christopher's Hospital for Children, Erie Avenue at Front Street, Philadelphia, PA 19134-1095; Phone: 215-427-4801; Fax: 215-427-4805; Email: daniel.schidlow@drexel.edu**.

Please visit our website at **http://www.drexel.edu/med/microbiology_immunology/**

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St. Jude Children's Research Hospital
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Postdoctoral Position in Molecular Oncogenesis

(REQ #3426)

A Postdoctoral position is available to study the role of the AML1/CBFß transcription factor complex in murine hematopoiesis. Studies will focus on elucidation of the role of this complex in the development of specific hematopoietic lineages. Investigation will also be directed toward the identification and characterization of relevant downstream transcriptional targets and on the investigation of the role that these targets play in hematopoiesis and leukemogenesis. These studies will utilize novel knock-out and knock-in mice recently developed in our laboratory. The successful applicant for this position will have either a Ph.D. and/or a M.D. and solid experience in molecular biology, cell culture, and/or genetic manipulation in mice.

St. Jude Children's Research Hospital has a highly interactive research environment and state-of-the-art facilities including core laboratories for proteomics, microarray analysis of gene expression and transgenic/knock-out technology. A competitive stipend and benefits package is available.

Interested candidates should send a CV, indicating REQ #3426, with three professional references (postal and E-mail addresses, phone and fax numbers) to:

Robert B. Lorsbach, M.D., Ph.D.
Department of Pathology
St. Jude Children's Research Hospital
332 North Lauderdale, Memphis, TN 38105
E-mail: robert.lorsbach@stjude.org

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www.stjude.org

Editorial Associate
Proceedings of the National Academy of Sciences
code 170.105

Qualifications
A minimum of a B.A./B.S. and 6 to 8 years related experience (Ph.D. in physical sciences or mathematics preferred). Must have a working knowledge of Microsoft Office Suite, databases, e-mail, and the Internet. The ideal candidate should have a solid understanding of current research trends. Travel is required.

Responsibilities
- Recruits scientific papers that will enhance the quality and breadth of PNAS (Proceedings of the National Academy of Sciences). The Editorial Associate recruits papers by meeting personally with scientists at scientific conferences and visiting laboratories, as well as through e-mail and phone communications. Recruitment also requires coordinating with Editorial Board Members and the Editor-in-Chief. Manuscript processing and peer review administration involves coordinating with the Managing Editor. This position reports directly to the Executive Editor.
- Coordinates and edits specialty papers. The Editorial Associate assembles and edits Special Feature Perspectives, as well as assists in the coordination and editing of Commentaries and Reviews.
- Reports on progress of all projects to the Editorial Board.

For immediate consideration, please forward your resume/cv indicating the appropriate job code to:

The National Academies
2001 Wisconsin Ave., NW
GR146
Washington, DC 20007
Fax: (202) 334-1746
E-mail: hrresumes@nas.edu

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ROCHE PROTEIN EXPRESSION GROUP HEAD OF PROTEIN PURIFICATION

The Roche Group, Basil, Switzerland, is pleased to announce the formation of the Roche Protein Expression Group (RPEG).

Based in Indianapolis, Indiana, RPEG is part of Roche Diagnostics Corporation, a World leader in Diagnostics and Life Science research reagents. RPEG will use both proprietary and patented technologies to produce novel proteins, which will be used for Drug Discovery research. Both cell-free and cell-based expression systems will be used.

RPEG seeks candidates for the *Head of Protein Purification.*

The successful candidate will direct an interdisciplinary team responsible for the purification of both native and modified proteins and will interact with the leaders of other scientific teams within RPEG. He/she will be responsible for providing input to the Executive Management for the purpose of managing the business and for the formation of business strategy.

The ideal candidate for this position will have the following experience:

- Ph.D. in Biochemistry or Molecular Biology
- 3-5 years' experience in protein purification in the Biotechnology or Pharmaceutical industry
- employee management
- cell-based protein production
- protein purification
- protein refolding
- protein labeling for NMR analysis
- protein crystallization

RPEG offers a very competitive compensation plan, including a performance bonus package.

Qualified candidates should apply online at our career site: **http://careers.ind.roche.com**. Roche is committed to providing equal opportunity in a diverse workforce.

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Helping People
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roche.com

EXERCISE PHYSIOLOGIST

THE DIVISION OF BIOLOGICAL SCIENCES, UNIVERSITY OF CALIFORNIA, DAVIS, invites applications and nominations for two positions in exercise physiology. These tenure-track positions may be at the **ASSISTANT PROFESSOR, ASSOCIATE PROFESSOR** or **PROFESSOR** level, as appropriate to the candidate's qualifications. These positions will be in the Exercise Biology Program, with the possibility of a joint appointment in the UC Davis School of Medicine. A Ph.D. (or equivalent) and postdoctoral experience is required. Candidates must have an outstanding record of research achievement and will be expected to develop a strong research program in exercise physiology. Particular attention will be afforded candidates who have an integrative perspective and employ mechanistic approaches to address important issues in exercise physiology, especially as related to muscle physiology/adaptation to exercise, and to candidates who would strengthen current campus initiatives on genomics, mouse biology, aging or gender-related responses to exercise. The successful candidates will be expected to teach undergraduate and graduate level courses in exercise biology and participate fully in the teaching and advising programs coordinated by the Divisions of Biological Sciences and Graduate Studies.

Applications should include: (1) curriculum vitae (with e-mail address), (2) statement of current and proposed research interests, (3) three relevant reprints, (4) statement of teaching experience/interests, (5) names, telephone numbers, and addresses (postal and e-mail) of at least three references, and (6) candidates should also arrange to have their reference letters mailed directly to the Committee Chair. All materials should be sent to: **Charles A. Fuller, Chair, Exercise Biology Search Committee, Exercise Biology Program, University of California, One Shields Avenue, Davis, CA 95616-8674**. Closing date: open until filled, but all materials must be received by **September 30, 2002** to be assured of full consideration.

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Postdoctoral Opportunities 2

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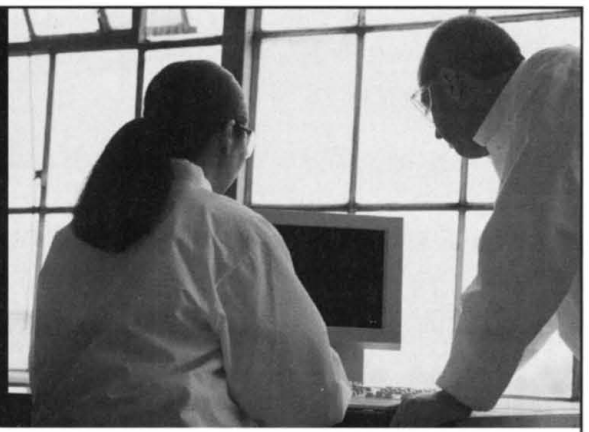

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Ph.D. students who want to take postdoctoral fellowships face a series of questions: Where should they pursue their further education? What discipline should they study? Whose group should they apply to for their postdocs? Should they apply for a nontraditional fellowship in an industrial or government lab? In this report, academic and nonacademic sponsors of postdoctoral fellowships will provide advice on how to answer those questions.

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National Institute on Aging
National Institutes of Health

Post-doctoral positions available in the Diabetes Section, Laboratory of Clinical Investigations, National Institute on Aging, NIH, Baltimore. The section is committed to studying all aspects of insulin secretion, particularly as to its modulation by gut factors. The candidates will be involved in on-going projects related to regulation of transcription factors in islets by gut factors and in studying the trophic factors responsible for islet growth and regeneration.

Candidates must possess a Ph.D.or M.D. and have no more than two years post-doc experience.

Interested applicants should send curriculum vitae, a brief description of research experience and interests, and three letters of references by Sept. 1, 2002 to:

Josephine M Egan, M.D.
Chief, Diabetes Section #23
GRC/NIA/NIH
5600 Nathan Shock Drive
Baltimore MD 21224

e-mail: eganj@vax.grc.nia.nih.gov

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FACULTY POSITION IN MICROBIAL BIOCHEMISTRY

UNIVERSITY OF CALIFORNIA, IRVINE

The Department of Molecular Biology and Biochemistry in the School of Biological Sciences announces the availability of a tenure-track position in Microbial Biochemistry at the ASSOCIATE PROFESSOR level. Applicants should hold Ph.D., M.D. or equivalent degree, and should have established a vigorous research program in the fundamental biochemical processes in microbial systems. The successful applicant will also be expected to teach microbiology at the undergraduate and graduate level. The appointment is to be at the Associate Professor level (with tenure) but outstanding candidates at all levels are encouraged to apply.

Applicants should submit a description of their research accomplishments including future plans, a Curriculum Vitae, and a list of at least four references to:

Chair, Microbiology Search Committee
Box 302
Department of Molecular Biology and Biochemistry
University of California
Irvine CA 92697-3900

DEADLINE FOR RECEIPT OF APPLICATIONS: Review of applications will begin September 15, 2002 and the recruitment will remain open until a suitable candidate has been hired.

The University of California, Irvine has an active career partner program and an NSF ADVANCE Program for Gender Equity and is an equal opportunity employer committed to excellence through diversity.

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Sr. Research Scientist/Research Biologist

Aventis Combinatorial Technologies Center (ACTC) is currently seeking a creative scientist level associate to work in 1 existing kinase biology group. Candidate will be involved in discovery of lead compounds for the kinase program. The position requires a Ph.D. in a biological/biochemical discipline with 3-5 yrs. of relevant exp. in an academic, biotechnology, or pharmaceutical setting. The candidate will have a proven track record of innovation in both the scientific & technological/instrumentation arenas. Specific exp. in enzyme kinetics & enzymology, molecular recognition & protein-protein interactions, & exp. in 1 or more following areas: protein kinase field, cell signaling & assay development, or High Throughput Screening (HTS) would be an advantage. The candidate should be able to interact with a multidisciplinary team, involving chemists, pharmacologists & HTS specialists at the ACTC site &, actively participate in lead discovery & optimization, including assay development/adaptation, screening, compound profiling & evaluation. The successful applicant should desire to work in a fast-paced, highly interactive, multidisciplinary collaborative environment & possess excellent communication skills, self-motivation & flexibility. He or she should be capable of overseeing activity of BS/MS level coworker(s), but have a strong desire to work at bench as well.

Computational Chemist

The successful candidate will work on 1 or more of target specific projects, that require exp. in structure-based & ligand-based drug design approaches (protein modeling, docking, pharmacophore modeling, QSAR etc.). A significant part of the work will also be dedicated to constructing & mining databases relevant to rational drug design. The successful candidate will be a major contributor to our many ongoing drug discovery & lead optimization programs & could expect to gain exp. in a fast moving & challenging working environment. Ph.D. in computational chemistry req'd. Exp. in using software like Sybyl, InsightII, Catalyst, MOE, & Cerius2 expected. The candidate is also expected to have high motivation, ability to work in a team & good communication skills to work very closely with synthetic chemists. Computer-programming skills, especially with Perl, UNIX shell-scripts and/or C/C++ and LINUX, are expected.

