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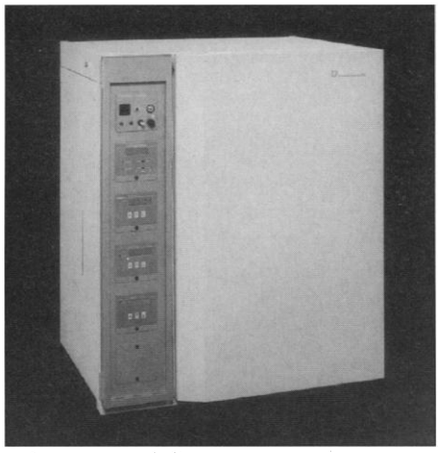

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Pipette Tips

With ShaftGard tips, both the pipette shaft and tip ejector fit inside the tip. No part of the pipette ever touches the vessel walls, so the danger of cross-contamination is eliminated. ShaftGard tips are significantly longer than standard 10-μl tips for full immersion into 0.5- to 2.0-ml microcentrifuge and polymerase chain reaction tubes. They are certified to be free of ribonuclease, deoxyribonuclease, DNA, and pyrogen. **Rainin Instrument. For information call 510-654-9142 or circle 142 on the reader service card.**

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FCR-10 Camera and PhotoPad

This system allows the user to document agarose gels without ever leaving the lab bench or turning off the lights. The FCR-10 camera combines a fixed focal length camera with the versatility of optional interchangeable hoods. Variable shutter speeds and aperture settings allow photographic flexibility, and a pistol-grip design with trigger shutter release provides handheld simplicity. The user simply makes the appropriate setting, puts the camera over the subject on a transilluminator, and pulls the trigger. The PhotoPad Scanner makes it easy to add the pictures to virtually any document. The user simply places a photo in the PhotoPad and clicks the Capture button. In 60 seconds or less the photo is digitized and ready to be dragged and dropped into documents or posters, e-mailed, or published on the Internet. **Fotodyne. For information call 800-362-3686 or circle 143 on the reader service card.**

■

Alcohol Solvent Recycling System

SolvCycle is a system for extracting stains, dyes, and cellular debris from alcohols used during staining procedures in histology and cytology labs. It produces clean, reusable alcohol. The system increases lab safety by eliminating the hazards associated with distillation, and it can eliminate the need to ship the spent liquid off-site as a hazardous chemical waste. **Naiad Technologies. For information call 888-296-2423 or circle 144 on the reader service card.**

■

Technical and Scientific Data Software

Noesys is desktop software for Windows and Macintosh that provides access to and control of technical and scientific data formatted in the increasingly important hierarchical data format (HDF). Noesys also includes Fortner Research's multi-dimensional graphical data analysis tools—Plot, Transform, and T3D (formerly Slicer). Thanks to its efficiency, flexibility, and platform-independent structure, HDF is rapidly becoming the standard for viewing and analyzing very large data sets. The need for universal scientific and engineering data formats is becoming critical to manage the enormous amounts of data being generated. Noesys was developed both as a catalyst to aid in the adoption of HDF and to provide a desktop tool for managing HDF data. Until now, the only tools available to access HDF were UNIX-based utilities and a few high-end commercial products that work with HDF in a limited capacity. **Adept Scientific. For information call 01462 480055 or circle 145 on the reader service card.**

■

Yeast Protein Product

The ESP yeast protein expression and purification system is for rapid, inexpensive, and high-yield production of proteins in a eukaryotic organism. The system retains many eukaryotic posttranslational modifications of proteins

(continued on page 1531)

(continued from page 1529)

that can be critical for the biological activity of expressed proteins. By making use of the yeast *Schizosaccharomyces pombe* as the host and glutathione-S-transferase (GST) as the protein purification tag, the ESP system expresses a protein of interest in yeast as a fusion with GST. The fusion protein is then purified using glutathione-agarose beads, and the GST tag can be removed from the protein by proteolytic cleavage with either bovine enterokinase or thrombin. **Stratagene. For information call 800-424-5444 or circle 146 on the reader service card.**

■

Video Documentation System

BioDoc II video documentation system combines a state of the art charge-coupled device (CCD) camera for sensitive detection of small amounts of nucleic acids, an easy-to-use keypad for quickly setting all camera parameters, Windows-based control software, and a digital, publication-quality printer. The resolution and sensitivity of the CCD camera allow detection of bands that can be barely seen by the eye. To eliminate long ultraviolet radiation of gels, a built-in freeze-function allows for optimization of the picture after its capture. **Biometra. For information call 0551 50 68 60 or circle 147 on the reader service card.**

■

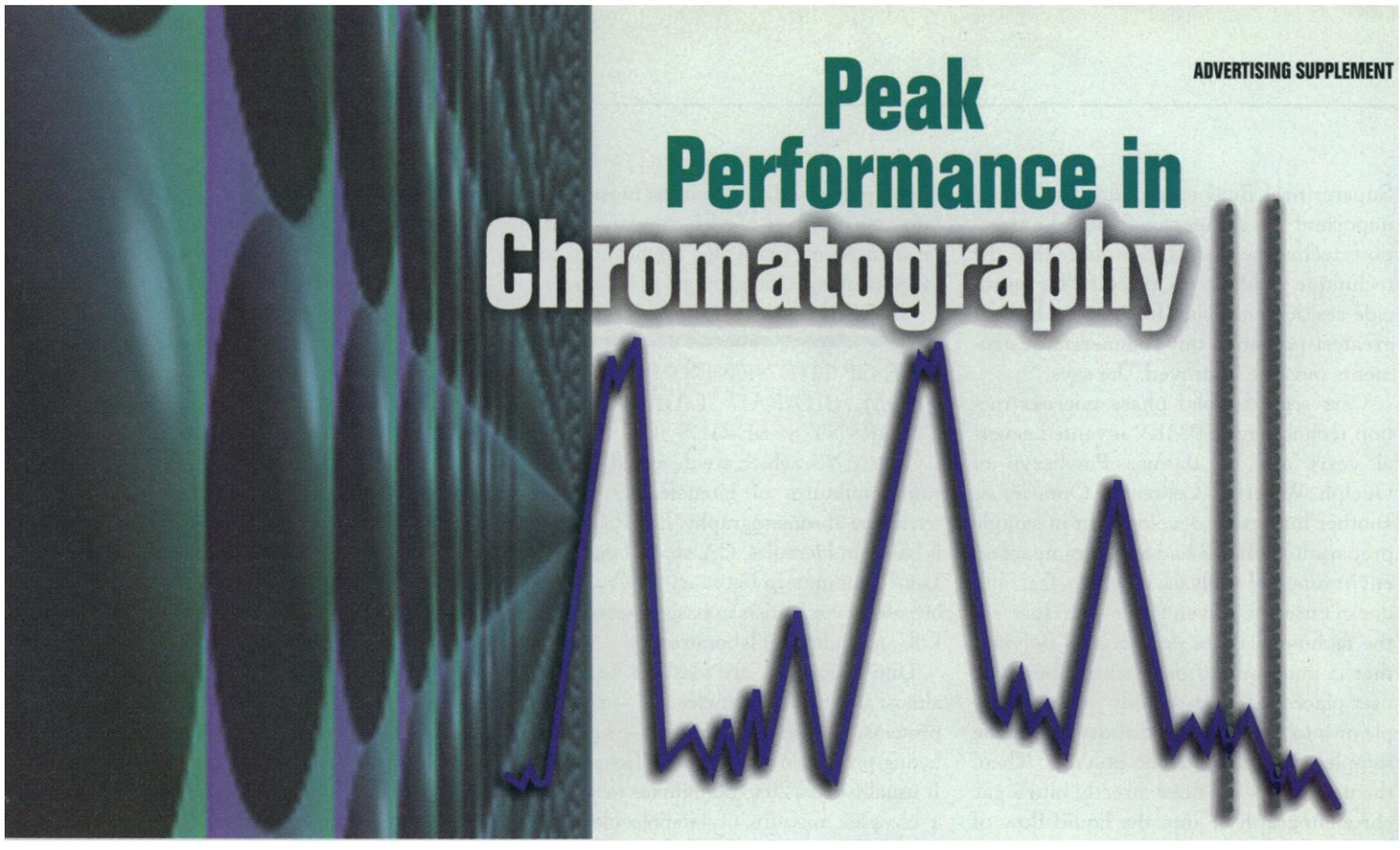
Literature

Intracellular Signal Transduction is a 310-page publication that describes the role of protein phosphorylation cascades and the structure, regulation, and function of protein kinases and phosphatases. Its wealth of information on signal transduction should be of interest to researchers in pharmacology, toxicology, cell and molecular biology, biochemistry, and neuroscience. **Sigma Chemical. For information call 800-325-3010 or circle 148 on the reader service card.**

Kathon CG/ICP Preservative for Media Biocide Applications describes a preservative that offers superior biocidal, compatibility, handling, and disposal characteristics for protecting research media such as reagents, controls, and buffer solutions. The active components—two isothiazolones—eradicate bacteria, fungi, and yeast at low concentrations for long periods without interfering with most enzyme- or antibody-linked reactions or assay indicators. **Supelco. For information call 800-247-6628 or circle 149 on the reader service card.**

Signal Conditioning & PC-Based Data Acquisition Handbook was created to be the definitive guide to signal conditioning techniques used by engineers in test and measurement applications. The 128-page handbook helps readers design accurate data-acquisition applications, avoid common pitfalls, and understand the requirements for proper transducer use. **IOtech. For information call 216-439-4091 or circle 150 on the reader service card.**

Newly offered instrumentation, apparatus, and laboratory materials of interest to researchers in all disciplines in academic, industrial, and government organizations are featured in this space. Emphasis is given to purpose, chief characteristics, and availability of products and materials. Endorsement by *Science* or AAAS of any products or materials mentioned in Tech.Sight is not implied. Additional information may be obtained from the manufacturers or suppliers named by circling the appropriate number on the Readers' Service Card and placing it in a mailbox. Postage is free.



Peak Performance in Chromatography

Feeling inundated with the alphabet soup of today's chromatography methods? Join the crowd.

Gas chromatography (GC) and liquid chromatography (LC) are still the meat-and-potatoes basis for separating mixtures and purifying compounds, but the techniques rarely exist in a pure state. Instead, variations on the GC and LC themes dominate the field: high-performance LC (HPLC), fast GC, and reversed-phase LC (RPLC) are common. Hyphenated techniques that combine a chromatographic method with a different analytical technique such as mass spectroscopy (MS) abound: GC-MS, GC coupled to ion-trap MS (GC-ITMS), and HPLC-MS pepper the analytical chemistry landscape. Even newer methods of preparing samples have their own language: solid-phase extraction (SPE)—which, of course, could be coupled to GC-MS—or supercritical fluid extraction (SFE) are recent examples. Typically, detectors are specialized for groups of compounds; only the flame ionization detector (FID), which is sensitive to a range of carbon-containing compounds purified by gas chromatography, comes close to being universal. And so it goes.

Given the variety of chromatographic techniques now available and the products to put them into practice, do any recent advances stand out as particularly significant? "That's easy," says Peter Carr, Professor of Chemistry at the University of Minnesota and recipient of the 1997 ACS award for chromatography, who studies how molecules interact during chromatographic separations. "Capillary electrochromatography is particularly important because it gives very high-efficiency separations in the liquid phase."

Instead of using pressure to move molecules through a column, which is typical of most LC methods, capillary electrochromatography depends on electro-osmotic flow. The method is akin to capillary electrophoresis, a non-chromatographic technique that is used to separate charged molecules and that gives tight bands—a hallmark of efficient separation. But capillary electrophoresis doesn't work well on neutral molecules and capillary electrochromatography does. "It gives narrower peaks than liquid chromatography, better resolution, and it increases peak capacity—the number of peaks produced per unit time," Carr says.

Joseph Sherma, head of the department of chemistry at Lafayette College in Easton, PA, won the 1995 ACS award for research at an undergraduate college. He specializes in pesticide analysis and looks at chromatography from a different perspective. "I think the field of pesticide analysis is sort of a microcosm of where the rest of the field is headed," says Sherma. "All of the kinds of chromatography and many of the new developments are used for pesticide analysis." Many pesticides are chlorinated organic compounds.

Sherma cites advances in sample preparation as particularly significant. Solid-phase extraction, accelerated solvent extraction, aqueous extraction, microwave-assisted extraction, and matrix solid phase dispersion, are more efficient methods for preparing samples than is conventional solvent extraction.

Supercritical fluid extraction has several important advantages over liquid extraction techniques, says Sherma, and the technique holds great promise for pesticide residue analysis. "It probably has the greatest potential, but commercial instruments must be improved," he says.

Carr regards solid phase microextraction technology (SPME), invented several years ago by Janusz Pawliszyn of Guelph Waterloo Center in Ontario, as another important development in sample preparation. "It has had a major impact on environmental analysis; it's clean, fast, and doesn't use any solvents," he says. Instead, the technique relies on a coated polymer that is immobilized on a silica fiber. The user places the fiber directly into the sample or into the head space above it, and the sample partitions into the polymer. Then, the user sticks the fiber directly into a gas chromatograph or into the liquid flow of an LC system. "Solid phase microextraction technology was invented for gas chromatography but is making its way into the world of liquid chromatography," Carr says. He also regards the development of more stable column packing materials for LC—the goal of a company he helped to found—as an important contribution.

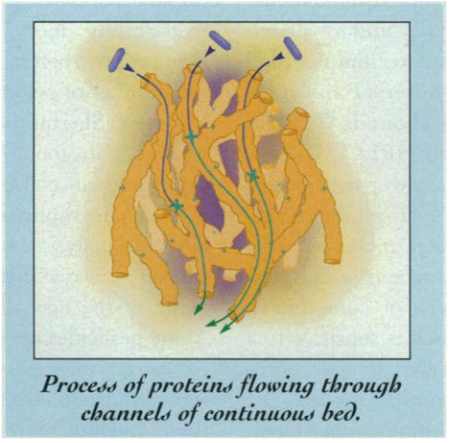
"Analytical instruments have greatly improved over the years," says Sherma. "Advances in computer technology have led to important gains in instrument control, data collection, and analytical determinations." Also, he says, the coupling of HPLC with electrospray MS has allowed researchers to detect many polar pesticides at trace levels.

Today, companies that manufacture products for chromatography employ sophisticated software to drive integrated systems that are highly automated, easy to use, efficient, and versatile. Most companies market a range of chromatography products for customers in the biotech and pharmaceutical industries, academic researchers, environmental-analysis labs that work under Environmental Protection Agency (EPA) contracts, and laboratories that specialize in food analysis. Discussions with the following sample of companies indicate that the most important new products of each company tend to be focused on particular applications and targeted to specific groups of customers.

ONE OF THE NEWEST PRODUCTS FROM BIO-RAD LABS IS THE COMPANY'S SERIES OF UNO™ COLUMNS, which are designed for separating mixtures of biomolecules by ion-exchange chromatography. Bio-Rad, which is based in Hercules, CA, started marketing Uno™ columns in February 1997, and they are used by scientists in basic research, clinical, and industrial laboratories.

Uno™ columns are ideal for separating almost any kind of biomolecules — peptides, proteins, and polynucleotides — says marketing product manager Eddy Scheinpflug. It usually takes 20 to 30 minutes to separate a complex mixture of biomolecules using traditional packed columns, but with Uno™ columns, the process can take less than five minutes, he says.

The unique feature of Uno™ columns is their homogeneous, non-porous Continuous Bed matrix packing material. "Traditional columns are packed with beads," says Scheinpflug. "With Uno™ columns, we let the polymerization of advanced monomers and ionomers occur inside the column." The result is a column with exceptionally uniform packing that exhibits high resolution, speed, and binding capacity, he says.



Process of proteins flowing through channels of continuous bed.

For traditional bead-packed columns, the beads are polymerized and sized, the ionic groups are added, and then the column is packed. In Bio-rad's Uno™ columns, all of these processes occur simultaneously. The ionomers of the Continuous Bed matrix carry the functional ionic groups Q or S. ('Q' stands for quaternary amine groups; 'S' stands for sulfonic groups.) Depending on the pI of the protein to be purified, the user will choose Q- or S-type columns. Negatively charged proteins, for example, are best separated with Q-type columns.

When the user injects a sample into a Uno™ column, biomolecules in the sample attach to the Q or S groups of the polymer matrix. Whether a particular species of biomolecule in the sample flows through the column depends on the charge of the molecule and the ionic Q or S groups that are attached to the polymer matrix. The elution process is triggered by increasing the ionic strength of the mobile phase. Molecules flow through a network of interconnecting channels in the matrix that average 2,000 to 3,000 Å in diameter.

In bead-packed columns, the factors that determine peak resolution and speed are the size of the beads and their porosity. Typically, achieving high resolution (sharp peaks) requires the use of small-diameter beads, which tends to increase back pressure and decrease the flow rate or speed. Bio-Rad's Uno™ columns allow extremely fast mass transfer of biomolecules and eluent to the Q and S functional groups. The rigid matrix of the polymer resists compression even at high flow rates, which minimizes band-broadening during elution, says Scheinpflug.

The high binding capacity of Bio-Rad's Uno™ columns is due to the large surface area created by the Continuous Bed matrix. "The surface of the Uno™ polymer is rough, like coral," says Scheinpflug. "Even if you greatly increase the flow rate, there is no loss in binding capacity."

Bio-Rad sells Uno™ columns in a range of sizes and also produces a small polishing column, with a volume of 0.16 ml, for use in late-stage purification procedures.

"Developing this column took several years," says Scheinpflug. "The trend in the

ÄKTApurifier.

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Analysis with RPC

- UNICORN analysis software enables rapid quantification of sample amount and concentration, determination of molecular weight by gel filtration and recovery calculations.

Figure A.

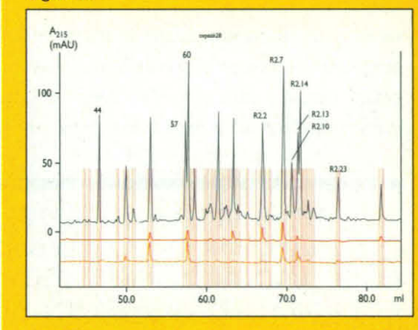

Figure B. **Figure C.** **Figure D.**

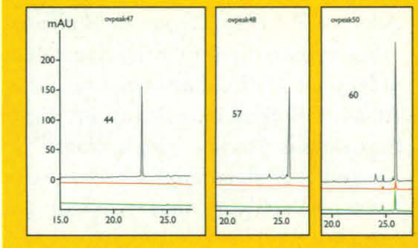

Figure A. *Separation of a tryptic digest of pyridylethylated ovalbumin using ÄKTApurifier and Sephasil Peptide C18 5 µm 4.6/250. The eluted peptides were collected using a peak fractionation function. Nine fractions were selected, as indicated with the fraction numbers on the top of the corresponding peaks.*

Figure B, C and D. *Purity check of the fractions indicated in Figure A using ÄKTApurifier and µRPC C2/C18 ST 4.6/100. The selected fractions were diluted with solvent A to a final concentration of 5% B (4% acetonitrile) before the reinjection.*

☐ Yes, please send me more information on ÄKTApurifier

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market is changing. Customers want faster separations, better resolution, and more economical tools." Bio-Rad's Uno™ columns offer all of those features, he says.

ROBERT BURGOYNE, MARKETING DIRECTOR OF WORLDWIDE CORE PRODUCTS FOR WATERS CORPORATION BASED IN MILFORD, MA, says the company's new Alliance™ HPLC Systems challenge an industry paradigm that the limits of technology for HPLC have been reached. An Alliance™ System consists of the 2690 Separations Module with a Waters detector and a Millennium® Chromatography Manager, software that provides system control and data management.

The key component of the Alliance™ HPLC Systems is the Waters™ 2690 Separations Module. "With this module, Waters has integrated all of the solvent- and sample-management functions," says Burgoyne. The result is an easy-to-use instrument that achieves high throughput HPLC separations with great efficiency, accuracy, and precision, he says.

One of the main features of the Waters™ 2690 Separations Module is its integrated system for delivering solvent to the HPLC column. The design of the system is novel because it is based on two, independently driven pistons that are arranged in series. "Their motion is controlled independently and is not linked mechanically in a gear train, as it is in traditional systems," says Burgoyne. "The design results in better solvent-flow accuracy and precision."

A continuous feedback mechanism inside the 2690 Separations Module monitors the pressure inside the pistons and matches it to system pressure. Feedback is provided by two pressure transducers and a digital signal processor that interprets and responds to operating parameters.

"The idea is that the solvent is precompressed so that its pressure equals that of the pressure in the system," says Burgoyne. "Then, no pressure pulse is created that could compromise the accuracy and precision of solvent-flow delivery." Pressure pulses caused by uneven solvent flow can be read by a detector as noise, which can reduce its ability to detect low levels of sample. "We can improve detector sensitivity by improving solvent delivery," says Burgoyne.

The Waters™ 2690 Separations Module can combine up to four solvents in a process called quaternary blending. The ability to blend multiple solvents in a gradient is important for users who have complex samples that are difficult to separate.

A second major component of the Waters™ 2690 Separations Module is designed for sample management. Like a CD player that rotates multiple CDs, the 2690 includes five carousels, each of which holds 24 sample vials. The operator can link different separation methods to each carousel and also can program the temperature of the enclosed sample-management system to ensure the stability of the samples.

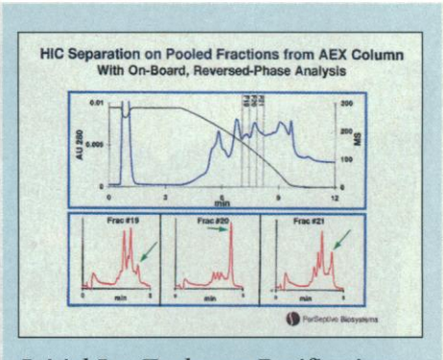
The 2690 Separations Module can be linked to different kinds of detectors. "Customers have asked for flexible modes of detection," says Burgoyne. "So you can add any detector technology you want to the 2690 module—UV-visible, refractive index, fluorescence, conductivity, or even mass spectrometry."

The functional integration of the Waters™ 2690 Separations Module stems from the design of its internal components, and it enables the user to achieve a higher level of performance, says Burgoyne. "We created the name Alliance™ to reflect the fact that its components share fundamental design innovations."

ACCORDING TO RICK CARBERRY, SENIOR DIRECTOR FOR CHROMATOGRAPHY PRODUCTS AT PERSEPTIVE BIOSYSTEMS, INC. IN CAMBRIDGE, MA, the company's new VISION Workstation addresses a critical bottleneck in the multi-step process of purifying and analyzing proteins. "It's really the first time that a protein-purification system has incorporated robotics as a means of analyzing fractions that are collected during preparative separations," he says. The VISION Workstation's new software and robotics allow protein purification and product analysis to be performed as a continual process.

PerSeptive's new robotics system for the VISION Workstation, called On Board Analysis™ technology, is designed to handle samples during the separation process and then automatically reinject the collected fractions for analysis. Two elements of the VISION software aim to increase the ease and efficiency of the separation and purification process. The Automated Campaign Templates™ feature allows the user to determine the optimal parameters for separation, including pH, flow rate, gradient slope (in ion-exchange chromatography, the rate of addition of salt), and sample load. The built-in SCOUT Column Selector automates the selection of the type of column—and surface chemistry—to be used.

After fractions have been collected from the separation process, the On Board Analysis™ technology allows the user to analyze the fractions. "VISION technology offers a panel of analytical options, including reversed-phase liquid chromatography, antibody-based assays (which are similar to Western blots), and high-performance ion



Initial Ion Exchange Purification
Sample: 10 mls of Crude E. Coli Lysate
Column: POPOS HQ 50; 10 x 100 mm (8ml)

Final HIC Purification
Sample: Pooled samples from HQ 50 Column (19-27)
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On-Board Analysis by Reversed Phase
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POROS R1/M; 4.6 x 100mm (1.7 ml)

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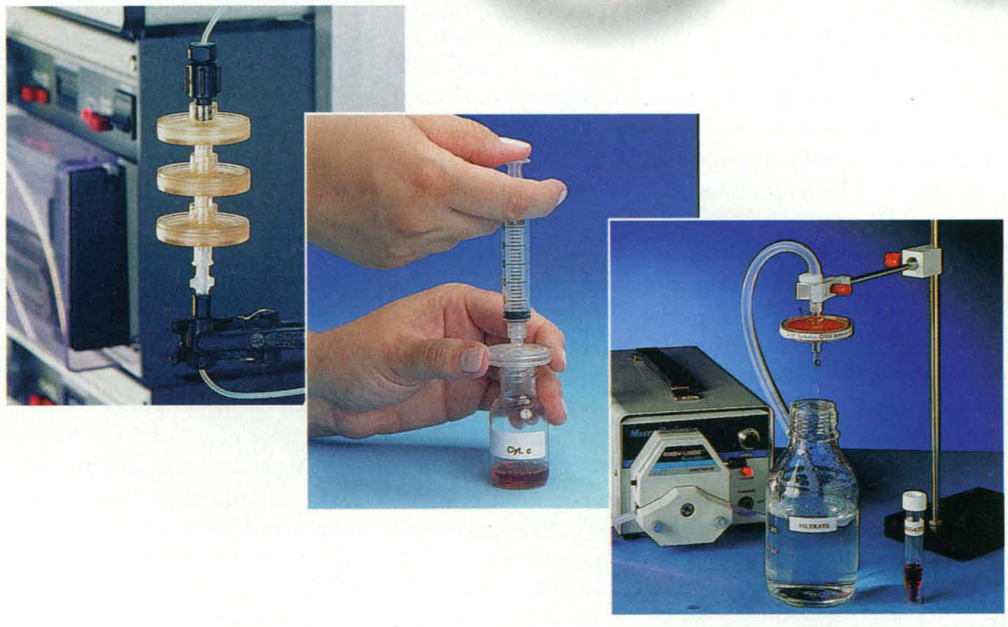

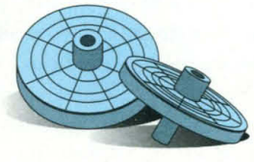

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Use Sartorius MA units with a syringe, a peristaltic pump or connect them to your chromatography workstation in place of a standard, packed column. Purification and concentration processes can be scaled up from lab to pilot scale using Sartobind®MA modules with binding capacities up to 20g of protein.

