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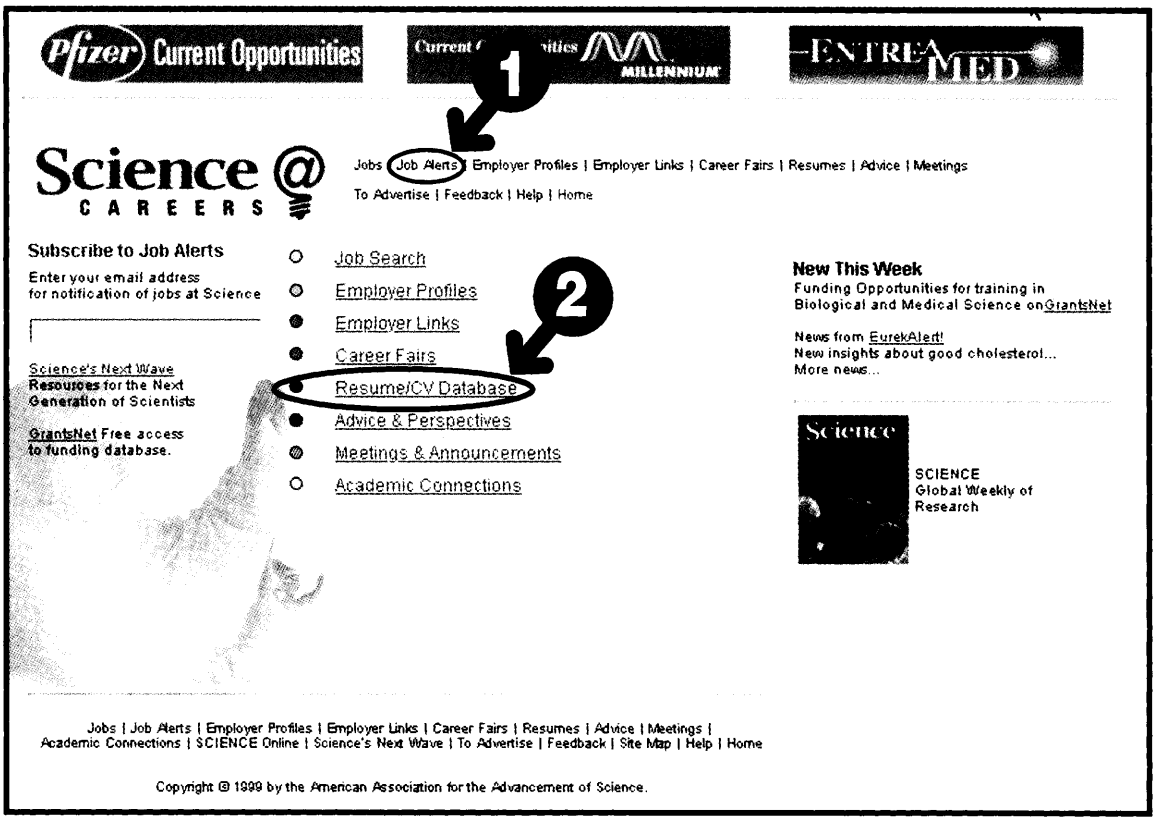

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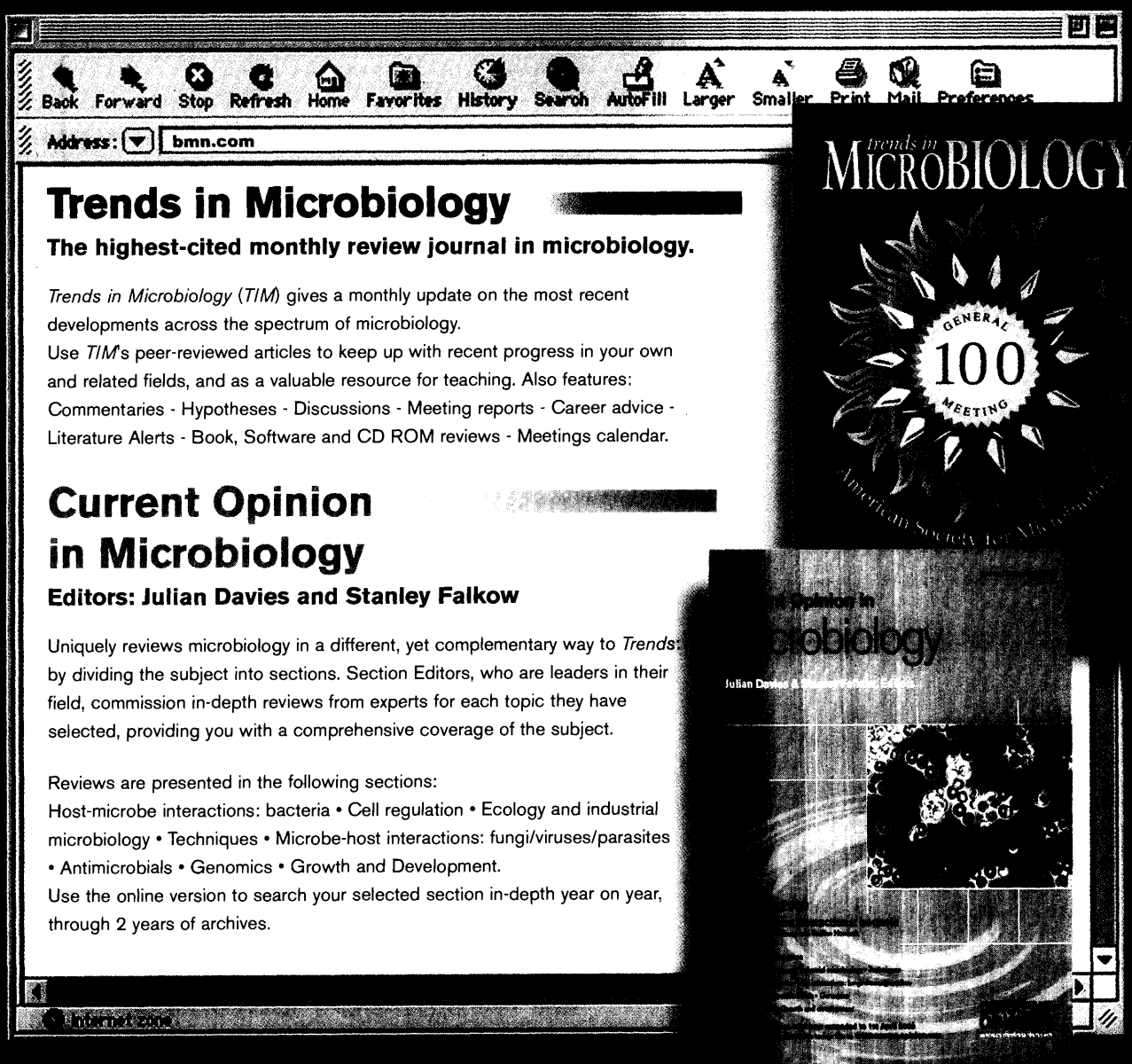

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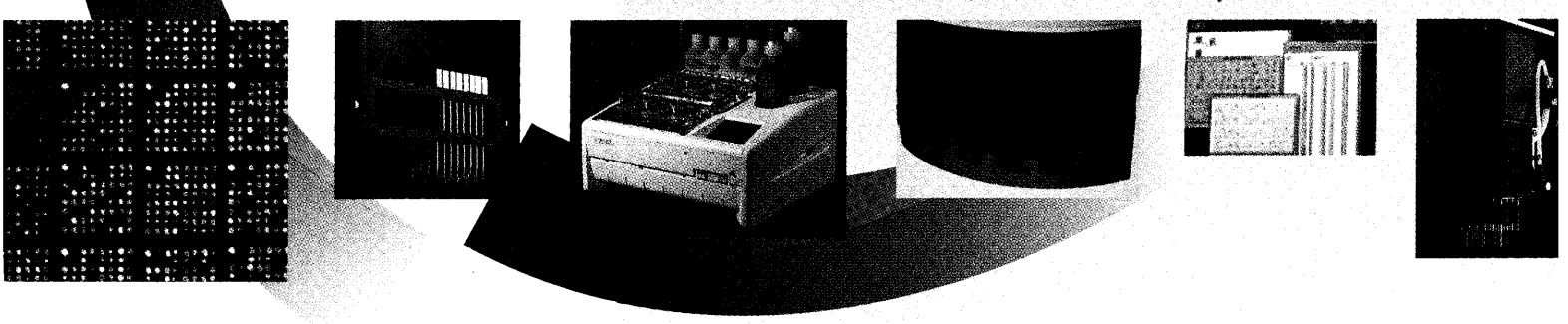

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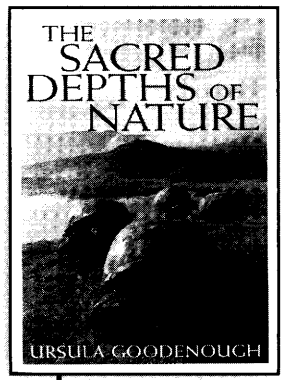

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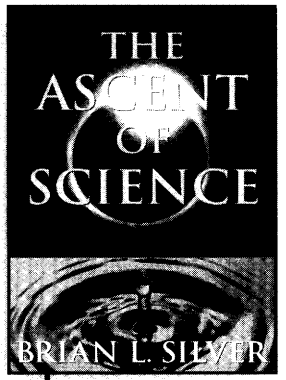

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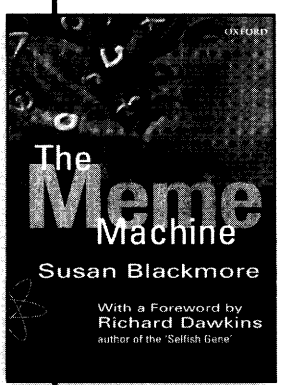

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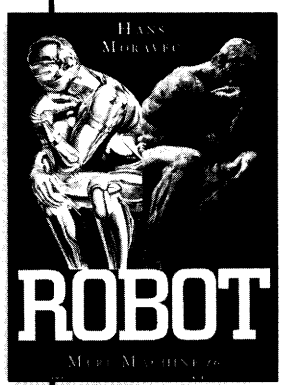

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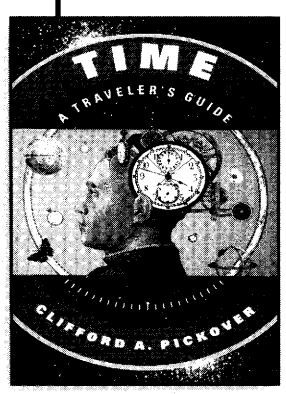

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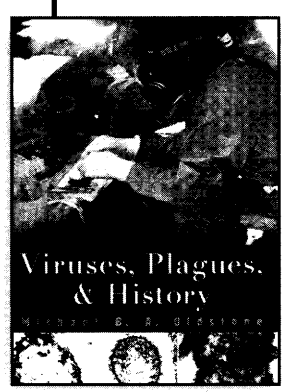