Become part of the most exciting growth company in the pharmaceutical industry. We reward our associates with exceptional benefits including medical/dental, retirement plans, holiday/floating holidays, work/life benefits and the opportunity to learn and grow. Apply online at Careers at Aventis, the Aventis Recruitment Center:

www.aventis.com

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ARIZONA STATE UNIVERSITY

MUSEUM CURATOR
Arizona State University
Main Campus

We invite applications for a position as Museum Curator of the vertebrate and invertebrate collections in the Department of Biology beginning January 2003. A Ph.D. in a biological science is required at the time of appointment, and candidates for the position also must have a minimum of one year of museum curatorial experience, a working knowledge of electronic archiving techniques, and experience in specimen-based research. The successful candidate will be expected to (1) conduct long-range planning and care of collections of over 250,000 specimens, richest in taxa of insects, amphibians, reptiles, and fishes; (2) cooperate with a wide range of Arizona State University faculty and associates in seeking external funding to support the collections; and (3) interact with the public in outreach programs. While this is a year-to-year state-funded appointment, it is expected to be long-term and renewable on the basis of satisfactory performance. Starting salary will be competitive, depending on work-related experience.

See **website: http://lifesciences.asu.edu/biology/text/museumcurator/details.htm** for more information on the collections, salary, and other details of the position.

Applicants must submit curriculum vitae, copies of up to three selected reprints, a concise statement of museum and collections management experience and goals, a statement of research interests, and arrange to have three letters of reference sent directly to: **Chair, Museum Curator Search Committee, Department of Biology, Arizona State University, Box 871501, Tempe, AZ 85287-1501**. Reference letters may also be sent to **e-mail: nclesko@asu.edu**. Application deadline is September 20, 2002, or, if not filled, weekly thereafter until the search is closed. *Arizona State University is an Affirmative Action/Equal Opportunity Employer.*

ASSISTANT/ASSOCIATE PROFESSOR

Outstanding Scientists using biochemical, cellular, and/or genetic approaches to investigate infectious disease or host response to disease are sought for a tenure-track position (90 percent research, 10 percent instruction). This position is funded by a competitive, state-supported salary (9 months) and technician, as well as a generous startup package. A Ph.D. or Ph.D./D.V.M. in a biomolecular discipline and postdoctoral experience is required. The potential to establish, or evidence of, a competitive, independent research program is required for candidates at the Assistant Professor level. Candidates at the Associate level are expected to have already established extramurally funded research programs. The department has state-of-the-art facilities for flow cytometry, cell biology, and molecular sciences and extensive large and small animal facilities. Veterinary Molecular Biology (VMB) faculty have expertise in transgenic and immunological approaches to host disease and a number of laboratories study viral, protozoal, fungal, or bacterial pathogenesis. Each of the eight laboratories in VMB is fully funded by grants from sources that include NIH, NSF, and USDA, and generate a departmental budget of more than 5 million dollars. Interested applicants should send letter of application, curriculum vitae, selected reprints, a summary statement concerning research plans and grant proposals, and arrange for three letters of reference to be sent to: **Chair, Search Committee, Veterinary Molecular Biology, Montana State University, Bozeman, MT 59717-3610**. Screening will begin September 1, 2002, and continue until a suitable applicant is hired. For a full job description and additional information about our department visit our **website: http://vmb.montana.edu**. *ADA/Equal Opportunity/Affirmative Action/Veterans Preference.*

POSITIONS OPEN

IMMUNOLOGIST ASSISTANT OR ASSOCIATE PROFESSOR
Department of Microbiology
The University of Iowa

The University of Iowa, Department of Microbiology, invites applications for a tenure-track faculty position in Immunology at the rank of Assistant or Associate Professor. Areas of interest include, but are not restricted to, innate and adaptive immune responses to infection. The position is a 12-month tenure-track appointment with highly competitive startup funds, modern laboratory facilities, and salaries and benefits. The Department of Microbiology is housed in newly renovated space and consists of faculty with research efforts in diverse areas including immunology, virology, pathogenic bacteriology, bacterial physiology, and genetics. The Immunology community at The University of Iowa consists of a collaborative and supportive group of over 30 Scientists with primary appointments in both basic and clinical departments, and oversees NIH-funded training programs for both doctoral and postdoctoral students. Candidates must possess a Ph.D. or M.D., or an equivalent degree, and several years of postdoctoral experience. The successful applicant will have a record of productivity and peer-reviewed publications in English language journals and the potential to develop a strong extramurally funded research program. Candidates should submit current curriculum vitae, a statement of research plans, and arrange to have three letters of reference sent to the address below.

John T. Harty, Ph.D.
Chair, Search Committee (F 2428)
Department of Microbiology
The University of Iowa
Bowen Science Building
Iowa City, IA 52242

The University of Iowa is an Affirmative Action/Equal Opportunity Employer. Women and minorities are strongly encouraged to apply.

NEUROPATHOLOGIST

The Department of Pathology and Neurology, University of California, Davis, are seeking a board eligible/certified Neuropathologist for a full-time position in the Regular (tenure-track) series. This individual will be expected to develop an extramurally funded independent research program in an area related to neurodegenerative disorders and will work closely with the UC Davis Alzheimer's Disease Center as director of the Neuropathology Core. The individual should be well trained in quantitative and experimental neuropathology, with expertise in cellular and molecular techniques. The individual should have skills in teaching medical students and house staff and also have demonstrated ability of potential to develop an extramurally funded independent research program. A valid California medical license or eligibility for licensure in the State of California is required. The level of appointment will be commensurate with credentials. Interested applicants should send curriculum vitae and the names and addresses of three references to: **William Jagust, M.D., Professor and Chair, Department of Neurology, University of California Davis Medical Center, Ambulatory Care Center, 4860 Y Street, Suite 3700, Sacramento, CA 95817**. This position is open until filled, but no later than June 30, 2003. *The University of California is an Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL FELLOWSHIPS

Michigan Society of Fellows Postdoctoral Fellowships Program is offering three-year Fellowships at the University of Michigan to begin September 2003. Annual stipend will be $43,260. Application postal deadline: October 4, 2002. Information and applications are available online at **website: http://www.rackham.umich.edu/Faculty/society.html**, or by writing to: **Society of Fellows, 3030 Rackham Building; University of Michigan, 915 East Washington Street, Ann Arbor, MI 48109-1070. E-mail: society.of.fellows@umich.edu**. No e-mail applications accepted.

POSITIONS OPEN

MEDICAL COLLEGE OF GEORGIA

A FACULTY POSITION is available at the Medical College of Georgia for an individual who has expertise in protein 2D-DIGE, protein digestion, mass spectrometry, and data interpretation. This individual will manage the new Proteomics/Mass Spectrometry Core Facility and should be able to provide the technical expertise in all aspects of proteomics and its analysis. Interested applicants should forward curriculum vitae and a list of three appropriate references to: **Ann Gambill, MCG, IMMAG, CB-2803, Augusta, GA 30912**. For further information you may access our **website: http://www.mcg.edu/Institutes/IMMAG**. ACH#45270, P.O. #E03010765.

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SENIOR FACULTY POSITION IN PHARMACOGENOMICS/ PHARMACOGENETICS
Department of Pharmaceutical Sciences
College of Pharmacy
University of Nebraska Medical Center

The College of Pharmacy at the University of Nebraska Medical Center (UNMC) seeks candidates with a strong background in pharmacogenomics/pharmacogenetics for a Senior Faculty position in the Department of Pharmaceutical Sciences. This position is at the **FULL** or **ASSOCIATE PROFESSOR** level with an attractive startup package. This is a dynamic, rapidly growing Department with research strengths in drug delivery, cancer, diabetes, brain, ocular therapeutics, and biophysical chemistry. The new faculty will have synergistic interactions with Nebraska Informatics Center for Life Sciences, Eppley Center for Cancer Research, Center for Neurovirology and Neurodegenerative Disorders, as well as other scientific centers and groups at UNMC. The successful candidate should have a sustained record of extramural funding, including major U.S. federal grants (or their equivalents for foreign applicants). A Ph.D. degree or equivalent is required *and women and minorities are especially urged to apply*. The candidate must possess a strong commitment to teaching excellence and continuing scholarship with excellent interpersonal and communication skills expected. The candidate will be expected to maintain a strong funded research program, develop multidisciplinary collaborations, and to teach in both professional and graduate programs. The review process will begin August 15, 2002, and continue until the position is filled.

Applicants should send curriculum vitae, names of five references, and a summary of research plans to: **Chairman, Faculty Search Committee, 986025 Nebraska Medical Center, Omaha, NE 69198-6025**. *UNMC is an Equal Opportunity/Affirmative Action Employer.*

STAFF INVESTIGATOR POSITION
Department of Dermatology
Henry Ford Health System

The Department of Dermatology at the Henry Ford Health System is seeking Ph.D. or M.D./Ph.D. Investigators to develop independent research programs in cutaneous biology which will augment current programs in T cell biology and pigment cell biology. Applicants will be expected to develop externally funded research programs in addition to receiving substantial internal support. Please send letter of interest describing future research plans, curriculum vitae, and names of three references to:

Henry W. Lim, M.D.
Clarence S. Livingood Chair
Department of Dermatology
Henry Ford Hospital K-16
Detroit, MI 48202

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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/)

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MAYO CLINIC

POSDOCTORAL POSITION

Rochester, Minnesota, U.S.A
Mayo Clinic/Mayo Medical School Postdoctoral Position
Cancer Genetics and Tumor Biology

Two postdoctoral positions are available immediately for individuals who are interested in studying DNA damage signaling in prostate cancer or AXIN2 signaling in GI tumors. The lab currently focuses on identification and characterization of genetic defects in prostate cancer and on mechanisms of AXIN2 in tumorigenesis using approaches ranging from functional genomics, mammalian cell culture, and molecular biology (*Nature Genetics* **26:** 146-47, 2000). Several genes that are mutated in prostate cancer have been identified. One candidate will be required to undertake biochemical and biological analysis of the candidate tumor suppressor genes in prostate cancer and the other will study AXIN2 in a new signaling pathway. Applicant should have a Ph.D. degree, be self-motivated and have strong research background in cancer genetics and/or tumor biology. The clinic research environment at Mayo Clinic is excellent.

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: **Wanguo Liu, Ph.D., Assistant Professor, Laboratory Medicine and Pathology, Guggenheim Building, Room 642C, Mayo Clinic/Mayo Medical School, 200 First Street SW, Rochester, MN 55905; (507) 266-0508; liu.wanguo@mayo.edu.**

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

SCIENCE WRITER

The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) 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.

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TENURE-TRACK FACULTY POSITION

The Department of Biomedical Sciences (BMS) in the College of Veterinary Medicine at Iowa State University is seeking applicants for a tenure-track **ASSISTANT/ASSOCIATE PROFESSOR** faculty position. Candidates are expected to teach professional, graduate, and undergraduate students and establish and conduct independent research. Primary teaching responsibilities will be to teach gross anatomy of domestic animals to professional students. The Department is looking for energetic candidates to join the expanding BMS faculty and interact with the interdisciplinary graduate programs at Iowa State University. A D.V.M. or Ph.D., or equivalent, with ability to teach and potential to conduct research is required. Teaching experience in gross anatomy, good publication record, and ability to secure extramural funding are preferred. The Department is willing to provide a mentor to the appropriate individual to teach gross anatomy.

Please send a hard copy of a signed letter of application, curriculum vitae, statement of career goals, and names, addresses, and telephone numbers of three references to: **Dr. Donald D. Draper, Chair, Search Committee, Department of Biomedical Sciences, College of Veterinary Medicine, Iowa State University, Ames, IA 50011-1250. Telephone: 515-294-4415; e-mail: ddraper@iastate.edu**. In addition, please send a complete e-mail application to: **Linda Erickson at e-mail: lericks@iastate.edu**.