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exchange chromatography," says Carberry.

"When you complete a preparative separation of a protein, the quality of the product you get is determined by its purity, biospecificity, and other characteristics," says Carberry. "A bottleneck in the process has been the inability to analyze the product quickly. VISION technology integrates the purification and analysis capabilities in the same platform."

One way a researcher might use PerSeptive's VISION Workstation is to develop a method for purifying a recombinant protein, says Carberry. The first step is to identify a set of columns and conditions for separating the starting mixture. To develop a purification method, the user needs a way to determine which peak is the product. Conventional systems require that the user collects fractions and then goes to another instrument to run the analytical techniques. "But with the VISION Workstation, you can do purification and analysis on the same platform," he says.

Others might use the VISION Workstation to analyze libraries of peptides as potential binding targets for drugs. "In a scenario like this, the user would use the VISION Workstation's purification capability for the synthetic product, then use its analytical capabilities to assess the purity of the product," says Carberry.

"One of the driving influences in the development of the VISION Workstation was the genome project," says Carberry. "There is a need to purify and isolate proteins that are encoded by all the new genes that are being sequenced."

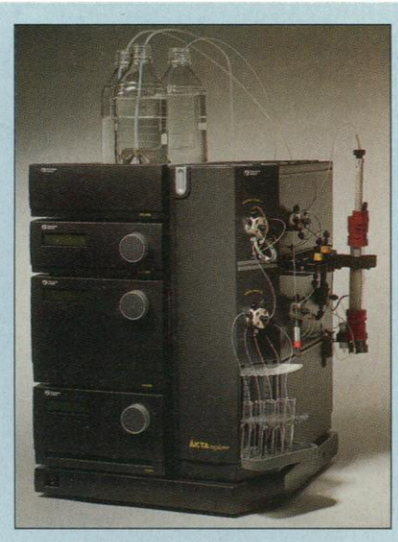
Now that PerSeptive has the VISION Workstation's robotic element in place, the next developments will probably include automatic sample dilution, desalting, mixing, and fraction transfer, says Carberry. "Anything that anyone would want to do with respect to a fraction will be able to be automated. We're bottleneck-chasers at PerSeptive. Typically, a new technology solves one problem but creates another one. That's the point at which we look to develop a new technology and a solution."

HANS JOHANSSON, DIRECTOR OF MARKETING AT AMERSHAM PHARMACIA BIOTECH'S HEADQUARTERS IN UPPSALA, SWEDEN, says the company's new ÄKTA™design chromatography systems for purifying proteins, peptides, and nucleic acids include interfaces, software, and other features to make the instrument very simple to use. "We introduced the ÄKTA™design systems about one year ago," says Johansson. "We now have ten possible configurations of the system that have a range of applications from process development—which focuses more on initial scale-up work—to quality-control applications."

Among the ÄKTA™design systems is Pharmacia's ÄKTA™Explorer, which is ideal for developing purification methods for all biomolecules, says Johansson. Many users of the ÄKTA™Explorer work in pharmaceutical research facilities. The instrument has a range of features that increase its ease of use. It also incorporates a variety of basic-method templates that include size exclusion chromatography, anion exchange chromatography, cation exchange chromatography, hydrophobic interaction chromatography, reversed phase chromatography, and affinity chromatography. Pharmacia's preinstalled UNICORN® control software runs the system and allows the user to evaluate data from pilot studies and move quickly to production-scale runs.

The ÄKTA™Explorer makes it easy to identify and implement the ideal conditions for a run. "The user scouts for the optimal parameters such as the ideal pH, the type of column to be used, and the best flow rate," says Johansson. "You just click on the computer screen, and whole machine sets up."

The system also includes a new library of prepacked columns for which the optimal parameters have been set and a series of sophisticated, but easy-to-use buffer systems. The ÄKTA™Explorer prepares and titrates the buffers automatically, which reduces much of the time-consuming, manual work usually spent in buffer preparation. "We also built in mechanisms for temperature compensation," says Johansson.



ÄKTA™Explorer 100 from Amersham Pharmacia Biotech is a chromatography system designed especially for purification methods development.

Another aspect of making the ÄKTA™Explorer easy to use takes the needs of pharmaceutical laboratories into account. Because industrial users work with columns of very different sizes, Pharmacia built a pump that can handle milliliter- to liter-scale columns. Previously, at least two pumps were necessary for columns of such different volumes, says Johansson.

An all-important characteristic of Amersham Pharmacia Biotech's ÄKTA™ design chromatography systems are their modular design. "In modern bioscience, there is a need to do many different kinds of laboratory techniques, so knowing how to run different machines becomes a problem," says Johansson. "So we tried to build a user interface that is modular."

In the next phases of development, Amersham Pharmacia Biotech will add new modules to the ÄKTA™design chromatography systems. "That is one of the strengths we achieved by committing to a modular design," says Johansson. "It allows us to have an annual module design. We can add new features and new applications each year."

VIKAS PADHYE, PH.D., PROGRAM MANAGER AND HEAD OF THE CHROMATOGRAPHY TEAM AT ISCO, INC. IN LINCOLN, NE, describes the company's new automated Flash chromatography systems as ideal for combinatorial chemistry. "The technique is becoming very popular for the rapid synthesis of organic compounds," he says. Anyone who purifies organic compounds, including customers in pharmaceutical and chemical companies as well as academic researchers, could use the Flash system.

Isco developed their first Flash system about one year ago and followed it with the Proteam LC system for protein purification. The new Flash system—components of which were introduced just this summer—is highly automated and flexible, allowing chemists to tailor it to their individual needs.

Two versions of Isco's Flash systems for combinatorial chemistry are designed for high throughput, and two are designed for high productivity. Both high-throughput systems, the 10-Channel Parallel System and the 5-Channel Parallel System, can be used with either a single solvent or multiple solvents. The isocratic system is designed for users who can purify compounds using just one solvent, usually hexane, ethyl acetate, or methylene chloride, says Padhye. But if a user needs to separate multiple compounds simultaneously, different solvents are often required. In that situation, one of Isco's gradient systems—programmed for either step gradients or linear gradients—would be more appropriate. Users would choose the 10-Channel System if they want to collect 20 fractions from each of 10 Flash columns and the 5-Channel System if they prefer to collect 40 fractions from each of 5 Flash columns.

"The initial 5- and 10-Channel systems offer the ability to collect fractions based on time," says Padhye. The user programs the time per fraction, rather than collecting fractions based on the shape or slope of different peaks. This summer, Isco introduced a system that allows the user to select fractions from one column based on peak detection.

A second category of Flash systems is designed for users who want high productivity. The user can run up to 16 or 32 columns with Isco's Sequential Automated Flash systems. One version of the system is engineered for single-use columns, the other for reusable columns or cartridges. Typically, single-use columns are best for mixtures that include dissimilar compounds that can contaminate the column. Reusable columns for separating similar compounds can be regenerated by flushing with the appropriate solvent.

Isco's new CombiFlash™ Chromatography Systems provide multi-sample sequential (shown here) or parallel automation for combinatorial chemistry screening and other applications requiring microgram-to-gram scale purification of organic compounds.

Isco's Sequential Automated Flash systems allow the user to collect fractions based on peak detection. The user sets parameters for peak slope or threshold level, and then collects only the selected peaks. The system can also be programmed to collect non-peak fractions rather than pooling them as waste, says Padhye. Both sample injection and peak detection are automated.

The 10-Channel, high-throughput system completes a purification in half an hour. The 32-column, high-productivity system can be left unattended to run overnight. All of the Sequential systems can accommodate collection tubes of different diameters and heights—or even flasks or beakers, Padhye says.

Although many researchers in pharmaceutical, biotechnology, and biomedical research laboratories depend on LC chromatography systems to separate complex mixtures of biomolecules and to purify compounds, their counterparts in environmental- or food-analysis labs rely on gas chromatography systems.

DAVID COE, MARKETING MANAGER FOR GAS CHROMATOGRAPHY AT VARIAN INSTRUMENT'S WALNUT CREEK, CA, FACILITY, says the company's new 3800 GC has combined many of the popular functions and features of previous gas chromatographs, including the inlets, detectors, and valving systems. Customers requested more reliable electronics, and the 3800 GC employs a reduced number of electronic boards. But the instrument's most important feature may be its ease of use.

"We've made this the simplest gas chromatograph to operate without compromising quality," says Coe. "The marketplace says simple, simple, simple. But at the same time, the 3800 GC must be versatile enough to cope with all sample types."

Users of the Varian 3800 GC can choose among five modes of sample injection and five kinds of standard detectors. Three injectors and three detectors can be installed to operate concurrently, which adds to the versatility of the instrument, says Coe.

"What really stands out in the 3800 GC is the valving system," says Coe. "When you are switching valves from one position to another, it can generate disturbances in the detectors. The electronic flow control—which is designed to accommodate the specific type of inlet being used—allows the user to avoid these disturbances." The GC 3800 also permits manual control of gas flow.

Varian added a new, high-performance oven for heating columns, says Coe. The column oven has higher ramp rates for heating and cooling, which leads to higher productivity. In addition to the oven, the 3800 GC has six heated zones to accommodate the three injectors and three detectors. "We have a patent-protected ability to cool

and temperature ramp the injector," says Coe. "Those functions take place independently from the column oven."

To enhance its ease of use, the Varian 3800 GC includes a simplified user interface: a reduced number of keys on the keyboard and an 11-line display on the screen. Customers for gas chromatographs, including those in environmental, pharmaceutical, food and agricultural, and academic laboratories, are demanding simpler machines.

"The 3800 GC really is a remarkable gas chromatograph," says Coe. "It has combined all the best features that Varian has ever produced together with the requirements of industry."

HEWLETT-PACKARD'S (HP) 6890 SERIES GC SYSTEM IS DESIGNED TO MAKE GAS CHROMATOGRAPHY (GC) faster, more sensitive, and easier to perform. Released in 1995, the HP 6890 GC System allows the user to choose from an array of inlets, columns, and detectors that are ideal for the target compounds to be separated and analyzed.

One new development in particular, the HP 6890 Micro-Electron Capture Detector (ECD), is designed to detect minute quantities of certain environmental contaminants, says Matthew Klee, Ph.D., at Hewlett-Packard's Little Falls Analytical Division in Wilmington, DE. "The Micro-ECD will only pay attention to those compounds that will capture electrons, such as chlorinated pesticides and polychlorinated biphenyls (PCBs)," says Klee. Environmental analysis is big business, particularly for companies that work under federal contracts from EPA.

Hewlett-Packard's 6890 Micro-Electron Capture Detector is designed for use with capillary columns, the tiny, coiled columns that have largely replaced traditional packed columns in gas chromatography. Like other electron capture detectors, the HP 6890 Micro-ECD contains an inert gas—typically, nitrogen—and its inner surface is coated with radioactive nickel, ^{63}Ni, which generates electrons. As the gaseous sample components that have been separated by GC elute into the detector, they capture electrons. The gas from the GC column must mix thoroughly and evenly with the nitrogen gas for the detector to measure the compound of interest over EPA's required range of linearity. The response from the detector indicates how many electrons have been captured—a measure of how much sample component is present—and by which component in the sample.

The HP Micro-ECD can detect 8 femtograms (10^{-15} g) of the pesticide lindane per second, a detection limit that is several times lower than that of previous ECDs. The detector has a cell volume of 150 microliters, which is 10 times smaller than the cell volumes of previous ECDs, and an electronic sampling rate of up to 50 Hz, which is 10 times faster than that of previous ECDs. Using the HP Micro-ECD and a 1.4m x 0.05mm capillary column (rather than a standard capillary column) reduces the separation time of a mixture of chlorinated pes-

ticides from 21 minutes to 1.2 minutes. Also, its dynamic range of >5 x 10^5 is about 50 times greater than that of other ECDs.

The extreme sensitivity and increased speed of the HP Micro-ECD are important for companies that perform analyses of environmental or food samples. "We need to detect smaller and smaller amounts of contaminant," says Klee. "This is especially true of pesticides that are designed to decompose in the environment and are very difficult to detect." Also, compounds such as DDT, which are banned in the United States, are often sold to third-world nations that grow foods and then ship them back to this country. "So we need to be able to measure low levels of those contaminants," says Klee. It has also become important to be able to detect small amounts of PCBs and other industrial pollutants, which are found in fish and shellfish. PCBs can disrupt the activity of hormones, including estrogen, and they tend to accumulate in fatty tissue.

One of the most important requirements for companies that work under EPA contracts is compliance with the agency's rigorous linearity standards for the assessment of environmental contaminants. (Linearity means that if the concentration of sample coming into the detector doubles, the detector shows exactly twice the response.) Under the Contract Laboratory Program, EPA requires that its contract companies detect contaminants in the range of 5 to 80 parts per billion, which means that detectors used by the companies must show a linear response over that concentration range.

Hewlett-Packard engineered the geometry of the HP 6890 Micro-ECD so that it interacts more predictably with molecules as they come off the GC column, thus ensuring that EPA's linearity standards are surpassed, says Klee. GC requires getting the sample into a gaseous state (in small ovens that heat to approximately 500° F.) and then carrying it through a column by an inert gas. The sample is injected into an inlet and pushed through a column. Individual sample components interact differently with the column and come out the end at different times.

"Then we need something at the end of the column to detect the sample," says Klee. There are many kinds of detectors for GC, each of which is optimal for detecting a certain category of compounds. Electron capture detectors are ideal for detecting chlorinated pesticides and PCBs, which are notorious "sponges" for electrons, and capture them easily.

One of the biggest problems for companies that do environmental analysis is that their instruments become contaminated. "If your job is to analyze waste oils for PCBs, you have this messy sample," says Klee.

Hewlett-Packard also redesigned the HP 6890 Micro-ECD to avoid contamination and to make it stable and rugged. The key to the redesign was to reposition the anode, a component of the detector, so that it is recessed into the top of the detector, rather than hanging down in the flow path of the chromatography effluent.

"We are always looking for ways to lower our detection limits," says Klee. Hewlett-Packard has maximized the sensitivity and selectivity of the 6890 Micro-ECD and also made it more dependable. "It has the best set of specs on the market," says Klee.

Given the improvements in detectors, columns, and system automation in chromatography, what more could an analytical chemist ask for?

"I would like to be able to analyze compounds faster than I can now," says Carr. "Also, there are certain kinds of samples that we can't resolve yet. We can't separate all the PCBs and there is certainly an upper limit to the weight of DNA we can separate. There are kinds of modified proteins that can't be separated from the native ones because the molecules are too similar. And it would be wonderful if we could separate isotopically labeled compounds, for instance, those containing ^{13}C from regular carbon."

Carr would also like to see improvements in LC technology. "LC is still slower than GC, and it doesn't give as much peak capacity," he says. "Also, the detectors for LC aren't quite as good as they are for GC. Of course, the big problem is that LC pumps are high-maintenance items. It's like maintaining your car; you just don't have any problem like that in a GC system."

Carr also points to an "intellectual issue" that requires attention. "In chromatography, we still do not understand the interactions between the stationary and the mobile phases sufficiently well," he says. "We still need to mess around to make it work; it's all very empirical." Carr would like to see the development of more quantitative indicators to help determine the optimal conditions for a separation.

Sherma wants to make chromatography methods more reliable. "I don't mean that they are unreliable now, but every method could benefit from greater accuracy, precision, and ruggedness," he says. "One of the big pushes in the pesticide field is the need to validate methods." Also, today's laboratories need to run many standards and controls. They need to computerize their data, store them, and back them up. "The O.J. Simpson trial and the Oklahoma City bombing trials point to this," says Sherma. "Analytical laboratories are under very close scrutiny. They need to show higher standards of quality control."

And what does the future hold for chromatography?

Sherma sees a continuing trend to interface methods. "People like to miniaturize, combine methods, and make them more reliable," he says. He also believes that methods of preparing samples will continue to improve, which will minimize cleanup efforts and reduce the number of hazardous wastes that are produced.

"I think chromatography will get faster in the future," says Carr. "There will be improvements in detectors. I also think capillary electrochromatography will give liquid chromatography a run for its money. In ten years, it's possible that liquid chromatography may really have waned."

"People who use chromatography products will continue to look for speed, automation, savings, better methods of minimizing waste, and to show that their methods give good results," says Sherma. "You need to have methods that can be used in any lab worldwide with confidence."

—J. St. George

J. St. George is a science writer living in the Washington, D.C., area.

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RICE UNIVERSITY

The Physics Department of Rice University invites applicants for a tenure-track **ASSISTANT PROFESSORSHIP** from persons with experimental research interests and expertise in the study of physics of biological systems or materials. This position is associated with a new university-wide initiative to establish a Center for Nanoscale Science and Technology. Applicants should send a dossier including a curriculum vitae, a statement of research and teaching interests, a list of publications, and two or three of their most interesting papers. Applicants should also arrange for three letters of reference to be sent to: **H. W. Huang, Chair, Faculty Search Committee, Physics Department—MS 61, Rice University, 6100 Main Street, Houston, TX 77005-1892.** The appointment is available July 1998 or later. Review and interview will begin in December 1997.
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FACULTY POSITION ANNOUNCEMENT
UNIVERSITY OF FLORIDA
CHAIR, DEPARTMENT OF PATHOBIOLOGY

Qualifications: advanced academic degree; research leadership training and experience; demonstrated administrative skills and experience; educational (teaching) experience; veterinary diagnostic laboratory experience.

The University of Florida, College of Veterinary Medicine, is seeking applications and nominations for a departmental chair who is expected to develop and sustain quality coursework in the department as appropriate to the current and future educational goals of undergraduate, professional, resident, and graduate programs. To lead the development of a nationally recognized research program involving all discipline in the department. To develop and sustain high quality, academically oriented diagnostic services in the Veterinary Medical Teaching Hospital, including anatomic pathology, surgical pathology, microbiology, and parasitology. To provide close liaison between the Department of Pathobiology and the scientific community of the Health Science Center, Institute of Food and Agricultural Sciences, and the state of Florida at large.

Letters of application or nomination should include a curriculum vitae, names of three persons who can provide letters of references, and a statement of career goals. The deadline for receiving applications is November 15, 1997. All correspondence should be addressed to:

Dr. Eleanor Green, Search Committee Chair
College of Veterinary Medicine
University of Florida
P.O. Box 100136
Gainesville, FL 32610-0125
Telephone: 352-392-4700 ext. 5600

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COMPUTATIONAL BIOCHEMIST
THE CITY COLLEGE
DEPARTMENT OF CHEMISTRY
FACULTY POSITION

The City College of New York (CCNY) invites applications for a faculty position leading to a tenure-track appointment in the Department of Chemistry. The candidate should have a doctorate, postdoctoral experience or its equivalent, and a proven research record utilizing computer simulations and molecular modeling in areas of biochemical interest. The appointee will be expected to develop an active, externally funded research program, to interact with colleagues, to develop courses in his/her area of expertise, and to teach both undergraduate and graduate (M.A. and Ph.D.) students. The level of appointment and salary will be commensurate with the appointee's experience and accomplishments. Please send by October 31, 1997, a curriculum vitae, a description of current and proposed research plans, selected reprints, and names, contact numbers, and addresses of at least three references to: **Professor Stanley Radel, Chair, Department of Chemistry, City College of New York, Convent Avenue at 138 Street, New York, NY 10031.**
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POSITIONS OPEN

DEPARTMENT HEAD
DEPARTMENT OF BIOLOGICAL SCIENCES
THE UNIVERSITY OF ILLINOIS AT CHICAGO

Applications and nominations are being sought for the position of Head of the Department of Biological Sciences at the University of Illinois at Chicago. The Head is the chief administrative officer of the Department, with overall responsibility for faculty and staff recruitment, budget, promotion, and instruction. The Head is expected to provide strong leadership for the Department in our research, teaching, and public service programs.

The Department of Biological Sciences has 37 faculty, over 120 graduate students, and approximately 1,100 undergraduate majors. Major subdivisions of the Department include cell and developmental biology, ecology and evolution, molecular biology, and neurobiology. UIC, a Research I institution located in the heart of Chicago, has a distinctively diverse student body of 16,000 undergraduates, 6,000 graduate, and 2,300 professional students.

The successful candidate will have an earned doctorate and be eligible for appointment at the rank of Full Professor. A strong record in research and university teaching, a demonstrated commitment to equality of opportunity, and substantial leadership and organizational skills are required. Women and minority candidates are especially encouraged to apply. The desired appointment date is August 21, 1998.

Applications should be received by November 7, 1997, to receive full consideration, although the search will proceed until the position is filled. Materials, including a full curriculum vitae and names and addresses of four references, should be directed to:

Professor Joel S. Brown
Biological Sciences Headship Search Committee
c/o College of Liberal Arts and Sciences (m/c 228)
The University of Illinois at Chicago
601 South Morgan Street
Chicago, IL 60607-7104
Website: http://www.uic.edu/depts/bios

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FACULTY POSITION IN
STRUCTURAL BIOLOGY
COLORADO STATE UNIVERSITY

The Department of Biochemistry and Molecular Biology seeks applications for a tenure-track position from individuals at any academic level, with research interests in structural biology. We especially encourage applicants in the areas of NMR, X-ray crystallography, optical spectroscopy, and calorimetry. Candidates must have a Ph.D. degree, an ability to sustain an independent and productive research program, and the desire to participate effectively in undergraduate and graduate teaching. Further information about the Department can be obtained through our **website: http://mmr.bmb.colostate.edu/bmb/,** by written requests to the address below, or by **Telephone: 970-491-5566.** Send curriculum vitae, a statement of research interests, and direct three references by October 31, 1997, to: **Dr. Robert W. Woody, Chair, Search Committee, Department of Biochemistry and Molecular Biology, Colorado State University, Fort Collins, CO 80523-1870.** *CSU is an Equal Employment Opportunity/Affirmative Action Employer, E.O. Office: 101 Student Services.*

FACULTY POSITION
YALE UNIVERSITY
DEPARTMENT OF MOLECULAR BIOPHYSICS AND BIOCHEMISTRY

The Department of Molecular Biophysics and Biochemistry seeks applicants for an opening at the **ASSISTANT PROFESSOR** level in the area of biochemistry, molecular biology, or molecular genetics. Our department spans a broad range of areas from structural to molecular biology, and is located in both the Faculty of Arts and Sciences and the School of Medicine of the University. Applications should include a curriculum vitae, a statement of research interests, reprints or preprints, and three letters of references to be forwarded separately. Completed applications should be sent to: **Faculty Search Committee, Department of Molecular Biophysics and Biochemistry, Yale University, 266 Whitney Avenue, P.O. Box 208114, New Haven, CT 06520-8114. Telephone: 203-432-5593.** Application Deadline: October 1, 1997.

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Japan Society for the Promotion of Science

JSPS

Postdoctoral Fellowships for American Researchers

Pursuit of Advanced Research at Japanese Universities

To promote scientific cooperation between the United States and Japan, the Japan Society for the Promotion of Science (JSPS) provides long-term and short-term fellowship programs for promising and highly qualified young researchers from the United States. These fellowships afford U.S. researchers an opportunity to conduct research in laboratories at Japanese universities and university-related research institutions.

JSPS is a quasi-governmental organization that operates under the auspices of Japan's Ministry of Education, Science, Sports and Culture (Monbusho) and focuses on advancement of science as its primary mission.

How to Apply There are two channels for applications

1. Application through a Nominating Institution

Applicants (U.S. citizens or U.S. permanent residents) should contact one of the nominating institutions listed below for application forms. All applicants are required to have a prior commitment from a Japanese host researcher to work cooperatively on a research project.