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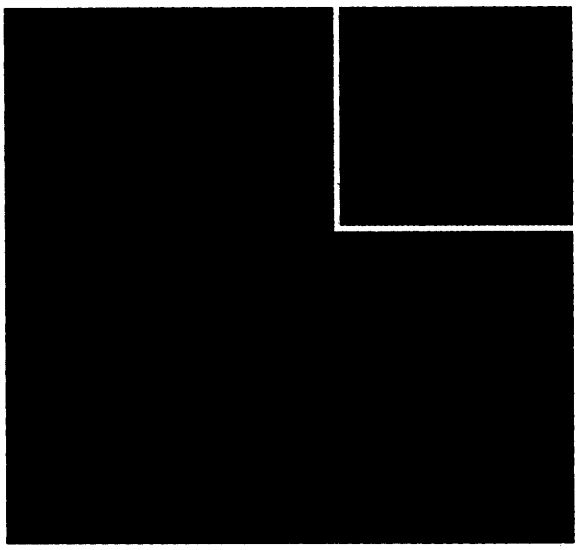

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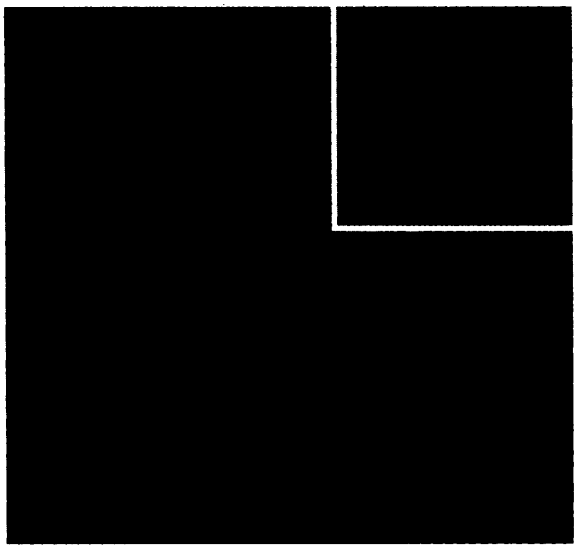

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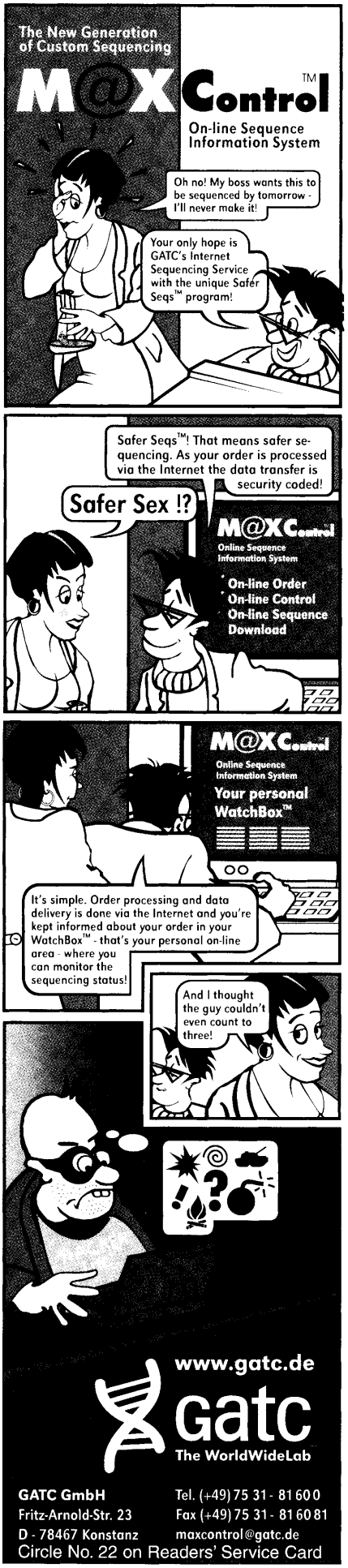

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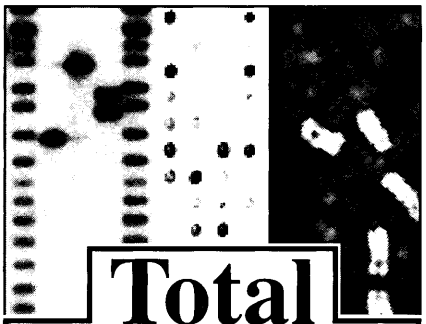

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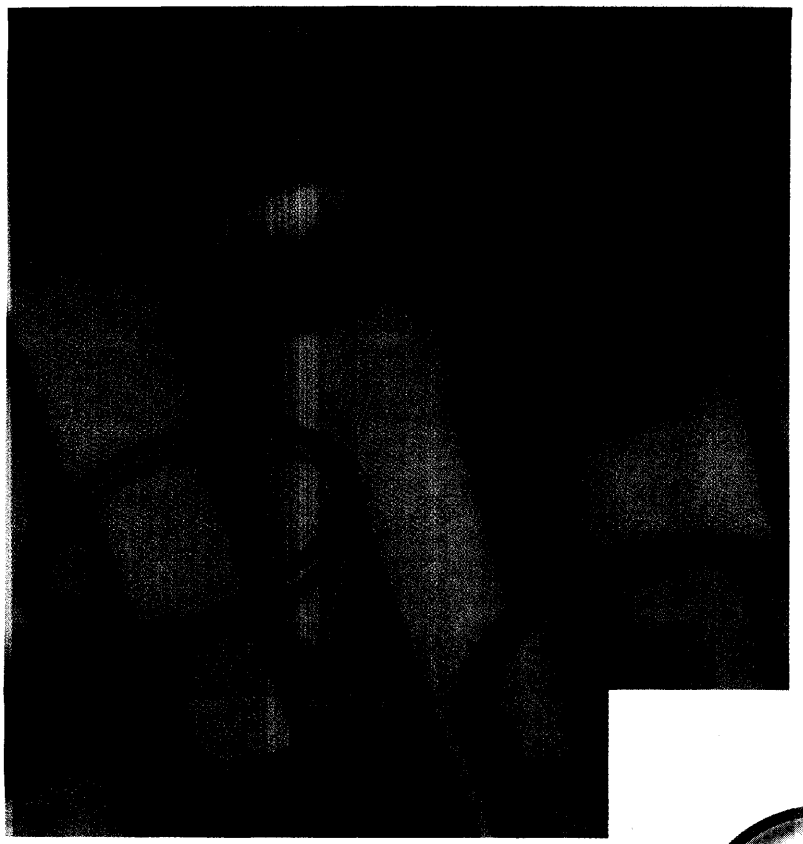

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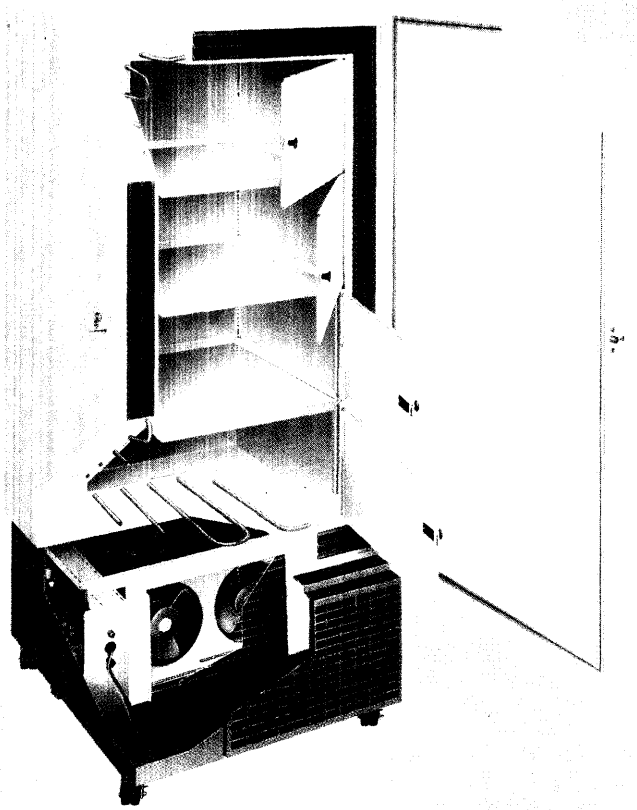

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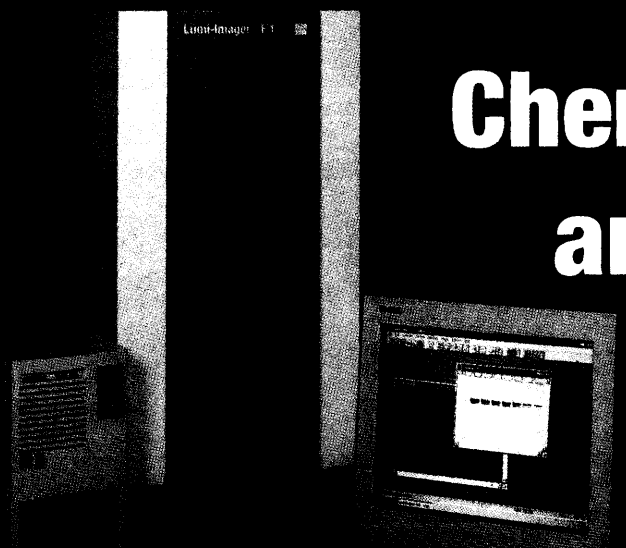

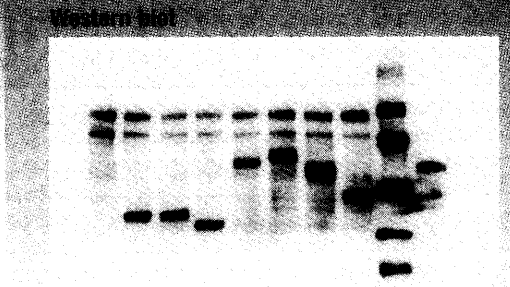

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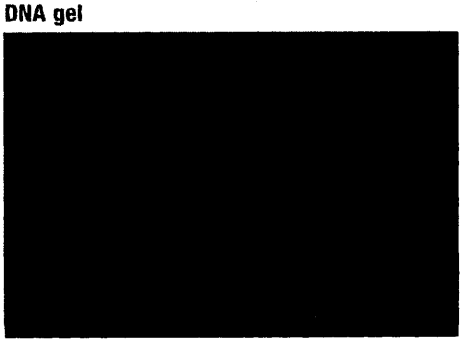

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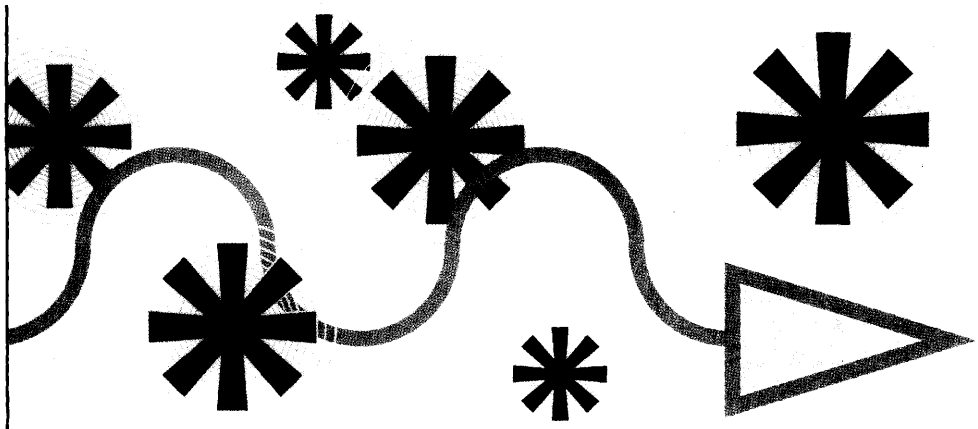

Laboratory Technology Trends:

Fluorescence + Labeling

Light Fantastic: The Emergence of Luminescent Technology

by Peter Gwynne and Guy Page

The development of technical infrastructure has enabled the steady expansion of luminescent labeling and detection in the life sciences. Today, researchers have many more options than they had in the past.