To guarantee consideration, application must be received by September 1, 2002. Review of applications will begin immediately and will continue until position is filled. Anticipated start date is November 1, 2002. A more detailed description of the position is available on our **website: http://www.vm.iastate.edu/departments/bms**. *Iowa State University is an Affirmative Action/Equal Opportunity Employer.*

FACULTY POSITION
MOLECULAR AND CELLULAR PHARMACOLOGY
School of Medicine
University of Miami

The Department of Molecular and Cellular Pharmacology at the University of Miami School of Medicine is seeking applications for a Tenure-Track Faculty Position (rank open). Rank and salary will be commensurate with experience. Excellent laboratory space and startup funds are available. Candidates must have a Ph.D. and/or M.D. degree and have an established record of research excellence. Applicants from all areas of molecular/cellular biology and biomedical research are welcome. The new faculty member will complement existing research efforts in the Department, which include regulation of cardiac and skeletal muscle function, ion channels, receptors and signal transduction, function and development of the nervous system, and steroid hormone action.

Applicants should send curriculum vitae, description of current and future research interests, and the names and addresses of three references to: **Dr. James D. Potter, Chairman, Department of Molecular and Cellular Pharmacology, University of Miami School of Medicine, P.O. Box 016189, Miami, FL 33101. E-mail: elalor@med.miami.edu**. *An Equal Opportunity/Affirmative Action Employer.*

A **POSTDOCTORAL POSITION** is available immediately to study the mechanism and regulation of mammalian mRNA turnover (*Genes and Dev.* **14:** 1236; *Cell* **107:** 451). Motivated candidates with recent Ph.D., M.D., or equivalent degrees and strong background in biochemistry and cell/molecular biology and protein purification are encouraged to apply for this position. Interested applicants may send their curriculum vitae and at least two letters of reference to: **Dr. Ching-Yi Chen, Department of Biochemistry and Molecular Genetics, 440A Kaul Human Genetics Building, 720 20th Street South, University of Alabama at Birmingham, Birmingham, AL 35294-0024. E-mail: cchen@uab.edu**. *UAB is an Equal Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

AMYLIN™ PHARMACEUTICALS

Amylin Pharmaceuticals is committed to improving the lives of people with diabetes and other metabolic disorders through the discovery, development, and commercialization of innovative, cost-effective medicines.

***In Vivo* PHARMACOLOGIST/SCIENTIFIC INVESTIGATOR** (Reference number E305-02). Responsible for *in vivo* pharmacology studies to characterize our product candidates and advance novel discovery peptides. Specifically, will design, conduct, interpret, and present studies in animal models of diabetes, obesity, and cardiovascular diseases which support corporate decision-making and facilitate regulatory submissions. Will contribute to the development of highly collaborative pharmacology projects and will supervise the work of two associates. The ideal candidate has a strong ability to prioritize tasks and communicate clearly with supervisors and reports. Requires a Ph.D. and eight years of experience.

Amylin offers competitive compensation, benefits, and stock options. Amylin maintains a drug- and alcohol-free workplace and all offers of employment are contingent upon satisfactory completion of a pre-employment drug and alcohol test. Please forward résumé (including Reference number E305) to: **Amylin Pharmaceuticals, Inc., 9373 Town Centre Drive, Suite. 250, San Diego, CA 92121**, or **FAX: 858-558-0153** or **e-mail: jobs@amylin.com**. Detailed job descriptions at **website: http://www.amylin.com**.

STAFF SCIENTIST

Syngenta is a leading global agribusiness, employing more than 20,000 people worldwide and operating across all major areas of crop protection and seeds. We are currently seeking a Staff Scientist to join us at our biotechnology research facility located in Research Triangle Park, NC. This position requires a Ph.D. in biology, chemistry, biochemistry, or related field and two years of experience as a Research Scientist/Associate. Candidates must have experience with the isolation of bacterial enzymes that work under extreme environmental conditions, bioanalytical chemical analysis of enzymes, development of methods of formulations, and animal feeding trials. Candidates also must have experience with the development of methods for industrial scale enzyme production. Syngenta offers a competitive salary commensurate with experience, a comprehensive benefits package, and an environment conducive to professional achievement. For prompt consideration, apply online at **website: http://www.syngentabiotech.com** and indicate Job Number 0228. *An Equal Opportunity Employer.*

POSTDOCTORAL POSITIONS

Funded by the DoD Cancer Research Programs are available immediately to study the role of a membrane serine protease in tumor invasion/metastasis suppression (keyword prostasin). Background and skills in biochemistry and molecular biology required. Familiarity with cancer cell biology, histology, and animal models a plus. Send curriculum vitae and three letters of reference to: **Dr. Karl X. Chai, University of Central Florida, HPA–2, Room 335, 4000 Central Florida Boulevard, Orlando, FL 32816-2360**.

POSTDOCTORAL FELLOW

A Postdoctoral position is available immediately to study signal transduction of Rho family small G-proteins. Experience in molecular biology, cell biology, and biochemistry is preferred. The Weis Center for Research is part of the Geisinger Medical Center, a tertiary care teaching hospital. Please send curriculum vitae and names of three references to: **Kristin Gaul (WY), Weis Center for Research, Geisinger Clinic, 100 North Academy Avenue, Danville, PA 17822-2600**.

POSITIONS OPEN

SENIOR FACULTY POSITION IN PROTEOMICS
Department of Pharmaceutical Sciences
College of Pharmacy
University of Nebraska Medical Center

The College of Pharmacy at the University of Nebraska Medical Center (UNMC) seeks candidates with a strong background in proteomics for a tenure-track position in the Department of Pharmaceutical Sciences. This position is at the **FULL** or **ASSOCIATE PROFESSOR** level with an attractive startup package. This is a dynamic, rapidly growing Department with research strengths in drug delivery, cancer, diabetes, brain, ocular therapeutics, and biophysical chemistry. The new faculty will have synergistic interactions with Nebraska Informatics Center for Life Sciences, Eppley Center for Cancer Research, Center for Neurovirology and Neurodegenerative Disorders, as well as other scientific centers and groups at UNMC. The successful candidate should have a sustained record of extramural funding, including major U.S. federal grants (or their equivalents for foreign applicants). A Ph.D. degree or equivalent is required *and women and minorities are especially urged to apply*. The candidate must possess a strong commitment to teaching excellence and continuing scholarship with excellent interpersonal and communication skills expected. The candidate will be expected to maintain a strong, funded research program, develop multidisciplinary collaborations, and to teach in both professional and graduate programs. The review process will begin August 15, 2002, and continue until the position is filled.

Applicants should send curriculum vitae, names of five references, and a summary of research plans to: **Chairman, Faculty Search Committee, 986025 Nebraska Medical Center, Omaha, NE 69198-6025**. *UNMC is an Equal Opportunity/Affirmative Action Employer.*

SCIENTISTS/SENIOR SCIENTISTS
RNAi Research

Ph.D. level Scientists to join a new Boston area company, Alnylam Pharmaceuticals, developing therapeutics with RNA interference technology. Company founders are world renown in this field and have secured solid financing for the startup.

Molecular Biologists, Cell Biologists, or Biochemists with experience conducting RNA experiments (RNAi/siRNA experience a plus).

Biologists with experience in *in vivo* mouse disease models.

Pharmacologists with experience in the antisense oligonucleotide field and ADME/biodistribution experiments in animal models.

Interested candidates should send curriculum vitae/résumé to: **Ed Bocko; e-mail: ebockoprotran@att.net**. Principals only please; no telephone calls.

POSTDOCTORAL POSITION available now as part of an NIH-funded training program to introduce Ph.D.s with basic science experience to a career in biomedical research. The research focus will be the regulation of nuclear function in the context of disease, using biochemical, molecular, proteomic, and genomic approaches. The ideal candidate would have a strong background in cellular and molecular biology as applied to nuclear function. *NIH-funded postdoctoral training programs are available for U.S. citizens or permanent residents.* Interested applicants should send curriculum vitae with names of references to: **Thomas G. Brock, Department of Internal Medicine, University of Michigan, Ann Arbor, MI, 48109-0642. E-mail: brocko@umich.edu**. *The University of Michigan is an Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL POSITION is available immediately to study G protein-coupled receptor signaling in leukocytes (*J. Immun.* **167:**3559, 2001 and *JBC* **277:**22685, 2002). Experience in molecular biology is essential. Send curriculum vitae to: **Hydar Ali, Ph.D., Department of Pathology, University of Pennsylvania School of Dental Medicine, 4010 Locust Street, Philadelphia, PA, 19104-6002. E-mail: ali@path.dental.upenn.edu**.

Cell and Molecular Biology
Postdoctoral Research Position

The State University of New York at Stony Brook has a Postdoctoral Research position available in the Department of Physiology and Biophysics. The project is to elucidate mechanisms by which normal cells control the growth of neighboring tumor cells. This will be done in two ways: (1) Study the roles of intercellular communication by junctions and diffusible factors in this process; (2) Investigate effects of intercellular communication on signaling pathways initiated by transforming kinases. This work will utilize novel and traditional techniques to answer fundamental questions of extensive biological significance.

REQUIRED QUALIFICATIONS: Ph.D. and strong background in cell and molecular biology.

This position will start September 1, 2002 or when filled and last 2-3 years. Salary will be commensurate with NIH guidelines, with possible opportunity for travel.

To apply send (preferably by email) a letter of application, CV, short description of research experience and interests, and names and contact information of three references to:

Dr. Gary S. Goldberg, Physiology and Biophysics
School of Medicine, HSC-Basic Science Tower L6
State University of New York at Stony Brook
Stony Brook, NY 11794-8661
E-mail: gary.goldberg@stonybrook.edu

AA/EOE.

For other job opportunities
see www.stonybrook.edu/cjo

STONY BROOK
STATE UNIVERSITY OF NEW YORK

POSTDOCTORAL POSITIONS IN MAMMALIAN MOLECULAR and DEVELOPMENTAL GENETICS

Genetics of Prion Disease Susceptibility (G. Carlson). The goal of this program is to identify genes (in addition to the prion protein gene) that modify susceptibility to prion infection or that are involved in prion replication. Interactions with co-investigators at larger research centers in Seattle **(L.E. Hood)** and San Francisco **(S.B. Prusiner)** enhance the training environment. Successful applicants will have a solid background in molecular biology.

Application of Mouse Genetics to Alzheimer's Disease (G. Carlson). Genetic approaches using transgenic mice overexpressing Alzheimer's disease-associated genes are aimed at dissecting pathogenic mechanisms and developing better disease models. Outstanding expertise in behavior and molecular genetics **(K. Hsiao Ashe)**, biochemistry **(S.G. Younkin)**, pathology **(B. Hyman)**, and vascular physiology **(C. Iadecola)** is provided by our collaborators. Expertise of the successful applicant may be in cell biology, neuroscience, or molecular biology.

Molecular Motors and Chemical Genetics (J. Mercer). Unconventional myosin function in hearing and organelle transport.

Genetic Regulation of Myelination (J. Bermingham). Genetic control of the morphological changes in Schwann cells that result in myelin formation. Emphasis on genes that are misexpressed in sciatic nerves or brains of mice that possess defects in myelination and neuronal differentiation, to understand the genetic regulation of these processes.

Development of the Auditory and Renal Systems (P. Xu). Dissect the genetic and molecular pathways controlling early developmental process of mammalian ear and kidney morphogenesis. Develop models for human deafness syndromes through molecular, genetic and transgenic approaches.