U.S. Nominating Institutions

- National Science Foundation
  4201 Wilson Boulevard, Arlington, VA 22230, Tel. 703-306-1701
  Mr. Randall J. Soderquist, Japan and Korea Program, Division of International Programs, e-mail.JKPinfo @nsf.gov
- National Institutes of Health (Fogarty International Center)
  Building 31 Room B2C11, Bethesda, MD 20892, Tel. 301-496-4784
  Dr. Allen Holt, Program Officer, e-mail. jsps@nih.gov
- Social Science Research Council
  810 Seventh Avenue, New York, NY 10019, Tel. 212-377-2700
  Ms. Sheri Ranis, Program Officer, e-mail. ranis@ssrc.org

A. Long-term Fellowships for American Researchers

Research Fields — **All fields of research (natural sciences, engineering sciences, medical sciences, social sciences, and humanities)**

Host Research Institutions — **Japanese universities and university-related research institutions**

Fellowship Tenure — **A period of 12 to 24 months**

Terms of Award

- **A round-trip air ticket (economy class) for the fellow only**
- **A monthly stipend of ¥270,000 ($2,455)**
- **A settling-in allowance of ¥200,000 ($1,818)**
- **A monthly housing allowance of up to ¥100,000 ($909)**
- **A monthly family allowance of ¥50,000 ($455), if accompanied by dependent(s), and**
- **Accident and sickness insurance coverage for the fellow only**

Fellows are eligible to apply for the Monbusho's research grants.

(Dollars figures in parentheses are approximate sums converted at ¥110 to $1.)

Eligibility — **Candidates must be US citizens or US permanent residents and hold a doctorate degree that was received within less than six years of April of the fiscal year in which the fellowship commences.**

B. Short-term Fellowships for American Researchers (new program)

The research fields, host research institutions and terms of awards are the same as those of the Long-term Fellowships. In addition, a research/domestic travel allowance of ¥150,000 ($1,364) is provided.

Fellows are not eligible to apply for the Monbusho's research grants.

Fellowship Tenure — **A period of 3 to 11 months**

Eligibility — **Candidates must be US citizens or US permanent residents and hold a doctorate degree that was received within less than ten years of April of the fiscal year in which the fellowship commences.**

2. Application through a Japanese Host Researcher

Japanese researchers may apply for a fellowship on behalf of an American researcher. JSPS provides application forms to Japanese researchers. Application periods are in May and September. JSPS makes selections from applications submitted by the prospective Japanese host researchers.

Further information can be obtained from the nominating institutions in the U.S. or from JSPS:

■JSPS Washington Liaison Office
1800 K Street N.W. Suite 920, Washington D.C. 20006, U.S.A.
Tel. 202-659-8190 e-mail. webmaster @ jspsusa.org

■JSPS Fellows Plaza in Tokyo
Jochi Kioizaka Bldg., 6-26-3, Kioicho, Chiyoda-ku, Tokyo 102
Tel. 03-3263-1721

Note 1: Besides the US, JSPS administers long-term fellowship programs for young non-Japanese researchers in other countries around the world. For further information, please contact JSPS.
Note 2: NSF will not accept applications for Short-term Fellowships unless the applicant is already affiliated with a NSF-sponsored research project or center. Applicants for Short-term Fellowships who are not currently affiliated with a NSF-sponsored research project or center must apply through a Japanese host researcher.

Division Chief

Division of Minerals

CSIRO's purpose is to serve the Australian industry and the community through outcomes which provide economic, social, and environmental benefits and to support Australia's national and international objectives. Its mission is to be a world class research organisation vital to Australia's future. In order to improve its customer focus, CSIRO has restructured its operation to include a sectoral approach to industry. CSIRO seeks to appoint an outstanding research leader and manager to lead the Division of Minerals and be responsible for the broader CSIRO response to the Mineral Processing and Metal Production Sector.

The Division of Mineral's objective is to deliver R & D outcomes to the Australian mineral and metal production industries that will benefit their efficiency, product quality and value adding prospects.

The Division, which has its Headquarters in Melbourne, currently has a staff of 315 located on six sites throughout Australia. It has an annual operating budget of approximately $33M of which approximately 45% is derived from industry through a variety of sponsored and research contracts.

Requirements

The successful candidate will have:

- an outstanding record of research achievement and research leadership
- highly developed research management and strategic planning skills
- a commitment to consultative planning of research
- a commitment to the effective application of research results with customers
- outstanding communication skills

The ability to provide leadership in developing collaborative research projects within CSIRO and with industry customers is essential. A thorough understanding of the issues facing the minerals industry and the potential for R & D to enhance the international competitiveness, together with R & D experience in the minerals and/or energy sectors, would be a significant advantage.

The Chief is accountable for the strategic direction and performance of the Division to the Deputy Chief Executive, Minerals and Energy and Construction. The Chief will also represent CSIRO before industry, community leaders, the media and the public.

The appointment will be for five years and involve an annual performance contract between the Chief and Deputy Chief Executive. Alternatively, other employment arrangements may be negotiated.

The remuneration package for the position will be highly competitive and includes superannuation, provision of vehicle and relocation assistance.

More information is available from Mr Greg Thill, Principal Adviser (Resources), [Tel: 61 3 9662 7418, Fax: 61 3 9662 7453, email: greg.thill@exec.csiro.au].

Interested applicants are invited to discuss the position with Dr Colin Adam, Deputy Chief Executive [Tel: 61 3 9662 7436]. Dr Adam would also be interested in hearing from people who may be able to help identify suitable candidates for these positions. Written applications should be sent to: **Dr C M Adam, Deputy Chief Executive, CSIRO, Level 9, 60 Collins Street, Melbourne Vic 3000.**

CSIRO IS AN EQUAL OPPORTUNITY EMPLOYER

CSIRO AUSTRALIA

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The University of Sydney AUSTRALIA

Lecturer/Senior Lecturer in Veterinary Microbiology

Department of Veterinary Anatomy and Pathology

Reference No. A33/02

Applications are invited for the position of Lecturer/Senior Lecturer in Veterinary Microbiology in the Department of Veterinary Anatomy and Pathology. The Department provides courses that include microbiology, general, clinical and systemic pathology, immunology and parasitology and has a strong research output in each of these disciplines with a vigorous postgraduate research training program. In addition the Department provides a diagnostic pathology service to veterinary clinics.

The successful applicant will be required to join a team that teaches across the spectrum of Veterinary Microbiology to undergraduate students in the Faculty of Veterinary Science. As part of an ongoing undergraduate curriculum review it is expected that these teaching activities will be progressively integrated with courses provided by other disciplines within the Faculty. A commitment to integrated and innovative teaching styles therefore will be an advantage.

It is expected that the successful applicant will have a strong commitment to research and diagnostic service. A research interest in the use of molecular approaches to investigate host-parasite relationships in infectious diseases would complement other research programs in the Department.

Essential Qualifications: PhD degree and publications in microbiology; effective communication skills; evidence of expertise in investigation of pathogenesis of infectious diseases.

Desirable Qualifications: A degree in Veterinary Science; expertise in clinical evaluation of infectious diseases, willingness to perform teaching across the spectrum of Veterinary Microbiology (Bacteriology, Virology and Mycology) as part of a team; ability to attract funding to support research; research interest in the use of molecular approaches to investigate host-parasite relationships in infectious diseases.

The position will be offered either as a three year or five year contract. Membership of a University approved superannuation scheme is a condition of employment for new appointees. Further information may be obtained from the Head of Department, Professor Michael Bryden tel: 61 2 9351 2446, fax 61 2 9351 6880, email mbryden@extro.ucc.su.oz.au

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Senior Lecturer: A$56,480 - A$65,126 p.a.
(Level of appointment and responsibility will be commensurate with qualifications and experience)

Closing: 23 October 1997

Method of application: Four copies of the application, quoting Reference No, including curriculum vitae, list of publications and the names, addresses and fax numbers of three confidential referees to: The Personnel Officer, College of Sciences and Technology, Carslaw Building, (F07), The University of Sydney, NSW, AUSTRALIA 2006

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DEPARTMENT OF SURGERY

Applications are invited for appointment to an Associate Professorship in the Division of Urology of the Department of Surgery.

Candidates should possess recognized undergraduate and postgraduate medical and surgical degrees. They should also be fully accredited in urological surgery with the FRCS (Urology), FRACS (Urology), or American Board certification in Urology or its equivalent. The appointee will head the Division of Urology, Department of Surgery, National University Hospital.

The Division of Urology is one of the major divisions of the Department of Surgery. It is housed in the National University Hospital (NUH), a tertiary-level teaching hospital with over 900 beds. In addition, the Division provides urological services to the Department of Surgery at Alexandra Hospital, a 600-bed secondary-level hospital in close proximity to NUH. The Division of Urology has excellent facilities for clinical practice and research in Urology. Major research programs currently being undertaken in the Division are in the fields of bladder cancer and gene therapy. The Division is fully equipped to carry out transurethral surgery, shock wave lithotripsy, laser lithotripsy, percutaneous ultrasound lithotripsy, minimally invasive Urological Surgery and urodynamic studies. In addition to the full range of urological services, staff of the Division are also involved in the renal transplantation program of NUH. Staff of the Division are actively involved in the undergraduate and postgraduate teaching program of the Medical Faculty and School of Postgraduate Medical Studies of the National University of Singapore.

Gross annual emoluments range from S$128,460 - 177,750. In addition, a 13th-month Annual Allowance (of one month's salary) and an Annual Variable Component (of normally 2 months' salary) may be payable at year end, under the flexible wage system, to staff on normal contracts. Under the Clinical Remuneration Scheme, the appointee may opt to receive professional fees or a Fixed Specialist Allowance (FSA). The FSA payable for an Associate Professor is 40% of gross monthly salary. (US$1.00 = S$1.49 approximately)

Leave and medical benefits will be provided. Depending on the type of contract offered, other benefits may include: provident fund benefits or an end-of-contract gratuity, a settling-in allowance, subsidized housing, education allowance for up to three children subject to a maximum of S$16,425 per annum per child, passage assistance and baggage allowance for the transportation of personal effects to Singapore.

All academic staff will be given a networked personal computer with access to a Cray supercomputer, UNIX hosts, departmental laser printers, a wide spectrum of software. on-line library catalogue, CD-ROM databases, Video-on-Demand, INtv and Internet.

Application forms and further information may be obtained from:

The Director
Personnel Department
National University of Singapore
10 Kent Ridge Crescent
Singapore 119260
Fax: +65 778 3948

The Director
North America Office
National University of Singapore
55 East 59th Street
New York, NY 10022, USA
Tel: +212 751-0331

E-mail: perlimmj@nus.edu.sg

Website: http://www.nus.sg/NUSinfo/Appoint/APPL1.HTM

Only shortlisted candidates will be notified.

GLOBAL CAREER OPPORTUNITIES

Universität Zürich

The Faculty of Sciences (Philosophische Fakultät II) of the University of Zürich invites applications for a faculty position in

Experimental Physics

Condensed Matter

at the Physics Institute. Depending on age and experience, the appointment will be made at the full (Ordinarius) or associate (Extraordinarius) professor level.

Candidates should have demonstrated their ability to carry out independent research in condensed matter physics. There is a preference for candidates in the field of **Soft Condensed Matter**, especially **Biological Systems**, but candidates with other areas of specialization will also be considered, in particular if they complement the existing programs in surface physics and superconductivity. The use of the neutron spallation source (SINQ) and the synchrotron radiation source (SLS) at the Paul Scherrer Institute near Zürich as well as that of the existing NMR spectrometers at the Physics Institute is possible.

The successful candidate is expected to participate in the teaching of basic courses for medical and biology students and special courses in condensed matter or biological physics.

Applicants should send their curriculum vitae (publication list, indicating the five most important publications, a short statement of research interests, research plan, and teaching experience) before November 15, 1997 to the **Dekan der Philosophischen Fakultät II der Universität Zürich, Prof. Dr. H. Haefner. Winterthurerstr. 190, CH-8057 Zürich**.

For further information please contact **Prof. Dr. R. Engfer, phone +41 1 635 5720, fax +41 1 635 5704.** Suggestions for suitable candidates are welcome.

TENURE-TRACK POSITION

National Eye Institute

The Laboratory of Immunology, National Eye Institute, National Institutes of Health, Public Health Service is searching for a tenure track M.D. scientist with expertise in gene therapy and the diagnosis and treatment of retinal diseases. The candidate will be responsible for the development and implementation of ocular gene therapy trials involving retinal diseases particularly inflammatory and vascular disorders. The candidate will be expected to have expertise in basic science techniques relating to gene therapy with board-certification in ophthalmology and fellowship training in retina. Space, post-doctoral fellow support, supply budget and salary are committed. Applicants must be U.S. citizens or permanent residents. A curriculum vitae, bibliography, three letters of recommendation, and a detailed statement of research interests and selected publications should be submitted to:

Chair, LI Search Committee
NEI, c/o Cheryl Wild
Building 31, Room 6A18
31 Center Drive MSC 2510
Bethesda, MD 20892-2510

NIH is an Equal Opportunity Employer

Astra is an international, researchbased pharmaceutical company with subsidiaries in some fifty countries. Every day millions of people all around the world use pharmaceuticals from Astra. Astra has approximately 20,000 employees, of whom a third are in Sweden. Sales in 1996 totaled approximately SEK 39 billion. For more information about Astra, see: www.astra.com

ASTRA HÄSSLE

Astra Hässle is situated in Göteborg, Sweden and is a research company with 1,200 employees. Research is aimed at developing new pharmaceuticals for cardiovascular and gastrointestinal diseases. Seloken® (metoprolol), Plendil® (felodipine), Imdur® (isosorbide-5-mononitrate), Logimax® (felodipine/metoprolol) and Losec® (omeprazole) are drugs developed by Astra Hässle scientists.

Astra is currently making major investments in biotechnology and genomics. This has resulted in the establishment of several corporate competence centers in areas as transgenic models, structural chemistry, bioinformatics, biotech production and high-throughput screening. In addition, collaborations with external partners in genome research such as Millenium Inc. and Genome Therapeutics Corp. has been initiated.

Genome-based pharmaceutical research

Astra Hässle is currently establishing a competitive platform for genome-based pharmaceutical research. The emphasis on this approach has resulted in the formation of a new internal competence group that will consist of devoted researchers representing preclinical and clinical sciences. The competence group will work in close collaboration with internal project groups and external scientific expertise and research organisations to develop family and population based disease material into new targets for therapeutic intervention. Our focus will be to identify and characterise genes involved in cardiovascular and gastrointestinal disorders and translate these discoveries into new therapeutic principles.

We seek motivated senior researchers for development and implementation of internal key activities within genomic research and for maintaining and developing external contacts within their respective areas of expertise.

Linkage Analysis
A Ph.D. with post doctoral experience and a documented background within genetic mapping of complex disorders. The position requires extensive experience in development and use of appropriate methods for analysis of complex traits with experience in parametric and non-parametric linkage analysis.

Positional cloning
A succesful candidate has a strong track record in molecular biology and molecular genetics including post doctoral experience. The position requires documented ability in disease gene identification and analysis. Important areas of expertise include development of high resolution genetic and physical maps and transcript mapping and mutation detection techniques.

Functional genomics
A Ph.D. with post doctoral experience for functional assessment of genes involved complex human diseases. A succesful person has a strong documented background in molecular genetics and expertise in evaluating gene function in eukaryotic model organisms. Experience in the use of relevant bioinformatics tools is essential.

Bioinformatics
This position at the Ph.D. or BS/MS level will work with development and integration of databases to support linkage analysis, mapping and sequencing projects via a close interaction with the different project activities. In addition, this person will be member of Astra Hässle bioinformatics group and responsible for implementation of existing central Astra bioinformatic resources within Astra Hässle´s genome research projects.

For more information please contact
Björn Löwenadler,
tel.no. +46 31-776 24 37,
bjorn.lowenadler@hassle.se.astra.com
or Lennart Hansson,
tel.no. +46 31-776 27 41,
lennart.hansson@hassle.se.astra.com.

Research scientists at the Astra Transgenic Centre

The Astra Transgenic Centre (ATC) is a new corporate competence centre to provide transgenic models used in functional evaluation of new drug targets and development of disease models. ATC will support preclinical projects in all different Astra product companies world-wide. We will work both with classical transgenic techniques, gene targeting and conditional systems. ATC is being established at Astra-Hässle in Göteborg and the first phase has been completed. The unit is now fully operational. The initial number of people in ATC will be eleven.

We are now entering the second phase of our recruitment and have the following vacancies:

Research Scientist-I
A PhD with documented experience from a laboratory generating transgenic animals. Expertise in designing and making constructs for both classical transgenic mice and gene targeted is required. You will be responsible for advising researchers in the different product companies concerning design of DNA constructs and together with the collaborators in your team at ATC ensure that the transgenic project is executed with highest quality and on time. You will also be responsible for developing and testing inducible systems to be used in transgenic animals. Previous experience from work with inducible systems in transgenic mice is an advantage.

Research Scientist-II
A PhD with experience from generating transgenic and gene targeted animals. You will work closely with the different projects to design constructs for transgenic or gene targeted animals. This requires profound knowledge in designing and making DNA constructs as well as analysing the genotype of ES-clones or mice. Together with your team you will be responsible for advising researchers at the product companies how to design constructs. You and your team will also be responsible for generation of transgenic or gene targeted animals at ATC in specified projects. You will develop tissue specific systems to be used both for tissue specific expression of transgenes and cell-specific gene targeting. Experience from working with systems to be used for conditional gene targeting is a major advantage.

Animal Geneticist
This position at the PhD or BS/MS level will work with genotyping of experimental gene targeted animals. This will include identifying transgenic or animals and also analysis using e.g. micro satellite mapping. Your responsibility will be backcrossing and intercrossing of different transgenic strains. You must have strong knowledge about both "classical" genetics and molecular genetics and practical experience of techniques used.

The selected candidates will work in a team handling multiple projects simultaneously and therefore flexibility and well developed organisational abilities are prerequisites. A strong desire to learn and apply new techniques and to instruct colleges is required. You are also expected to maintain and extend contacs with external groups, both at universities and other research companies.

For more information please contact Jan Törnell, tel.no. +46 31-776 24 69, jan.tornell@hassle.se.astra.com.

Applications with full details should be marked "108/97 Linkage Analysis", "109/97 Positional Cloning", "110/97 Functional genomics", "111/97 Bioinformatics", "113/97 Research Scientist-I", "114/97 Research Scientist-II" or "115/97 Animal Geneticist" and sent to the following address before September 20, 1997:

Astra Hässle AB,
Human Resources,
S-431 83 Mölndal, Sweden.
Fax.no. +46 31 776 37 46.

ASTRA
ASTRA HÄSSLE

Research Entomologist,

Bioactive Agents Research Unit,

National Center for Agricultural Utilization Research,

Peoria, IL

ARS is seeking a Research Entomologist to be part of an interdisciplinary team that examines relationships among insects, plants, and microorganisms and how these relationships are influenced by naturally occurring chemicals. Specifically, incumbent will examine effects of volatile and nonvolatile chemicals on insect behavior. Electrophysiological techniques such as electroantennographic GC detection (EAD) and single-cell electroantennography (EAG) will be key tools in the incumbent's research with volatiles. Techniques for sensory organs besides antennae or for nonvolatile compounds may need to be developed. A team goal is to increase understanding of how insects interact with their surroundings and then to apply this knowledge to develop safer and more effective pest management practices. A system of current interest involves the interaction between sap beetles (family Nitidulidae) and the fungi that produce mycotoxins in corn and other crops.

Candidate must have skill in EAD, knowledge of EAG, and experience with analytical chemistry techniques such as capillary GC and HPLC. Knowledge of supporting disciplines such as mass spectrometry, electronics, microscopy, insect physiology, insect behavior, laboratory and field bioassays, insect rearing, and statistics would be very helpful.

Ph.D. is desirable. *Must be U.S. citizen.* Salary is commensurate with experience ($37,507–$69,492 per annum). For information on the research program and/or position, contact **M. R. McGuire (309) 681-6595**. For information on application procedures/forms, contact **Marie Bishop (309) 681-6632** or access the ARS Home page at **http://www.ars.usda.gov**. Applications in response to the advertisement should be marked (ARS-D7N-0157) and postmarked by November 4, 1997.

USDA/ARS IS AN EQUAL OPPORTUNITY EMPLOYER.

Bates | College

Department of Chemistry

The Department of Chemistry at Bates College invites applications for a tenure-track position in Physical Biochemistry at the assistant professor level to begin in September of 1998.

The successful applicant will be expected to develop and teach a course in physical biochemistry, participate in our biological chemistry survey course, contribute to our introductory chemistry curriculum, and possibly teach one additional upper-level chemistry course as determined by the qualifications of the applicant. The applicant will also be expected to develop a research program that will involve undergraduates. While this position primarily serves our chemistry and biology chemistry majors, opportunities may occasionally arise to teach courses associated with interdisciplinary programs in African American Studies, American Cultural Studies, Classical and Medieval Studies, Neuroscience, or Women's Studies. Major departmental equipment holdings for teaching and research include: 300 MHZ NMR, EPR, FT-IR, ICP, GC-MS, and UV-vis spectrometers, as well as HPLCs, ultracentrifuges, IBM work stations, and an Nd. YAG-pumped dye laser. A Ph.D. is required.

Applicants should provide a CV, undergraduate and graduate transcripts, brief statements of teaching philosophy and research interests, and three letters of recommendation by October 24th, 1997 to:

Chemistry Search Committee

Prof. T. Glen Lawson, Chair

Department of Chemistry,

2 Andrews Road, 7 Lane Hall

Bates College

Lewiston, ME 04240

e-mail inquiries may be directed to **tlawson@bates.edu.**

Bates College values a diverse college community and seeks to assure equal opportunity through a continuing and effective Affirmative Action Program.

FACULTY POSITION
IN
BIOCHEMISTRY AND
MOLECULAR BIOLOGY

THE UNIVERSITY OF CHICAGO

The Department of Biochemistry and Molecular Biology at The University of Chicago invites applications and nominations for a tenure-track position at the rank of Assistant Professor. We seek candidates with a record of outstanding research and a strong potential to build an effective research program at the interface of the biological and physical sciences. The University is creating a research institute linking the physical and biological sciences in which the candidate could be a member. All faculty are expected to teach in the departmental program. Applications should include a curriculum vitae, list of publications, summary of past research, plan for future research, and letters of reference from at least three individuals who know the candidate's work well. Please submit complete applications and nominations by December 15, 1997 to:

Faculty Search Committee
Department of Biochemistry and Molecular Biology
The University of Chicago
920 East 58th Street
Chicago, IL 60637.

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

DIRECTOR, BARRETT CANCER CENTER
UNIVERSITY OF CINCINNATI
COLLEGE OF MEDICINE
AND HEALTH ALLIANCE OF GREATER CINCINNATI

The University of Cincinnati College of Medicine and the Health Alliance of Greater Cincinnati seek applicants for the position of Director of The Barrett Cancer Center. The College of Medicine is affiliated with the Health Alliance, an integrated organization of six teaching hospitals and a large group of associated physicians. There are also close academic and clinical ties with other institutions including the Children's Hospital Medical Center and the Veterans Affairs Medical Center.

The Barrett Cancer Center Director will provide leadership in research program development and integration. The Center Director will facilitate application of research advancements to the benefit of patients and their physicians in the Greater Cincinnati area. There is substantial institutional commitment of new laboratory space, clinical research infrastructure, and research start-up funds to support the Director in this endeavor. He/she will report jointly to the Dean of the College of Medicine and to the Senior Executive Officer for Cancer Care of the Health Alliance.

The Barrett Cancer Center Director must be a nationally recognized authority in cancer research and have a history of substantial extramural support for his/her research program. The Director must qualify for appointment as Professor or Associate Professor in a clinical department in the College of Medicine. He/she must have significant breadth of expertise in both basic and clinical research to facilitate their union in the Center. The Director must be able to demonstrate effective leadership ability, interpersonal skills, and financial acumen to enable successful management of a complex organization.

APPLICATIONS SHOULD BE ADDRESSED TO:

John C. Winkelmann, M.D., Search Committee Chair
The University of Cincinnati College of Medicine
Office of Faculty Affairs ML-0554
231 Bethesda Avenue
Cincinnati, OH 45267-0554

The University of Cincinnati is an Affirmative Action/Equal Opportunity Employer

DEAN OF NATURAL SCIENCES AND MATHEMATICS

The Richard Stockton College of New Jersey is a young, residential college of arts, sciences, and professional studies with a student body of 5000. The College is located on a 1600-acre wooded campus in the Pinelands of New Jersey, 15 miles from the ocean beaches, 45 miles from Philadelphia, and 120 miles from New York City.

THE DIVISION OF NATURAL SCIENCES AND MATHEMATICS is staffed by 54 faculty who are strongly committed to undergraduate teaching and active research, and includes majors in Environmental Studies and Marine Science as well as the more traditional areas of Biology, Biochemistry, Chemistry, Geology, Mathematics, and Physics. The science laboratories recently have been renovated, and a newly constructed arts and sciences building houses the field sciences. An observatory is located on campus, and a marine science station near campus has been newly renovated. The Dean manages the Division, exercises curricular leadership, develops and administers the budget, oversees and monitors faculty development, manages faculty recruitment and evaluation, and participates in overall academic planning. The Dean reports to the Vice President for Academic Affairs.

QUALIFICATIONS: Ph.D. in one of the sciences or mathematics; an academic record that would merit the rank of Professor or the equivalent; significant administrative experience; a strong commitment to excellence in teaching; an understanding of the role of research in undergraduate science education; an appreciation of the resources necessary to support the laboratory and field sciences.