Radioisotopes have suffered a slow decline from their position as the first-choice technology for labeling and detecting biomolecules. Radioactive systems still predominate in some areas, such as northern and southern blotting. Nonetheless, the era of radioactivity appears to be on the wane as more and more new, safe, and effective luminescent technologies gather momentum.

The new momentum stems from several factors. The range of luminescent technologies has steadily expanded from a limited number of fluorophores such as Fluorescein and Texas Red to a much broader fluorescent catalog. Industrial research teams have developed several variations, including chemiluminescent, bioluminescent, and chemifluorescent technologies. Companies have built the basic chemistries into user-friendly kits and systems that make implementation much easier. And new, more powerful instrumentation can now detect and help interpret luminescent signals. This progressive growth of the "infrastructure" of luminescent detection has opened the door for a much wider range of users in the laboratory than ever before.

Depending on their experimental needs and limitations, scientists now have a large number of options for luminescent labeling and detection. Chemiluminescent or electrochemiluminescent systems, such as those marketed by Amersham Pharmacia, PE Tropix and Pierce Chemical deliver high sensitivity for solution or blot-based assays. Bioluminescent systems such as Luciferase, produced by Promega and Pharmingen, or green/red fluorescent protein, marketed by CLONTECH, offer molecular biologists flexible and adaptable tools for studies of gene expression. In addition, the rapidly expanding repertoire of fluorescent probes, kits and detection instruments has created many new options.

Several companies have built their entire business plans around key luminescent technologies. Aurora Biosciences, for example, has developed a suite of proprietary fluoresence assays for a variety of molecular targets. It licenses these tools to pharmaceutical companies for drug discovery. And Pyrosequencing, a new Swedish company involved in DNA sequencing, has created a novel technology based on Luciferase detection.

Strengths and Weaknesses

Light-based detection involves two forms of technology: chemiluminescence and fluorescence. In the former, the action of an enzyme causes a chemical substrate to produce light, which is detected and measured. In the latter, light comes from an external source, such as an incandescent lamp or a laser. The incoming light is absorbed by a dye molecule, which spontaneously converts it to a different wavelength, which is then detected and measured.

The two technolgies have different strengths and weaknesses. "Chemiluminescence buys you two things: Another log or two of sensitivity and a broader dynamic range," explains Chris Groves, marketing manager for Tropix, a part of PE Biosystems that helped pioneer chemiluminescent detection. The key reason: scientists measuring chemiluminescent signals do not have to worry about excessive background light. And since chemiluminescence is generated internally, it does not damage samples in the way that fluorescence, an external force, can do.

On the other hand, points out Iain Johnson, product manager for Molecular Probes, "fluorescence is more widespread as a natural phe-nomenon than chemiluminescence." On a more practical level, he

continued ➢

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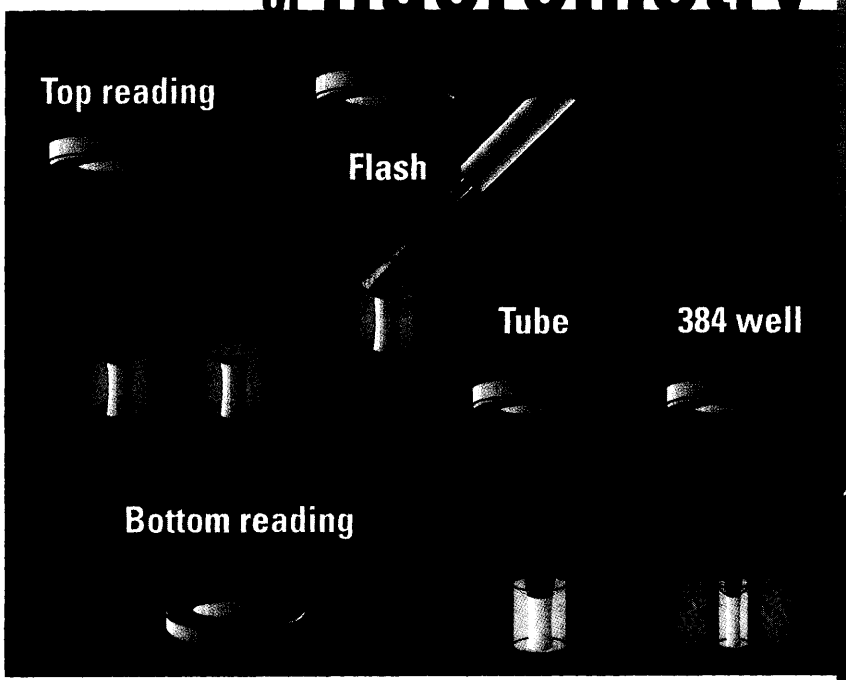

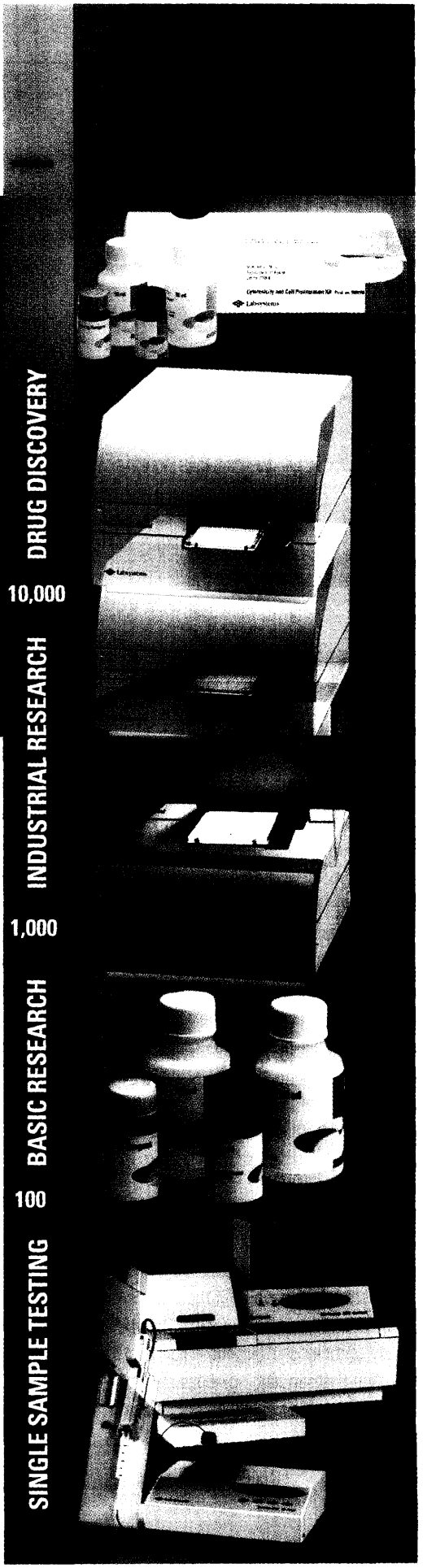

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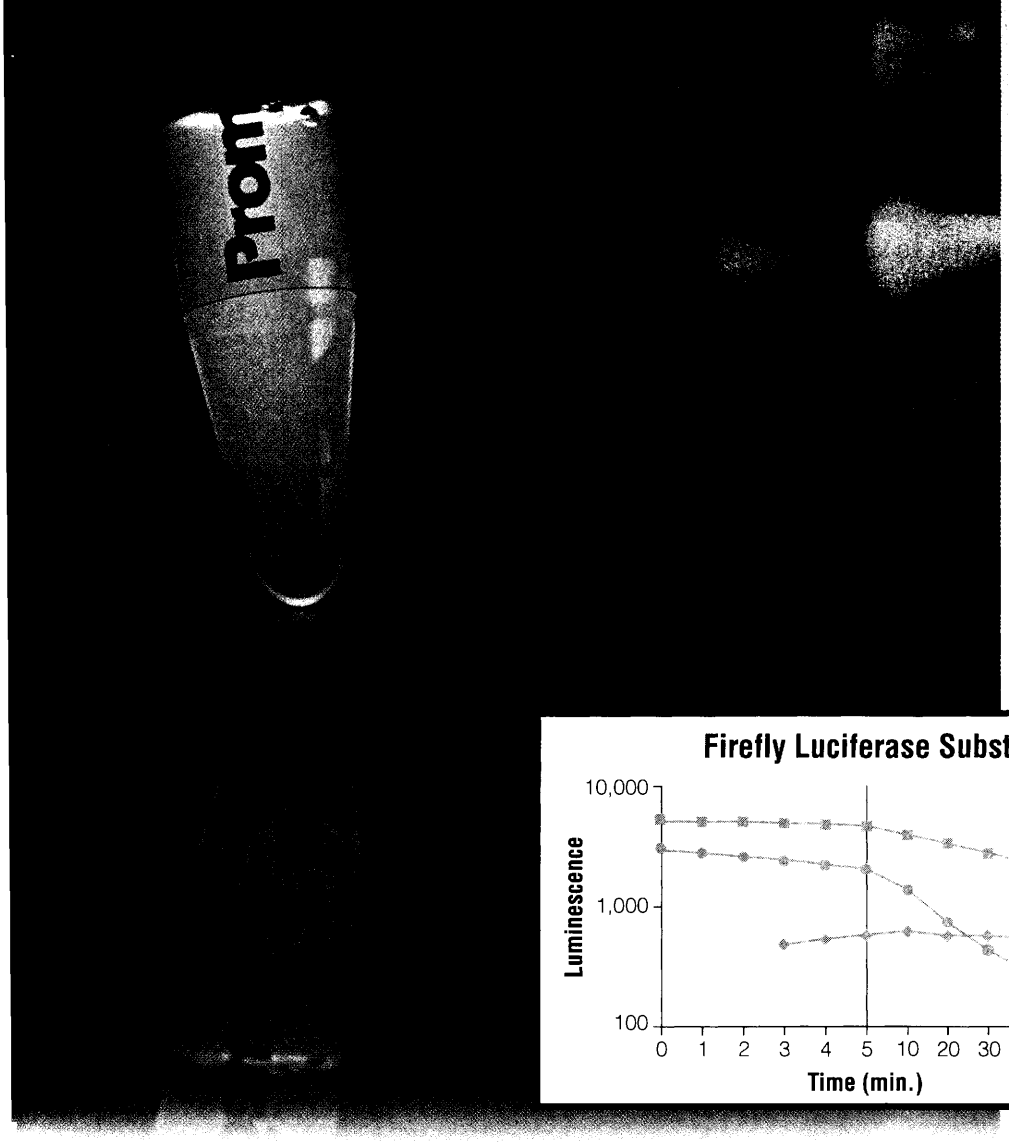