McLaughlin Research Institute is a small non-profit research organization near the east slopes of the Rocky Mountains and provides an outstanding environment to train for a career in mammalian genetics. Applicants for these positions should provide evidence, including publication in internationally recognized journals, for their potential for an independent research career. To apply, state clearly which program you wish to apply to, send your curriculum vitae, a statement of research interests, and the names of three individuals we may contact for references to: **Training Office, McLaughlin Research Institute, 1520 23rd Street South, Great Falls, MT 59405; tg@po.mri.montana.edu.**

NIMH
National Institute of Mental Health

Genetic Epidemiology
Tenure-Track Investigator
Mood and Anxiety Disorders Program
National Institute of Mental Health
Bethesda, MD, USA

The Section on Developmental Genetic Epidemiology, Experimental Therapeutics and Pathophysiology Branch in the Mood and Anxiety Disorders Program at the National Institute of Mental Health, Intramural Research Program, is recruiting a scientist for a tenure-track position to develop research in genetic epidemiology in a new cross-institute program in neurogenetics. The candidate will have the opportunity for collaboration with scientists in diverse research areas in genetics (i.e., genetic epidemiology, biostatistics, statistical genetics, molecular genetics), as well as neuroscience and relevant clinical disciplines. The candidate should have an M.D. or Ph.D. in (1) epidemiology; (2) genetic epidemiology; (3) human genetics; or (4) psychology. In addition, the applicant should demonstrate significant experience in the design, implementation and/or analysis of genetic epidemiologic studies of complex diseases. This position includes an attractive start-up package and operating budget in an exciting multidisciplinary research environment. Preference will be given to candidates with a background and interest in complex disorders, particularly neuropsychiatric disorders. Applicants should send a curriculum vitae, statement of research interests, and three letters of recommendation to Dr. Kathleen Merikangas (kathleen.merikangas@nih.gov), Search Committee, National Institute of Mental Health, 15 K North Drive, MSC#2670, Bethesda, MD 20892, by November 1, 2002.

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NATIONAL INSTITUTES OF HEALTH

NATIONAL INSTITUTE OF NEUROLOGICAL DISORDERS AND STROKE

Help shape the future of Basic and Clinical Neuroscience at the NIH

The National Institute of Neurological Disorders and Stroke, NIH, is seeking a scientist or physician to serve as Program Director for the planning, evaluation, and administration of neuroscience research on Stroke/Ischemia and/or Vascular Biology. Successful candidates will join a highly interactive group of scientists and clinicians directing research programs in all areas of modern neuroscience and neurological disorders. He/she will plan and implement a cutting edge research program through active communication with the professional and lay communities as well as program staff from other institutes and agencies.

Applicants should have a Ph.D. and/or M.D. degree in a relevant field of biomedical science. This is a GS-13/14 civil service position (salary range $66,229.00 - $102,965.00). Physicians may be eligible for a Physician's Comparability Allowance. Title 42(f) appointing authority may be used. Permanent U.S. residents may apply for consideration under indefinite full-time appointments.

Applicants should submit **by September 10, 2002** a letter of application (refer to vacancy # **NINDS-02-0640**), a brief description of career interests, and a curriculum vitae and bibliography to: **Mr. Luis Arvelo, HRB, NINDS, NIH, Building 31, Room 8A23, 31 Center Drive, MSC 2540 Bethesda, MD 20892-2540; Tel. (301) 435-6033; FAX: (301) 480-0383; e-mail: la45j@nih.gov**. Applicants are **strongly encouraged** to obtain specific information concerning the knowledge, skills and abilities (KSAs) needed for the position by contacting **Mr. Arvelo at (301) 435-6033**. For complete information regarding the vacancy please see our Web site at: **https://careerhere.nih.gov/CHPublic/HRShowVac.taf?&VACANCY_uid1=12265&_Title=EV**.

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MEDICAL COLLEGE OF WISCONSIN

CURATOR

The Bioinformatics Research Center, Medical College of Wisconsin, in Milwaukee seeks a Curator in the fields of bioinformatics and rat genomics and genetics to work on the internationally recognized Rat Genome Database (RGD) and related projects. Successful candidate will be primarily responsible for data acquisition and analysis, and evaluating and annotating data to be incorporated into the databases. Will also work on the development of new or existing RGD data analysis tools. Applicant should have experience in molecular biology or mammalian systems and be versed in genetics, genomics, and cellular or developmental biology. Must have good English communication skills. M.S. with experience required; Ph.D. in life sciences preferred. Send cover letter and résumé to: **The Medical College of Wisconsin Attn: Employment Office HMGCS, 8701 Watertown Plank Road, Milwaukee, WI 53226. Telephone: 414-456-8245; FAX: 414-456-6502; e-mail: mcw_emp@mcw.edu. Website: http://www.mcw.edu/hr.** *Equal Opportunity Employer. Minorities/Females/Disabled/Veterans.*

MICROBIOLOGIST needed by Sugar Creek Packing Company, a manufacturer of bacon products in central Ohio. Duties include updating and revising HACCP programs and establishing testing protocols according to FDA Bacteriological Analytical Manual; establishing product specifications for analytical and microbial requirements; monitoring the analysis of raw and finished products for bacterial profile screening for Listeria species, Salmonella, Staphylococcus auerus, total coliforms, and generic E. coli for ready to eat meat products; authorizing release of product after testing; responsibility for laboratory and testing budget; ensuring USDA and required accreditations are maintained; and approving customer Certificates of Analysis requests. Member of crisis management team. Traveling 40 percent of time to other packing facilities located in Frontenac, KS; Bloomington, IL; and Dayton, OH. BS in Microbiology and three years of experience in job offered or three years of experience developing and implementing HACCP programs, establishing testing protocols for ready-to-eat meat products, and performing bacterial profiling for Listeria, Salmonella, Staphylococcus auerus, coliforms, and E. coli. Schedule is 6:00 a.m. to 5:00 p.m, Monday through Friday and on call 24/7 as necessary for monitoring testing and release of product. To apply, send résumé to: **L. Floss, Human Resources Manager, 2101 Kenskill Avenue, Washington Court House, OH 43160, referencing Job Order AA.** No telephone calls.

PRIMAL

Primal, a biotech in Seattle, Washington, is developing technologies in the study of behavioral disorders. Our research is based on the development of transgenic mice, and we have openings in our Mouse Biology and Behavioral Biology teams.

MOUSE BIOLOGY–RESEARCH ASSOCIATE. This position requires an individual who is competent in mouse embryo manipulation techniques including embryo isolation and transfer, microinjections, and experience in mouse husbandry.

BEHAVIORAL BIOLOGY – RESEARCH ASSOCIATE. This position requires an individual who has experience with behavioral testing of rodents, understands testing principles and protocols, and has experience with drug injections in rodents. Primal offers an excellent compensation and benefits package and a stimulating research environment. Please e-mail or FAX your curriculum vitae and cover letter to: **e-mail: hr@primalinc.com** or **FAX: 206-839-0303.**

POSITIONS OPEN

RESEARCH ASSISTANT/FELLOW to work on genetics of HIV neuronal injury and ADHD. Molecular biology/tissue culture experience preferred. Assistant will also have administrative work. Contact: **Bradford Navia, M.D., Ph.D., Tufts-New England Medical Center, Boston, MA 02111.** Or **e-mail: bnavia@lifespan.org.**

As the leading supplier of life science technology and related applications, Applied Biosystems is helping Life Scientists understand and use the power of biology to pursue new scientific discoveries and methods for diagnosing and treating disease. If you're interested in a challenging career in one of the fastest moving fields today, you've come to the right place.

Recent Ph.D. graduates or postdoctoral Scientists in chemical engineering, biochemistry, or organic chemistry, who are looking for a exciting opportunity to expand their scientific education into the intellectual property, patent, and legal fields, are encouraged to apply for our **TECHNICAL SPECIALIST** position.

The Technical Specialist will seek and identify novel inventions resulting from corporate research and product development. Incumbent will be well versed in the company's technology efforts and existing patent portfolio. Responsibilities include encouraging invention and disclosure of patentable material, drafting invention disclosures, and filing patent applications.

Advanced degree in chemical engineering, biochemistry, organic chemistry, or molecular biology is required. Familiarity with bioinformatics or computer software is a plus. Applied Biosystems will provide training, but some prior familiarity with patents is preferable. Strong verbal and written communication skills are necessary, as is the ability to work in a collegial but fast-paced work environment. Please forward your résumé to: **Shawn Phillips at e-mail: phillism@appliedbiosystems.com.** *Equal Opportunity Employer.*

NMR SPECTROSCOPIST

The Department of Biochemistry and Molecular Biology of the Medical University of South Carolina has a position open at the Associate or Full Professor level, commensurate with experience and track record, for an NMR Spectroscopist specializing in structural biology of macromolecules and in proteomics. The candidate must be a leader in NMR spectroscopy and will play a prominent role in the establishment of a new NMR laboratory that is being built around an 800 MgHz NMR instrument. The successful candidate is expected to maintain a vigorous, nationally competitive research program and to collaborate in solving structures of important proteins and protein-nucleic acid complexes. The Department of Biochemistry has strengths in nucleic acid biochemistry and molecular biology, lipid biochemistry, and has a rapidly growing program in X-ray crystallography. The University is located in attractive surroundings in the city of Charleston, and it is steadily gaining strength and stature as a nationally competitive research institution. Please send curriculum vitae, a clear statement of research plan, and the names and addresses (including e-mail addresses) of four references to: **NMR Search Committee, Department of Biochemistry and Molecular Biology, Box 250509, Medical University of South Carolina, Charleston, SC 29425.** *The Medical University of South Carolina is an Affirmative Action/Equal Opportunity Employer.*

POSITIONS OPEN

CuraGen Corporation

BIOPROCESS DEVELOPMENT AND MANUFACTURING

CuraGen Corporation (NASDAQ: CRGN) is a genomics-based pharmaceutical company that is combining engineering principles with biology and information technology to systematically discover and develop genomics-based pharmaceutical products. In order to support CuraGen's increasing pipeline of novel protein therapeutics and monoclonal antibodies, we are growing our bioprocess development and manufacturing team. We are seeking **SCIENTISTS** and **ENGINEERS** in protein expression, protein purification, protein formulation, bioanalytical development, and large-scale protein production (mammalian cell culture and microbial fermentation). Positions are available at all levels. CuraGen's offices are located in New Haven and Branford, Connecticut, along the state's beautiful shoreline region. CuraGen is also centrally located, just a short drive to New York City and Boston. CuraGen provides an attractive compensation package and competitive benefits. Relocation is available. To apply, visit **website: www.curagen.com/careers.**

RESEARCH HORTICULTURIST

The U.S. Department of Agriculture, Agricultural Research Service is seeking applicants for a permanent, full-time Research Horticulturist position at the Horticultural Crops Research Laboratory in Corvallis, Oregon. The successful candidate will conduct research on horticultural practices that optimize yields and improve quality of small fruits crops (strawberries, raspberries, blackberries, cranberries, blueberries, and other berry crops) grown in the Pacific Northwest. Specific areas of study may include whole plant physiology, plant nutrition or water use, or production practices. *U.S. citizenship is required* and a Ph.D. or equivalent is desired. Salary is commensurate with experience ($54,275 to $83,902). For information on the research program and/or more details on the position contact: **Dr. Chad Finn at Telephone: 541-750-8759;** or **e-mail finnc@bcc.orst.edu.** For specific application procedures and requirements, please call: **Ms. Beth Harrington at Telephone: 541-750-8700;** or **e-mail: harrinbe@onid.orst.edu.** You may also obtain a copy of the vacancy announcement on the USDA-ARS **website: http://www.ars.usda.gov/afm2/divisions/hrd/index.html;announcement ARS-X2W-2345.** Applications must be postmarked by August 30, 2002. *USDA/ARS is an Equal Opportunity Employer and Provider. Woman and minorities are encouraged to apply.*

ELECTROPHYSIOLOGIST

PROJECT SCIENTIST or **POSTDOCTORAL FELLOW** position is available in Center for Molecular Genetics and Department of Molecular Cardiology at the Cleveland Clinic Foundation (CCF). Research is related to electrophysiological characterization of human disease mutations and animal models for cardiac arrhythmias and sudden death. For more information about our projects, please visit **website: http://www.lerner.ccf.org/moleccard/wang/.** Experience in electrophysiology (patch-clamp) is required. Please submit curriculum vitae to: **Dr. Qing Wang, Director, Center for Cardiovascular Genetics by e-mail: wangq2@ccf.org.**

A **MOLECULAR BIOLOGIST** is sought to evaluate a magnetic resonance detectable maker gene for liver targeted gene therapy and to develop other biomarkers for molecular imaging. Ph.D. training in molecular/cell biology and experiences with constructing viral vectors are required. Experiences with atherosclerosis and other cardiovascular disease models are desirable. Send curriculum vitae and three letters of reference to: **Dr. Rong Zhou, Radiology Department, University of Pennsylvania, B6 Blockley Hall, Philadelphia, PA 19104. E-mail: zhou@rad.upenn.edu.**

Senior Research Scientist
Computer-Aided Drug Discovery

Albany Molecular Research, Inc. (NASDAQ:AMRI) is an established leader in collaborating with pharmaceutical, biotechnology and life science companies to accelerate the movement of products through the discovery and development process. Because of our talented staff, commitment to quality and customer satisfaction, AMRI continues to enjoy high demand for its services which has resulted in the availability of an outstanding career opportunity at its Bothell Research Center located near Seattle,WA.