Applications should include a cover letter outlining the applicant's qualifications for, and interest in, the position as well as a current curriculum vitae. Applicants should request that three letters of recommendation be sent to the address below. Applications and nominations should be sent to **Professor Donald Plank, Chair, Dean Search Committee, Faculty of Natural Sciences and Mathematics, The Richard Stockton College of New Jersey, AA29, Pomona, NJ 08240**. Salary is competitive and based on qualifications and experience. Screening will begin on October 20, 1997. *Stockton is an AA/EOE. Women and minorities are encouraged to apply.* R800829

Announcing applications for:

THE CHILDREN'S BRITTLE BONE FOUNDATION FELLOWSHIP

$50,000/year award for two years.

The Children's Brittle Bone Foundation announces the fifth international competition for fellowships to study the pathogenesis and treatment of osteogenesis imperfecta. Appropriate research areas include: therapeutic approaches to osteogenesis imperfecta including gene therapy; regulation of collagen-synthesis; bone growth and differentiation factors.

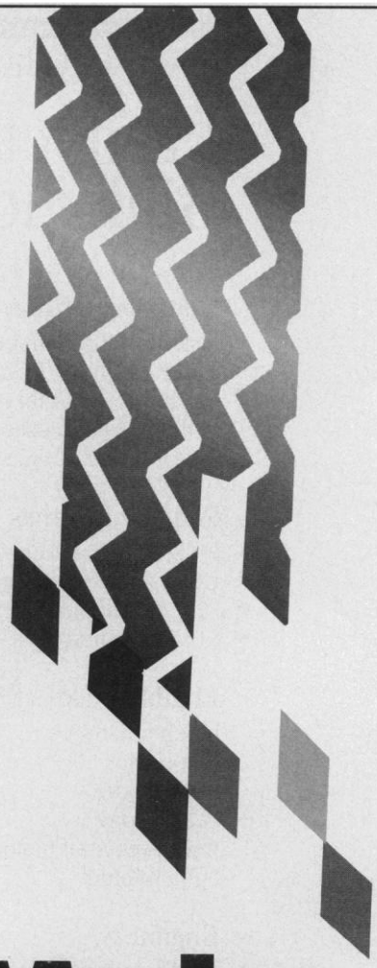
Each grant includes approximately $35,000 in salary plus benefit allowance, and a research allowance. Applicants may hold either a Ph.D. or M.D. and be in postdoctoral training or hold a junior faculty position. A second year of support will be available based on evidence of continued progress.

If the applicant is a postdoctoral fellow, a letter of support from the preceptor along with evidence of the preceptor's external funding for related scientific research is required with the full application.

Applications available:
October, 1, 1997
Filing Deadline:
January, 16, 1998
Fellows Notified:
April 27, 1998

Write to:
CHILDREN'S BRITTLE BONE FOUNDATION
Attention: Grants and Awards
P.O. Box 27
Highland Park, IL 60035
USA

CHILDREN'S BRITTLE BONE FOUNDATION



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Howard Hughes Medical Institute

Predoctoral Fellowships in Biological Sciences

1998 Competition

80 fellowships will be awarded by the Howard Hughes Medical Institute for study toward a Ph.D. or Sc.D. degree in the biological sciences listed below. Awards, based on an international competition, focus on research directed to understanding basic biological processes or disease mechanisms. Fellowships may be held at academic or research institutions with appropriate degree programs.

Fellowship Terms

- Full-time study toward the Ph.D. or Sc.D.
- Up to five years of support possible
- $15,000 annual stipend
- $15,000 annual cost-of-education allowance

Eligible Fields of Study

biochemistry
biophysics
biostatistics
cell biology
developmental biology
epidemiology
genetics
immunology
mathematical and computational biology
microbiology
molecular biology
neuroscience
pharmacology
physiology
structural biology
virology

Eligibility

- Beginning graduate study (prior study toward an M.P.H. or a medical degree does not rule out eligibility)
  - college seniors
  - first year graduate students
  - medical students and physicians (M.D., D.O., D.D.S., or D.V.M.) not past the first year of a Ph.D. or Sc.D. degree program
- Not in a funded M.D./Ph.D. program
- No citizenship requirements for application; U.S. citizens may study abroad, but others must study in the United States

Schedule

Application deadline: November 12, 1997
Awards announced: early April 1998
Fellowships start: June 1998–January 1999

1998 Program Announcements, Eligibility Guidelines, and Applications

Hughes Fellowship Program
The Fellowship Office
National Research Council
2101 Constitution Avenue
Washington, DC 20418, United States of America
Telephone (202) 334-2872
Fax (202) 334-3419
E-mail <infofell@nas.edu>
http://fellowships.nas.edu

The Howard Hughes Medical Institute, an Equal Opportunity Employer, welcomes applications from all qualified candidates and encourages women and members of minority groups to apply.

THE UNIVERSITY OF CALIFORNIA AT BERKELEY

Faculty Positions in the Department of Molecular and Cell Biology

The Department of Molecular and Cell Biology is seeking applications for faculty positions in the areas of biochemical cell biology, genetics, and immunology. The appointees are expected to join the faculty beginning July 1, 1998 or thereafter.

Ph.D. and/or M.D. scientists should have demonstrated excellence, originality, and productivity in research, as well as a strong interest in undergraduate and graduate teaching.

Multiple faculty search committees have been formed and applications should be directed to the Chair of the appropriate committee(s) at the addresses listed below. Applications should include a curriculum vitae, bibliography, a brief description of research accomplishments; a two-page statement of research objectives and teaching interest; and reprints of the three most significant publications. Arrange to have three letters of reference sent to the appropriate address below. Candidates applying to multiple positions must send a separate and complete application as well as letters of reference to each desired search committee. Applications must be received by **November 15, 1997**. **The University of California is an Affirmative Action/Equal Opportunity employer.**

Biochemical Cell Biology

Research experience in molecular (biochemical or genetic) analysis of cellular processes such as signal transduction, apoptosis, motility, protein traffic, or cell cycle regulation, or functional analysis of cellular components such as organelles, membranes, receptors, cytoskeletal proteins, or chromosomes. Two appointments are expected to be made over a two-year period, one at the level of Assistant (tenure-track) Professor, and the other at the tenured level of Associate or Full Professor.

Dept. of Molecular & Cell Biology
Chair, Biochemical Cell Biology Search
University of California
142 LSA #3200
Berkeley, CA 94720-3200

Genetics

Research emphasis in vertebrate genetics, microbial genetics, genomic approaches and novel methodologies for solving biological problems. The appointment is to be made at the level of Assistant (tenure-track) Professor.

Dept. of Molecular & Cell Biology
Chair, Genetics Search
University of California
401 Barker Hall #3202
Berkeley, CA 94720-3202

Immunology

Research emphasis in molecular or cellular immunology including, but not limited to, B cell development, inflammation, gene regulation and/or signal transduction in lymphocyte activation and development, and antigen processing. The appointment is to be made at the level of Assistant (tenure-track) Professor.

Dept. of Molecular & Cell Biology
Chair, Immunology Search
University of California
142 LSA #3200
Berkeley, CA 94720-3200

POSITIONS OPEN

FACULTY POSITION
UNIVERSITY OF MINNESOTA
RENAL DIVISION
DEPARTMENT OF MEDICINE

The University of Minnesota, Department of Medicine, Renal Division seeks a faculty member at the **ASSOCIATE/ASSISTANT PROFESSOR** level (depending on qualifications) for a position in the clinical track. This position will include clinical care and teaching for the area of end-stage renal disease and administration of dialysis operations including directing inpatient and/or outpatient dialysis service and organization of related educational programs. The successful applicant will be board-certified in Nephrology, and will have demonstrated skill in the treatment of renal diseases, including experience in the ambulatory and inpatient settings, dialysis, and renal transplantation. The successful applicant will also have demonstrated the ability to teach and conduct clinical research.

Qualifications: M.D. plus three years of residency in internal medicine, two years of fellowship in nephrology, demonstrated ability and experience in teaching, clinical research, and the treatment of renal diseases including renal transplantation and dialysis. Last day for receipt of applications: Applications will begin to be reviewed October 3, 1997, and will be accepted until position is filled. Start date: As soon as possible.

Applications (incuding curriculum vitae and a minimum of three letters of recommendation) should be sent to:

Thomas Hostetter, M.D.
Professer of Medicine
Director, Renal Division
Box 736 UMHC
420 Delaware Street S.E.
Minneapolis, MN 55455

The University of Minnesota is an Equal Opportunity Educator and Employer.

FACULTY POSITION—MAMMALIAN LENTIVIROLOGIST
Institute for Gene Therapy and Molecular Medicine
Mount Sinai School of Medicine

Faculty positions at all tenure-track levels are available in the Institute for Gene Therapy and Molecular Medicine at the Mount Sinai School of Medicine. Applicants should have extensive experience in the study of mammalian lentiviruses and an interest in the design, development, and application of lentiviral-based vectors for *in vivo* gene transfer into mammalian cells. Successful applicants will be expected to develop, or have in place, a strong, independent research program capable of successfully competing for research funding. In addition to excellent start-up packages and state-of-the-art research facilities, the Institute for Gene Therapy and Molecular Medicine also offers an ideal environment for the establishment of productive collaborative efforts with existing faculty who have interests and expertise in molecular virology, cellular immunology, stem cell biology, molecular genetics, and the development of viral and non-viral vectors for use in gene therapy of animal models of human disease.

Interested candidates should send a curriculum vitae, a description of past research accomplishments and future research plans, and three letters of reference by October 31, 1997, to: **Randy C. Eisensmith, Ph.D., Chair, Genetic Vector Systems Search Committee, Institute of Gene Therapy and Molecular Medicine, Mount Sinai School of Medicine, One Gustave L. Levy Place, Box 1496, New York, NY 10029-6574.** *The Mount Sinai Medical Center is an Equal Opportunity Employer. We foster diversity in the workplace.*

The Department of Biochemistry at Baylor College of Medicine (BCM) invites applications for two to three **FACULTY POSITIONS** (tenured or tenure-track) in emerging areas in the fields of biochemistry, biophysics, and computational biology. This heavily research-oriented department is seeking outstanding scientists who are committed to establishing excellent research programs. BCM provides a unique and interactive community of researchers with strengths in structural, molecular, cellular, and developmental biology, in molecular genetics, and molecular medicine. Applicants should send a curriculum vitae, a research plan, and three letters of recommendation to: **Professor F. A. Quiocho, Faculty Search Committee, c/o Mary Jane Perez, Department of Biochemistry, Baylor College of Medicine, Houston, TX 77030, USA. E-mail: mperez@bcm.tmc.edu).** *BCM is an Equal Opportunity/Affirmative Action/Equal Access Employer.*

POSITIONS OPEN

RESEARCH FACULTY POSITION
THE UNIVERSITY OF GEORGIA
MARINE INSTITUTE
SAPELO ISLAND

The UGA Marine Institute seeks a highly-motivated individual with an interest in the ecology of macroscopic organisms of coastal estuaries, especially intertidal wetlands, to fill an entry-level position on the permanent research faculty. This is a once-in-a-lifetime opportunity for an active, field-oriented scientist to conduct original research in a relatively unimpacted natural coastal setting, protected from human disturbance. The incumbent's research program should be at the community or ecosystem level and may include—but is not limited to— a focus on fishes, invertebrates, or plants of salt marsh-dominated estuaries.

This full-time research appointment offers eight months of salary supported by state appropriations; the incumbent is expected to generate additional salary from outside funding of his/her research. The successful applicant should expect to reside on site at the Marine Institute on Sapelo Island, but will be encouraged to develop professional interactions with off-island researchers, including colleagues within the UGA School of Marine Programs which, in addition to the Marine Institute on Sapelo Island, comprises the Department of Marine Sciences and Sea Grant College Program in Athens, as well as Marine Extension Service facilities in Brunswick and Savannah.

The position requires a doctorate in ecology, marine science, or related field and is available as early as April 1998. Interested individuals should send a cover letter, curriculum vitae, including statement of research interests, and the names, addresses (including e-mail if available), and telephone numbers of at least three potential referees to: **Dr. R. T. Kneib, Search Committee Chair, UGA Marine Institute, Sapelo Island, GA 31327.** Closing date for applications is 1 December 1997.

The University of Georgia is an Equal Opportunity/Affirmative Action Institution.

TENURE-TRACK FACULTY POSITION IN CELL BIOLOGY

The School of Biological Sciences, University of Missouri–Kansas City (UMKC), invites applications for a tenure-track senior faculty position (**ASSOCIATE PROFESSOR** or **PROFESSOR**) in cell biology anatomy. Consideration will be given to applicant research areas compatible with, but not limited to, existing lines of the School's research focus on molecular recognition, embryology/developmental biology or neuroscience. We seek an outstanding scholar with exemplary communication and supervisory skills who has previously attained U.S. university tenure or equivalent status at other universities. Additional requirements are teaching experience in an English-language institution and demonstrated record of collegial interactions. Teaching activities will involve participation in at least two of the following disciplines: cell biology, embryology, histology, and anatomy. State-of-the-art research facilities, competitive salary, start-up funds, and fringe benefits are available. Review of applications will begin October 15, 1997, and will continue until the position is filled. Submit curriculum vitae with summary of present and future research interests, and request that three letters of recommendation be forwarded to: **CBB Search Committe, Division of Cell Biology and Biophysics BSB 403, School of Biological Sciences, 5007 Rockhill Road, University of Missouri, Kansas City, MO 64110-2499.**

Equal Opportunity/Affirmative Action Employer.

FACULTY POSITION IN NEUROETHOLOGY

The Section of Neurobiology and Behavior invites applications for a tenure-track position at the **ASSISTANT/ASSOCIATE PROFESSOR** level. Applicants must have a Ph.D., an excellent record of scientific productivity, and a commitment to undergraduate and graduate teaching. Candidates should have research interests in behavioral neurobiology with expertise in one or more of the following areas; sensory and motor systems physiology, evolutionary neurobiology, computational neuroscience. Send application, curriculum vitae, and three letters of reference to: **Chair, Neuroethology Search Committee, Section of Neurobiology and Behavior, Cornell University, Ithaca, NY 14853-2702.** Review of applications begins November 15, 1997. *Women and minority candidates are strongly encouraged to apply. Cornell University is an Equal Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

FACULTY POSITIONS
BIOMEDICAL ENGINEERING
YALE UNIVERSITY

Yale University invites applications and nominations for one or more tenured and/or untenured faculty positions in the general area of biomedical engineering. At the senior level, the candidate is expected to be exceptionally qualified and internationally recognized in biomedical engineering or closely related areas and have a strong commitment to teaching. Junior candidates must demonstrate the potential to mature into distinguished positions in the field, and to become excellent teachers. Preference will be given to candidates with demonstrated ability to compete for external research support. The appointee would be expected to establish interdisciplinary links with the School of Medicine, as well as with life science departments, within Yale. Experience with industrial collaborations is also desirable.

Nominations and applications with curriculum vitae, copies of most recent relevant publications, and the names, addresses, and telephone numbers of at least four professional references should be sent to:

Professor John C. Gore
Chairman, Biomedical Engineering
Search Committee
Department of Diagnostic Radiology
Yale University School of Medicine
P.O. Box 208042
New Haven, CT 06520-8042

Applications received by December 1, 1997, will be treated preferentially. *Yale University is an Affirmative Action/Equal Opportunity Employer and welcomes applications from women and members of minorities.*

TENURE-TRACK FACULTY POSITION
VERTEBRATE DEVELOPMENT
UNIVERSITY OF MASSACHUSETTS, AMHERST

The Biology Department, in cooperation with the Neuroscience and Behavior program at the University of Massachusetts, Amherst, invites applications for a tenure-track faculty position at the **ASSISTANT PROFESSOR** level. This search is re-opened for an individual using cellular, molecular, or genetic approaches to address fundamental problems of development in a vertebrate model system. Preference will be given to candidates who complement existing strengths in *Drosophila* neurodevelopment, cell death, evolution, mammalian development, or neuroendocrinology. Candidates will be expected to have a strong commitment to undergraduate and graduate education, to teach a course in developmental biology, and be willing to contribute to other appropriate areas. We offer an excellent environment in which to establish a competitive academic research career, including generous laboratory space and start-up support. Salary is commensurate with experience. A Ph.D. and postdoctoral experience is required. Interested candidates should mail curriculum vitae, statement of research and teaching interests, and arrange for three letters of reference to be sent to: **Vertebrate Development Search Committee, Department of Biology, Morrill Science Center, University of Massachusetts, Amherst, MA 01003.** Applications will be evaluated beginning October 15, 1997. Direct questions to **e-mail: develsearch@bio.umass.edu.** *The University of Massachusetts is an Equal Opportunity/Affirmative Action Employer.*

A search is currently underway for recruitment of an M.D. or M.D./Ph.D. **TENURE-TRACK FACULTY MEMBER** interested in the molecular basis of cardiovascular development. This scientist will be expected to develop a recognized independent program investigating transcriptional regulation, ligand-receptor interactions, or molecular signaling as these relate to lineage commitment and cellular differentiation in the cardiovascular system. The person accepting this position will benefit from a rich environment in developmental and molecular biology in the Departments of Medicine and Pediatrics, the Department of Developmental Biology, other basic science Departments, and the Howard Hughes Institute at Stanford University School of Medicine.

Applicants should forward their curriculum vitae, a concise statement of research interests, and the names of three references to: **Judith L. Swain, Professor and Chair of Medicine, Stanford University School of Medicine, Department of Medicine, 300 Pasteur Drive, SUMC S102, Stanford, CA 94305-5109.** *Stanford University is committed to increasing representation of women and members of minority groups on its faculty and particularly encourages applications from such candidates.*

CHRYSALIS

DNX TRANSGENIC SCIENCES

Chrysalis DNX Transgenic Sciences is expanding our transgenic facility located in Princeton, NJ and have the following positions available:

Research Associate, Microinjectionist — *Transgenic Animal Science.* DNX is currently seeking a microinjectionist to perform pronuclear and blastocyst injection of mouse embryos for the generation of transgenic and gene targeted animals. Qualified candidates must have a B.S. in biology. High transgenic rates and a minimum of 3–5 years microinjection experience are required. Previous experience at a core microinjection facility is preferred. Familiarity with embryo cryopreservation techniques a plus. Excellent communication and computer skills, along with the ability to work in a team environment are essential.

Research Associate — *Molecular Biology/Cell Culture.* Qualified individuals must have a B.S. in biology with 5+ years of laboratory experience. Extensive experience in gene cloning, gene manipulation and gene expression analysis a must. Cell Culture responsibilities to include maintaining embryonic fibroblasts and embryonic stem cells, and executing a designed gene targeting protocol.

Chrysalis DNX Transgenic Sciences offers an excellent work environment, along with a competitive compensation and benefits package. To apply for one of the above positions, please send your CV with salary history to: **301B College Road East, Princeton, NJ 08540 or fax to (609) 520-9864.** *EOE.*

Vertex Pharmaceuticals Incorporated, a publicly owned pharmaceutical company in Cambridge, is engaged in the discovery, development and commercialization of pharmaceuticals for the treatment of diseases for which there are currently limited or no effective treatments. The Company is concentrating on the discovery and development of drugs for the role in the treatment of many diseases including cancer multidrug resistance, hemoglobin disorders, inflammation, and HIV infection and AIDS.

ENZYMOLOGISTS – PH.D.

We are seeking individuals to support our growing Enzymology team in two of our ongoing projects:

Position One: You will be responsible for experiments to determine the mechanism of action of replication enzymes involved in the life cycle of RNA viruses. In addition, you will design biochemical assays for evaluation of novel inhibitors of these enzymes as potential anti-viral therapeutic agents. Successful candidate will have a **Ph.D.** in Biochemistry with related post-doctoral studies on the mechanism of replication enzymes. Two or more years of independent research with a background in enzyme kinetics and molecular biology are required. A strong publication record is highly desired.

Position Two: You will be responsible for experiments to determine the mechanism of action of protease enzymes involved in inflammation. In addition, you will design and execute biochemical assays for the kinetic characterization of novel inhibitors against these targets. Successful candidate will have a **Ph.D.** in Biochemistry and related post-doctoral studies in the field of enzyme mechanisms. Experience with protease mechanisms and inhibitors is strongly desired.

Please send your c.v. and three names from whom references may be obtained to: **Vertex Pharmaceuticals Incorporated, Recruiting Manager, Ad Code: SCI9/5, 130 Waverly Street, Cambridge, MA 02139; Fax: (617) 577-6686 or visit our web page at http://www.vpharm.com.** Equal Opportunity Employer.

Vertex

MOLECULAR BIOLOGY CHEMISTRY BIOPHYSICS

VERTEX PHARMACEUTICALS INCORPORATED

We're Not Leaving Success To Chance

Protein Crystallographer Tenure Track

A faculty position as Assistant Professor is available in Protein Crystallography in the Department of Chemistry and Biochemistry. Exceptionally well qualified candidates could be considered at a higher rank. Applicants should have a Ph.D. and postdoctoral experience. We seek an outstanding candidate who will establish a nationally competitive, vigorous and independent research program in a significant area of structural biology, and will participate in undergraduate/graduate teaching. Opportunities for research collaboration are also present in this intellectually stimulating environment. Excellent new facilities and generous start-up funds will be provided. Review of applications will begin as they are received and will continue until November 1, 1997. Candidates should submit a curriculum vitae, statement of current and future research plans and have three letters of reference sent to: **Professor Colin Thorpe, Protein Crystallography Search Committee, Department of Chemistry and Biochemistry, University of Delaware, Newark, DE 19716.**

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

UNIVERSITY OF DELAWARE

Medical Research

Join The System That Works For You

The following postdoctoral positions are immediately available at the **Lankenau Medical Research Center.** The Lankenau Medical Research Center, located in suburban Philadelphia, is a small, highly interactive institute dedicated to understanding the molecular bases of chronic disease. If interested in a position listed below, please send a summary of research interests, Curriculum Vitae and three references to the address listed below to the attention of the appropriate investigator. Equal Opportunity Employer.

The Lankenau Medical Research
100 Lancaster Avenue
Wynnewood, PA 19096
610-645-8299 FAX

Susan K. Gilmour, Ph.D. Postdoctoral Fellowship available for candidate with strong background in molecular biology and interest in signal transduction and carcinogenesis. Studies will incorporate molecular, cellular and transgenic approaches to evaluate the in vivo interaction between polyamines and possible downstream effectors such as casein kinase 2 in epithelial tumorigenesis and invasiveness (JBC, 272: 12536; Cancer Res. 57:2104). Experience in protein purification is desirable.

Karen A. Knudsen, Ph.D. Postdoctoral position available for candidates with a Ph.D. in Cell Biology, Microbiology or Molecular Biology to study cadherins and catenins: their role in intracellular signaling affecting proliferation, differentiation, and morphogenesis.

James M. Mullin, Ph.D. Postdoctoral position is available to study regulation of intercellular junctional proteins by protein kinase C phosphorylation. Candidates should have a Ph.D. and some background in protein chemistry. Emphasis will be upon the regulation of transepithelial permeability by protein kinase C and cytokine signal transduction pathways (Exp Cell Res 227:12-22, 1996; Am J Physiol 270:F869-F879, 1996) in cell culture, tissue level, and clinical programs.

Thomas G. O'Brien, Ph.D. A Postdoctoral/research associate position is available to study the mechanism by which elevated polyamine levels cause increased susceptibility to skin cancer. We have developed several transgenic mouse models in which ornithine decarboxylase expression can either be overexpressed or inhibited in specific populations of epidermal keratinocytes (see O'Brien, et al., Cancer Research 57:2630-2637, 1997). These models will be used to test hypotheses concerning the consequent of up regulated polyamine levels.

Alejandro Peralta Soler, M.D., Ph.D. Postdoctoral position is available immediately for studying signal transduction mechanisms of estrogen and cell-cell adhesion in the central nervous system. Candidates with a Ph.D. degree, background in signal transduction and with an interest in cell-cell adhesion and neuroscience should apply.