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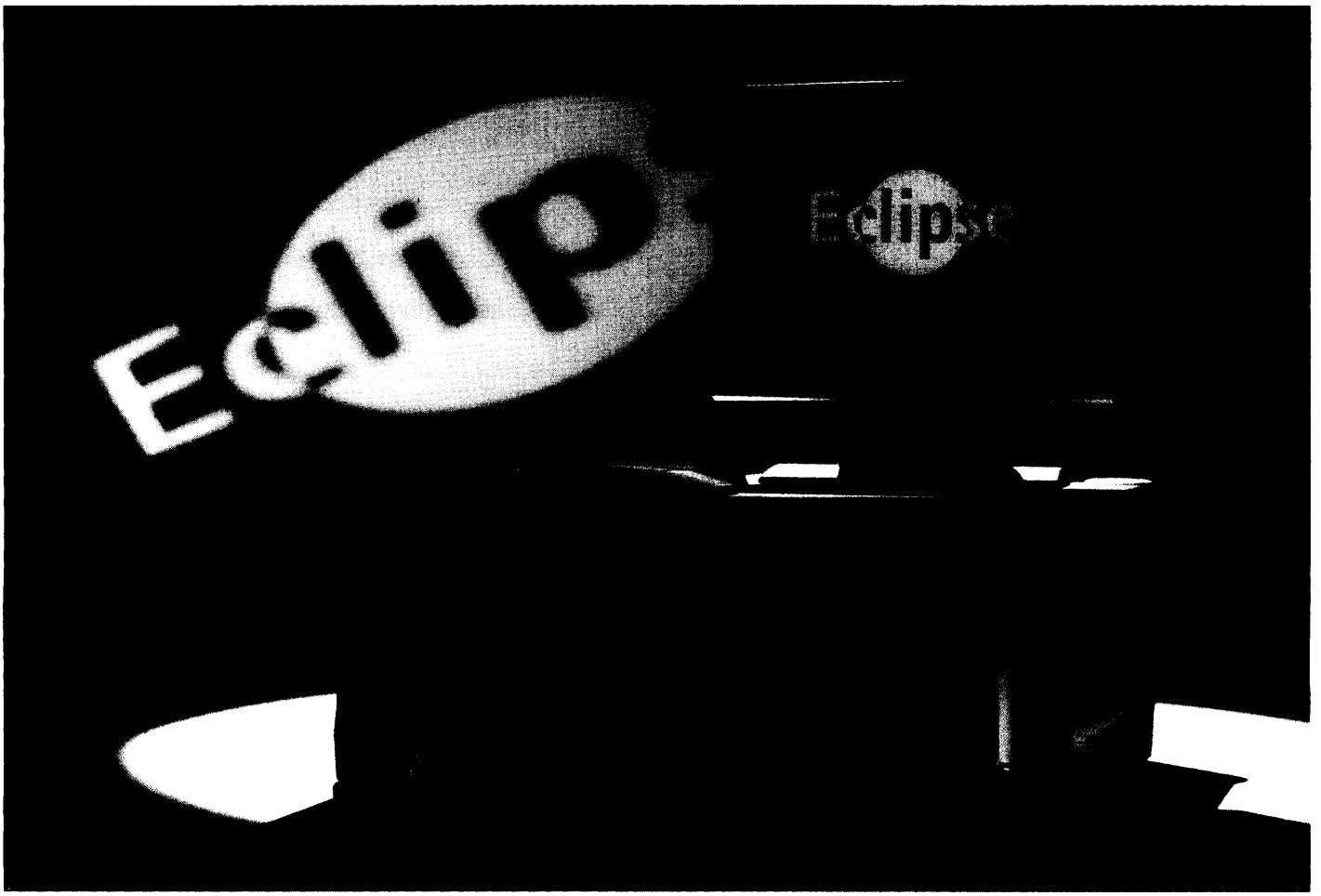

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"[chemiluminescence and fluorescence] both compete against and complement each other," says Tom Brotke. Choosing between the two techniques "largely comes down to a question of signal to noise," adds Keith Woods.

continues, "you can simultaneously measure a number of parameters in a sample by tagging each one with a different-colored fluor. For example, you can use fluorescence to measure the numbers of live cells and dead cells in a sample simultaneously, by staining one red and the other green."

Scientists involved in chemiluminescence counter that efforts to overcome the "multiplexing" limitation are beginning to bear fruit and that increasing numbers of chemiluminescent compounds are emerging. "We're looking for new chemiluminescent compounds all the time," says Tom Brotcke, marketing manager, detection systems for Pierce Chemical Co. Brotcke and his colleagues also concede that chemiluminescent imaging can be a difficult process. And assays that require chemiluminescence need enzymes to catalyze the generation of light.

Not surprisingly, says Brotcke, "the two technologies both compete against and complement each other." Choosing between the two techniques "largely comes down to a question of signal to noise," says Keith Wood, program director for biomolecular imaging and reporters at Promega Corporation. "Fluorescence is generally much brighter, but it's not more sensitive because it has a lot of background light from various sources."

The Essence of Chemiluminescence

In a typical chemiluminescent reaction, the key chemical reagent contains substantial stored energy that can be released as light. The chemical reagent is stable until an enzyme acts on it. The enzyme catalyzes the ultimate degradation of the chemical, accompanied by the emission of light. That simple reaction is applied to a wide range of assays. "Chemiluminescence is coming into its own because of technological improvements that have led to orders of magnitude better sensitivity," says Brotcke.

Tropix, for example, has evolved from its pioneering substrates to its current high-throughput screening assays and systems. "We have a panel of assays that we have developed and we are continuing to introduce new products for screening-type detections," says Groves. The assays are based on chemiluminescent dioxetanes, and are appropriate for reporter gene assays, second messenger detection, immunoassays, or nucleic acid detection assays.

Recent offerings from Tropix include the NorthStar high-throughput screening workstation, which permits high throughput for microplates. The company has also developed a cyclic AMP heterogeneous assay for drug screening in laboratories with automated equipment. It works on systems containing up to 1536 wells. "We are also working actively on G-protein coupled receptor detection," adds Groves. "In the near future we will be bringing out detectors for both agonists and antagonists on the NorthStar platform. This technology will be available for orphan detection, in cases where scientists don't know what the ligand is."

Pierce Chemical, meanwhile, has developed an extensive line of chemiluminescent reagents and kits for protein detection in several formats. "Our product line is based on informatic reactions; horseradish peroxidea is our specialty," explains Brotcke. "We deal in western, northern, and southern blotting, and solution phase assays. Our signal systems for western blotting contain

continued ➢

the most sensitive chemiluminescent substance on the market today. They work in the femtogram range. Our first formulation came out in 1995, and the most recent last year."

From in Vitro to in Vivo

Bioluminescence is a facet of chemiluminescence in which living organisms create their own light when an enzyme acts on a chemical substrate. While a chemiluminescent system must be assayed *in vitro*, bioluminescent systems can be assayed *in vivo*. That gives the systems a valuable utility in studying gene expression. "The value of this application has grown considerably over the past decade as the traditional use of reporter genes has broadened to cover wide-ranging aspects of cell physiology," says Wood, whose company has aggressively pursued the market for bioluminescent assays.

The preeminent bioluminescent system is the simple, robust enzyme Luciferase. The Luciferase reaction shows both extreme sensitivity and a remarkably linear dynamic range over eight orders of magnitude. "It also avoids even the small background common to chemiluminescent reactions," explains Wood, "because the reaction is a two-step process. When the enzyme is not present, there's no detectable luminescence. That means very high sensitivity."

Promega uses two forms of Luciferase: the best-known version from fireflies, and another from Renilla, a jellyfish-like marine creature. "We've combined firefly with Renilla Luciferase in a single assay," says Wood. "In reporter gene measurements, it's common to include a second reporter gene for internal control. To do the first reaction, we add firefly substrate to the extract, which causes luminescence. Then we add a second reagent that quenches the firefly reaction and stimulates the Renilla reaction."

Luciferase has grown in popularity owing to its ability to make measurements very fast. "It's not a difficult task to measure over 100,000 assays per day using the enzyme," says Wood. Now, Promega is aiming at academic research teams, which carry out perhaps a few thousand assays daily. "We'll soon introduce a luminometer at a cost of less than $10,000," says Wood. "It can read a 96-well plate in about three minutes." The company is also near completion of a new technology that uses different colors of bioluminescence for signal multiplexing."

Fundamentals of Fluorescence

Whatever the attractions of chemiluminescent and bioluminescent systems, fluorescence has established itself as the major luminescent system for detection and labeling. That stems in part from its greater light-generating capacity. "Chemiluminescence is a one-shot effect," says Johnson. "Fluorescence is a regenerative process that can be fed by laser as long as the sample can stand it. Imaging of molecular targets present at a few thousand copies per cell is much easier to implement when you have a lot of signal per larger molecule." Fluores-

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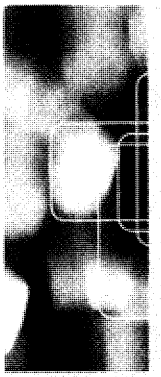

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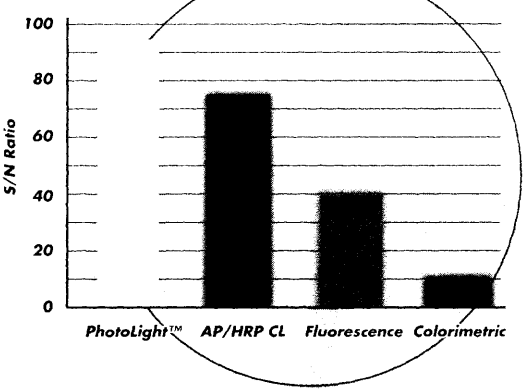

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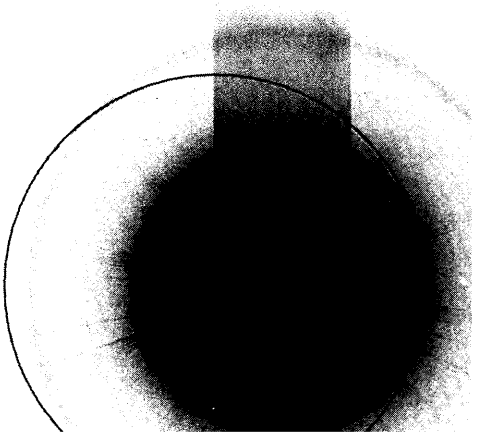

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Strengths and Weaknesses of Fluorescence and Chemiluminescence Detection

	Fluorescence	Chemiluminescence
Photon output	High	Relatively low
Background	Variable[2]	Invariably low
Photodamage	Variable[3]	None
Multicolor detection[4]	Many options	Limited options
Imaging	Routine	Difficult

[1] Includes purely chemical and protein-mediated (bioluminescence) processes.
[2] Depends on excitation wavelength and sample composition.
[3] Depends on excitation wavelength and light source intensity.
[4] Capacity for simultaneous monitoring of multiple targets.

Note: Chemiluminescence also shows greater assay sensitivity and assay linearity. *Courtesy Iain Johnson, Molecular Probes*

cence's ability to multiplex also makes it the technology of choice in several situations. "The technology keeps changing as we get better and better fluorescent molecules," points out Ralph Sinabaldi, vice president of scientific affairs at Operon Technologies.