This application-oriented position requires a Ph.D. in computational chemistry or a related discipline and experience in CADD applications relevant to drug discovery, both at the small molecular and protein level. Post-doctoral experience is highly desired and familiarity with scripting languages and informatics tools a plus.

AMRI offers competitive salaries, comprehensive benefits, and incentive programs that recognize and reward individual performance and its correlation to company success as well as an environment that fosters teamwork and opportunities for personal and professional growth. Please mail, E-mail, or fax resume and salary requirements to: Human Resources,Albany Molecular Research, Inc., 18804 North Creek Parkway, Suite 100, Bothell, WA 98011. Fax: (425)424-7299. E-mail: brchr@albmolecular.com. No phone calls please. EOE. M/F/D/V.

Albany Molecular Research, Inc.
www.albmolecular.com

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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UK
UNIVERSITY OF KENTUCKY

The University of Kentucky College of Medicine is seeking applications for Chair of Physiology. The department is one of six basic science departments within the University of Kentucky Chandler Medical Center in Lexington, KY and ranks in the top 20 in NIH funding among physiology departments in the U.S. Twenty-five faculty members fulfill the mission of the department in education, research, service, and supporting the aims and objectives of the Medical Center. Faculty members teach approximately 600 graduate students and undergraduates per year in more than six programs. The department has broad expertise in molecular and cellular methods and in all major areas of physiological science, including neurobiology, aging, and cardiovascular, reproductive, respiratory, endocrine and renal physiology. The College is seeking a candidate who will build on the foundation of this highly successful department. Candidates must have a PhD or MD and demonstrate a record of leadership and administrative experience.

Please send nominations or an application packet including a letter of interest, a CV and three reference names to Karen Dodridge, College of Medicine, Office for Research and Leadership Development, L007 Kentucky Clinic, Lexington, KY 40536-0284 or to kadodr@email.uky.edu. The committee will begin reviewing applications on September 3, 2002, and will continue accepting them until the position is filled.

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

National Institute on Aging
Intramural Research Program

FACILITY HEAD
INTRAMURAL RESEARCH PROGRAM
NATIONAL INSTITUTE ON AGING
NATIONAL INSTITUTES OF HEALTH

The Intramural Research Program (IRP) of the National Institute on Aging (NIA) invites applications for a Facility Head to manage the Mass Spectrometry Unit of the Research Resources Branch at the Gerontology Research Center and to conduct a related research program. The unit provides peptide analysis by MS, computer-assisted data processing, and proteomics studies including mapping proteins by HPLC, for all laboratories in the IRP. The ideal candidate is a Ph.D. with extensive experience in Mass Spectrometry and associated analytical protein techniques and computer-assisted analysis of results. Experience as a facility head is highly desirable.

Applicants should send curriculum vitae, bibliography and three letters of reference, at least two from non-collaborators, to: **National Institute on Aging, Gerontology Research Center, Human Resources Office, Vacancy #NIA-01-064A, 5600 Nathan Shock Drive, Room 1D09, Baltimore, MD 21224**. Applications must be postmarked no later than **August 16, 2002**. For application procedures and questions, applicants should call 410-558-8116.

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POSTDOCTORAL POSITIONS
Program in Molecular Immunology
Medical College of Georgia
Augusta, Georgia

Two Research positions available immediately in the areas of: (1) protein transduction technology (see *Genesis* **33**:48–54, 2002), and (2) regulation of immune response by dendritic cells in mice. Experience in mouse immunology, cellular immunology, or molecular biology is preferable. A résumé with a statement of research interests and names of at least two references should be sent to: **Pandelakis A. Koni, FAX: 706-721-7959; e-mail: pkoni@mall.mcg.edu.** *Equal Employment Opportunity/Affirmative Action/Equal Access Employer.*

ASSISTANT/ASSOCIATE PROFESSOR INFECTIOUS DISEASES OF WILDLIFE
Division of Biological Sciences and
Fish and Wildlife Biology Program
The University of Montana

The Division of Biological Sciences at The University of Montana invites applications for a tenure-track Assistant/Associate Professor studying wildlife diseases, with primary responsibility in the interdisciplinary Fish and Wildlife Biology Program. The successful applicant will hold a Ph.D. or Ph.D./D.V.M. and will be expected to develop an interactive, extramurally funded research program in the ecology or pathogenesis of infectious disease in wildlife populations and to participate in both undergraduate and graduate education in wildlife biology. Individuals with research interests that complement those of existing faculty are strongly encouraged to apply. For information on the position and application procedures see **websites: http://biology.dbs.umt.edu/** and **http://www.forestry.umt.edu/academics/wildlife**. Screening of applications will begin immediately and continue until the position is filled. *The University of Montana, an Equal Opportunity/Affirmative Action Employer, seeks to employ outstanding men and women who contribute to the cultural diversity valued in a university setting.*

2003 ASM/NCID POSTDOCTORAL RESEARCH POSITIONS IN MICROBIOLOGY

Positions are available for **POSTDOCTORAL SCIENTISTS** to conduct novel research with the overall objective of developing practical applications of microbiology, immunology, and epidemiology for diagnosis and prevention of infectious diseases. Associates will perform research in residence at the National Center for Infectious Diseases, which is headquartered at the Centers for Disease Control and Prevention in Atlanta, Georgia. Applications can only be submitted electronically. Application Deadline: November 15, 2002. **Website: http://www.asmusa.org/edusrc/edu23e.htm. E-mail: fellowships-careerinformation@asmusa.org.**

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.**

POSITIONS OPEN

POSTDOCTORAL RESEARCHER

A Postdoctoral Researcher position is available in the laboratory of **Dr. Bo Xu**, Department of Genetics/Stanley S. Scott Cancer Center at Louisiana State University Health Science Center-New Orleans, to study the mechanisms of cell cycle checkpoint control in response to DNA damage. A Ph.D. in cell biology, molecular biology, or biochemistry is required. A strong background in techniques such as DNA cloning, PCR, western blotting, and cell culture is preferred. Qualified candidates should send curriculum vitae with bibliography, and the names and e-mail addresses of three references to: **Assistant Business Manager, Stanley S. Scott Cancer Center, 2025 Gravier Street, Suite 613, New Orleans, LA 70112.** Or **e-mail: emares@lsuhsc.edu** by August 30, 2002. *LSUHSC is an Equal Employment Opportunity/Affirmative Action Employer.*

POSTDOCTORAL RESEARCH ASSOCIATE
Neutrophil Biochemistry

Applications are invited for a Postdoctoral Research Associate to work on neutrophil biochemistry at Montana State University-Bozeman. Our research program utilizes protein biochemistry, cell biology, and pharmacology to study the neutrophil NADPH oxidase and the role of free radicals in inflammatory disease. Applicants should have a Ph.D. or equivalent degree in biochemistry, immunology, or a closely related field and experience in protein biochemistry and free radical biology. E-mail curriculum vitae and addresses of three references to: **Dr. Mark Quinn; e-mail: mquinn@montana.edu** or mail to: **Veterinary Molecular Biology, Montana State University, Bozeman, MT 59717.** *ADA/Affirmative Action/Equal Opportunity Veteran's Preference.*

TWO POSTDOCTORAL POSITIONS TO STUDY STEM CELL RENEWAL AND LOCALIZED PROTEIN SYNTHESIS IN MAMMALIAN GERM CELLS

For more information visit **website: http://sertoli.genetics.washington.edu/braunlab/**. Experience in molecular biology, genetics, or biochemistry is desired. If interested, please **e-mail: braun@u.washington.edu**; or send a cover letter and your curriculum vitae to:

Dr. Robert E. Braun
Department of Genome Sciences
Box 357730
University of Washington School of Medicine
Seattle, WA 98195

POSTDOCTORAL POSITION available to investigate the signaling pathways underlying cancer, in particular the role of the Pak protein kinase. A combination of biochemical cell biological, genetic, and molecular genetic approaches are employed. For more information and recent publications see **website: http://www.uphs.upenn.edu/pharm/faculty/indexf.html#field**. Candidates should have an M.D. or Ph.D. in a relevant field with experience as demonstrated by peer reviewed publications. Send curriculum vitae and three references to: **Jeffrey Field, Ph.D., Department of Pharmacology, University of Pennsylvania, 149A John Morgan Building, 36th Street and Hamilton Walk, Philadelphia, PA 19104. E-mail: field@pharm.med.upenn.edu.**

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

POSTDOCTORAL POSITION available immediately to study calcium sparks and spikes in pulmonary arterial smooth muscle cells and cardiac myocytes using patch-clamp and confocal fluorescence imaging techniques. Experience in electrophysiology, immunohistocytochemistry, and/or molecular biology in cardiac myocytes preferred. Send curriculum vitae and three references to: **James S.K. Sham, Ph.D., Division of Pulmonary and Critical Care Medicine, Johns Hopkins School of Medicine, 5501 Hopkins Bayview Circle, Baltimore, MD 21224. FAX: 410-550-2612; e-mail: jsks@jhmi.edu.**

POSITIONS OPEN

POSTDOCTORAL POSITION
Molecular Mechanisms of Neurodegeneration

Postdoctoral position is available in a productive, well-funded laboratory to study the pathogenic processes of Huntington's disease, with an emphasis on the molecular mechanisms of mitochondrial dysfunction. Applicants must have received a Ph.D. in biochemistry, cell biology, or a related discipline within the last three years. The position offers a highly competitive salary with benefits. University of Alabama at Birmingham (UAB) is one of the top 20 NIH-funded institutions and provides an outstanding, interactive research environment. *Must currently reside in the U.S. or Canada to be available for an interview.* Send curriculum vitae and the names of three references to: **Dr. Gail V. Johnson, Department of Psychiatry, SC 1061, 1720 7th Avenue South, University of Alabama at Birmingham, School of Medicine, Birmingham, AL 35294-0017. E-mail: gvwj@uab.edu; FAX: 205-934-3709; website: http://www.dpo.uab.edu/gvwj/.**