Lankenau Hospital
Jefferson Health System

POSITIONS OPEN

UNIVERSITY OF CALIFORNIA, DAVIS SCHOOL OF MEDICINE

The Basic Science Departments of the School of Medicine invite applications for a full-time, tenure-track faculty position at the **ASSISTANT PROFESSOR** level in cell physiology/cell biology. Applicants should have a Ph.D. and/or M.D. degree, and at least two years of postdoctoral experience. The most important criteria are: a record of excellence in research that demonstrates strong potential for building an independent, competitive research program; and communication skills demonstrating the potential to achieve excellence in teaching medical and graduate students. Consideration will be given to candidates studying vertebrate cell signaling/function and employing molecular, cell biologic, and/or electrophysiologic approaches. Areas could include gene expression, nuclear receptors, transmembrane signaling, membrane transport, ion channels, and intracellular trafficking. Applicants should submit: a curriculum vitae (including teaching experience); a synopsis of past, present, and future research goals; up to three representative reprints; and four letters of reference to: **Chair, Basic Sciences Search Committee, c/o Don Martensen, Office of the Dean, School of Medicine, East Health Sciences Drive, University of California, Davis, CA 95616.** This position will be open until filled; for full consideration, applications should be received by December 31, 1997. For additional information see our **website: http://medsponsoredprograms/pages/SOMOR/recruit.html.** *The University of California is an Affirmative Action/Equal Opportunity Employer.*

FACULTY POSITIONS IN REGULATORY BIOLOGY AND CELL SIGNALING

The newly formed Department of Integrative Biology and Pharmacology at the University of Texas Medical School in Houston has several tenure-track faculty openings for an expanding departmental focus in regulatory biology and cell signaling. Appointments may be at the **ASSISTANT PROFESSOR** level for candidates completing their postdoctoral training or at the **ASSOCIATE PROFESSOR** level for candidates with funded, independent research programs. Applicants using multifaceted approaches to define molecular mechanisms involved in the regulation of cell function are preferred, but a broad spectrum of research areas will be considered. Responsibilities include the development of a funded, internationally recognized research program and participation in medical and graduate education. Attractive start-up packages and competitive salaries and benefits will be provided. See **website: http://IBPsearch.med.uth.tmc.edu.** Candidates should send a curriculum vitae, a description of future research plans, and at least three letters of reference to: **Drs. Peter Davies** or **Agnes Schonbrunn, Integrative Biology and Pharmacology, University of Texas Medical School, P.O. Box 20708, Houston, TX 77225.** Review of applications will begin immediately and will continue until the positions are filled. *The University of Texas is an Equal Opportunity Employer and encourages applications from women and minorities.*

FACULTY POSITIONS IN PHYSIOLOGY UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

The Department of Physiology at the University of North Carolina at Chapel Hill invites applications for two tenure-track faculty positions at the **ASSISTANT PROFESSOR** level from candidates with a Ph.D., M.D., or the equivalent degree and significant postdoctoral experience. Appointment at higher rank will also be considered. We seek individuals who will establish vigorous research programs investigating physiological processes at the molecular and cellular levels and participate effectively in the department's graduate and medical student teaching programs. Applications from all physiological disciplines will be considered, but for one position, preference will be given to individuals whose research interests complement the department's strength in neurobiology. For information about the department, see our **website: http://www.med.unc.edu/physiolo/.** Send a complete curriculum vitae, a brief description of research interests, and the names, addresses, and telephone numbers of three references to: **Faculty Search Committee, Department of Physiology, CB 7545, University of North Carolina, Chapel Hill, NC 27599-7545.** *UNC-CH is an Affirmative Action/Equal Opportunity Employer. Minorities and women are especially encouraged to apply.*

TWO TENURE-TRACK ASSISTANT PROFESSORSHIPS IN EVOLUTIONARY BIOLOGY
University of Massachusetts, Amherst

The Biology Department and the Graduate Program in Plant Biology are offering a position in

PLANT EVOLUTIONARY BIOLOGY

Applicants should be interested in the evolutionary relationships of major plant groups and/or gaining insight into basic evolutionary processes, and have a solid background in some area of organismal plant biology (e.g., plant morphology, systematics) combined with detailed knowledge and experience in molecular techniques. The candidate is expected to teach in the Biology undergraduate program, compete successfully for external funding, and participate in graduate training. Please submit curriculum vitae, a brief statement of research and teaching interests, and the names and addresses of three references to: **Ms. K. Nelson, Secretary, Plant Evolution Search, Department of Biology, University of Massachusetts, Amherst, MA 01003-5810. E-mail: knelson@bio.umass.edu.**

Departments participating in the Graduate Program in Organismic and Evolutionary Biology are offering a position in

MOLECULAR SYSTEMATICS/ EVOLUTION OF ANIMALS

Applicants should have research experience incorporating technical and theoretical skills in molecular systematics and evolution, especially as related to animal behavior, ecology, conservation, or management. Experience working with museum as well as field-collected material, strong potential for extramural grant success, and the ability to teach undergraduate and graduate courses is desired. The appointment will be in the Department of Biology, Entomology, or Forestry and Wildlife Management. Applications should include a letter stating personal teaching and research goals and a curriculum vitae. Arrange for letters from three references to be sent to: **Dr. William E. Bemis, Chair, Molecular Systematics/ Evolution of Animals Search Committee, Department of Biology, University of Massachusetts, Amherst, MA 01003-5810. FAX: 413-545-3243; e-mail: systzool@bio.umass.edu.**

For both positions, a Ph.D. is required, with postdoctoral experience preferred. Review of applications will begin October 15th, 1997, and continue until the positions are filled.

The University of Massachusetts is an Equal Opportunity Employer.

FACULTY APPOINTMENT AND RESEARCH POSITION

(nucleic acid enzymology/biophysical chemistry). Position entails conducting a productive research program in biophysical chemistry within the context of the goals of a large nucleic acid enzymology laboratory and providing assistance/mentoring for students and postdoctoral fellows on biophysical issues. Expertise in the area of equilibrium binding measurements and kinetic analysis in complex multiprotein systems required. Position involves working within large established laboratory and helping extend the biophysical approaches used. Excellent instrumentation available in a supportive environment. Desire and ability to work collaboratively with laboratory director and personnel required. Ph.D. required. Faculty rank commensurate with experience. Send curriculum vitae, description of past research accomplishments and present interests, and names of five professional references to: **Biophysical Position, Molecular Biology Program (B-121), University of Colorado Health Sciences Center, 4200 East 9th Avenue, Denver, CO 80262.** *UCHSC is committed to Equal Employment Opportunity and Affirmative Action.*

TENURE-TRACK ASSISTANT PROFESSOR FEBRUARY 1998 POSITION REVISED/SEARCH EXTENDED

Molecular Biologist, Ph.D., to teach general biology in a forensic science program. Background in forensic and/or DNA applications desired. Mentoring of research required. Please send a letter of application, curriculum vitae, three letters of recommendation, and a brief description of research plans to: **Professor Selman A. Berger, Department of Sciences, John Jay College of Criminal Justice, The City University of New York, 445 West 59th Street, New York, NY 10019. FAX: 212-237-8742.** Deadline: November 10, 1997. *Affirmative Action/Equal Opportunity Employer.*

ASSISTANT PROFESSOR OF BIOLOGY (TENURE-TRACK) UNIVERSITY OF MASSACHUSETTS DARTMOUTH
North Dartmouth, MA 02747 USA

The Department of Biology invites applications for an Assistant Professor of Biology to teach and conduct research in marine microbiology and molecular ecology. The successful candidate will be expected to teach courses at the undergraduate and graduate levels and to conduct an externally funded independent research program. Teaching responsibilities will include maintaining and further developing a molecular biology laboratory, which should offer the opportunity of integrating the research needs of students and faculty in interdisciplinary projects focusing on marine ecology and systematics. Candidates should have a Ph.D., a strong research record, prior teaching experience, and research skills in molecular database analyses and phylogenetic systematics. Salary will depend upon the successful candidate's experience and qualifications.

Send a curriculum vitae, statements of teaching and research interests, and the names and addresses of three references to:

Marine Microbiology Search Committee
Department of Biology
University of Massachusetts Dartmouth
285 Old Westport Road
North Dartmouth, MA 02747-2300

Screening of applicant files will begin 1 October 1997. Information about the University of Massachusetts Dartmouth (**website: http://www.umassd.edu**) and the Department of Biology (**website: http://www.bio.umassd.edu**) is available on the World Wide Web. For specific information contact the Chair of the Search Committee, **Dr. Robert K. Edgar, e-mail: redgar@umassd.edu.**

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

DEVELOPMENTAL BIOLOGIST

Baylor University, a private, liberal arts university of 12,000 students, seeks a Developmental Biologist for a tenure-track position at the **ASSISTANT PROFESSOR** level beginning 1 July 1998. Applicants must have a Ph.D. degree and be using current and innovative approaches to examine developmental processes. Position responsibilities: (1) Teach an upper-level course in embryology/development, teach introductory biology for majors, and develop and teach an upper-level course in area of specialty. (2) Establish a research program that provides training for undergraduate and graduate students. (3) Participate in departmental and university service activities. Baylor is renowned for excellence in teaching, balanced with quality faculty and student research. Submit, by 13 October 1997, application letter, curriculum vitae, statements of teaching philosophy and research interests, graduate and undergraduate transcripts, and names and addresses of three references to: **Professor Ken Wilkins, Search Committee Chair, Department of Biology, Baylor University, Waco, TX 76798-7388. Telephone: 254-710-2911; FAX: 254-710-2969; e-mail: ken_wilkins@baylor.edu; website: http://www.baylor.edu.** *Baylor University is a Baptist university affiliated with the Baptist General Convention of Texas. As an Affirmative Action/Equal Employment Opportunity Employer, Baylor encourages minorities, women, veterans, and persons with disabilities to apply.*

Department of Chemistry and Biochemistry, University of Maryland at College Park invites applications for a tenure-track or tenured position in biochemistry. Candidates at all levels will be considered (**ASSISTANT, ASSOCIATE** or **FULL PROFESSOR**). Research areas of particular interest include, but are not limited to, protein and peptide structure, folding, and design; protein targeting and secretion; and RNA structure and function. Candidates will also have the opportunity to participate in the newly-established Center for Biomolecular Structure and Organization and the campus-wide Program in Molecular and Cell Biology. UMCP encourages applications from women and members of minority groups and is an Equal Opportunity/Affirmative Action Employer. Submit a curriculum vitae, a brief (three- to five-page) description of research plans, and arrange for three letters of reference to be sent to: **Professor Douglas A. Julin, Biochemistry Search Committee, Department of Chemistry and Biochemistry, University of Maryland, College Park, MD 20742-2021.** Applications should be received by November 1, 1997, for best consideration.

SCIENTIFIC DIRECTOR

National Institute of Mental Health, National Institutes of Health

The National Institute of Mental Health (NIMH) has established a search committee to select outstanding candidates for the position of Scientific Director. The NIMH Scientific Director manages the Institute's Division of Intramural Research programs, represents the NIMH in discussions of NIH-wide intramural policies and programs, and, as a vital member of the senior scientific staff of the Institute, advises the NIMH Director on scientific and policy issues. The next Scientific Director will have a remarkable opportunity to shape the future of NIMH intramural research, which has an annual budget of nearly $100 million, a well-established infrastructure for outstanding basic and clinical research, and a distinguished history of research accomplishments.

The Scientific Director provides leadership and direction to the Institute's clinical, behavioral, and biological intramural research, establishing overall priorities and allocating resources to advance our understanding of the brain and behavior, the causes of mental illness, and effective treatment and prevention strategies. In addition to budgetary responsibilities, the Scientific Director is responsible for the recruitment and retention of outstanding scientists to further these research goals and to assure excellence in training the next generation of researchers.

The Scientific Directorship is a senior position, equivalent to a tenured Full Professor. Candidates must have an M.D. or Ph.D., strong research credentials in the basic or clinical neurosciences or related research areas, and broad experience in developing, administering, and evaluating biomedical research programs related to mental disorders. The Scientific Director will be appointed in the Senior Biomedical Research Service at an annual salary ranging up to $148,400, depending on the candidate's credentials and accomplishments.

The search committee is chaired by Story Landis, Ph.D., Scientific Director for the National Institute of Neurological Disorders and Stroke. Applicants are requested to send a letter including a statement of research interests, a curriculum vitae and bibliography, and the names and addresses of four individuals for references to:

Ms. Patricia Middleton
NIMH Personnel Office
Parklawn 7C15
5600 Fishers Lane
Rockville, Maryland 20857

The deadline for receipt of applications is October 17, 1997.

NIH IS AN EQUAL OPPORTUNITY EMPLOYER

DEAN

School of Forestry and Environmental Studies
Yale University

Applications are invited for the position of Dean of the Yale University School of Forestry and Environmental Studies. The School of Forestry and Environmental Studies offers several of the most distinguished professional forestry, environmental, and natural resource management graduate and research programs available in the world. There are currently three masters and three doctoral degree programs offered. In 2000, the School will be 100 years old. We seek an individual with extraordinary leadership skills, scholarly credentials in the natural, social, or engineering sciences, and an outstanding record of achievement in the academic, public, or private sector.

The deadline for receipt of applications is October 1, 1997.

Please direct all inquiries to: **Professor William H. Smith, Chairman, Dean Search Committee, School of Forestry & Environmental Studies, Yale University, 205 Prospect Street, New Haven, CT 06511; phone 203-432-5794; FAX 203-432-3051; e-mail: whsmith@minerva.yale.edu.**

Yale University is an Equal Opportunity Affirmative Action Employer and applications from women and members of minority groups are encouraged.

STAFF SCIENTIST

SECTION ON HUMAN GENETICS
LABORATORY OF MOLECULAR GENETICS, NIDCD

The Section on Human Genetics, Laboratory of Molecular Genetics (LMG), National Institute on Deafness and Other Communication Disorders (NIDCD) is recruiting for the position of Staff Scientist. The Staff Scientist is responsible for ascertaining extended multiplex human pedigress throughout the world where genetic hearing impairment and other communication disorders are apparent, collecting DNA samples, performing genome-wide searches for linkage and positionally cloning the genes. The position requires a Ph.D. or a M.D. with extensive postdoctoral experience in ascertaining families or populations; designing and performing experiments to map the genes responsible for the inherited phenotype and characterizing the structure and expression of the gene. In addition, experience in the following is desirable: working with remote populations, medical genetics, and the syndromes associated with hearing loss and other communication disorders, databases and linkage software programs. The candidate should have published scientific papers in peer reviewed journals. The successful candidate is expected to maintain an active program of collaborative research; to learn, develop and adapt new techniques as needed to explore pertinent research questions; and to be knowledgeable about scientific resources at the NIH and elsewhere.

This is a Civil Service position at the GS-13 level, with a base salary currently ranging from $54,629 to $78,203 per year depending on qualifications.

Further information about the position and qualification requirements may be obtained by contacting Ms. Christine Clements at (301) 402-0508 (voice or TDD) or TDD (301) 402-1134. A Curriculum Vitae and Bibliography and three letters of reference and two recent publications should be submitted by September 30, 1997 to: **MS. CHRISTINE CLEMENTS, PERSONNEL MANAGEMENT SPECIALIST, NATIONAL INSTITUTE OF DEAFNESS AND OTHER COMMUNICATION DISORDERS, 31 CENTER DRIVE MSC 2320, BETHESDA, MD 20892-2320.**

NIH is an Equal Opportunity Employer

POSITIONS OPEN

VERTEBRATE AND INVERTEBRATE ORGANISMAL BIOLOGISTS, UNIVERSITY OF CALIFORNIA, DAVIS. The Division of Biological Sciences, University of California, Davis, invites applications and nominations for two positions in the Section of Evolution and Ecology. Both positions could be at either the tenure-track **ASSISTANT PROFESSOR** or tenured **ASSOCIATE PROFESSOR** level. These positions could include an appointment in the Agricultural Experiment Station. A Ph.D. or equivalent in biological sciences or a related field is required. We seek two individuals, one of whom works on vertebrates and the other on metazoan invertebrates. For both positions, we are interested in candidates whose research centers on the organism as a unit of study, in an ecological or evolutionary context. Teaching responsibilities include undergraduate courses in animal diversity and advanced courses in the candidate's area of specialization. Applicants should submit a curriculum vitae, copies of significant publications, a research statement, and a summary of teaching interests and experience. Applicants should also arrange to have three letters of recommendation sent either to: **H. Bradley Shaffer, Chair, Vertebrate Biologist Search Committee**, or **Rick Grosberg, Chair, Invertebrate Biologist Search Committee, Section of Evolution and Ecology, University of California, Davis, CA 95616-8755.** Closing date: Open until filled, but all application materials, including letters of recommendation, must be postmarked by 15 October 1997 to be assured full consideration. For more information about these positions, consult our **website: http://www-eve.ucdavis.edu/search.htm.** *The University of California is an Equal Opportunity/Affirmative Action Employer with a strong institutional commitment to the development of a climate that supports equality of opportunity and respect for differences.*

IMMUNOLOGY
FACULTY POSITIONS AVAILABLE

The Department of Microbiology and Immunology invites applications for tenure-track positions at the level of **ASSISTANT PROFESSOR.** We are seeking investigators whose research interests are directed to molecular and/or cellular analyses of contemporary problems in immunology. Candidates will be expected to develop high quality, extramurally funded, independent research programs with long-term growth potential. Teaching responsibilities, which emphasize quality rather than quantity, include medical, dental, and graduate students. The Department offers a highly interactive intellectual environment with strong extramural research support.

The review of applications will begin on September 15 and will continue until the positions are filled. Applications should consist of curriculum vitae, copies of several recent publications, a brief statement of future research goals, and three letters of reference to be sent to:

Dr. Terrance G. Cooper
Department of Microbiology and Immunology
The University of Tennessee, Memphis
858 Madison Avenue, Room 801
Memphis, TN 38163

Detailed information about the Department may be obtained on the World Wide Web at **website: http://microbiology.utmen.edu.**

The University of Tennessee, Memphis is an Equal Employment Opportunity/Affirmative Action/Title VI/Title IX/Section 504/ADA/ADEA Employer.

ASSISTANT PROFESSOR. Host-Pathogen Physiologist/Plant Molecular Biologist. A tenure-track position is available immediately in the Department of Plant Pathology, Rutgers University. The successful candidate will be expected to develop a research program addressing endophyte-grass interactions and the application of biotechnology to turfgrass systems. The appointee will contribute significantly to one introductory-level course in plant pathology and will teach at least one course or section annually of the undergraduate biotechnology curriculum. A Ph.D. in plant pathology, plant molecular biology, or a closely related field is required, preferably with substantial postdoctoral training. Expertise in plant and/or fungal transformation is essential, and expertise in turfgrass transformation is desirable. Applications will be accepted until October 10, 1997, or until a suitable candidate is selected. Please submit a curriculum vitae, a statement of teaching and research interests, long-range career goals, and the names and addresses of five references to: **Dr. B. I. Hillman, Search Committee Chair, Department of Plant Pathology, Cook College, Rutgers University, Foran Hall, New Brunswick, NJ 08903.** *Rutgers University is an Equal Opportunity/Affirmative Action Employer.*

PLANT BIOLOGY
UNIVERSITY OF UTAH

The Department of Biology at the University of Utah seeks to add two faculty in plant biology to complement and strengthen our existing program in plant sciences. The search will be divided into two broad categories: molecular and cellular plant biology and organismal plant biology. Individuals whose interests span these two areas are particularly welcome. The preferred rank is at the **ASSISTANT** or **ASSOCIATE PROFESSOR** levels and positions are available beginning July 1, 1998.

The existing plant biology faculty include strengths in cell biology, developmental biology, genetics, photosynthesis, water relations, and ecology. The successful candidates are expected to strenghten the research capacity of plant sciences in a broad sense, while complementing existing programs. More information about plant biology and the department is available through the Internet at **website: http://www.biology.utah.edu.**

Interested applicants should send to the most appropriate search committee listed below: a curriculum vitae, a statement which includes both research and teaching interests, and names of three individuals who can evaluate the candidate's research. The search will remain open until the positions are filled, but we anticipate beginning to review completed applications on November 1, 1997.

Darryl Kropf
Molecular and Cellular Plant Biology Search
or
Jim Ehleringer
Organismal Plant Biology Search
Department of Biology
University of Utah
Salt Lake City, UT 84112

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

ASSISTANT PROFESSOR
SOUTHWEST TEXAS STATE UNIVERSITY
DEPARTMENT OF BIOLOGY

Tenure-track faculty position available at the Assistant Professor level, nine-month appointment, in the area of invertebrate biology. The successful candidate should have a background in marine and organismic level biology, with research expertise in wetland biology. The individual will teach an introductory zoology course and an upper division course in either invertebrate biology or oceans and estuaries. The individual selected will be expected to develop an independent research program and obtain extramural funding. Postdoctoral experience is desired. The Biology Department has 33 faculty, over 100 graduate students, and 1,300 undergraduate majors. SWT (21,000 students) is located in San Marcos, Texas, midway between Austin and San Antonio. Review of applications will begin on 15 October 1997. Applicants should send a statement of qualifications (teaching and research); a curriculum vitae; names, addresses, telephone numbers, and e-mail addresses of three potential references; and up to five reprints to: **Francis L. Rose, Search Committee, Biology Department, Southwest Texas State University, San Marcos, TX 78666. Telephone: 512-245-2178; FAX: 512-245-8713.** *SWT is an Affirmative Action/Equal Opportunity Employer.*

FACULTY POSITION IN MEDICINAL CHEMISTRY. The Department of Medicinal Chemistry and Pharmacognosy, University of Illinois at Chicago, invites applications and nominations for a full-time, tenure-track position at the **ASSISTANT** or **ASSOCIATE PROFESSOR** level. A Ph.D. degree in medicinal or organic chemistry with an interest in biologically related research is required. Postdoctoral experience is highly desirable. The successful candidate will be required to develop a vigorous, extramurally-funded, independent research program, and foster collaborative interactions with other faculty. Candidates interested in combinatorial chemical approaches to drug development are strongly encouraged to apply. Teaching in the professional and graduate programs of the College of Pharmacy is required. Candidates should send a curriculum vitae, a brief research plan, and provide three reference letters by 1 December 1997 to: **Professor Duane L. Venton, Chair—Search Committee, Department of Medicinal Chemistry and Pharmacognosy, College of Pharmacy, M/C 781, University of Illinois at Chicago, 833 South Wood Street, Chicago, IL 60680-6998. Telephone: 312-996-5233; FAX: 312-996-7107; e-mail: venton@uicvm.uic.edu.** *UIC is an Affirmative Action/Equal Opportunity Employer.*

ASSISTANT PROFESSOR
MOLECULAR BIOLOGY OF AGING

The Department of Physiology and the Sanders Brown Aging Center at the University of Kentucky College of Medicine invite applications for a tenure-track position at the Assistant Professor level. We seek an individual who will establish a strong research program that emphasizes the use of molecular biological approaches to study age-related changes in physiological functions and who will participate in our teaching program. Special consideration will be given to candidates who complement existing strengths in the Aging Center including the study of Alzheimer's disease and/or mechanisms of oxidative damage, neuron-glia interactions, and/or neuronal plasticity. Candidates with training in other molecular and cellular aspects of aging will also be considered. Interactions with faculty within the College of Medicine, School of Biological Sciences, College of Agiculture, and the Markey Cancer Center provide a particularly stimulating research environment.

Applicants must have a Ph.D. and/or M.D. degree and at least three years of postdoctoral experience. Interested individuals should send a curriculum vitae, a detailed statement of past experience, future research plans, and three letters of reference to: **Dr. Phyllis M. Wise, Chair, Department of Physiology,** or **Dr. William Markesbery, Director, Sanders Brown Aging Center, College of Medicine, University of Kentucky, Lexington, KY 40536-0084.** Review of applications will begin on November 15, 1997.

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

CARDIOVASCULAR PHYSIOLOGIST

The Department of Physiology at The University of Arizona, College of Medicine, invites applications for a tenure-track, fiscal year position at the rank of **ASSISTANT PROFESSOR.** Preference will be given to a systems/integrative cardiovascular physiologist who uses molecular genetic tools to examine mechanisms of cardiovascular function. The successful candidate will be expected to establish a vigorous, independent research program and contribute to teaching in undergraduate, graduate, or medical physiology courses. Qualifications include the Ph.D., M.D., or equivalent, and two or more years of postdoctoral training. Candidates with demonstrated experience in teaching and success in acquiring independent funding are especially encouraged to apply. Position is available beginning July 1, 1998. Review of applications will begin September, 1997, and continue until the position is filled. Submit a letter of application, a summary of teaching and researching goals, a curriculum vitae with the names of three references, and three reprints to: **Janis M. Burt, Ph.D., Head of the Search Committee, Department of Physiology, The University of Arizona, Tucson, AZ 85724-5051.** More information about the Department can be found at **website: http://vascular.physiol.arizona.edu/CVjob.html** and/or **http://www.physiol.arizona.edu/CELL/Department/CV.html.** *The University of Arizona is an Equal Opportunity/Affirmative Action Employer. Minorities/Females/Disabled/Veterans.*

YORK UNIVERSITY
DEPARTMENT OF BIOLOGY
PLANT MOLECULAR BIOLOGIST

Applications are invited for a tenure-track appointment at the **ASSISTANT PROFESSOR** level in plant molecular biology, commencing July 1, 1998. The department is seeking the strongest possible candidate in any area of plant molecular biology. The successful candidate will be expected to develop a strong research program and contribute to teaching courses in their area of specialization and in the core biology program. York University is in the thriving cultural centre of Toronto and is ideally located for interaction with many neighbouring Ontario universities. Applicants should submit a curriculum vitae, statement of research interests, and recent publications, and arrange for three letters of reference to be sent to: **Dr. Daphne Goring, Search Committee Chair, Department of Biology, Faculty of Pure and Applied Science, York University, North York, Ontario, Canada M3J-1P3.** The closing date for applications is December 1, 1997. *York University is implementing a policy of Employment Equity, including Affirmative Action for women faculty. In accordance with Canadian immigration requirements, priority will be given to Canadian citizens and permanent residents of Canada.*

DIRECTOR, OFFICE OF EDUCATION
NATIONAL INSTITUTES OF HEALTH

The National Institutes of Health is searching for a Director for its Office of Education (equivalent to Associate Dean of Education). The Director of the Office of Education will be responsible for creating graduate programs or a Graduate University at the NIH, and for designing and implementing strategies to recruit outstanding candidates for NIH's student and postdoctoral training programs and tenure-track positions. The Director of the Office of Education also will oversee existing basic science education and clinical training programs. The candidate selected for this critical position in NIH's intramural research program will have a doctoral level degree and possess a broad understanding of contemporary biomedical research, interest in graduate education, outstanding written and oral communication skills, and excellent managerial skills. Salary will be commensurate with background and experience up to, and including, executive level salary. The NIH is an equal opportunity employer and applications from minority scientists and candidates with disabilities are especially welcome. Please send curriculum vitae, bibliography, statement explaining interest in the position, and arrange to have three letters of reference sent to:

MS. SANDRA FREUND, BUILDING 1, ROOM 336, MSC 0182, 9000 ROCKVILLE PIKE, BETHESDA, MD 20892-0182, BY OCTOBER 15, 1997. TELEPHONE: (301) 496-2511 OR E-MAIL: freunds@od1tm1.od.nih.gov

AgrEvo USA Company

Leading American Agriculture into the Twenty-First Century.