A leader in the creation of fundamental fluorescence chemistries, Molecular Probes aims to serve a wide range of applications in cell biology, neuroscience, molecular biology, and biochemistry. Thus, the company has a large research staff, with about 40 Ph.D.s among its 165 employees. "In some ways, we are leading the market by doing R&D," remarks Johnson. "We look at the general field of biological detection and look where the benefits of fluorescence can be applied." As an example, Johnson points to protein stains. "The current gold-standard technique is either a silver stain or coomassie blue," he says. "We've developed a fluorescence stain for the same purpose, more sensitive than the coomassie blue and easier to implement than the silver-stain process."

Several other companies have developed their own twists on conventional fluorescence technology. CLONTECH Laboratories, Inc., for example, offers "biofluorescent" reagent systems, based on green fluorescent protein from the jellyfish *Aequorea victoria*. "Our fluorescent proteins express your proteins which permits you to identify cells that express your protein. Thus, you can identify cells in a population," says marketing development manager Nicola Zahl. "We've changed the spectral properties of *Aequorea* to give cyan, blue, and yellow, in addition to green. That permits some multiplexing." The company has also launched a red fluorescent protein, isolated in collaboration with the Russian Academy of Sciences, for work with transgenic animals.

An Array of New Technologies

Genisphere, Inc. has created what may become the standard in fluorescent labeling systems for a rapidly emerging field. "We're focusing almost entirely on fluorescence detection in microarrays," says general manager Ari Zak. "We offer multianylate capability. And with appropriate controls in place, you can get a pretty quantified answer." Last month, the company announced a new technology that produces low-expression messages with an extraordinarily small amount of sample — 1/4 to 1 microgram, in contrast to the usual 25 to 100 micrograms. "The product has a very easy and reliable one-day protocol," says Zak. "You start in the morning and get the result in the evening. It's useful for a large number of experiments using limited human tissue samples."

Operon Technologies is also working on microarrays. "We haven't been packing a detection system with our arrays because the technology has changed too quickly," says Sinabaldi. "But we are looking at detection arrays. We'll decide whether to market them some time within the next two months." Operon also specializes in molecular beacons. These are fluorescently labeled oligonucleotides folded in such a way as to quench the fluorescent state. The arrival of a complementary nucleic acid unfolds the oligonucleotide and causes it to fluoresce.

Another emerging technology, launched in January by Swedish company Pyrosequencing, involves a different type of luminescence. A mixture of four enzymes (DNA polymerase, Luciferase, sulfurylase, and apyrase) and a substrate are added to a DNA template with primer annealed, followed by nucleotides added one at a time. The addition of a nucleotide to the growing strand releases a pyrophosphate, which is converted to ATP by the sulfurylase. The Luciferase then acts on the ATP, emitting a flash of light. "The light is detected with a charge-coupled device camera," says Helena Nilshans, Pyrosequencing's product manager. "We do sequencing in real time."

A consistent theme of fluorescent technologies is their adaptability to users' needs in both industry and academe. Packard Instrument Company's Alpha technology, a bead-based system designed for ultra-high throughput screening, "has both types of customer," says product manager Keith Osiewicz. "Customers can do assay development in a very comfortable 96-well situation, and go up to 384- or 1,536-well without reoptimizing."

What is the true value of luminescent technologies? "We're using cells essentially as biosensors to tell us what the functions of genes might be," says Paul Negulescu, vice president of cell biology for Aurora Biosciences. "The technology has a real application in genomics as we move beyond high-throughput screening and toward high-throughput biology." ■

Peter Gwynne is a freelance science writer based on Cape Cod, Massachusetts. Guy Page is managing director of Ferguson Forth Page, a consulting firm in Madison, Wisconsin.

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The Division of Human Genetics within the Department of Genetics at Washington University School of Medicine invites applications for tenure-track positions at the **ASSISTANT PROFESSOR** level. The successful applicants will develop research programs in human genetics and participate in human genetics teaching. Candidates should have a Ph.D. or M.D. degree, relevant postdoctoral experience, a strong academic record, and commitment to a career in basic research within the highly collaborative environment at the School of Medicine. Competitive start-up packages are available. Applicants should send curriculum vitae, statement of research plans, and names of three references to: **Mary Akin, Washington University, Department of Genetics, 4566 Scott Avenue, St. Louis, MO 63110.** *Washington University School of Medicine is an Affirmative Action/Equal Opportunity Employer.*

JUNIOR STAFF or **POSTDOCTORAL POSITION** in tumor physiology/biology funded by an NIH program project in the area of photodynamic therapy (PDT). Training in radiation biology, biophysics, tumor biology, or PDT would be very useful in the position. Experience with *in vivo/in vitro* tumor model systems is essential. The successful applicant will continue investigations on the relationship between *in vivo* physiological parameters such as oxygen and measured *in vitro* cytotoxicity. The Research Department of HealthONE Alliance has a free-standing, well-equipped laboratory located in the city of Denver, Colorado. *U.S. citizenship or permanent resident status is preferred.* Please send curriculum vitae and the names and contact information for three references to: **Fred W. Hetzel, Ph.D., J.D., Vice President, HealthONE Alliance, 1850 High Street, Denver, CO 80218. E-mail: fhetzel@health1.org.**

POSITIONS OPEN

ASSISTANT PROFESSOR

The Department of Microbiology and Cell Science at the University of Florida invites applications and nominations for a 12-month tenure-track position as Assistant Professor to develop an independent research program in eukaryotic molecular genetics. Applicants should have a Ph.D., postdoctoral experience, and a strong publication record in an area related to molecular and cell biology, biochemistry, and/or microbiology, with research expertise in the molecular genetics of lower eukaryotes. Individuals with an interest in the application of bioinformatics or expression profiling to fundamental research related to gene function and/or structural biology are particularly encouraged to apply. Regardless of the research area, we are seeking applicants with a demonstrated record of outstanding research. The successful candidate is expected to develop a research program supported with extramural funding, to be an active and innovative instructor of undergraduate and graduate students in molecular and cell biology courses, and to supervise Ph.D. candidates. Interested individuals may send nominations or curriculum vitae, description of research interests, and names of five references to: **James F. Preston, Professor, Department of Microbiology and Cell Science, P.O. Box 110700, University of Florida, Institute of Food and Agricultural Sciences, Gainesville, FL 32611-0700. E-mail: jpreston@ufl.edu; Telephone: 352-392-5923.** Application deadline is July 15, 2000, for a position starting as soon as January 1, 2001. *The University of Florida is an Equal Opportunity/Affirmative Action Employer.*

FACULTY POSITION IN EVOLUTIONARY GENOMICS

The Ecology and Evolution Department at The University of Chicago invites applications for a faculty position (rank open) in the areas of experimental and computational genomics. This position is part of an initiative throughout the Division of Biological Sciences and the Departments of Statistics and Computer Sciences to establish an interdisciplinary research program in genomics. The successful candidate is expected to establish an internationally competitive research program that adopts genomic approaches to study problems in evolutionary and population genetics. These problems include but are not limited to speciation genetics, the genetic basis of adaptation, the study of molecular evolution in humans or other model organisms, complex trait mapping, and plant or animal disease dynamics. Candidates should send curriculum vitae, addresses of three personal references, and a research statement to: **Genomics Search Committee, Department of Ecology and Evolution, University of Chicago, 1101 East 57th Street, Chicago, IL 60637.** The position will remain open until filled; however, first review of applications will begin June 15, 2000. *Equal Employment Opportunity/Affirmative Action Employer.*

CLINICIAN/SCIENTIST

Academic **RESEARCH FACULTY POSITION** available at Columbia University in the Neurological Institute of Columbia-Presbyterian Medical Center. The Division of Pediatric Neurology and the Colleen Giblin Research Laboratories for Pediatric Neurology seek a clinician/scientist who is trained in clinical medicine and in basic research techniques to investigate genetically determined diseases that affect the developing nervous system. The applicants must have a strong background in basic research and must have completed medical school education. Demonstrated expertise in all aspects of modern neuroscientific research must be evident with a special interest in the GLUT-1 deficiency syndrome. Applicants should send curriculum vitae, a letter describing their interests and plans, and the names of three references to: **Dr. Darryl C. De Vivo, Director of Pediatric Neurology, The Neurological Institute, 710 West 168th Street, New York, NY 10032.** *Columbia University is an Equal Opportunity/Affirmative Action Employer.*

Aventis Pharmaceuticals

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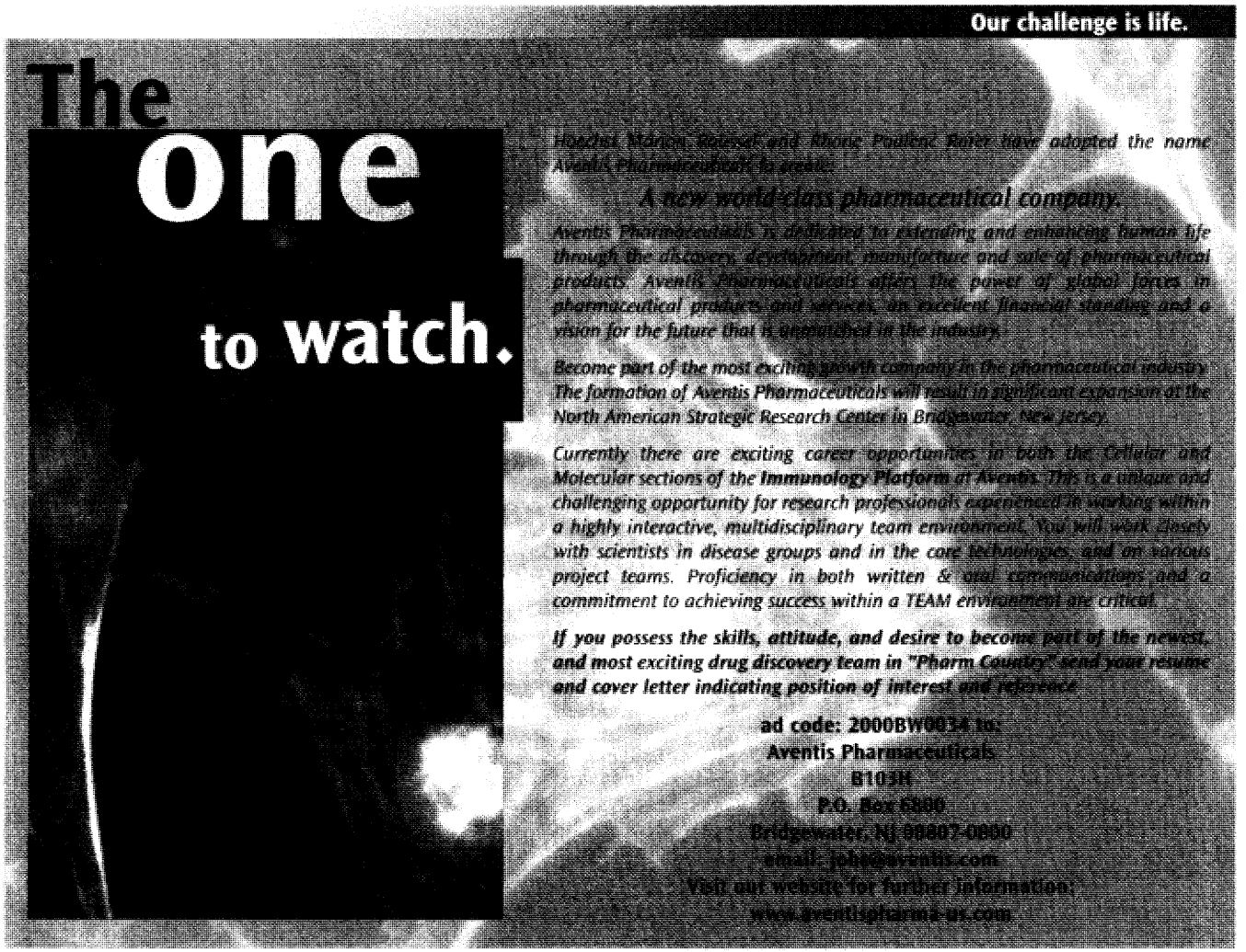

Principal Investigators - Molecular Immunology:

Multiple opportunities exist for Molecular and Cellular Immunologists to conduct research in the areas of gene-identification and target-validation for numerous immunological disorders. Your major responsibilities will include the proposal & implementation of new projects in close partnership and collaboration with the disease groups and core technologies. Successful candidates will possess a Ph.D. and 3-5 years extensive molecular and cellular biology expertise working in the areas of immunology and inflammation. These should include highly developed skills in various state-of-the-art technologies, including: gene-identification (gene-chip technologies, subtracted libraries, etc.) and gene-validation strategies (antisense, ribozyme approaches, construction of viral expression & transgenic expression DNA constructs). Experience in gene database searching is required. Also required is a strong knowledge of Cell Biology and signal transduction pathways in immune-competent cells.