POSTDOCTORAL POSITION available immediately in the NIH/NIAID/Laboratory of Allergic Diseases to study heterotrimeric G protein signaling and Regulator of G-protein signaling (RGS) proteins in inflammatory cells using biochemical techniques and knockout mice. A Ph.D. and/or M.D. and experience in molecular and cellular biology is required. Interest and/or experience in animal models is desirable. Salary based on relevant experience and education. Send cover letter, curriculum vitae, summary of past work, and names and addresses of three references to: **Dr. Kirk Druey, Laboratory of Allergic Diseases Molecular Signal Transduction Section NIAID/NIH/Twinbrook II, Room 200E 12441 Parklawn Drive, Rockville, MD 20852 U.S.A. E-mail: kdruey@niaid.nih.gov.**

For information see **website: http://www.niaid.nih.gov/dir/labs/LAD/molecular.htm.** *NIH is an Equal Opportunity Employer.*

SENIOR POSTDOCTORAL POSITION AVAILABLE AT SLOAN-KETTERING INSTITUTE

Seeking research Scientists with several years of postdoctoral experience who wish to assume a supervisory role in a laboratory focused on defining the molecular events underlying normal and malignant hematopoiesis. Applicants should have considerable expertise in *in vitro* assays of hematopoietic stem cells, in the study of gene silencing mechanisms, or in the creation and analysis of knock-out or transgenic mice. Send a description of your research interests, curriculum vitae, and the names and phone numbers of three references to: **Dr. Stephen D. Nimer, Memorial Sloan-Kettering Cancer Center, 1275 York Avenue, Box 575, New York, NY 10021.** *Memorial Sloan-Kettering is an Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL POSITION in Neurobiology of Circadian Rhythms is available immediately at Vanderbilt University to study circadian rhythms and calcium fluxes in mammals. Experience with basic techniques of neurobiology and molecular genetics is necessary; experience with signal transduction (esp. Ca++), transfection, CREB, etc., is desirable. See **website: http://johnsonlab.biology.vanderbilt.edu/**. Send curriculum vitae and the names of three references to: **Dr. Carl Johnson; e-mail: carl.h.johnson@vanderbilt.edu.**

POSTDOCTORAL POSITION within the Emory Center for Islet Transplantation. The successful candidate will have the opportunity to interact with Scientists working at the interface of chemistry, biology, and bioengineering. Applicants should have a Ph.D. degree with training in cell and molecular biology. Experience in animal experimentation, islet cell transplantation, and immunology desirable. Send curriculum vitae to: **Elliot L. Chaikof, M.D., Ph.D., Emory University School of Medicine, Department of Surgery, 1639 Pierce Drive, 5105 WMB, Atlanta, GA 30322. E-mail: echaiko@emory.edu.**

NEUROME, INC.

Neuroscience - the study of the structure, functions, capacities and diseases of the brain - offers the greatest challenge in biology, the leading growth area for biomedical research, and the focus of hope for understanding and treatment of brain-based behaviors and pathologies, from deficits in memory and learning to diseases like Alzheimer's and schizophrenia.

Neurome, Inc., a newly established neuroscience company founded by a team of leading brain researchers from The Scripps Research Institute and Mount Sinai School of Medicine, will use its proprietary technologies to develop standardized, quantitative databases that accurately depict and integrate gene expression patterns in the 3-dimensional context of the brain's structures, circuits and cells, and to deploy these databases in primary research directed toward the discovery and development of gene targets for enhancement of brain function and treatment of brain-based disease.

Research Associates

We are seeking highly motivated individuals willing to work, learn, and grow in a team environment. The ideal candidates will have at least one year of research experience in immunohistochemistry, neurocytology, and in situ hybridization. A bachelor's degree in neurobiology, cell biology, biochemistry or related fields is required. These posts will be responsible for working with Neurome's scientific team to implement our approach to cellular neurobiology and brain analysis aimed at development of comprehensive neural databases. The major work effort will focus on preparation of tissue samples for quantitative analysis of gene expression patterns.

Compensation will meet your qualifications and includes equity participation in an exciting growth Company. For consideration, please send or fax your resume/CV, letters of reference and salary history to: **NEUROME, INC., 11149 North Torrey Pines Road, La Jolla, California 92037, www.neurome.com, fax: (858) 677-0458**. *EOE*

NEUROME

GRANTS

Think Mitochondria

UMDF Research Grant Program

♦ Request for Proposals ♦

UMDF — Restoring Hope

UNITED MITOCHONDRIAL DISEASE FOUNDATION

The United Mitochondrial Disease Foundation (UMDF) is seeking new, aggressive research to continue its mission to find cures and better treatments for mitochondrial illnesses.

Eligible proposals must fall under at least one of the following categories:

- Seed money for new researchers
- Clinical research
- Post-doctoral fellowship
- New concept for experienced investigators

Letter Of Intent (LOI) Application and additional information about the grant process is available via the UMDF web site at www.umdf.org or by contacting the home office.

Deadline: The UMDF must receive LOI by September 17, 2002. Incomplete LOI or those received past the deadline will not be considered. FAX transmittal is not acceptable.

Contact Information: UMDF Research Grant Program, 8085 Saltsburg Rd, Suite 201, Pittsburgh, PA 15239 USA, Tel: (412) 793-8077, Fax: (412) 793-6477, Email: info@umdf.org

PRIZES

The Linus Pauling Institute Prize for Health Research

Call for Nominations

The Linus Pauling Institute Prize for Health Research is a prize sponsored by the Linus Pauling Institute at Oregon State University (**http://lpi.orst.edu**). The Prize consists of $50,000 and a medal, and is awarded biannually. The LPI functions from the basic premise that an optimum diet and a healthy lifestyle is the key to optimum health. The mission of the LPI is to determine the function and role of micronutrients, vitamins and phytochemicals in promoting optimum health and preventing and treating disease; and to determine the role of oxidative/nitrative stress and antioxidants in human health and disease. The purpose of the Prize is to encourage and recognize excellence in research relating to LPI's mission.

Procedure: The nominator should submit a nomination letter, two supporting letters and the candidate's curriculum vitae. The candidate's research accomplishments in light of the purpose of the Prize should be amply described in the letters. The recipient must be present to accept the Prize and present a talk at a conference entitled "Diet and Optimum Health" organized by the LPI in Portland, Oregon, May 21-24, 2003. Nominations should be sent to: **Linus Pauling Institute, Attn: Barbara McVicar, Oregon State University, 571 Weniger Hall, Corvallis, OR 97331-6512**. Complete nomination materials must be received by **November 1, 2002**.

GRANTS

RFA Announcement
Funds Available for Niemann-Pick Research

The Ara Parseghian Medical Research Foundation announces an unrestricted request for applications (RFA) directed toward understanding the cause and/or developing a treatment for Niemann-Pick Type C (NPC) disease. NPC is an autosomal recessive neurological storage disease. The gene responsible for NPC disease (NPC1) was isolated in 1997, and NPC2 in 2000.

Yeast, fly, worm, cat and mouse homologues have been identified. NPC1 mutant mice are available through Jackson Laboratories and human NPC1 and NPC2 mutant cell lines are available. Preliminary characterization of the NPC1 gene product suggests that it is a membrane-bound protein involved in vesicular trafficking of sterols, sphingolipids and other metabolites.

The Foundation will fund meritorious research proposals for up to a two-year period (renewable thereafter), at a maximum of $150,000/year, excluding salary support for the Principal Investigator. Investigators new to this field are encouraged to apply for funding.

Targeted areas of emphasis include:

1. **Cell Biology of the NPC1 and NPC2 proteins:** Elucidation of the intracellular function(s) of the NPC1 and NPC2 proteins with particular emphasis on fully characterizing the role of these proteins in vesicular trafficking and intracellular signaling.
2. **Neurobiology of NPC disease:** Determination of the molecular pathogenesis of NPC disease in the CNS with particular emphasis on defining the function of the NPC1 and NPC2 proteins in the CNS.
3. **Novel therapeutic approaches for NPC disease including:** Identification of bioactive compounds and characterization of cell-based therapeutic strategies. Identification of surrogate endpoints that correlate with NPC disease progression including neurophysiological testing and/or genomics/proteomics approaches.

The application deadline is: October 11, 2002 with funding to begin January 1, 2003. For information and application forms, please contact: **Ara Parseghian Medical Research Foundation, 3530 East Campo Abierto, Suite 105, Tucson, AZ 85718. Telephone: 520-577-5106; FAX: 520-577-5212.**

For complete information on grants administration, instructions and to download the grant application, please visit our web site at **www.parseghian.org**.

GRANTS

AMERICAN HEALTH ASSISTANCE FOUNDATION

Research Grants
Call for Applications

The American Health Assistance Foundation invites applications from researchers at non-profit institutions for the following programs:

Alzheimer's Disease Research: grant awards for Standard Awards, a maximum of $100,000 per year, up to two years, or Pilot Project Awards, a maximum of $50,000 per year, up to two years, for research into the causes and treatment of Alzheimer's disease.
Application Deadline: October 15, 2002

National Glaucoma Research: grant awards of up to $35,000 per year for up to two years for research into the causes and treatment of glaucoma.
Application Deadline: November 15, 2002

National Heart Foundation: starter grants of up to $25,000 for one year of research into the cause and treatment of stroke or cardiovascular disease. To qualify for a starter grant, the investigator must be an assistant professor (or equivalent).
Application Deadline: November 1, 2002

Macular Degeneration Research: grant awards of up to $50,000 for one year of research into the causes and treatment of macular degeneration.
Letters of intent due July 16, 2002

For application forms and guidelines please visit our website at **www.ahaf.org**, call: **301-948-3244** or email: **smonahan@ahaf.org**

1–3 DECEMBER 2002

International Workshop on Multi-locus Sequence Typing

Hinxton Hall Conference Centre

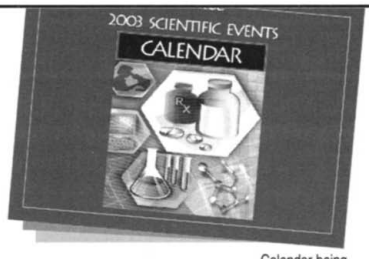
An international workshop on multi-locus sequence typing (MLST) and its applications to the study and control of bacterial pathogens will be held at Hinxton Hall Conference Centre from 1 to 3 December 2002. The meeting will discuss recent conceptual and technical advances in MLST, and aims to promote cross-discipline dialogue in the translation of studies of pathogen populations into public health action.

The workshop is being organized by Professor Keith Cartwright and Dr Martin Maiden, aided by a scientific advisory committee comprising Professor Mark Achtman, Dr I Feavers, Dr Mary Ramsay, and Professor Brian Spratt. The workshop is co-sponsored by the Wellcome Trust and the UK Public Health Laboratory Service. Further details will be available at: www.wellcome.ac.uk/hinxton/mlst.

Enquiries: Miss Elaine O'Brien
Hinxton Hall Conference Centre
The Wellcome Trust Genome Campus
Hinxton, Cambridgeshire CB10 1RQ, UK
E-mail: elaine.obrien@hinxton.wellcome.ac.uk
Tel: +44 (0)1223 495110 Fax: +44 (0)1223 495023
Venue information: www.hinxton.wellcome.ac.uk

The Wellcome Trust is a registered charity, no. 210183. RM-2684.p/07-2002/JM

The Wellcome Trust



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

Calendar being published by *Science* Business Office.

The 2003 Scientific Events Calendar will be published in our 13 December 2002 issue. Deadline for submissions is 8 November 2002. This calendar reaches nearly 800,000[1] *Science* readers who could be potential delegates, exhibitors, and sponsors for your event.

Go to www.sciencemeetings.org to submit a free listing or call your *Science* sales representative for more information on multiple listings and advertising in this year-round resource.