As a result of rapid expansion, AgrEvo USA Company, a leader in crop production, plant protection and environmental health both in North America and the world, has an excellent opportunity for:

Regulatory Specialist, Biotechnology.

Coordinate submissions of transgenic plants and biologicals for US Government (USDA, EPA, FDA) and occasional outside US clearances. Participate within North America Biotech Regional Team to achieve global clearances as required by business plans.

Responsibilities include completing regulatory submissions in correct government approved format; responding to questions from government agencies; assisting in data development; assisting in preparation of written materials regarding the communication of biotech safety info to the public and establishing and maintaining positive working relationships with key government regulators to ensure timely acceptance, review and processing of submissions.

Position will report to Regulatory Manager, Biotechnology, AgrEvo USA Company. Requirements include a minimum of a Master's degree in biological science or biochemistry with established knowledge of basic central issues in the biotech regulatory arena. Strong written/verbal communications, interpersonal and organizational skills essential.

AgrEvo

Submit resume to:
Human Resources Department
AgrEvo USA Company
Little Falls Centre One, 2711 Centerville Road
Wilmington, DE 19808
Fax: 302-892-3027

LeukoSite, Inc., located in the Kendall Square area of Cambridge, MA, is a leader in inflammation research and the development of novel therapeutics for the selective immunosuppression of chronic inflammatory diseases. We have collaborations with major pharmaceutical companies, as well as leading academic labs in the US and Europe.

POSTDOCTORAL SCIENTIST

A postdoctoral position is available to study the molecular and cellular functions of chemokine receptors and/or related molecules, a family of G protein-linked seven transmembrane domain proteins that play important roles in inflammation and HIV infection. Candidates with a strong record of accomplishment as evidenced by publications, and extensive experience in cell biology or immunology, especially relating to G-protein coupled receptors, are encouraged to apply.

SENIOR SCIENTIST, IMMUNOLOGY

We are seeking a Ph.D.-level scientist with at least 3 years' postdoctoral training and a strong background in human and rodent cellular immunology to work on the biology of chemokine receptors as part of our drug discovery programs. The major emphasis will be on the expression and function of T cell chemokine receptors both *in vitro* and *in vivo*, and thus, experience in T cell biology would be an advantage. The successful candidate will have a strong publication record, a team-oriented approach to science, and experience with cytokines, receptor-ligand interactions, and animal models of inflammation. Experience in molecular biology, especially relating to G protein coupled receptors would also be an advantage. LeukoSite encourages presentations of scientific advances at meeting and in leading journals.

SENIOR SCIENTIST, RECEPTOR PHARMACOLOGY

We have an opening in the Receptor Pharmacology Department for a Ph.D.-level scientist who has experience with GPCR ligand binding, reporter gene or cell-based assays. The focus would include the creation of novel assays for a series of GPCR, including many new chemokine receptors that would be amenable to high-throughput screening for antagonist discovery. This position would interface closely with the screening group and would be responsible for the further characterization of screening leads. Candidates will also have the opportunity to perform basic research to identify and characterize novel chemokines and orphan receptors in a multidisciplinary environment, to publish results in leading journals, and to present results in both company and external meetings.

DIRECTOR OF PHARMACOLOGY

Reporting to the Vice President of Drug Discovery, the successful candidate will have 5-10 years' experience in a leadership position in the pharmaceutical industry, a thorough knowledge of inflammation biology, a strong record of innovative research, the ability to articulate the department's strategy both internally and externally, and a strong desire to work in a highly collaborative environment. The responsibilities of the new Director will be to develop animal models of inflammation, to characterize small molecule drug effects, to provide support for lead optimization of pharmacologic activity using pharmacokinetics, *in vitro* and *in vivo* metabolism to participate in the drug discovery and development efforts with our corporate partners and to interact regularly with our scientific advisory board.

Please send your CV with cover letter (identifying position) and three references to: Personnel Manager, LeukoSite Inc., 215 First Street, Cambridge, MA 02142. An Equal Opportunity Employer. See our website at: www.Leukosite.com

LEUKOSITE INC

POSITIONS OPEN

PROVIDENCE COLLEGE

ASSISTANT PROFESSOR OF BIOLOGY. Applications are invited for a tenure-track position in the Biology Department at Providence College beginning September 1998. Applicants are required to have a Ph.D., the ability to establish a research program involving undergraduates, and the ability to apply for extramural funding. The applicant should have a strong commitment to undergraduate education and be willing to foster a collaborative atmosphere among students and faculty in keeping with the Mission of the College.

The position is as follows: **MOLECULAR BIOLOGIST.** The successful candidate will develop and teach a course in cell and molecular biology required for majors, and teach the cell and molecular biology component of the General Biology course for majors. Other responsibilities include the development of new courses for majors and non-majors. All areas of molecular biology will be considered; however, candidates whose research is applied to questions of phylogenetic analysis are especially encouraged to apply.

Providence College is a Roman Catholic, four-year, liberal arts college conducted under the auspices of the Dominican Friars. Applicants should submit curriculum vitae, transcripts, a statement of teaching philosophy and research interests, and three letters of recommendation by October 15, 1997, to: **Dr. Michael S. Zavada, Chairperson, Biology Department, Providence College, Providence, RI 02918-0001.** For additional information about the Biology Department and Providence College refer to **website: http://www.providence.edu.** *Providence College is an Affirmative Action/Equal Opportunity Employer. Women and minorities are especially encouraged to apply.*

The Department of Pathology at Baylor College of Medicine is seeking candidates at the **ASSISTANT PROFESSOR** (tenure-track) level. The position is in anatomic pathology at Baylor affiliated hospitals and requires strong skills in surgical pathology and cytopathology. Preference will be given to applicants with strong evidence of academic accomplishment including independent, third-party funding. Board certification in anatomic pathology and the ability to obtain licensure in Texas are requirements. Please send a curriculum vitae by December 5, 1997, including publications, research support, and the names of three references to:

Michael W. Lieberman, M.D., Ph.D.
Chairman, Department of Pathology
Baylor College of Medicine
One Baylor Plaza
Houston, TX 77030
Telephone: 713-798-6501
FAX: 713-798-6001

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

ANIMAL PHYSIOLOGIST

Tenure-track position at the **ASSISTANT PROFESSOR** level beginning August 1998 for a broadly trained physiologist with expertise in any area of current research, and a commitment to teaching and research at an undergraduate institution. Candidates must possess a Ph.D. and have the potential to develop a research program involving significant undergraduate participation. Responsibilities include teaching an advanced course addressing fundamentals of modern physiology, participation in the introductory curriculum, and academic advising. Applicants should send curriculum vitae, summary of research interests, and names and telephone numbers of three references to: **Professor Thomas L. Koppenhefer, Chair, Department of Biology, Trinity University, San Antonio, TX 78212.** Application deadline is October 6th, 1997. *Women and minority candidates are strongly encouraged to apply. Trinity University is an Equal Opportunity/Affirmative Action Employer.*

CONSERVATION SCIENTIST

The Freer Gallery of Art and the Arthur M. Sackler Gallery, Smithsonian Institution, seek a Conservation Scientist to perform scientific work identifying and analyzing the materials of works of art and providing technical support for conservation efforts. Participation in research projects encouraged. Federal civil service position with benefits, salary $38,330 to $49,831. To receive an announcement **Telephone: 202-357-4880 ext. 444** to leave a voice message. Call **Toni Lake** at **Telephone: 202-357-4880 ext. 206** for information. *Equal Opportunity Employer.*

University of California, Davis, Department of Chemistry invites applications for three tenure-track positions beginning fall 1998, pending administrative approval:

A **SYNTHETIC CHEMIST** at the interface of organic and inorganic chemistry.

An **NMR SPECTROSCOPIST** with interests in biological macromolecules. The UCD NMR Facility expects delivery of a new 600 MHz spectrometer to complement a newly upgraded 500 MHz instrument.

An **ANALYTICAL CHEMIST** with interests in analytical separations and/or single molecule (or particle) detection. Expertise in the analysis of nanostructures is also within the scope of the search.

These positions are at the Assistant Professor level. Successful candidates will demonstrate exceptional promise for active, independent research programs and for teaching. Applicants should write to: **Faculty Recruitment Committee, Room 108, Chemistry Department, University of California, Davis, CA 95616.** They should include a curriculum vitae (including a list of publications), a summary of research objectives, and the names, addresses, FAX and telephone numbers of three references. The positions are open until filled, but to assure consideration, applications should be received by October 15, 1997. *The University of California, Davis, is an Affirmative Action/Equal Opportunity Employer with a strong institutional commitment to the development of a climate that supports equal opportunity and respect for differences based on gender, cultural ethnicity, disability, and sexual orientation. In that spirit, we are particularly interested in receiving applications from individuals who would enhance the diversity of our work force.*

POPULATION/EVOLUTIONARY BIOLOGIST. Tenure-track position starting July 1998 at the **ASSISTANT PROFESSOR** level. Qualifications we seek include: the Ph.D. plus combined strengths in teaching and research, with a commitment to research with undergraduates; experience and facility in field and laboratory studies; broad interests in population biology and evolution; and strong quantitative abilities. Teaching responsibilities in our 11-member Biology Department will include lectures and laboratories in an evolution-centered introductory course that includes Mendelian genetics and ecology, and upper-level elective courses in one's specialty and in evolution. Enrolling 1,800 students, Franklin and Marshall is a coeducational liberal arts college with a tradition of strengths in science, emphasizing faculty and student research. Send curriculum vitae plus statements of teaching approaches (including experience and plans for actively engaging students in learning) and research plans by October 15, and arrange for graduate and undergraduate transcripts and three reference letters to be sent to: **Chair, Search Committee, Department of Biology, Franklin and Marshall College, Lancaster, PA 17604-3003. Telephone: 717-291-4118; FAX: 717-399-4548; e-mail: c_mcintyre@acad.fandm.edu.** *The College is committed to cultural pluralism through the hiring of minorities and women. Equal Opportunity Employer/Affirmative Action.*

NEUROSCIENTISTS

We invite applications for tenure-track positions at open rank for scientists interested in helping to build a highly-respected, interactive, research-intensive academic department in the setting of a small medical college. Scholarly academic responsibilities also include participation in a team-taught course in medical neuroscience, university citizenship, and the training of graduate students. Funded scientists with research interests that are separate from, yet complimentary to, our current work on the neurobiology of central dopamine and excitatory amino acid neuronal systems (for details, **website: www.finchcms.edu/neuro/home.html**) are encouraged to send a curriculum vitae, a description of research goals, a list of professional references and two to three publications to:

John Sladek, Ph.D.
Professor and Chairman
Department of Neuroscience
The Chicago Medical School
3333 Green Bay Road
North Chicago, IL 60064

We are an Equal Opportunity Employer.

RESEARCH COORDINATOR

The Mickey Leland National Urban Air Toxics Research Center (NUATRC), a Houston-based nonprofit research organization, is seeking candidates for the position of Research Coordinator, available August 1, 1997. Candidates must have a graduate degree in science or technology and should be conversant with scientific research methodology, documentation, and publication.

The position will report to the President and will be responsible for all business aspects of research contracts/grants management, including development of contract/grant documents, and liaison with legal counsel and government personnel. The successful candidate will assure that contract/grant terms are met, e.g., deliverables, payment schedules, conditions, etc.

The successful candidate will also serve as research grant coordinator, being responsible for interactions with the principal investigator(s), monitoring contract/grant deliverables, and providing scientific and business staff support to the NUATRC Scientific Advisory Panel. Participation in the development of RFA/RFP(s), working with the NUATRC Scientific Advisory Panel, is a key element of the position. The successful candidate will also plan scientific meetings, including workshops, symposia, etc., and attend/participate in meetings on behalf of the NUATRC.

Applicants should send a curriculum vitae and complete list of publications to: **NUATRC, P.O. Box 20286, Houston, TX 77225-0286. E-mail: rcampion@utsph.sph.uth.tmc.edu.** For additional detailed information about the position and the organization, access **website: http://utsph.sph.uth.tmc.edu/www/utsph/MLELAND/index.htm.** *An Equal Opportunity/Affirmative Action Employer.*

ASSISTANT PROFESSOR
NEW YORK UNIVERSITY MEDICAL CENTER
DEPARTMENT OF BIOCHEMISTRY

The Biochemistry Department of New York University Medical Center seeks to fill a tenure-track position at the level of Assistant Professor. Areas of research currently represented in the Department include DNA replication, recombination, regulation of transcription and translation, protein folding and transport, viral-host cell interactions, cellular transformation, and signal transduction. Applicants should hold a Ph.D. or M.D. degree, have at least two years of postdoctoral research experience, and are expected to establish an independent research program and participate in teaching and other departmental academic activities. Applicants should submit a curriculum vitae, three letters of reference, and a brief summary of current and future research interests by November 1, 1997, to: **Faculty Search Committee, Department of Biochemistry, New York University Medical Center, 550 First Avenue, New York, NY 10016.**

For more information about the Biochemistry Department and New York University Medical Center, see our **website: http://mcrcr4.med.nyu.edu/Biochem/HomePage.html.**

POSTDOCTORAL POSITION
IN NEUROSCIENCE
HARVARD MEDICAL SCHOOL AND
MASSACHUSETTS GENERAL HOSPITAL

Regeneration of the central nervous system. Position available to study the relative contribution of extrinsic and intrinsic factors in limiting axonal growth after injury to the adult spinal cord. This is a three-year position requiring an M.D. or Ph.D. with a background in molecular and cellular neurobiology or neuroanatomy. Send curriculum vitae with three referees to: **Dr. Clifford Woolf, Neural Plasticity Research Group, Department of Anesthesia and Critical Care, 149 13th Street, Room 4309, Charlestown, MA 02129. E-mail: woolf@etherdome.mgh.harvard.edu.** *MGH is an Equal Opportunity Employer.*

RESEARCH AND DEVELOPMENT SCIENTISTS

Gentra Systems is a leader in DNA and RNA purification products, located in suburban Minneapolis. We are seeking creative, highly motivated Ph.D's with strong communication skills. Experience in molecular biology, particularly DNA and RNA analysis, required for positions in research and development. We offer competitive salary with excellent benefits package.

Send cover letter and résumé to: **Human Resources, Box DH, Gentra Systems, Inc., 15200 25th Avenue North, Suite 104, Minneapolis, MN 55447.**

Quantitative Ecologist
Department of Biological Sciences
Dartmouth College

The Department of Biological Sciences, Dartmouth College, seeks applicants for a tenure-track **Assistant Professor** position to begin in the fall of 1998. The successful applicant will join a dynamic and growing graduate program in ecology and evolution. We seek an ecologist who combines theoretical approaches with experimentation and field studies. Research should address physiological, population, or community processes. Ecologists combining basic and applied research interests are also encouraged to apply. The successful candidate will be expected to develop a vigorous, externally funded research program and teach courses in biostatistics and ecology at the undergraduate and graduate levels. Ph.D. and postdoctoral experience are required.

Please submit curriculum vitae, statements of research and teaching interests, recent reprints, and three letters of recommendation to:

Mark McPeek, Chair
Ecology Search Committee
Department of Biological Sciences
6044 Gilman Hall
Dartmouth College
Hanover, NH 03755-3576

Application review will begin on 10 October 1997 and continue until the position is filled. Women and members of minority groups are strongly encouraged to apply. Information about the department can be found on the WWW at **http://www.dartmouth.edu/artsci/biology/index.html**. *Dartmouth College is an Equal Opportunity/Affirmative Action Employer.*

Assistant Professor
Department of Biological Sciences

The Department of Biological Sciences invites applications for a new tenure track position starting September 1, 1998 at the assistant/associate level in Biology Education. A Ph.D. in biology with expertise in educational research or a Ph.D. in science education is required. The candidate must possess at least a master's degree (or equivalent) in the biological sciences, and preferences will be given to individuals with teaching experience at the middle and/or high school level.

The successful candidate will be expected to 1) develop a research program concerned with recent advances in theory and practice of science education, 2) teach courses in secondary science education, 3) help oversee the academic advising and the student teaching supervision of secondary science education majors, 4) acquire and administer grants, 5) provide leadership in biology education research within the Department of Biological Sciences, 6) participate and provide leadership in an existing campus-wide community of science faculty and science educators committed to the enhancement of science education, and 7) foster productive relationships between the University and the professional K-12 teaching community.

Review of applications will begin as they are received and interviewing of candidates is planned for November. CONTACT: Candidates should submit a curriculum vitae, three letters of recommendation, copies of representative reprints, and a statement of present and future research plans to **Professor Steven D. Skopick, Chair, Biology Education Search Committee, Department of Biological Sciences, University of Delaware, Newark, DE 19716. E-mail Steven.Skopik@MVS.UDEL.EDU**

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

UNIVERSITY OF DELAWARE

Ocean Spray CRAVE the WAVE.

IT'S YOUR ZING!

Ocean Spray Cranberries, Inc., is a Fortune 500 cooperative organization providing beverage and food products to an ever increasing base of satisfied customers. Help us advance the status of research, while you enjoy opportunities for exceptional growth and achievement in a new/evolving areas within one of the world's most dynamic, innovative, and successful food companies.

These are unique opportunities to put your expertise to excellent use in cutting edge research in plant science being conducted within the company and through outside research vendors. Both positions are within our Agricultural Research area at our Lakeville, MA headquarters. Qualifications include a Ph.D. in an appropriate discipline, strong communications and interpersonal skills, plus the ability to champion and sell new ideas and approaches to business. You must also show evidence of scientific accomplishments and excellence through publication in scientific journals, leadership of academic/industry/trade association initiatives, or similar involvement. The Senior person hired will be responsible for supervising a staff of 6-8 scientists. Therefore, 3-5 years of supervisory/management experience is a definite asset.

Both positions involve approximately 20% travel.

Plant Nutrition/ Horticultural Scientist

You will play a key role in developing the fundamental and applied understanding of macro and micro nutrients, soil, plant water relations, plant propagation and other areas related to production agriculture to help our growers maintain and increase yields. **Job Code: RDPNHS**

Plant Physiology/Biochemistry Scientist

Your research will be directed toward improvement in cranberry production as well as the fundamental and applied understanding of how physiology affects fruit and plant attributes such as color, taste, appearance and bloom. **Job Code: RDPPBS**

Interested applicants should send resume, indicating Job Code and current salary, to: Ocean Spray Cranberries, Inc., Attn: Human Resources, One Ocean Spray Drive, Lakeville, MA 02349; Fax (508) 946-7980.

No phone calls please. Principals only. EOE, M/F/D/V.

Staff Scientist

Section on Experimental Immunology
Laboratory of Immunology, NIDCD

The Section on Experimental Immunology, Laboratory of Immunology (LI), National Institute on Deafness and Other Communication Disorders (NIDCD) is recruiting for the position of Staff Scientist. The Staff Scientist is responsible for carrying-out collaborative basic research within the Section and for designing and maintaining a research program to develop candidate antigens which confer protective immunity against the bacterial pathogens which cause otitis media. The position requires an M.D. or a Ph.D. with extensive postdoctoral experience in immunology. The candidate should have extensive experience in characterizing, testing in appropriate animal model systems and preparing vaccine candidates against common bacterial pathogens known to cause otitis media in preparation for Phase One clinical trials. In addition, experienced in the following is desirable: designing and performing experiments to characterize vaccine candidates; experience in training laboratory personnel in vaccine development; and having published papers on vaccine development in peer reviewed journals. The successful candidate is expected to maintain an active program of collaborative research; to learn, develop and adapt new techniques as needed to explore pertinent research questions; and to be knowledgeable about scientific resources (both human and material) at the NIH and elsewhere.

This is a Civil Service position at the GS-13 level, with a base salary currently ranging from $54,629 to $78,203 per year depending on qualifications.

Further information about the position and qualification requirements may be obtained by contacting Ms. Christine Clements at (301) 402-0508 (voice or TDD) or TDD (301) 402-1134. A Curriculum Vitae and Bibliography and three letters of reference and two recent publications should be submitted **by September 30, 1997** to: **Ms. Christine Clements, Personnel Management Specialist, National Institute on Deafness and Other Communication Disorders, 31 Center Drive MSC 2320, Bethesda, MD 20892-2320.**

NIH is an Equal Opportunity Employer

POSITIONS OPEN

IMMUNOLOGIST

MEGAN Health, Inc. has an opportunity for a Ph.D.-level scientist to design, develop, and evaluate vaccines using live avirulent *Salmonella* vector systems. Candidates should have three-plus years of graduate and postdoctoral research experience in mucosal, humoral, and cellular immunology. Expertise in induction monitoring and evaluation of avian and/or mammalian (murine/human) immune responses is especially desired. Candidates should have some experience with various vaccination routes and with molecular genetics. Familiarity with GLP is a plus.

MOLECULAR BIOLOGISTS

MEGAN Health, Inc. has opportunities for Ph.D.-level scientists to conduct research leading to the development of human and animal vaccines using avirulent *Salmonella* vector systems. Three-plus years experience in molecular biology, preferably working with bacterial or viral pathogens, is required. Research experience in microbial genetics, immunology, and animal science, plus familiarity with the pharmaceutical or veterinary industry, GLP, are a plus.