Ph.D. Bioinformatician:

You will be responsible for setting up automated genomic database searches for high throughput DNA sequences, from subtracted libraries and various gene-expression profiling experiments. Within the department you will be responsible for effective database mining, and for the bioinformatics support of research activities in the Immunology Platform. Additionally, you will be the liaison between Immunology, the central bioinformatics group, and the IT group.

Molecular or Cellular Biologists:

Multiple opportunities exist for Molecular & Cellular Biologists having proven strength in either molecular or cellular biological techniques, and database searching skills. At Aventis, your expertise will help form the foundations of the Immunology project teams that will uncover the secrets of immunological disorders. If you've been looking for a chance to be of critical importance to a drug discovery team, have a BS or MS degree in the biological sciences with at least 5 years industrial or academic experience, this opportunity is the one you've waited for.

Aventis Pharmaceuticals is proud to be an equal opportunity employer committed to a diverse workforce.

MANAGEMENT POSITIONS

Brookhaven National Laboratory, a contractor for the U.S. Department of Energy (DOE), carries out basic and applied research in materials science, high energy and nuclear physics, life sciences, energy sciences and technology, environmental science, and national security. The Energy, Environment and National Security Directorate of Brookhaven National Laboratory seeks to fill the following three positions:

Chair, Energy Science and Technology Department

The ES&T Department consists of approximately 150 people carrying out research and development in materials and chemical science, energy efficiency and renewable energy, clean fuels and nuclear energy. The total budget is more than $50 million.

We seek an experienced and articulate leader who as Department Chair and the Laboratory's principal spokesperson on energy issues will further Brookhaven's historic commitment to high quality science and engineering. He/She will also have line responsibility for safety and environmental protection. Placing this function in a separate Department underscores the Laboratory's commitment to playing a larger role in DOE's energy mission and the Chair will be expected to ensure that our programs are aligned with that mission. The Chair reports to the Associate Laboratory Director for Energy, Environment, and National Security Programs. Refer to position #M8241.

Chair, Environmental Sciences Department

The Department is organized into three Divisions: Earth Systems Science, Atmospheric Sciences, and Environmental Research and Technology. The Department conducts basic and applied research in climate change, water, soil and air pollution, and develops novel methods for the remediation of environmental contamination. The Department has a staff of 80, including 69 scientific and professional personnel.

Candidates for this position must have a record of technical accomplishment in one of the disciplines represented by the Department and previous experience administering a large technically diverse group. The successful candidate should have a clear vision of how they will lead the Department to the highest levels of excellence within a multidisciplinary high technology environment; establish successful working relationships with the Department of Energy, other federal, state, and private funding agencies, and strengthen industry and academic collaborations. The Chair reports to the Associate Laboratory Director for Energy, Environment and National Security, and is responsible for all administrative, budgetary, and personnel decisions within the Department. The successful candidate is expected to exhibit excellent leadership and management skills, to provide evidence of responsible fiscal management, and to possess effective communication skills. Refer to position #M8239.

Head, Environmental Research and Technology Division

This newly formed division within the Environmental Sciences Department consists of 20 staff members who conduct basic research in environmental science and develop and evaluate technologies for remediation of sediments, soils and wastes. Ongoing research and development activities include microbiology, geochemistry, biogeochemistry, microgeophysics, phytoremediation, treatment of hazardous and radioactive wastes, fate and transport of contaminants, and public policy issues.

The successful applicant must have an established career with a strong background and interest in the application of synchrotron radiation to environmental research, a distinguished publication record, and a demonstrated history of funding from federal agencies. This position requires the oral/written communication and interpersonal skills to work effectively with a diverse group of scientists. Demonstrated ability to manage an interdisciplinary group engaged in both basic and applied research, and to integrate these R&D activities into realistic solutions for environmental problems are essential. Refer to position #M8242.

BNL is managed by Brookhaven Science Associates. Applications/nominations should be sent, indicating specific position #, to: Patricia Fox, Building 179A, Brookhaven National Laboratory, P.O. Box 5000, Upton, NY 11973-5000 or to: fox1@bnl.gov. We welcome diversity and encourage applications from all qualified individuals.

BROOKHAVEN
NATIONAL LABORATORY

www.bnl.gov

CHAIR – DEPARTMENT OF CELL AND DEVELOPMENTAL BIOLOGY

SEARCH OPENED

The SUNY Upstate Medical University invites nominations and applications for the position of Chair of the Department of Cell and Developmental Biology. We seek candidates with a nationally recognized, well-funded research program in the general areas of cell and/or developmental biology that complement the major research strengths of our University, along with exceptional leadership skills and the ability to recruit and develop an outstanding faculty. In addition, the candidate should have a record of accomplishment in teaching and administrative service in a medical school environment.

The department has institutional teaching responsibilities in the anatomical, cellular and neural sciences. In addition to offering a Ph.D. program in Cell and Developmental Biology it contributes to two interdisciplinary Ph.D. programs. The University is committed to adding a number of state-funded tenure-track faculty positions with generous start-up packages and laboratory space. This position represents an excellent opportunity to build a thriving department dedicated to excellence in research and education.

Please submit a curriculum vitae and the names of four references to Dr. Jose Jalife, Chairman, Search Committee, c/o Office of the Provost, SUNY Upstate Medical University, 750 East Adams Street, Syracuse, NY 13210. E-mail address is jalifej@mail.upstate.edu and the Upstate campus web site is http://www.upstate.edu.

Review of applications will begin immediately and will continue until the position is filled.

State University of New York
Upstate Medical University
Formerly known as SUNY Health Science Center

SUNY Upstate Medical University is an AA/EEO/ADA employer, committed to excellence through diversity.

UNIVERSITY OF VERMONT
ASSISTANT/ASSOCIATE/ FULL PROFESSORS EUKARYOTIC GENETICIST/ DEVELOPMENTAL GENETICIST

The Department of Microbiology and Molecular Genetics invites applications for two tenure-track faculty positions. We are soliciting applicants who have demonstrated superior productivity in the area of eukaryotic genetics. Potential research areas include genetic/genomic approaches to the study of development and/or human disease using model systems such as mice, nematodes, or fungi and/or human tissues/cells/cell lines. Opportunities for collaborative research exist both within and outside the Department in somatic cell genetics and biology, signal transduction, cell-cycle control, pathogenesis, protein-nucleic acid interactions, and structural biology. Candidates must hold a doctoral degree, have had postdoctoral research experience, and will be expected to establish a vigorous, independent research program as well as contribute to the Department's teaching responsibilities. Details about the Department and the University may be accessed at http://salus.med.uvm.edu/mmg/mmg.html. Applicants should submit a curriculum vitae, a description of research interests, and have three letters of reference sent to: **Dr. Douglas I. Johnson, Search Committee Chair, Department of Microbiology and Molecular Genetics, Stafford Hall, University of Vermont, Burlington, VT 05405.** Review of applications will begin immediately and continue until the positions are filled.

The University of Vermont is an equal opportunity, affirmative action employer. Women and minorities are encouraged to apply.

Subsurface Science Initiative

The Idaho National Engineering and Environmental Laboratory (INEEL), located in beautiful southeast Idaho, is a multi-program Department of Energy National Laboratory performing basic and applied research and technology development in support of DOE's Environmental Restoration, Waste Management, and Nuclear Energy missions. The INEEL has established a major initiative in Subsurface Science research and development to evaluate and understand fundamental biogeochemical and transport processes occurring in heterogeneous subsurface environments. We are currently seeking qualified candidates for the following positions:

Subsurface Science Initiative Director

As a Science Fellow at the laboratory, candidates will expand the laboratory's current scientific capabilities into an internationally recognized center for conducting subsurface environmental science.

The successful candidate must hold a Ph.D. in an environmental science discipline, an extensive track record in developing/managing significant research programs related to subsurface science, including geology, geophysics, hydrogeology, vadose zone geology, geochemistry, or subsurface microbiology. In addition, qualified applicants must have a distinguished record of scientific publications, aptitude for administration of an integrated research program, demonstrated leadership/organizational skills, and the ability to facilitate research with organizations outside of the INEEL.

Discipline Specific Technical Leaders

The INEEL is also seeking nationally or internationally recognized experts in several core scientific disciplines. Successful candidates will have wide latitude in developing research programs, and must hold a Ph.D., have 13 years of directly relevant experience, have an extensive peer-reviewed publication record, and have demonstrated success in securing external funding through peer reviewed competition. Technical Leaders are being sought for the following core scientific disciplines:

Geosciences

The Geosciences research objective is to understand/quantify, at the field scale, transformation rates in the subsurface. This includes research at multiple scales of investigation, including micro-scale, meso-scale, and field-scale.

Qualified applicants must hold a Ph.D. in Hydrology (with emphasis in vadose processes), Soil Physics or Geochemistry, and extensive experience in research dealing with physico-chemical processes in the vadose zone, with particular emphasis on understanding water and contaminant movement.

Biological Sciences

This position will focus on the interactions between microbes, surface minerals and contaminants, including development of in-situ molecular biology approaches to evaluate organisms in the subsurface, their metabolic capabilities, and their rates of metabolism. In addition, this research component will require the development of instrumentation/analytical capabilities to assess chemical signatures of microbial transformations.

The successful candidate must hold a Ph.D. in Microbial Ecology, Microbial Physiology, Geomicrobiology, Biogeochemistry, or a closely related field, and extensive research experience with microbial processes under natural conditions.

Modeling

This position will develop analytical (mathematical) expressions for coupled processes that are being investigated in the subsurface, using finite element code development to utilize the mathematical models, and implementation of parallel processing of the mathematical models and codes.