1 *Science* Harvey Research Readership surveys: 14 January 2000, 4 February 2000, 4 June 1999 (Japan) as applied to *Science* December 2001 BPA Publisher's Statement, publisher's own data.

For full details contact:

In the U.S.	Kathleen Clark	In Europe	Richard Walters
phone	202-326-6555	phone	+44 (0) 1223 326 500
fax	202-289-6742	fax	+44 (0) 1223 326 532
e-mail	kclark@aaas.org	e-mail	rwalters@science-int.co.uk

Science @ www.sciencemeetings.org

AAAS

GRANTS

Creating the future of biotech—Together

Invitrogen's Research Tools Development Grants Program provides funding for investigators developing innovative tools for use in life science research. Total funding is US$5 million per year, with annual individual awards of up to US$100,000. Grants are provided quarterly.

Third quarter 2002 funding is for novel approaches in the **separation and purification** of biomolecules. Proposals to develop enrichment, fractionation and labeling technologies are also of interest. Deadline for full Grant Proposals is September 1. A preproposal is required. For more information, visit www.invitrogen.com, e-mail grants@invitrogen.com, or call 800 955 6288, ext. 66140.

1600 Faraday Ave., Carlsbad, CA 92008 USA
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Invitrogen™
life technologies

AWARDS

CaP CURE
ASSOCIATION FOR THE CURE OF CANCER OF THE PROSTATE

New Funding Opportunities

FOR PROSTATE CANCER RESEARCH

CaP CURE, The Association for the Cure of Cancer of the Prostate is a public charity with a single mission: **to eradicate prostate cancer as a health risk to men and their families.** CaP CURE will now modify its research funding strategy to focus greater resources on programs that promise high levels of multidisciplinary intra- and inter-institutional collaboration.

We are now funding two new types of research awards:

1. **Expanded Competitive Award.** Proposals will be entertained for highly novel prostate cancer research programs with an expanded scope. Applicants should consider multi-disciplinary approaches involving significant intra- and inter-institutional collaboration. We will not fund programs that are simple extensions of work in progress. The successful applicant will propose a highly coordinated research program with potential for near term translation to the clinic or immediate clinical application. These awards are for one year and will be budgeted up to $500,000 each. Deadline for submission will be September 6, 2002.
2. **Donald S. Coffey-CaP CURE Physician-Scientist Award.** This new program replaces the CaP CURE Young Investigator Award and reflects forward integration of our programs toward patient care. The successful candidate will maintain a clinical practice caring for prostate cancer patients and an active, recognized prostate cancer research program based in the clinic or laboratory. These awards will provide support for three years at the rate of $50,000 per year. Deadline for submission will be June 1, 2003.

Instructions for submission of these applications may be found at **www.capcure.org**. For additional information contact **Dr. Howard Soule** at **capcuregrants@capcure.org**.

BUCK INSTITUTE
SYMPOSIUM 2002

Aging Cell

*Sponsored in part by **Aging Cell**, a major new journal on the biology of aging, from Blackwell Publishing and the Anatomical Society. To be launched at:*

The Buck Institute Symposia on Aging

"Neuroendocrine Systems and Lifespan Determination"

September 24-27, 2002 Novato, California

The Buck Symposia aim to bring together researchers from a wide variety of disciplines to discuss and challenge major issues in aging research. This symposium will focus on the relationship between neuroendocrine signaling, metabolism, stress response, and aging. Participants will discuss the conservation of aging processes between invertebrates and mammals and will focus on the molecular and biochemical mechanisms of aging.

Featured speakers:
Julie Andersen, Steve Austad, Andrzej Bartke, Kenneth Beckman, Dale Bredesen, Ashley Bush, Catherine Clarke, David Clemmons, Leonard Guarente, Tom Johnson, Cynthia Kenyon, Gordon Lithgow, Simon Melov, Brian Merry, David Nicholls, Arlan Richardson, Peter Rotwein, Gary Ruvkun, Takuji Shirasawa, William Sonntag, John Speakman, Marc Tatar, John Tower, Wayne Van Voorhies.

Co-Organizers:
Dale E. Bredesen, Simon Melov, Gordon Lithgow, Tom Johnson.

For more information and registration details visit our website: **www.buckinstitute.org/symposium** or contact: **symposium@buckinstitute.org**

Buck Institute for Age Research
8001 Redwood Blvd. Novato, CA 94945
(415) 209-2000
www.buckinstitute.org

POSTDOCTORAL ASSOCIATES

The Howard Hughes Medical Institute, a scientific and philanthropic organization devoted to biomedical research and scientific education, is seeking two highly skilled and motivated Postdoctoral Associates for a genetics laboratory at the University of California, San Francisco.

In this position, you would be a part of a research laboratory specializing in human genetics. Projects for which you might be responsible include the genetics of absolute pitch, **website: http://perfectpitch.ucsf.edu**, and genetic aspects of mercury metabolism in mice and yeast. Projects in other areas of human genetics involve autism and neurodegenerative disorders.

Requirements include a Ph.D. degree, preferably with experience in human, mouse, or yeast genetics. Candidate must possess excellent analytical, organization, and communication skills and the ability to work independently.

HHMI offers competitive salaries, a generous retirement plan, and flexible benefits. Please send résumé and three references to: **Jane Gitschier, Ph.D., Howard Hughes Medical Institute, 533 Parnassus Avenue U-280, San Francisco, CA 94143-0794. FAX: 415-502-0720. E-mail: gitschi@itsa.ucsf.edu**. Visit our **website: http://www.hhmi.org**. *HHMI is an Equal Opportunity Employer.*

POSTDOCTORAL POSITION IN EXPERIMENTAL HEMATOLOGY

A Postdoctoral position is available in the Cell Manipulation Center of the Blood and Marrow Transplant Program at the MD Anderson Cancer Center. Projects include translational research in cellular immunotherapy, purification and *ex vivo* expansion of cord blood and other stem cells, and phenotype analysis of cultured cells by flow cytometry. A Ph.D. in cell biology or related field is essential. A background in dendritic cell biology and experience in flow cytometry analysis is desirable. Starting salary commensurate with experience.

Please submit a letter of interest and curriculum vitae to: **Corliss Denman, UT MD Anderson Cancer Center, Box 423, 1515 Holcolmbe Boulevard Houston, Texas 77030. FAX: 713-745-1278; e-mail: cdenman@mail.mdanderson.org**. *MD Anderson is an Equal Opportunity and Affirmative Action Employer. We encourage minorities and women to apply for this position.*

A postdoctoral position is available to be filled as a **RESEARCH ASSOCIATE** (Ph.D./M.D.) in an active NIH-funded immunology laboratory, in the Department of Pathology at University of Virginia, to investigate immunoregulation and autoimmune disease pathogenesis in versatile animal models (*Immun. Rev.* **182:**138, 2001). Molecular and cellular immunology techniques are desirable and salary is highly competitive. Minimum of one year of experience desired. Send curriculum vitae, publication list, and the names, addresses, e-mail addresses, and telephone numbers of three Scientists for letters of reference to: **Dr. Kenneth Tung, Department of Pathology, University of Virginia Health System, Box 800214, Charlottesville, VA 22908. FAX: 434-924-8060. E-mail: kst7k@virginia.edu**. *The University of Virginia is an Equal Opportunity/ Affirmative Action Employer.* Position open until filled.

POSTDOCTORAL OR RESEARCH ASSOCIATE POSITION

A Postdoctoral or Research Associate position is immediately available for a qualified Ph.D. or M.D. to study signal transduction pathways involved in the regulation of ion channels by cytoskeletal components in cardiac myocytes. Experience with single cell voltage clamp techniques is required and confocal fluorescence microscopy is desirable. Send curriculum vitae, names and addresses of three references, and a brief statement of research experiences and interests to: **Dr. Stephen Lipsius, Department of Physiology, Loyola University Medical Center, 2160 South First Avenue, Maywood, IL 60164. FAX: 708-216-2606; e-mail: slipsiu@lumc.edu**.

POSITIONS OPEN

POSTDOCTORAL FELLOWSHIPS
Molecular Cardiovascular Biology

The training program in Developmental Cardiology at the Cardiovascular Research Institute, University of California, San Francisco is seeking highly qualified Postdoctoral Researchers with a Ph.D. and/or M.D. and a strong background in molecular/cellular biology or biochemistry for the following areas: (1) signaling/gene transcription governing cardiomyocyte proliferation; (2) cell cycle regulation and myocardial regeneration; (3) functional genomic studies of cardiac development and pathology; and (4) genetic studies of coronary vascular development.

Systems include primary cell culture, zebrafish, and mouse models. Techniques include microarray analysis and transgenic modeling. *U.S. citizen/permanent resident status required.*

E-mail curriculum vitae, research summary, and names of three references to: **H. S. Bernstein (e-mail: hsbernstein@pedcard.ucsf.edu; website: http://bernstein.ucsf.edu)** or **J. Bristow (e-mail: jbristow@pedcard.ucsf.edu; website: http://itsa.ucsf.edu/~pedendo/faculty.html#James%20Bristow)**.

UCSF is an Equal Opportunity Employer.

FACILITY MANAGER, SCIENTISTS, POSTDOCTORAL FELLOWS, TECHNICIANS

Van Andel Research Institute is an independent not-for-profit organization focusing on basic research of cancers. Multiple positions are available immediately to study signaling pathways mediated by nuclear hormone receptors, including glucocorticoid receptor (see the July 12 issue of *Cell*) and peroxisome proliferator-activated receptors (*Nature* **415:**813; *PNAS* **98:**13919; *Mol Cell* **5:**545; *Genes and Dev.* **14:**2229 and *Mol Cell* **3:**397). These positions require a B.S., M.S., or Ph.D. degree in biological sciences. Candidates with strong skills in molecular biology, protein biochemistry, crystallization, structure determination, or experience in maintaining X-ray facility are encouraged to e-mail their curriculum vitae as well as the names and addresses of three references to: **Human Resources Department, Van Andel Institute, 333 Bostwick Avenue Northeast, Grand Rapids, MI 49503. E-mail: vari-employment@vai.org** *Equal Opportunity Employer.*

MOLECULAR IMMUNOLOGISTS

The Receptor Cell Biology section of NIAID, NIH, is recruiting for Postdoctoral Fellows for studies on natural killer cell receptor expression and function. Emphasis is on the interplay of activating and inhibitory receptors, regulation of expression and signal transduction. Salary based on relevant experience and education. Qualified and interested candidates should send curriculum vitae and three letters of reference. For more information regarding these positions, contact: **John E. Coligan, Ph.D., Laboratory of Allergic Diseases, Receptor Cell Biology Section, NIAID/NIH, Twinbrook II, Room 205, 12441 Parklawn Drive, Rockville, MD 20852-8180. Telephone: 301-496-8247; FAX: 301-480-2818; e-mail: jcoligan@niaid.nih.gov**. *NIH is an Equal Opportunity Employer.*

RESEARCH ASSOCIATE/POSTDOCTORAL POSITION available to study the neural and behavioral mechanisms of cross-modality (i.e., multisensory) integration. Interest in electrophysiological, behavioral, or anatomical techniques preferred. Send curriculum vitae and three letters of recommendation to: **Barry E. Stein, Ph.D., Department of Neurobiology and Anatomy, Wake Forest University Health Sciences, Winston-Salem, NC 27157-1010**. *Affirmative Action/Equal Opportunity Employer.*