Excellent benefits package. Send résumés in confidence to: **Darleen Phillips, MEGAN Health, Inc., 3655 Vista Avenue, St. Louis, MO 63110. FAX: 314-776-3317.** *MEGAN Health is an Equal Opportunity Employer.*

OTS ACADEMIC DIRECTOR

The Organization for Tropical Studies, a consortium of 55 universities and research institutions, invites applications for a senior administrative position. The Academic Director administers a portfolio of about 10 field courses in Costa Rica and Brazil in the areas of tropical biology, agroecology, and environmental policy, primarily for graduate students, as well as a new science-based undergraduate semester abroad program. The academic director oversees a growing fellowship program and plays a lead role in fundraising for the academic program. Applicants should hold the Ph.D. and have relevant education experience. The position is based at OTS' North American office at Duke University. For further information see **website: http://www.ots.duke.edu** or contact OTS. Please send letter of application with details of administrative and educational experience, curriculum vitae, and names and contact information of three references to: **Dr. Gary Hartshorn, OTS Executive Director, Box 90630, Durham, NC 27708-0630.** *An Equal Opportunity/Affirmative Action Employer.*

BIOINFORMATICS/MOLECULAR BIOLOGY

Corixa Corporation is a biotechnology company dedicated to the development of T cell vaccines and therapies for cancer and infectious diseases. Corixa is seeking **ASSOCIATE SCIENTISTS** and **SCIENTISTS** with a minimum three years of postdoctoral experience to conduct research in the area of tumor antigen discovery. Duties will emphasize the use of bioinformatics tools in a multidisciplinary approach to discover tumor antigens with vaccine, diagnostic, and therapeutic potential. Successful applicant will have Ph.D. and/or M.D. and be familiar with bioinformatics and molecular biology. Competitive salary and benefits. Please send curriculum vitae, statement of research interests and experience, with names of three references by September 26, 1997, to: **Corixa Corporation, ATTN: HR240, 1124 Columbia, Suite 464, Seattle, WA 98104. FAX: 206-667-5715.** *An Equal Opportunity Employer.*

POSTDOCTORAL POSITION available immediately in the Department of Pathology, University of Washington, with a large NIH-funded research group focusing on interactions between various sexually transmitted diseases, particularly HIV and HPV, and neoplasia. Applicants must hold an M.D. or a Ph.D. in microbiology, pathology, pathobiology, or a related field and have experience in *in situ* hybridization and/or immunocytochemistry. Send curriculum vitae, cover letter, and names, addresses, and telephone numbers of three references to: **Dr. Nancy Kiviat, Box 359933, 325 Ninth Avenue, Seattle, WA 98104.**

POSTDOCTORAL POSITIONS are available to study the mechanism of insulin action on the Na, K-ATPase and the structure, function, and physiological significance of ecto-apyrase (CD39, ecto-ATPase). Candidates should have experience in protein biochemistry and molecular biology. Send curriculum vitae and names of two references to: **Guido Guidotti, Department of Molecular and Cellular Biology, Harvard University, 7 Divinity Avenue, Cambridge, MA 02138. FAX: 617-495-8308; e-mail: guidotti@fas.harvard.edu.**

POSITIONS OPEN

Agricultural Research Service — **United States Department of Agriculture**

The United States Department of Agriculture (USDA), Agricultural Research Service (ARS), Beltsville Human Nutrition Research Center (BHNRC), Phytonutrients Laboratory, is accepting applications for a permanent, full-time **RESEARCH BIOLOGIST/RESEARCH PHYSIOLOGIST/NUTRITIONIST,** or related discipline. The objective of this position will be to develop an independent research program and provide expertise in establishing metabolic techniques to study the mechanisms of actions of phytonutrients related to human nutrition and health. The scientist must have knowledge of human nutrition and either physiology, biochemistry, or molecular biology, knowledge of phytonutrient metabolism in humans, animals, or cell systems; and demonstrated experience using methods appropriate for the study of phytonutrients. A Ph.D. in nutrition, physiology, biochemistry, or related discipline is desired. *Applicants must be U.S. citizens.* Salary range is $45,939 to $83,922. For a copy of Announcement Number ARS-D7B-0193 and an application package, please call: **USDA, ARS, Human Resources Division, Telephone: 301-344-4638.** Specific questions regarding the position may be directed to: **Dr. Tim R. Kramer, Telephone: 301-504-8396; e-mail: kramer@307.bhnrc.usda.gov.** The closing date for this announcement is October 6, 1997. *USDA, ARS is an Equal Opportunity/Affirmative Action Employer.*

BIOPHYSICAL CHEMIST

The National Heart, Lung, and Blood Institute is recruiting for a **SENIOR POSTDOCTORATE** position to perform thermodynamic measurements on biological macromolecules and complex systems. The candidate should have training and expertise in calorimetry, fluorometry, circular dichroism, spectroscopy, and ultracentrifugation. Particular expertise in computer programming is desirable. The candidate should have prior experience in protein purification, enzymology, and some knowledge of nucleic acid chemistry. Applicants should have a Ph.D. and not more than five years of postdoctoral experience. Submit curriculum vitae and references to: **Ann Ginsburg, Ph.D., Chief, Protein Chemistry Section, Laboratory of Biochemistry, 3 Center Drive, MSC 0340, Building 3, Room 208, Bethesda, MD 20892-0340. E-mail: aog@cu.nih.gov.**

Two **POSTDOCTORAL RESEARCH ASSOCIATE** positions, funded by NIH, are available October 1, 1997, to study the acute and chronic aspects of the negative effect of alcohol on cardiovascular neurobiology. Studies will involve hemodynamic and electrophysiologic measurements in chronically instrumented conscious rats as well as central administration of drugs to investigate the role of central sympathetic pathways in the interaction. Candidates must have a Ph.D., M.D., D.V.M., or equivalent degree. Familiarity with molecular neurobiology and/or patch-clamping is desirable. Send curriculum vitae, description of research experience, and names of three references to: **Dr. Abdel A. Abdel-Rahman, Department of Pharmacology, East Carolina University School of Medicine, Greenville, NC 27858.** Federal law requires proper documentation of identity and employability at the time of employment. *Affirmative Action/Equal Employment Opportunity.*

UNIVERSITY OF COLORADO HEALTH SCIENCES CENTER POSTDOCTORAL FELLOW/ RESEARCH ASSOCIATE

To study the induction of hematopoietic differentiation versus the suppression of apoptosis by protein kinase and phosphatase cascades (SAPK/JNK). Extensive experience in molecular biology is highly desirable. Refer to ad #157. Please send curriculum vitae and the names of three references to: **Dr. Andrew S. Kraft, Chief, Division of Medical Oncology, 4200 East 9th Avenue, Denver, CO 80262. FAX: 303-315-5502.** *UCHSC is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL POSITION to study alcohol-induced liver injury. M.D. required. Both M.D. and Ph.D. preferred. Strong surgical background and over three years of experience in microsurgery desired. Annual salary: $25,000. Send curriculum vitae and three letters of reference to: **Brenda Asam, Department of Pharmacology, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-7365.**

POSITIONS OPEN

ANTIMICROBIAL PEPTIDES: STRUCTURE-FUNCTION STUDIES UNIVERSITY OF CALIFORNIA, IRVINE

Two positions at the **POSTDOCTORAL** or **ASSISTANT RESEARCHER** level are available in the UCI Department of Pathology for studies on mammalian antimicrobial peptides (see *Trends Cell Biol.* 5:114–119, 1995). Innovative investigators are sought to expand ongoing structure-function studies employing solid phase peptide synthesis and recombinant expression methodology. Project goals include the elucidation of peptide structural features that correlate with antimicrobial potency, selectivity, and ordered interactions with biological membranes. Candidates should have a strong background in peptide/protein chemistry as well as expertise in: solid phase peptide synthesis, purification, and characterization; or site-directed mutagenesis and recombinant protein expression. Send curriculum vitae, research experience and interests, and names of three references to: **Dr. Michael E. Selsted, Department of Pathology, College of Medicine, University of California, Irvine, CA 92697-4800.** *The University of California is an Equal Opportunity Employer.*

LABORATORY SUPERVISOR MOLECULAR PATHOLOGY

The Department of Pathology/Clinical Laboratories at Duke University Medical Center and Health System is seeking qualified candidates for the position of Laboratory Supervisor. This position will oversee a combined group of pathology specialty laboratories that include molecular immunology, flow cytometry, and image cytometry. The primary functions of this position are to develop new and improved test methods, provide technical supervision, and coordinate the administrative activities of these labs. The successful candidate will hold a Ph.D. in clinical immunology with a background in clinical and/or laboratory medicine, including technical management. Applicants should submit current curriculum vitae with names and addresses of four references to: **Laboratory Supervisor Search, Gordon C. Edwards, Ph.D., Executive Director, Clinical Laboratories, Duke University Medical Center, P.O. Box 3712, Durham, NC 27710. FAX: 919-681-8868.** *Duke University is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL POSITIONS UNIVERSITY OF CHICAGO

Join an interactive group studying molecular genetics of intestinal lipoprotein secretion, particularly the role of apoB mRNA editing, as well as the role of candidate genes in differentiation and oncogenesis. These will include *in vitro* studies with recombinant proteins as well as conditional expression in cell lines and genetically manipulated animal models. Position and compensation commensurate with experience. Candidates with an outstanding background in molecular and/or cell biology should send curriculum vitae to: **Nicholas Davidson, M.D., University of Chicago, MC 4076, 5841 South Maryland Avenue, Chicago, IL 60637. FAX: 773-702-2182; e-mail:** (inquiries only, no curricula vitae): **ndavidso@medicine.bsd.uchicago.edu.** *Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL FELLOWSHIP

We are seeking a candidate with experience in molecular biology and biochemical techniques to participate in studies on regulation of genes encoding drug-metabolizing enzymes in response to oxidative/chemical stress. The studies will involve the use of tissue culture and animal (transgenic and knockout) model systems. Send curriculum vitae/bibliography and three letters of reference to: **Dr. Anil Jaiswal, Pharmacology, Baylor College of Medicine, One Baylor Plaza, Houston, TX 77030.** *Baylor College of Medicine is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL ASSOCIATE YALE MEDICAL SCHOOL

Position available immediately to study transciptional regulation of kidney development and kidney-specific gene expression. Experience in eukaryotic gene regulation desired. Send résumé and names of three references to: **Dr. Peter Igarashi, Department of Internal Medicine, Yale University School of Medicine, P.O. Box 208029, New Haven, CT 06520. FAX: 203-785-7068; e-mail: peter.igarashi@yale.edu.** *Women and members of minority groups are encouraged to apply.*

Postdoctoral Research at The Wistar Institute

The Wistar Institute, an independent research organization located on the University of Pennsylvania campus, currently seeks postdoctoral applicants.

Postdoctoral Researcher - Structural studies on viruses and several enzymes responsible for human genetic diseases. The laboratory emphasizes the application of crystallographic, EM, and theoretical methods to very large assemblies. Training in protein crystallography is highly desirable. **Reply to Dr. Roger M. Burnett.**

Postdoctoral Researcher - Crystallographic studies of protein and protein complexes in the areas of transcriptional regulation, cell cycle control, and cancer. The laboratory uses a combination of molecular, biochemical, and structural techniques. This position requires experience in the computational aspects of X-ray crystallography. **Reply to Ronen Marmorstein.**

Postdoctoral Researcher - Postdoctoral position to investigate at a cell and molecular level the concept of control by protein segregation using several DNA viruses as probes. Also immediate early interaction of viruses and host nucleus with the aim to interrupt transcription at the virus deposition site in the nucleus (see J. Cell Biol. 134:815-825 1996; J.Cell Biol 138:5-16 1997). Good background in molecular techniques essential. **Reply to Dr. Gerd G. Maul.**

Postdoctoral Researcher - RNA editing of GluR ion channel gene transcripts in mammalian brain; the molecular mechanism and its relevance to neurological disorders such as Alzheimer's and epilepsy. Previous experience in molecular techniques required. Degree received within last three years preferred. Mol Cell Biol. 17:2413 (1997), EMBO J. 15:34 (1996). **Reply to Dr. Kazuko Nishikura.**

Postdoctoral Researcher - Analysis of human telomere variation and function. Cloned subtelomeric probes, DNA sequence data, and novel analytical methods developed in a separate project will be applied to the analysis of the subtelomeric DNA variations in human cell lines and tissues in order to assess normal subtelomeric DNA variation and to investigate the potential involvement of subtelomeric/telomeric alterations in carcinogenesis. **Reply to Dr. Harold Riethman.**

Postdoctoral Researcher - Biochemical characterization of the RNA polymerase II complexes in human cells by using a fully defined in vitro transcription system. We are also characterizing the connection of the basal transcription machinery to that of DNA repair. Motivated scientists with Ph.D. in any discipline of biological sciences with experience in molecular biological techniques and protein purification preferred. **Reply to Dr. Ramin Shiekhattar.**

Postdoctoral Researcher- A position is available to study the mechanism of T cell development in mice. This position requires a Ph.D. or M.D. degree, and experience in molecular and/or cellular biology. **Reply to Dr. Lisa M. Spain.**

Interested applicants are requested to send a C.V. and three letters of reference to the appropriate faculty member's attention: **THE WISTAR INSTITUTE, 3601 Spruce Street, Philadelphia, PA 19104.** Equal Opportunity Employer.

THE WISTAR INSTITUTE 1892

The Search For Cures Begins With A Search For The Best.

ANIMAL HEALTH VACCINE DEVELOPMENT

Pfizer Inc is seeking scientists and engineers of all levels to support the development of new Animal Health vaccines at our Groton, CT Research facility. Applicants must demonstrate experience in developing and registering bacterial and viral vaccines.

Research Scientists
Immunologist

Develop and validate new assays for bacterial and viral vaccines, support process development and clinical testing, and identify and develop new technologies. Ph.D., experienced in AH vaccine development, knowledge of microbial culture and design of bacterial inactivation, validation and GLP experience required. ***Job Code: 2237***

Process Engineer

Develop new processes for efficient production of bacterial and viral vaccines under GLP conditions, validate processes, support process transfer to manufacturing, draft manufacturing sections for registration filings and develop new techniques. Qualified candidates will have Ph.D. or MS plus experience in vaccine production and bench scale optimization, as well as product isolation and purification under GLP conditions. Position is located in Lincoln, Nebraska facility until year-end 1998, then will move to Groton, CT. ***Job Code: 2238***

Associate Scientists
Immunologist

BS/MS with experience with AH vaccines to help develop and validate new assays for bacterial and viral vaccines, support process development and clinical testing, and identify and develop new technologies. Also, draft bioanalytical component of clinical protocols and register filings. ***Job Code: 2239***

Virologist

Develop and validate new assays for viral vaccines, supporting process development and clinical testing, identify and develop new technologies and draft bioanalytical components of clinical protocols and filings. BS/MS with experience with AH vaccines, knowledge of cell culture, medium optimization, ELISA, FA assays and PAGE plus GLP experience required. ***Job Code: 2250***

Bacteriologist

Identify and develop new technologies, support process development and clinical testing and assist in the development and validation of new assays for bacterial vaccine fractions. Also draft bioanalytical component of clinical protocols and filings. BS/MS with experience with AH vaccines plus GLP experience and knowledge of microbial culture and design of bacterial inactivation validation required. ***Job Code: 2251***

Process Development

Located in Lincoln, Nebraska facility until year end 1998, then moving to Groton, CT facility, develop new processes for efficient production of bacterial and viral vaccines under GLP conditions, validate processes, support process transfer to manufacturing, draft manufacturing sections for filings and develop new techniques. BS/MS with experience with AH vaccines and product isolation and purification under GLP conditions required. Experience in laboratory and bench scale optimization of bacterial growth and antigen expression and/or mammalian cell growth and virus expression also necessary. ***Job Code: 2252***

At Pfizer, we entrust the enormous task of discovering treatments and cures for major diseases to some of the world's most gifted scientific talents. Our Fortune 100 company maintains a commitment to R&D that's unrivaled in our industry, as we've invested a total of $9.4 billion since 1990 and expect a 1997 R&D investment of approximately $2 billion. The only other investment that comes close is the one we make in our people.

Here, we realize that to attract the best, we must offer the best. That's why we provide a collegial, collaborative and multidisciplinary environment of leading-edge science that lets you create new professional opportunities, advance your education and balance your work and personal life, all while making the fullest contribution possible to the drug discovery process at Pfizer. If you've been searching for the chance to shape the future of the pharmaceutical industry, join us at Pfizer.

In addition to providing competitive salaries, we offer an excellent compensation package, comprehensive flexible benefits and generous relocation support. For immediate consideration, please forward your resume and a description of relevant research, interest and experiences to: Employee Resources, Pfizer Inc, Central Research Division, Job Code #_____, Eastern Point Road, Groton, CT 06340. For more information on career opportunities available at Pfizer, please visit our Web site: ***http://www.pfizer.com.*** *We are an equal opportunity employer dedicated to diversity M/F/D/V.*

Pfizer

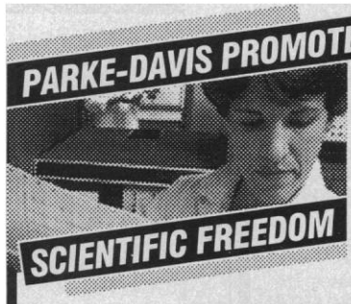
We're part of the cure.

ASSISTANT PROFESSOR
FACULTY POSITION
DEPARTMENT OF DEVELOPMENTAL BIOLOGY
STANFORD UNIVERSITY SCHOOL OF MEDICINE

Stanford University is seeking applicants for a tenure-track Assistant Professor position in the Department of Developmental Biology located in the Beckman Center for Molecular and Genetic Medicine. The current faculty in the department use genetics, molecular biology, and cell biology to pursue basic understanding of developmental processes and disease origins in microbial systems, *C. elegans*, *Drosophila*, mice, and humans. The applicant is expected to establish a vigorous research program studying an important developmental problem in any organism. Responsibilities include teaching developmental biology and advanced courses for graduate and medical students.

Applications should be submitted by December 1, 1997, and should include a curriculum vitae, a brief statement of research objectives, and three letters of reference. Please send applications to: **The Developmental Biology Search Committee, Department of Developmental Biology, Beckman Center, B300, 279 Campus Drive, Stanford University School of Medicine, Stanford, California 94305-5329.**

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



At Parke-Davis Pharmaceutical Research, you'll enjoy a work environment that promotes creativity and rewards achievement. Right now couldn't be a more exciting time to be part of our scientific team, as we discover new technology that will impact the 21st century and beyond!

SENIOR SCIENTIST

As the Laboratory Director of behavioral pharmacology in our preclinical Neuroscience Therapeutics Department, you will conduct and develop behavioral and physiological tests to determine in vivo CNS activity of drug candidates for use in psychiatric, neurodegenerative and neurological diseases.

A Ph.D. in Biological Science, 2-10 years' experience and a background in neuroscience, behavioral pharmacology and neuropsychiatric diseases are required. Experience in developing in vivo animal models for CNS disease and an established record of scientific publications are essential. Previous scientific managerial experience and a background in neurodegenerative and neurological diseases are preferred.

Interested individuals mail, fax or e-mail your resume* to: **Parke-Davis Pharmaceutical Research, Human Resources Department, Job Code: CJM-97290, 2800 Plymouth Road, Ann Arbor, MI 48105. Fax: (313) 998-3394. E-mail: resume@aa.wl.com**

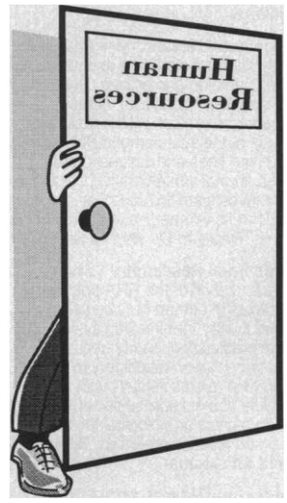
*Submit resume on laser-quality white paper, with legible 10 point or larger type, and avoid boldface, italics, borders, etc.

Equal opportunity in action.
Smoke-free work environment.

PARKE-DAVIS

Want to get your foot in the door?

Then let SCIENCE open some doors for you by attending the **SCIENCE Career Fairs.** SCIENCE Career Fairs offer the perfect opportunity for scientific professionals to meet in person with representatives from top biotechnology and pharmaceutical companies, universities, governmental agencies, and institutions.



UPCOMING 1997 SCIENCE CAREER FAIR

Palo Alto, CA on the Stanford Campus
Tresidder Memorial Union
3 October: 11 am – 4 pm
4 October: 11 am – 3 pm

On-site registration is available. **Remember to bring multiple copies of your CV or résumé with you to the Career Fair; a copy will be necessary to gain admission to the hall.** For more information call (202) 326-7018 or check SCIENCE Career Fair Information Online: www.sciencemag.org. *Admission to the event is FREE.*

Do not contact Stanford directly. They are not responsible for organizing this event.

SCIENCE
CAREER FAIRS
www.sciencemag.org
(Choose SCIENCE Professional Network from the menu)

PROGRAM OF EXCELLENCE IN MOLECULAR BIOLOGY OF THE HEART AND LUNG

Special Postdoctoral Positions

The University of Cincinnati Program of Excellence in Molecular Biology of the Heart and Lung, funded by the National Heart, Lung, and Blood Institute of NIH, has as its goal the application of molecular genetic approaches to study heart and lung function. The Program is open to Ph.D's or M.D's with training in molecular biology who wish to apply their skills to significant problems of heart or lung or to individuals with strong backgrounds in heart and lung who wish to develop molecular tools for continued study of these problems. We are particularly interested in recruiting women and minorities to the Program. Stipends begin at $31,000 per year with benefits. The faculty and their interests are described below. *The Program is limited to U.S. citizens and permanent residents.*

Jerry B. Lingrel *Na, K-ATPase gene regulation, knockout and replacement studies, and structure-function studies. Role of transcription factors in early lung and erythroid development.*

Jeffrey Whitsett *Molecular biology of lung development and lung specific gene expression.*

Paul Rosevear *Elucidation of structure/function relationships in the cardiac troponin complex using multidimensional NMR techniques.*

Gary Shull *Role of ion-transport proteins in cardiac function and control of arterial blood pressure using gene targeting technology.*

Jeffrey Robbins *Targeted modification of the cardiac contractile proteins and growth and developmental control of cardiac muscle.*

Steven Potter *Manipulating genes important in heart and lung development by insertional mutagenesis and targeted modification in ES cells.*

Thomas Doetschman *Role of growth and differentiation factors in the development and function of heart and lung using targeted gene modification in the mouse.*

Anil Menon *The genetics of human cardiovascular disease.*

Stephen Liggett *Molecular biology, pharmacology, and structure/function of cardiopulmonary adrenergic receptors*

Applicants should submit a C.V. and the names of three references to **Jerry B. Lingrel, Ph.D. Director, Program of Excellence in Molecular Biology, Department of Molecular Genetics, Biochemistry and Microbiology, University of Cincinnati, College of Medicine, 231 Bethesda Avenue, Cincinnati, Ohio 45267-0524.**

Affirmative Action/Equal Opportunity Employer

SEARCH FOR PRESIDENT OF AMERICAN HEALTH FOUNDATION

The American Health Foundation, a nonprofit institute specializing in cancer prevention and a nationally-designated cancer center, seeks a President to direct its scientific and administrative activities and programs. The candidate must have demonstrated experience commensurate with managing a multi-site, 175+ person research facility and fiscal responsibility for the annual budget. The individual should preferably be a physician with a recognized background in cancer research, a special commitment to cancer prevention and public health, and extensive experience with NIH grant systems.

The candidate should have, in addition to expertise in the cancer field, experience and interest in representing the Foundation both to the cancer research community as well as the public. The position of foundation president requires active involvement in board building and fund raising. The ideal candidate should have an interest in translational research and public health dedicated to achieving a reduction in the incidence and mortality of cancer.

Individuals that fall within these guidelines should contact:

Thomas A. Moore
American Health Foundation
320 East 43rd Street
New York, NY 10017

UNIVERSITY OF VIRGINIA

Assistant/Associate Professor
AIDS/HIV Research

A tenure track position at the Assistant or Associate Professor level is available for a scientist involved in HIV or AIDS-related research. A primary appointment will be made in the Department of Microbiology and the Myles H. Thaler Center for AIDS and Human Retrovirus Research, with a joint appointment in an appropriate clinical department. The successful applicant will be expected to establish a strong independent research program. Individuals who combine basic and clinical research are especially urged to apply.

Applicants should have an M.D. with additional clinical and research training, or a Ph.D. with postdoctoral training and a strong track record in clinically-related research. A very competitive startup package with newly renovated laboratory space and excellent support facilities are available.

Applicants should apply by submitting a curriculum vitae, a brief statement of research interests and the names of three references to: **Dr. David Rekosh, Thaler AIDS Research Center, The University of Virginia, Jordan Hall 7-85, HSC Box 441, Charlottesville, VA 22908**

We strongly encourage applications from women and minority groups. UVA is an Affirmative Action/Equal Opportunity Employer.

POSITIONS OPEN

RESEARCH SCIENTIST IN CELLULAR BIOPHYSICS

The Biomedical Engineering Laboratory of the Swiss Federal Institute of Technology in Lausanne (EPFL), Switzerland, is seeking a Research Scientist in Cellular Biophysics. The candidates should hold a Ph.D. degree in physics, mechanical engineering, biomedical engineering, or related fields, plus one to two years of postdoctoral experience. Current research of our laboratory in this domain includes the study of cell adhesion, cytoskeletal remodeling in response to applied stresses, and overall cell mechanical behavior. The laboratory has cell culture facilities and is very well equipped in cell manipulation systems, confocal microscopy, optical tweezers, and image acquisition.

The candidate is expected to lead a research team in the area of cell or subcellular mechanics and to develop original research projects, including both experimental and theoretical aspects.

Applications (curriculum vitae, personal status, references) should be submitted to: **Professeur J.-J. Meister, Biomedical Engineering Laboratory, Swiss Federal Institute of Technology in Lausanne (EPFL), PSE—Ecublens, Switzerland.**

POSTDOCTORAL POSITION HUMAN TOPOISOMERASE I UNIVERSITY OF WASHINGTON

Employ a combination of biochemistry and genetics to explore structure-function relationships in human topoisomerase I. Emphasis will be on understanding the structural basis for catalysis, enzyme specificity, and the mode of action of the anti-cancer drug, camptothecin. Strong consideration will be given to applicants with training in site-directed mutagenesis, standard cloning techniques, and nucleic acid and protein biochemistry. Position available immediately but applications will be considered until the position is filled. Please send curriculum vitae, a brief statement of prior research experience, and three references to: **Dr. James J. Champoux, Department of Microbiology, Box 357242, University of Washington, Seattle, WA 98195.** *The University of Washington is an Affirmative Action/Equal Opportunity Employer.*

POSITIONS OPEN

THE WILLS FOUNDATION invites applications for **POSTDOCTORAL** studies in the area of neurobiology. Special consideration will be given to projects related to understanding Huntington's Disease. Contact: **The Wills Foundation, P.O. Box 27534, Houston, TX 77227-7534. FAX: 713-960-8111.**

POSTDOCTORAL RESEARCH POSITIONS available in neuroimmunobiology and host defense laboratory studying mechanisms of neuroprotection and brain injury related to infectious diseases. Scientists from three areas are invited to apply: 1) virologist with cloning experience to study HIV and CMV infection of brain cells, 2) CD8 lymphocyte immunologist to study brain defense and cytotoxicity, and 3) cell biologist to study brain injury-related apoptosis. Please send curriculum vitae and three references to: **Dr. Chun Chao, Ph.D., Minneapolis Medical Research Foundation, 914 South 8th Street, D-3, Minneapolis, MN 55404. FAX: 612-337-7372; e-mail: chaox002@maroon.tc.umn.edu.** *Equal Opportunity Employer.*

POSTDOCTORAL POSITION available immediately to: characterize ATP-regulated K+ channels and glutamate receptors in enteric and pancreatic neurons. Experience in molecular biology using techniques such as PCR and *in situ* hybridization is required. Send curriculum vitae, summary of relevant experience, and three references to: **Dr. Annette Kirchgessner, Department of Anatomy and Cell Biology, Columbia University, 630 West 168th Street, New York, NY 10032. E-mail: alk2@columbi.edu.** *Equal Opportunity Employer.*

POSTDOCTORAL POSITION available immediately to study effects of neuropeptides on the heart, intrinsic cardiac ganglia, and coronary blood vessels. Position contingent upon grant funding. Send curriculum vitae and names of three references to: **Dr. Donald B. Hoover, Department of Pharmacology, East Tennessee State University, Box 70577, Johnson City, TN 37614-0577. E-mail: hoover@etsu-tn.edu.** *Equal Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

POSTDOCTORAL TRAINING PROGRAM UNIVERSITY OF KANSAS MEDICAL CENTER MOLECULAR AND CELLULAR ASPECTS OF REPRODUCTION AND DEVELOPMENT

Faculty and research topics include: **Glen K. Andrews**—molecular and transgenic analysis of gene expression in the reproductive tract; **S. K. Dey**—molecular and cellular biology of implantation; **George C. Enders**—molecular and cellular regulation of spermatogenesis; **Leslie L. Heckert**—transcriptional control of gonadotropin and gonadotropin receptor genes; **Joan S. Hunt**—immunological aspects of pregnancy; **William H. Kinsey**—signal transduction during fertilization and early embryo development; **Girish Shah**—pituitary gene regulation, control of prostate cancer cell proliferation; **Michael J. Soares**—regulatory pathways controlling trophoblast and uterine differentiation; **Joseph S. Tash**—signal transduction pathways in the regulation of sperm motility; **Paul F. Terranova**—cytokines, ovarian cell function, and toxicology; **James L. Voogt**—regulation of prolactin secretion in reproduction; **Michael W. Wolfe**—transcriptional control of gonadotropin gene expression.