Qualified applicants must hold a Ph.D. in Computational Hydrology, Geostatistics, Stochastic Hydrology, or a closely related field, as well as extensive research experience with scaling issues associated with subsurface processes. Knowledge of the development of analytical expressions, finite code development, and parallel code development are a must, as well as experience working in soil or geologic systems and an understanding of biologic interactions with geochemistry and fluid dynamics.

Chemistry

This position will focus on the mechanisms of accumulation of inorganic species on mineral surfaces, particularly surface reactions of fission product and actinide ions, colloids, and particles on silicate surfaces similar to those found in the vadose zone.

The successful candidate must hold a Ph.D. in Geochemistry or a related branch of chemistry and extensive research experience on the chemistry of mineral processes.

Physics

This position will focus on the characterization challenges associated with multiple scales of investigation that will complement traditional field-based geoscience and laboratory-based biochemistry investigations. Characterization technology development needs range from subsurface fluid flow to interfacial biochemistry.

Qualified applicants must hold a Ph.D. in Physics, Geology, Chemistry, or Engineering and experience working with subsurface environments.

Please send your Curriculum Vitae, along with a cover letter (detailing your scientific, administrative, and leadership qualifications), before May 31, 2000, to:

Idaho National Engineering and Environmental Laboratory
C/O Melinda Hamilton
P.O. Box 1625
Idaho Falls, ID 83415-2203

INEEL

Idaho National Engineering & Environmental Laboratory

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Lilly is a premier biotechnology company and a world leader in the production of therapeutic proteins. Our division of Research Technologies and Proteins is leading the way in the race to identify novel drug targets and develop therapeutic protein solutions. Currently, our group has an opening in the following area:

Mammalian Cell Molecular and Cell Biology Post Doctoral Position

The Bioprocess Fermentation Development Division is seeking a scientist with a recently granted Ph.D. in molecular and cellular biology, biochemistry, biotechnology, or related science. The suggested candidate will have experience in mammalian cell culture, preferably with a demonstrated ability to specifically manipulate the genetic properties of cells. The major portion of the program will adopt and develop improved cutting edge methods for site directed modifications of the genomic DNA and incorporation of multiple genes into the genome. Site directed modifications could selectively integrate genes at preferred locations in the genome to add new phenotypes, modify the properties of a gene, or knockout a gene that imparts an undesirable phenotype. New host cell lines will be developed to facilitate faster construction of production cell lines, higher biosynthesis rates for targeted proteins, better predictability of genetic manipulations, and defined post-translational modifications of targeted proteins. Candidates should exhibit teamwork skills and the ability to train co-workers in the new methods as they are developed. Reference **Source Code: ADSCMPD07** on all correspondence.

For confidential consideration, please submit your resume through our website at ***www.lilly.com*** *or send your resume to:*
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DC 1818, Indianapolis, IN 46285. *We are an equal opportunity employer making a difference through our commitment to diversity.*

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Cancer Center Director

Dartmouth Medical School and Dartmouth-Hitchcock Medical Center seek a Director for the Norris Cotton Cancer Center, an NCI-designated Comprehensive Cancer Center. Outstanding candidates having M.D. and/or Ph.D. degree(s) with scientific and clinical expertise are encouraged to apply. Essential qualifications are a strong record of clinical, research and administrative accomplishments in cancer-related areas. The Director works collaboratively with students, staff, faculty and the several communities of the Dartmouth-Hitchcock system to build on existing excellence in the teaching, research, and clinical programs of the Cancer Center. The Director oversees Dartmouth's Cancer Center Core Grant and an evolving strategic plan in prevention, screening and cancer care provided in the extensive region served by the Cancer Center. Letters of application should include a curriculum vitae with a summary of relevant research, clinical and administrative experiences and the names of at least three references. Send letters of application to:

Cancer Center Director Search Committee
c/o K.C. Waterman,
Dartmouth Medical School Administration,
One Rope Ferry Road,
Hanover, NH 03755.

Dartmouth, an equal opportunity/affirmative action employer, strongly encourages applications from women and minority candidates.

ADVANCING THE POWER of Science.

Vertex Pharmaceuticals Incorporated is engaged in the discovery, development and commercialization of novel, small molecule pharmaceuticals for the treatment of diseases for which there are currently limited or no effective treatments. The Company is a leader in the use of structure-based drug design, an approach to drug discovery that integrates advanced biology, biophysics, chemistry and information technologies. The Company is concentrating on the discovery and development of drugs for the treatment of viral diseases, cancer, autoimmune and inflammatory diseases, and neurodegenerative diseases.

INVESTIGATOR, MOLECULAR MODELING

We are seeking an individual who will be responsible for modeling of inhibitor/enzyme complexes; molecular structure database searches; creative idea generation for novel inhibitor scaffolds; diversity analysis for chemical libraries; extensive interaction with both medicinal and combinatorial chemistry groups; extensive interaction with methods development modelers; and involvement in the generation of patents.

Successful candidates will have a Ph.D. in Chemistry and 0-5 years industrial experience. Good knowledge of organic synthesis and medicinal chemistry principles, extensive interaction with structural biologists, and 1-2 years modeling experience is required.

Please submit cover letter and resume on-line (preferred method) to: www.vpharm.com, or to: Human Resources, Vertex Pharmaceuticals, Job Code: 400-3, 130 Waverly Street, Cambridge, MA 02139; Fax: (617) 577-6645. Scannable resumes should be forwarded on plain white bond paper, using standard types and fonts, and no bold or italic print.

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ars Agricultural Research Service

U.S. Department of Agriculture (USDA) Agricultural Research Service (ARS) Research Leader GS-14/15

The Pasture Systems & Watershed Management Research Unit, housed at Pennsylvania State University, has a challenging position for a **Supervisory Soil Scientist, Hydrologist, or Research Agronomist**. This individual will serve as Research Leader of the Unit, and be responsible for leading and participating with a team of 11 Research Scientists in the development and execution of a broad research program to identify, quantify, predict, and manage the interactions among physical, chemical, and biological mechanisms that control grazing land and crop production. This research will determine the impact of grazing and cropping uses, including management of animal manures, on nutrient and chemical losses to surface runoff and groundwater recharge; will develop methods to enhance off-site controls, both natural and constructed, for removing nutrients from agricultural drainage waters; and will develop and test dairy systems that are economically and environmentally sustainable. Candidates must have appropriate knowledge of soil science, environmental chemistry, agronomy, hydrology, geology, biology, ecology, and mathematics; ability to conduct research which characterizes and predicts the interaction among physical, chemical, and biological mechanisms of land, water, and plant management systems; and skill in developing such systems. **U.S. citizenship is required.** Salary commensurate with qualifications, $70,457 to $107,738 p/a. For information about the position contact Dr. Frank Greene at 215-233-6668 or at fgreene@naa.ars.usda.gov. For application, call Ms. Mary Ann Byrne at 215-233-6571. Visit the ARS Vacancy Web Site: www.ars.usda.gov/afm/hrd/resjobs. **Applications must be marked ARS-X0E-0160, completed and postmarked by May 31, 2000.**

USDA/ARS is an Equal Opportunity Employer. Women and minorities are encouraged to apply.

Science That Impacts Lives

Is Bound To Change Your Own

While many companies promise products or careers that "make a difference," Amgen truly delivers. We're the company that develops world-renowned biopharmaceutical products that positively impact lives. If you are driven, enjoy new experiences and want to be part of something that touches and improves how people feel and live, we invite you to explore our diverse opportunities at Amgen's facilities in the **Boulder & Longmont, Colorado** area. From our leading-edge research to the latest in complex drug manufacturing techniques, at Amgen you're sure to find an environment that inspires you and challenges you to reach your fullest potential. Currently, we seek qualified candidates for the following positions:

AMGEN

Quality Analytical Laboratories Associates - Microbiology

Perform routine procedures in support of the various microbiological programs. Procedures include: Microbial identifications using various ID systems such as VITEK, GC, and API. Also responsible for promotion of media in support of the microbial monitoring, in-process testing, and ID programs. Qualification of components and reagents necessary for the ID systems and qualification and maintenance of quality control organisms, as well as maintenance of microbial isolates. Perform in-process tests, including Contamination Assay, Genotypic Verification Assay, and Plasmid Retention Assay associated with manufacturing of products. Perform testing of biological indicators in support of validation protocols. Requirements include: a Bachelor's degree in Life Sciences or the equivalent combination of education and experience with 1-5 years of related laboratory experience in a cGMP environment. Previous experience using aseptic technique and familiarity with microbial identification systems are preferred. The ability to follow written procedures,perform routine identification tasks, and operate general laboratory equipment. Candidate shall also have excellent communication (oral and written) and computer skills.

Quality Analytical Laboratories Supervisor, Immunochemistry

Supervise the Quality Analytical Laboratories Immunochemistry group and perform sample testing. This group is responsible for testing product and biological samples by enzyme immunoassay and radioimmunoassay following cGMP and GLP regulations in support of the Clinical, Manufacturing and Process Development groups. Requirements include: a Bachelor's degree in Life Sciences, Biochemistry, Chemistry or a related field and a strong knowledge of immunochemistry with 6-10 years of related laboratory experience including experience in a GMP or GLP regulated environment. Previous supervisory experience in a GMP setting, with proven ability to effectively lead and aid in the development of people, including effective coaching and counseling of direct reports. Experience in EIA and or RIA performance, troubleshooting, and development, maintenance of clear and precise laboratory records and excellent laboratory skills (including pipetting) are required. Experience in immunoassay validation, contact with regulatory agencies during inspections and use of multiple data transformation software programs for data analysis are preferred.

Quality Analytical Laboratories Supervisor, Biochemistry

Provide supervision and technical expertise for a highly motivated work group that performs LAL; SDS-PAGE Silver, Coomassie and Western; IEF Silver, Coomassie, Western, Bradford and DNA testing in support of Commercial and Clinical manufacturing and Clinical Stability efforts while employing cGMPs and maintaining accurate records. Assure GMP compliance through proper documentation, instrument standardization/ calibration, SOPs, and analytical method review. Contribute by participating with on-call or overtime work schedules in order to meet the needs of team, department, site and company goals. Candidate may speak for and represent a functional work group during Regulatory inspections. Requirements include: a Bachelor's degree and 6 or more years of laboratory experience and technical expertise in a least three of the above mentioned techniques. At least 3 years of previous supervisory experience is preferred.

Amgen professionals enjoy a highly competitive salary and a benefits package that includes bonus and stock purchase plans, and generous paid vacation time. To be considered for our opportunities, please email your resume to: **co.resumes@amgen.com (indicating position of interest - #606 as the subject)** or mail your resume to: **Amgen, Human Resources, Position Title of interest -#606, AC-4C, 4000 Nelson Road, Longmont, CO 80503.** Please visit our Website at **www.amgen.com** for information on our products and other career opportunities. Principals only please.