POSITIONS OPEN

POSTDOCTORAL POSITIONS IN STOCKAND'S LABORATORY

There are several NIH-funded Postdoctoral opportunities available in the Stockand Laboratory. Projects focus on regulation of the epithelial Na channel (ENaC), characterization of the apical targeting signals of EnaC, and identification of accessory proteins modulating ENaC activity. In addition, the cellular and molecular mechanisms of aldosterone action are being investigated. These projects involve extensive electrophysiology in complement with molecular biology and biochemistry. Experience in patch-clamp electrophysiology helpful but not required. The Department of Physiology at the University of Texas Health Science Center at San Antonio offers a rich research environment with excellent opportunities for collaboration and career development. San Antonio is a historic, attractive, and multicultural city in Texas, near Austin, the Gulf Coast, and Mexico. Interested candidates should contact: **Jim Stockand, Ph.D., Department of Physiology - 7756, University of Texas Health Science Center, 7703 Floyd Curl Drive, San Antonio, TX 78229-3900. E-mail: Stockand@uthscsa.edu**. *The University of Texas Health Science Center at San Antonio is an Equal Employment Opportunity/Affirmative Action Employer.*

Four **POSTDOCTORAL POSITIONS** in microbiology/biochemistry are available immediately in the Department of Microbiology and Cell Science at the University of Florida, Gainesville. The research to be conducted involves engineering bacterial two-component regulatory systems to respond to novel signal molecules. Membrane sensors with novel properties will be created by a combination of random mutagenesis, and domain swapping with homologous and heterologous proteins. Initially, sensors that specifically recognize environmental pollutants will be sought using high-throughput methods. The long-term goal of the research is to define the underlying principles of two-component signal transduction systems so that desired biosensors can be rationally designed. The position requires a Ph.D. in microbiology, biochemistry, or a related discipline. Candidates with a strong background in molecular genetics and microbiology are preferred. Salaries will be $30,000 to $50,000 per year depending on experience and qualifications. Interested parties should send their curriculum vitae to: **Dr. Thomas A. Bobik, University of Florida, Department of Microbiology and Cell Science, PO110700, Gainesville, FL 32611**. Or **e-mail: bobik@ufl.edu**.

POSTDOCTORAL POSITIONS
in Developmental and Cancer Biology

Projects are available in two areas: (1) Axis determination and germ-layer formation in mouse embryogenesis (*Nature* **395:**702-707' 1998; *Genes Dev.* **13:** 2527-253, 1999; *Nature* **403:**385-389, 2000; *Trends Genet.* **16:**303-309, 2000); (2) Prostate development and cancer, using mouse model systems (*Genes Dev.* **13:**966-977, 1999; *Genes Dev.***14:**2410-2434, 2000). Expertise in developmental and/or molecular biology is essential. To apply, please send curriculum vitae, a summary of research interests, and three letters of reference to: **Michael M. Shen, Ph.D., Center for Advanced Biotechnology and Medicine, UMDNJ-Robert Wood Johnson Medical School, 679 Hoes Lane, Piscataway, NJ 08854. FAX: 732-235-5373. E-mail: mshen@cabm.rutgers.edu**. For additional information, see **website: http://shen.cabm.rutgers.edu**.

POSTDOCTORAL POSITION. An NIH-funded Postdoctoral position is available immediately for studies on germinal center B cell function in tolerance and autoimmunity to DNA in autoimmune and anti-DNA antibody transgenic autoimmune mice. Experience in basic immunology, immunohistochemistry, and molecular biology will be necessary. Send current curriculum vitae and the names of three references to: **Tony Marion, Department of Molecular Sciences, University of Tennessee Health Science Center, 858 Madison Avenue, Memphis, TN 38163. E-mail: tmarion@utmem.edu**.

POSITIONS OPEN

POSTDOCTORAL POSITION IN MACROMOLECULAR NMR AND STRUCTURAL BIOLOGY
Laboratory of Chemical Physics
National Institute of Diabetes and Digestive and Kidney Diseases

A Postdoctoral position is available immediately in the Section of Protein NMR to determine the three-dimensional solution structures of larger macromolecular complexes by multidimensional NMR spectroscopy. Particular emphasis is currently being placed on protein-protein complexes involved in signal transduction, and on binary and ternary protein-nucleic acid complexes involved in transcription. (For further details of projects in the laboratory see **website: http://spin.niddk.nih.gov/clore**). Applicants must have a Ph.D. and/or M.D. and less than five years of postdoctoral experience. Expertise in multidimensional NMR, as well as protein expression and purification, is essential.

The Laboratory of Chemical Physics in NIDDK provides state-of-the-art research facilities in NMR spectroscopy and structural biology in a highly collegial environment involving a number of NMR and X-ray groups. Please send your curriculum vitae bibliography, and copies of selected publications, and arrange for three letters of reference to be sent directly to: **G. Marius Clore, M.D. Ph.D., Chief Protein NMR Section, Laboratory of Chemical Physics, Building 5/B1–30I, NIDDK, National Institutes of Health, Bethesda, MD 20892–0510, FAX: 301-496-0825, E-mail: mariusc@intra.niddk.nih.gov.** *NIH is an Equal Opportunity Employer.*

POSTDOCTORAL FELLOW to study actin binding protein villin and its role in cell migration, which is implicated in colon cancer and inflammatory bowel disease. Current projects include structure-function studies with villin. Expertise in tissue culture is required. Highly motivated individuals will have the opportunity to learn new techniques (e.g., molecular biology and protein chemistry) and to submit independent grant proposals in the future with the potential to be appointed Research Associate/Instructor. Contact: **Seema Khurana, Department of Physiology, The University of Tennessee Health Science Center, 402 Nash, 894 Union Avenue, Memphis, TN 38163. E-mail: skhurana@utmem.edu.** *The University of Tennessee is an Equal Employment Opportunity/Affirmative Action/Title VI/Title IX/Section 504/ADA/ADEA Employer.*

GRADUATE PROGRAM

GRADUATE TRAINING IN INFECTIOUS DISEASE AND IMMUNOLOGY

The Veterinary Molecular Biology (VMB) Department of Montana State University performs basic and applied research using state-of-the-art technologies to contribute to a better understanding of human and animal disease. Graduate education is a high priority of VMB in awarding the Master of Science and Doctor of Philosophy degrees. VMB is nationally competitive for extramural funds with student stipends, tuition, and health insurance funded by NIH, USDA, NSF, and other public and private sources. Research strengths of the VMB faculty include: mucosal immunology, virology, pulmonary immunology, developmental biology, molecular parasitology, cellular immunology, genetics, and genome science.

VMB graduate students rotate through three different laboratories before choosing a dissertation project, which provides an opportunity to learn research techniques, their power and limitations, as well as a broader perspective of overall research efforts and philosophies. VMB is a unique program to the Northwest in that it has a small research institute-like atmosphere, highly competitive Scientists, and is located in a highly desirable recreational area in the Rocky Mountains.

For more information visit our **website: http://vmb.montana.edu/**or contact: **Veterinary Molecular Biology, P.O. Box 173610, MSU-Bozeman, Bozeman, MT 59717-3610.**

POSITIONS OPEN

POSTDOCTORAL POSITION
Functional Genomics of Ion Channels
Job Code: TJ

We are seeking an ion channel expert to join a group focused on the functional characterization of novel ion chanel genes. The group is looking to combine electrophysiology, cutting-edge genomic technologies, and high throughput screening to define the physiological roles of specific ion channels. Opportunities exist to pursue drug discovery if interesting potential targets are found. The ideal candidate will have broad interests and will look to take advantage of the collaborative possibilities and extensive core facilities that make Genomics Institute of the Novartis Research Foundation (GNF) special. Patch clamp expertise is essential and experience with genomic methods, mouse models, and tissue culture are highly desired. Please submit curriculum vitae and any supporting documents to: **Genomics Institute of the Novartis Research Foundation (GNF), Job Code: TJ, 10675 John Jay Hopkins Drive, San Diego, CA 92121. FAX: 858-812-1670;** or **e-mail: jobs@gnf.org**; subject line must include Job Code. *Equal Opportunity Employer.*

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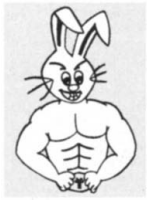

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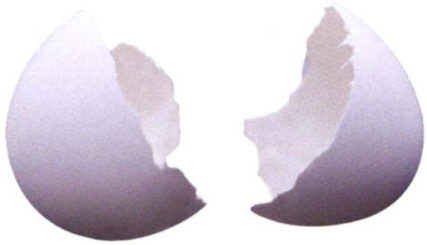

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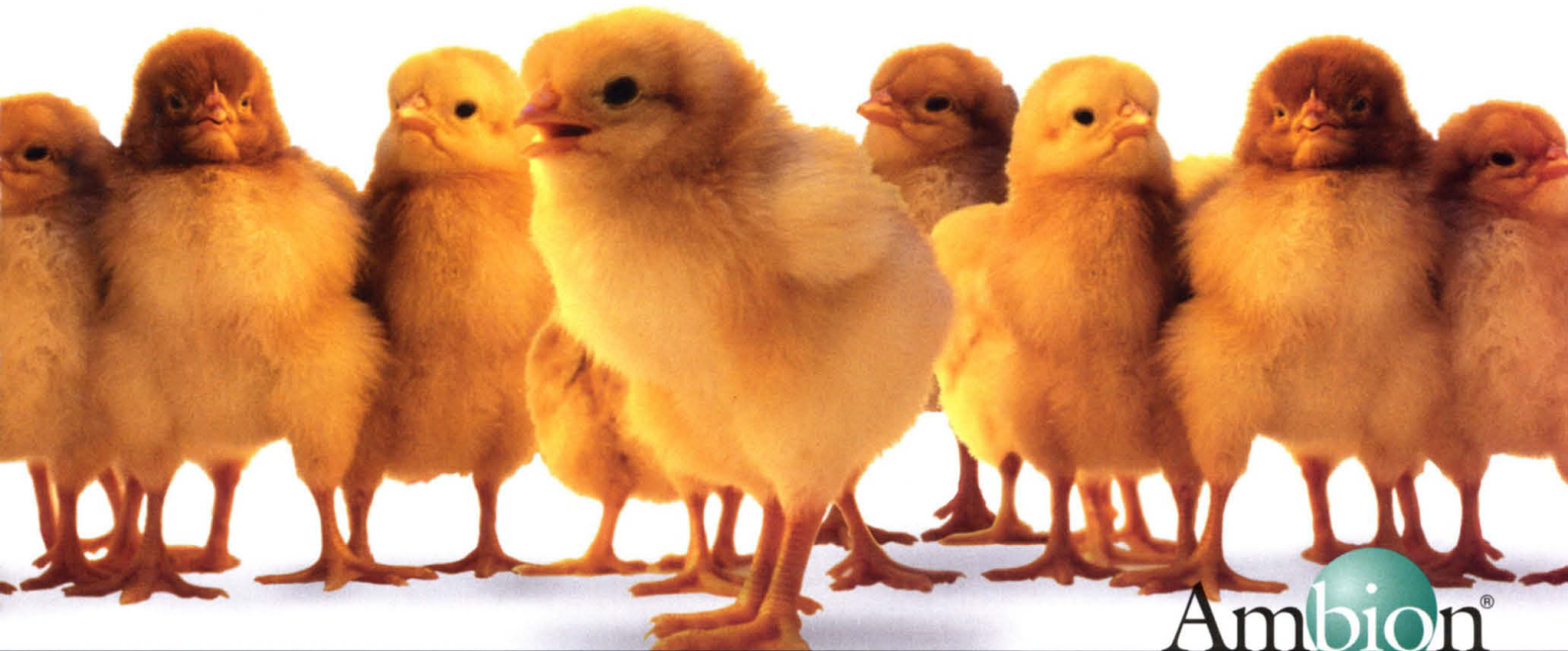

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