Support is provided by an NIH training grant for *U.S. citizens or permanent residents.* Send a letter indicating research interests, curriculum vitae, and three letters of recommendation to: **Dr. Michael J. Soares, Department of Physiology, University of Kansas Medical Center, 3901 Rainbow Boulevard, Kansas City, KS 66160. Telephone: 913-588-5691; FAX: 913-588-5677; e-mail: msoares@kumc.edu.** *An Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL FELLOW/INSTRUCTOR INHERITED CALCIUM ION CHANNEL DISORDERS

Position for Electrophysiologist to analyze spontaneous and transgenic calcium ion channel mouse mutants. Strong background in patch clamp electrophysiology in brain slices and culture. Send curriculum vitae to: **Dr. Jeffrey Noebels, Developmental Neurogenetics Laboratory, Department of Neurology, Baylor College of Medicine, One Baylor Plaza, Houston, TX 77030. E-mail: jnoebels@bcm.tmc.edu; FAX: 713-798-7528.**

NATIONAL LIBRARY OF MEDICINE
NATIONAL INSTITUTES OF HEALTH
Supervisory Technical Information Specialists

The National Library of Medicine (NLM) in Bethesda, MD is seeking applicants for two branch chief positions in its Specialized Information Services Division. The Division manages NLM's Toxicology and Environmental Health Information Program which administers programs involving online databases in the areas of toxicology, environmental and occupational health, and hazardous waste information.

Chief, Biomedical Information Services Branch. The incumbent will be responsible for the design and implementation of training programs, outreach, and related activities associated with the dissemination and utilization of toxicological and environmental health information.

Chief, Biomedical Files Implementation Branch. The incumbent will be responsible for the design, implementation, and maintenance of information systems related to toxicology and environmental health information dissemination.

Both positions require strong, supervisory and management skills, contract administration experience, and oral and written communication abilities. A graduate level degree in the physical or biological sciences, information or computer science, or library science is desirable. Salary ranges: $60,270 – $78,351. Applications must be postmarked by September 22, 1997. HOW TO APPLY — Call: **Christopher Parker, Tel. (301) 496-4943.**

Selection for this position will be based solely on merit, without discrimination for non-merit reasons such as race, color, religion, sex, national origin, politics, marital status, sexual orientation, physical or mental handicap, age, or membership or nonmembership in an employee organization. U.S. citizenship is required.

NIH IS AN EQUAL OPPORTUNITY EMPLOYER

Chair
Department of Biological Sciences

The University of Delaware is seeking nominations and applications for the position of Chair of the Department of Biological Sciences. The Department has 25 tenure-track faculty in two separate divisions: Molecular Biology and Integrative Biology, with a combined enrollment of 1000 undergraduates and 52 graduate students in MS and PhD programs. The University has embarked on a major initiative in molecular biology. Substantial resources have been assembled and a major renovation and expansion of research facilities on campus is underway.

The appointment of the Chair will be at the level of professor. The University seeks a scientist with a distinguished record of scholarly activity, an active and internationally recognized research program in molecular cell biology, and a commitment to excellence in undergraduate and graduate education. The successful candidate will have demonstrated administrative skills and exhibit a dynamic approach to leadership that will create a comprehensive research training and educational program in contemporary biological sciences.

The appointment is available immediately. The position will remain open until filled. Salary and benefits are competitive. Applicants should send a curriculum vitae with names of five references to: **Dr. Joan Burnside, Chair, Search Committee, Elliot Hall, Room 201, University of Delaware, Newark, DE 19716. joan@udel.edu**

The University's and Department's homepage addresses are: http://www.udel.edu/ and http://www.udel.edu/bio/ The UNIVERSITY OF DELAWARE is an Equal Opportunity Employer which encourages applications from Minority Group Members and Women.

UNIVERSITY OF DELAWARE

PULMONARY PHARMACOLOGY

POSTDOCTORAL SCIENTIST

SmithKline Beecham Pharmaceuticals, a worldwide leader in pharmaceutical research, is built on the excellence and dedication of our employees.

We seek a scientist with a background in molecular biology and pharmacology for our Pharmacological Sciences division. The scientist will investigate the mechanisms underlying lung remodeling and mucus hypersecretion.

The ideal candidate will be intent on gaining recognition in the scientific community through publication of scientific results and participation in national meetings. A PhD in Pharmacology, Molecular Biology, or related discipline, up to 3 years' postdoctoral experience, and knowledge of standard molecular biology techniques are required. Experience with standard techniques in cell biology, *in situ* hybridization, and immunohistochemistry are preferred.

Located in a state-of-the-art research facility in suburban Philadelphia, SmithKline Beecham offers a competitive compensation/benefits/relocation package as well as a stimulating work environment. For confidential consideration, please forward a resume and salary requirements to: SmithKline Beecham Pharmaceuticals, Job Code H7-0436, P.O. Box 2645, Bala Cynwyd, PA 19004. ***Indicating Job Code is essential.*** For more information on SmithKline Beecham, visit our Web site at www.sb.com/careers. We are an Equal Opportunity Employer, M/F/D/V.

SB
SmithKline Beecham
Pharmaceuticals
Challenging the natural limits.

Director, Center for cognitive and behavioral neuroscience

SEARCH EXTENDED. Stony Brook is seeking a Director for a newly developed Center for cognitive and behavioral neuroscience. The Center's program will be interdisciplinary, and involve faculty from both the College of Arts and Sciences and the School of Medicine. The Center will enhance and integrate the existing strengths in neuroscience of various departments (e.g. Psychology, Neurobiology and Behavior, Psychiatry). A number of tenure-track faculty lines, in addition to the Director's, will be devoted to its further development.

The Director's position will be a senior, tenured faculty appointment. We seek an outstanding scientist with an excellent track record of research involving the study of the nervous system and its relationship to cognition/behavior. We expect the Director to maintain a vigorous, productive, and independently-funded research program. The Director will use her/his leadership and administrative skills to promote further development of the Center at the faculty, graduate, and undergraduate levels.

Applications and nominations, curriculum vitae, and the names, addresses and telephone numbers of at least three references should be submitted to: Janos Kirz, Chair, Search Committee, Director, Center for cognitive and behavioral neuroscience, Office of the Provost, SUNY Stony Brook, Stony Brook, NY 11794-1401. Review of applications will continue until position is filled. Current applicants need not apply. For further information, try our WEB page at: http://www.sunysb.edu/ provost/bns/dir.html

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POSTDOCTORAL FELLOWSHIP CELLULAR AND MOLECULAR BIOLOGY OF WOUND REPAIR

A Postdoctoral position is available to join an active, interdisciplinary group studying the cellular and molecular biology of early wound repair. Emphasis will be on the development and evaluation of new therapeutic modalities to accelerate the reparative process. Areas of investigation will include ligand binding to fibroblast receptors, transcriptional activation of fibroblast wound growth factors, metalloproteinase expression, and collagen biosynthesis. Applicants should have a strong background and experience in cellular and molecular biology. The position requires a Ph.D., M.D., or equivalent degree with evidence of relevant experience. A competitive salary and benefits will be commensurate with experience. The position will be available for a minimum of two years and may be renewable for an additional two years by mutual agreement. Please send curriculum vitae, statement of research interests, and the names and addresses of three references to: **Dr. David L. Williams, Department of Surgery, James H. Quillen College of Medicine, Box 70575, East Tennessee State University, Johnson City, TN 37614. E-mail: williamd@access.etsu-tn.edu.** *Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL POSITION IN IMMUNOLOGY

A position is available in our laboratory at the Maxwell Finland Laboratory for Infectious Diseases at the Boston University School of Medicine studying the humoral and cellular immune responses towards *Neisseria gonorrhoeae* in patients with gonococcal infection to define correlates of protection from disease. Experience in immunologic techniques is essential, including murine and human lymphocyte isolation, culturing, proliferation assays, FACS analysis, ELISA, SDS-PAGE, and Western blot analysis, etc. If interested please send your curriculum vitae including names, telephone numbers, and FAX numbers of at least three references to: **Lee M. Wetzler, M.D., The Maxwell Finland Laboratory for Infectious Diseases, Boston Medical Center, Boston University School of Medicine, 774 Albany Street, Boston, MA 02118. FAX: 617-534-4391; e-mail: lwetzler@acs.bu.edu.**

The Alfred P. Sloan Foundation and the Department of Energy are supporting up to ten **POSTDOCTORAL FELLOWSHIPS** to catalyze career transitions into computational molecular biology from physics, mathematics, computer science, chemistry, and related fields. These fellowships will give young scientists an intensive two-year postdoctoral opportunity in an appropriate molecular biology laboratory. Selections will be announced in May, 1998, and funding can begin any time after September 1, 1998. Application deadline: January 19, 1998. You can obtain the complete announcement from: **Christine Trance, Alfred P. Sloan Foundation, 630 Fifth Avenue, Street 2550, New York, NY 10111. Telephone: 212-649-1649; FAX: 212-757-5117; e-mail: trance@sloan.org.**

POSTDOCTORAL POSITIONS—RNA

N.I.H.-funded Postdoctoral positions are available in the laboratory of **Thoru Pederson** in a program on RNA processing and the intracellular traffic and localization of RNA in mammalian cells. Prior training in the molecular biology of RNA is essential, and experience in cell biology and microscopy is highly desirable. These positions are available December 1, 1997, or soon thereafter. Send curriculum vitae, including description of previous research, and the names of three references (with telephone numbers and e-mail addresses) to: **Thoru Pederson, Worcester Foundation for Biomedical Research, University of Massachusetts Medical Center, Worcester Foundation Campus, 222 Maple Avenue, Shrewsbury, MA 01545.** *The Worcester Foundation and the University of Massachusetts Medical Center are Equal Opportunity Employers. Women and minority candidates are encouraged to apply.*

POSTDOCTORAL RESEARCH ASSOCIATE

Lignin Biochemist/Chemist to join the Forest Biotechnology Group at North Carolina State University (NCSU) and to participate in studies of quantitative variation of lignin composition in woody plants and grasses. The position involves interaction with molecular biologists, quantitative geneticists, and lignin chemists. Available immediately. Please send curriculum vitae and three letters of recommendation to: **Ron Sederoff** or **Ross Whetten, Forest Biotechnology Group, NCSU, Box 8008, Raleigh, NC 27695-8008.**

POSITIONS OPEN

POSTDOCTORAL FELLOW ESTROGEN ACTION/DRUG DISCOVERY

A Postdoctoral position is available immediately to study the molecular pharmacology of the estrogen receptor. The successful candidate, who should have an interest in drug discovery, will join a collaborative effort engaged in the identification and characterization of novel estrogen receptor ligands. Applicants with a strong background in transcription and/or transgenic animal technology are encouraged to apply.

Those interested should send a curriculum vitae and names and addresses of three referees to:

Dr. Donald P. McDonnell, Ph.D.
Department of Pharmacology and Cancer Biology
Box 3813
Duke University Medical Center
Durham, NC 27710

POSTDOCTORAL POSITION, DEPARTMENT OF VETERINARY SCIENCE, PENN STATE. Position available immediately to study cellular regulation of the Ah receptor pathway. Current studies are focused on delineating the role of co-activators, immunophilins, heat shock proteins, and protein phosphorylation in regulating Ah receptor activity. Applicants should have a Ph.D. in toxicology, biochemistry, or related field. Salary is competitive and commensurate with experience. Submit curriculum vitae and names of three references to: **Dr. Gary H. Perdew, Center for Molecular Toxicology, Department of Veterinary Science, 115 Henning Building, The Pennsylvania State University, University Park, PA 16802. E-mail: ghp2@psu.edu.** *Affirmative Action/Equal Opportunity Employer.*

UNIVERSITY OF COLORADO HEALTH SCIENCES CENTER POSTDOCTORAL FELLOW/ RESEARCH ASSOCIATE

To examine the mechanism of action of anticancer drugs by studying their ability to inhibit cell cycle regulatory components and/or modulate apoptosis using tissue culture and transgenic animal models. Significant experience in molecular and cellular biology is desirable. Refer to ad #279. Please send curriculum vitae, statement of interest(s), and names of three references to: **Andrew S. Kraft, M.D., 4200 East 9th Avenue, Denver, CO 80262. FAX: 303-315-5502.**
UCHSC is an Equal Opportunity/Affirmative Action Employer.

POSTDOCTORAL POSITION IN PHYSIOLOGY/SURGERY—MAYO CLINIC. Position available immediately in an NIH training grant to study neural regulation of water and electrolyte absorption-secretion. Applicants must have a Ph.D. or M.D. degree with expertise in methods involving Ussing chamber work and *in vitro* transport studies. *Applicants must be a U.S. citizen or permanent resident.* Send résumé and letters of reference to: **Michael G. Sarr, M.D., Mayo Clinic/Mayo Foundation, GI Research Unit, Alfred Building, Second Floor, 200 First Street S.W., Rochester, MN 55905.** *Mayo Foundation is an Affirmative Action and Equal Opportunity Educator and Employer.*

The Cognitive Electrophysiology Laboratory at New York Psychiatric Institute has a **POSTDOCTORAL POSITION** available supported by a grant from NIA on cognitive aging and brain potentials (ERPs). Requirements: experience in the recording, analysis, and write-up of ERP data. Salary based on experience with excellent fringe benefits. Interested persons should contact: **Dr. David Friedman, New York Psychiatric Institute, 722 West 168th Street, New York, NY 10032. Telephone: 212-543-5476; e-mail: friedma@nypimail.cpmc.columbia.edu.**

POSTDOCTORAL POSITION/IMMUNOLOGY YALE UNIVERSITY SCHOOL OF MEDICINE

Ph.D. position to study T-B cell collaboration and γδ T cell regulation in murine systemic autoimmunity and Fas deficiency (see *J. Exp. Med.* **184**:1149, 1996; *J. Immunol.* **157**:5225, 5689, 1996). Experience and/or interest in T cell cloning, co-stimulatory factors, apoptosis, and/or animal models of autoimmunity necessary. Send curriculum vitae, research interests, and three reference letters to: **Joe Craft, Professor of Medicine, Yale School of Medicine, P.O. Box 208031, New Haven, CT 06520-8031.** *Affirmative Action/Equal Opportunity Employer.*

POSITIONS OPEN

POSTDOCTORAL FELLOWSHIPS

Ph.D. CHEMISTRY/BIOLOGIST experienced in surface chemistry, organic chemistry, and microfabrication methods as well as tissue culture and mammalian cell biology techniques. This interdisciplinary project involves use of self-assembled monolayer techniques to create defined adhesive microenvironments for living cells on the micron scale. Studies will include analysis of the role of adhesion and cell shape in the control of cell behavior as well as development of automated methods for non-invasive quantitation of changes in cell function.

Ph.D. BIOENGINEER experienced in mechanical engineering analysis and mammalian cell biology techniques to investigate the micromechanical properties and microarchitectural features of the cytoskeleton and nucleus in living cells. Experience in molecular cell biology, light microscopy, electron microscopy, and micromanipulation techniques, such as optical tweezer or scissors, preferable. For both positions, send curriculum vitae, including three names of references, to: **Donald Ingber, M.D., Ph.D., Enders 1007, Departments of Pathology and Surgery, Children's Hospital/Harvard Medical School, 300 Longwood Avenue, Boston, MA 02115.**

A **POSTDOCTORAL LIMNOLOGIST** position is available in fall 1997 at the Florida Center for Environmental Studies, Palm Beach Gardens, Florida, to participate in studies of trophic dynamics in subtropical Lake Okeechobee. The person selected to fill this position will conduct research to quantify seasonal and spatial variation in tropic interactions among bacteria, protozoa, phytoplankton, and zooplankton. Applicants must hold a Ph.D. in limnology, ecology, or a related field, and have a strong background in plankton ecology. Expertise with field and laboratory methods for quantifying plankton trophic interactions, in particular *in situ* techniques using fluorescent and radiocarbon-labeled tracer particles desired. Evidence of qualifications should include articles published in the peer-reviewed literature. Funding for this project provided by the South Florida Water Management District. Position does not include benefits and maximum salary is $36,000 per year. To apply, send a curriculum vitae, reprints of relevant publications, and two letters of recommendation to: **Employment Administrator, Florida Center for Environmental Studies, 3970 RCA Boulevard, Suite 7401, Palm Beach Gardens, FL 33410.**

POSTDOCTORAL FELLOWSHIP, Boston University Medical Center. Cellular and molecular biology of connective tissue and autoimmunity: regulation of matrix gene transcription, differential display, integrin signaling, apoptosis and Fas-mediated signaling, immunology of murine lupus, and amyloidosis. Ph.D. or M.D. with background in molecular or cell biology, biochemistry, immunology. *U.S. citizens or permanent residents only.* Send curriculum vitae and three references to: **Joseph H. Korn, M.D., Arthritis Center, K-5, BUSM, 80 East Concord Street, Boston, MA 02118.** For additional information **e-mail: -jkorn@med-medl.bu.edu; Telephone: 617-638-4486.**

POSTDOCTORAL POSITION, HARVARD MEDICAL SCHOOL. Available immediately. Organic Chemist will synthesize radionuclide carrier molecules as part of a multidisciplinary group examining the diagnostic and therapeutic potential of radionuclides. Salary based on experience. *Must be a U.S. citizen or permanent resident.* Please contact: **Dr. A. I. Kassis, Goldenson Building, Radiology Department, Room B242, 220 Longwood Avenue, Boston, MA 02115-5729. Telephone: 617-432-7777.** *An Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL POSITION immediately available to study (1) the structure-immunogenicity relationships of tumor-specific molecules for adoptive immunotherapy of cancer and the development of potential vaccines, and (2) cellular immunity to *Cryptosporidium* involving the role of T cells and cytokines in infection and identification of key antigens. Experience in culturing of human and mouse lymphocytes, and molecular biology including gene expression is desirable. Send curriculum vitae and three letters of reference by mail or FAX to: (1) **Kenneth E. Dombrowski, Ph.D.** or (2) **Jan Mead, Ph.D., VA Medical Center, Research Service 151, 1670 Clairmont Road, Decatur, GA 30033. FAX: 404-728-7780; e-mail: dombrowski.kenneth_e@atlanta.va.gov,** or **jmead@emory.edu.** *U.S. citizen or permanent resident required.*

TRAINING

INTERESTED IN CLINICAL OR POSTDOCTORAL RESEARCH TRAINING?

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http://helix.nih.gov:8001/oe.

MEETING

NON-ANTIBIOTIC PROPERTIES OF TETRACYCLINES
November 13–14, 1997, Garden City, New York

Unique workshop on anti-inflammatory, anti-proliferative, and MMP inhibitory capacity of tetracyclines. Sponsored by Long Island Jewish Medical Center in collaboration with CollaGenex Pharmaceuticals Inc. Contact: **Dr. Robert Greenwald, Long Island Jewish Medical Center, New Hyde Park, NY 11042. Telephone: 718-470-7251; e-mail: rgreen@lij.edu.**

SYMPOSIUM

THERAPEUTIC PATHWAYS OF INDUCED APOPTOSIS

Méridien Montparnasse Hotel, Paris, France; October 29–30, 1997: An international symposium organized by Consultants Internationaux sur le Médicament. Chairpersons: **N. McCarthy, Ph.D.; J. Cahn, M.D.-Ph.D.; H. Tapiero, Ph.D.; J. A. Hickman, Dsc.; C. Charriaut-Marlangue, M.D.; I. M. C. MacLennan, Ph.D.; F. Lunel-Fabiani, M.D.-Ph.D.; L. Robert, M.D.; G. Feldmann, M.D.; E. White, M.D.** Internet Summary: **website: http://www.impulsor.fr/apoptose;** For program and registration: **Telephone: 33-01-46-92-01-53; FAX: 33-01-46-92-01-50.**

ANNOUNCEMENTS

LASER FELLOWS PROGRAM
W. M. KECK FREE-ELECTRON LASER CENTER

The W. M. Keck FEL Center is inviting applications for M.D. or Ph.D. Fellowships for research in biomedical and clinical applications of FELs. These fellowships are available as early as the spring of 1998 and are for one year of full-time, FEL-based research. Exceptionally productive fellows may be renewed for a second year. The stipend is $35,000 and up to $10,000 in research funds will be provided. The FEL program fosters collaborative research across traditional disciplinary lines: preference will be given to candidates who are jointly supervised by faculty with complementary research expertise. Fellows must collaborate with at least one faculty member actively pursuing FEL applications research.

Applications are due December 30, 1997, and will be assessed by the Vanderbilt FEL Peer Review Board. We anticipate multiple awards. Application guidelines and more information are available from:

Valorie Corley
W. M. Keck FEL Center
410 24th Avenue South
Vanderbilt University
Nashville, TN 37212
E-mail: corleyvj@ctrvax.vanderbilt.edu
Telephone: 615-343-6146
FAX: 615-343-1103
Website: http://gabella@fel.vanderbilt.edu

CAREER CHANGE OPPORTUNITY

This unique program offers the candidate with an earned doctorate in the sciences the opportunity to obtain the Doctor of Optometry (O.D.) degree in two calendar years. Employment opportunities exist in private practice, industry, education, and research. Contact: **Lawrence Shattuck, M.Ed., The New England College of Optometry, The Office of Admissions, 424 Beacon Street, Boston, MA 02115.**

POSITIONS OPEN

POSTDOCTORAL POSITION available immediately to study the molecular genetics of pediatric brain cancer. Experience in molecular biology preferred. Please send curriculum vitae and names of three references to: **Gregory J. Riggins, M.D., Ph.D., Department of Pathology, Box 3156, Duke University Medical Center, Durham, NC 27710. FAX: 919-684-6458.** *Duke University is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL POSITION in tumor immunology to study vaccines/radioimmunotherapy. Must have experience in molecular biology, biochemistry. Send curriculum vitae and references to: **David A. Scheinberg, Head, Hematopoietic Cancer Immunochemistry Laboratory, Sloan-Kettering Institute, 1275 York Avenue, New York, NY 10021. FAX: 212-717-3068.** *Equal Opportunity Employer.*

CONFERENCE

CONTAMINATED SOILS CONFERENCE

October 20–23, 1997, the University of Massachusetts at Amherst will host the 12th Annual Conference on Contaminated Soils. This year's conference focuses on issues including: federal issues, radionuclide contamination, railroad/diesel, analysis, site assessment, environmental fate, remediation, phytoremediation, risk-based corrective action, risk-based cleanup standards, brownfields, heavy metals, innovative technologies, sediment contamination, state regulatory issues, human health risk assessment and effects, and ecological risk assessment. For more information please contact: **Robyn Blain, Telephone: 413-545-2934; e-mail: rblain@bio.umass.edu.**

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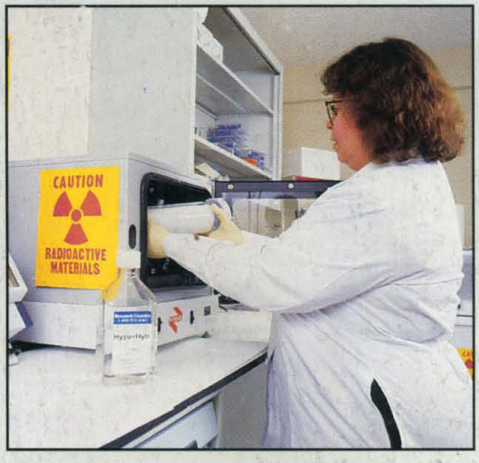

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