EOE/AA Employer M/F/D/V

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Science Serving Society

Bioscience Division
"Innovation for Health and Security"

The Bioscience Division of Los Alamos National Laboratory seeks a Deputy Director to share in the responsibility with the Division Director for the scientific leadership and management of the Division, serving the Nation's needs in health and national security, nonproliferation, energy and the environment. Bioscience Division fosters research at the interface of biology, chemistry, physics, and computational biology to create and discover frontier science and technology that benefits public health, the environment and national security. The Division provides a multidisciplinary mix of science capabilities that include biologically inspired materials and chemistry, computational biology, environmental biology, genomics, measurement science and diagnostics, medical applications, molecular cell biology, molecular synthesis and structural biology. These capabilities are focused in the strategic thrust areas of bio-threat reduction, functional genomics, structural genomics, complex biosystems modeling, natural and engineered biochemical diversity, and biomedical technology. The Center for Human Genome Studies also resides in Bioscience Division. Bioscience Division operates in a strong team environment. As a member of the Division's Science Leadership Team, the Deputy's responsibilities include providing scientific leadership, and maintaining high standards for the quality of scientific pursuits. As a member of the Division's Management Team, the Deputy's responsibilities include ensuring good business practices.

Required Skills, Knowledge, Abilities: Demonstrated leadership and management of a research-oriented organization to include planning and program development; management of resources; promoting successful interactions within and outside the organization; encouragement of innovation and risk-taking; and the effective resolution of conflicts. Record of scientific accomplishment in an area of research relevant to the Division, as evidenced by an outstanding publication record and/or demonstrable national or international reputation. Experience in attracting and retaining outstanding personnel. Effective verbal and written communication skills. Record of success in personnel leadership as demonstrated in formally directing, monitoring and mentoring the performance of others. Ability to obtain a DOE "Q" clearance, which usually requires US citizenship.

Education, Training, or Licensing: Ph.D. in a field of physical or biological science or an equivalent combination of education and experience in related areas relevant to the mission of the Division.

DEADLINE FOR SUBMITTING APPLICATIONS - JUNE 30, 2000

To apply, submit a comprehensive resume and cover letter that addresses the specific required and desired criteria, referencing "Science005755", to the Resume Service Center, P.O. Box 1663, MS P286, Los Alamos, NM 87545.

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www.lanl.gov/jobs

The Salk Institute

MOLECULAR BIOLOGIST

The Salk Institute is seeking an outstanding molecular biologist at the level of assistant, associate, or full professor who will complement existing strengths in the molecular genetics and biochemistry of chromatin and nuclear structure, especially as these relate to cellular differentiation, stem cell biology, or cancer. We are particularly interested in the scientists whose research is focused on understanding regulatory mechanisms. The candidate should have a strong record of research accomplishment and be able to develop an independent research program. Applicants must be legally employable in the United States.

Qualified candidates should submit a curriculum vitae, a summary of current and proposed research programs, and arrange for 3 letters of recommendation to be sent to:

Chair, Regulatory Biology/Labortory of Genetics Search Committee
Salk Institute for Biological Studies
10010 North Torrey Pines Road
La Jolla, CA 92037

The Salk Institute is an Equal Opportunity Employer.

www.salk.edu

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mayo

Postdoctoral Positions at Mayo Clinic

The Ultrasound Research Laboratory at Mayo Clinic in Rochester, Minnesota, has immediate openings for two postdoctoral research fellows or research associates. The first position requires someone with a Ph.D. in Mechanical Engineering or Materials with a solid knowledge of acoustics and vibration. The person should have a strong theoretical background along with experimental skills. The project involves investigating new imaging methods called vibroacoustography and vibrography (*Science* 280:82-85, April 3, 1998).

The second position requires someone with a Ph.D. in Electrical Engineering or Optics with knowledge of interferometry and signal processing along with some acquaintance with tomography if possible. This person should be able to conduct schlierien-like experiments and analyze resulting data. The project involves investigating new quantitative optical methods for measuring ultrasound signals in water with high spatial and temporal resolution.

Both positions are supported by R01 grants from the National Institutes of Health.

Rochester is a small city of 70,000 in the southeastern region of Minnesota. The Mayo Clinic is the largest private medical institution in the world with annual income of over $2.5 billion.

James F. Greenleaf, Ph.D.
Basic Ultrasound Research Laboratory
Department of Physiology and Biophysics
Mayo Clinic and Foundation
Rochester, MN 55905

Phone: (507) 284-8496
Fax: (507) 266-0361
E-mail: jfg@mayo.edu

http://www.mayo.edu/ultrasound/ultrasound.html

Mayo Foundation is an affirmative action and equal opportunity employer and educator.

UofL Birth Defects Center

RESEARCH ASSOCIATE GENE EXPRESSION

Applications are invited for available positions to investigate gene expression during development. Successful candidates will join a research team active in the investigation of: growth factor/cytokine signaling mechanisms, regulation of gene expression during embryonic development, and molecular genetic causes of birth defects. Postdoctoral training and a strong background in molecular, cellular and/or developmental biology required. Full faculty benefits included. Applicants should submit (1) curriculum vitae, (2) statement of current research activities and (3) names of three references to: **Dr. Robert M. Greene, Department of Molecular, Cellular and Craniofacial Biology, ULSD, 501 S. Preston St., Univ. of Louisville Health Sciences Center, Louisville, KY 40292.**

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

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Purdue BioPharma L.P. is a research-oriented biopharmaceutical company which seeks to benefit patients by providing new treatments for cancer, infectious diseases and disorders of the immune system. As the Discovery Research arm of a growing and successful international Pharmaceutical organization, we are seeking highly motivated professionals to support our expansion in the Princeton, New Jersey area. Many exciting opportunities exist within our Biopharmaceutical and Small Molecule groups.

Director
Biologics Research

Position requires a Ph.D. in Immunology, Cell Biology, or related field with at least 10 years' professional experience in the biotech/pharmaceutical industry – at least 5 years' of which were directly involved in the management of antibody/vaccine discovery programs. Successful candidates must have expertise and a record of achievement in developing active and/or passive immunotherapeutics and will have demonstrated the ability to develop and direct interdisciplinary research teams in both exploratory discovery research and strategic project settings. Responsibilities include managing a staff of approximately 20 Ph.D./non-Ph.D. level scientists, directing research programs, contracts and external collaborations, and participating in the identification, evaluation and recommendation of in-licensing opportunities. The position closely interacts with other R&D disciplines and will support continuing research for clinical and marketed products.

Molecular Immunologist

Successful candidate will help interface with our Immunology group. Requires a Ph.D. in Molecular Biology or related field, a minimum of 5 years' pharmaceutical experience following completion of post-doctoral work, and a strong molecular biology/immunology background. Must have a proven track record supervising Ph.D./non-Ph.D. level scientists and cloning and manipulating DNA fragments encoding antibodies. Knowledge of antibody structure and functional importance of different domains/sequences is essential, along with strong MB skills, including DNA cloning, site-directed mutagenesis, PCR, cell culture and expression of recombinant proteins in mammalian cells. An understanding of oncology and/or infectious diseases a plus.

Ph.D. Scientist
Molecular Biology

Successful candidates will have a Ph.D. in Molecular Biology or related field with 2-5 years of laboratory experience. A working knowledge of cloning techniques, PCR, automated DNA sequencing, mammalian cell culture and the expression of recombinant proteins in bacteria and mammalian cells is required. Strong computer skills are also required and familiarity with DNA sequence analysis software is a plus. Experience in immunology and or cancer biology would also be an advantage.

Bioinformatics Scientist

Position requires a Ph.D. or equivalent in Molecular Biology, Structural Biology or related field and 2+ years of relevant postdoctoral experience with bioinformatics applications and the modeling and analysis of protein structure. This position will work in close collaboration with scientists in the Molecular Biology and Molecular Modeling Groups on projects involving the identification of novel targets and the design of protein ligands for receptors. Familiarity with algorithms underlying sequence assembly and comparisons and structure/function prediction is desired, as is knowledge of public resources for biological data sets and their analysis. The candidate should also have experience modeling the 3D structure of proteins using MSI and Tripos software and familiarity with CGI/Perl programming would be an advantage.

Postdoctoral Fellow (1-2 year term)
Molecular Biology

Candidates will have a Ph.D. in Molecular Biology or related field with 0 to 2 years' postdoctoral experience. Must have a strong interest in exploring the structure/function relationships of proteins and be skilled in all aspects of molecular biology, including various mutagenesis approaches as well as the cloning, expression and purification of recombinant proteins from mammalian cells. Familiarity with antibody structure/function relationships would be an advantage.

Postdoctoral Fellow (1-2 year term)
Peptide Chemistry

Candidates will have a Ph.D. in Chemistry with a research focus on the design and synthesis of constrained peptides as well as some training in heterocyclic synthesis techniques. The applicant should be an expert with the latest synthetic techniques used to prepare complex cyclic peptides and have a high level of expertise utilizing state of the art methods for purification and analysis. A high level of insight regarding the structural consequences of certain peptide modifications and familiarity with relevant simulation tools would be an advantage.

Postdoctoral Fellow (1-2 year term)
Computational Chemistry

Candidates will have a Ph.D. in Chemistry with a research focus on computational methods in protein design. The applicant should be highly skilled with commercial software and its use for modeling peptides and proteins. Expertise in the UNIX operating system, C/Fortran programming, web-based applications and bioinformatics databases would be an advantage.

We offer competitive compensation, an attractive benefits package and opportunities for personal advancement and professional growth. For immediate consideration, qualified applicants should mail resumes to: **Associate Director, Human Resources, 201 College Road East, Princeton, NJ 08540.** Corporate standards require drug testing and background investigation. We are an equal opportunity employer committed to a diverse workplace.

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Director, Geophysical Fluid Dynamics Laboratory (GFDL)

(A Senior Executive Service Position in the Federal Government)

Office of Oceanic and Atmospheric Research
National Oceanic and Atmospheric Administration, Plainsboro, New Jersey
$119,040 - 130,200 annually • NOAA#00-06

The candidate selected for this position is responsible for the direction and administration of all Geophysical Fluid Dynamics laboratory activities and must possess the following:

1. Broad understanding of the theory and current state-of-the-art in at least three of the following disciplines (meteorology, oceanography, hydrology, physics, fluid dynamics, chemistry, applied mathematics, high-speed digital computation and experimental design and analysis).
2. High level competence sufficient to perceive complex problems in broad perspective, to coach and infuse ideas, and to participate in critical discussions and assessment of the scientific leadership of the professional staff in order to elevate and encourage sound scientific projects and eliminate weak ones, in support of NOAA's research mission.
3. Broad understanding of atmospheric research programs across the Office of Oceanic and Atmospheric Research (OAR), as well as knowledge of OAR's climate and ocean/coastal programs.
4. Ability to translate knowledge of OAR's atmospheric research programs, climate and ocean/coastal programs into policy recommendations and initiatives to better integrate programs within OAR, across NOAA, and beyond.

Please contact **301/713-0530 x106 (301/713-0973[TDD])**
(Internet address: dede.epstein@hrmo.noaa.gov) for an announcement package, including mailing instructions—referring to the announcement number -OR- you may access the entire full-text vacancy from NOAA's Executive Resources Homepage (see below). Incomplete applications will not be considered.

http://www.rdc.noaa.gov/~hrmo/er-home.htm

This vacancy will close on **June 12, 2000**

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MIT

POSTDOCTORAL FELLOW

The Harvard/MIT Division of Health Sciences and Technology has an immediate opening. Will join a team of investigators studying cardiovascular function with emphasis on the development of new diagnostic and therapeutic techniques. Other projects include investigating the adverse effects of space flight on the cardiovascular system. The principal responsibility of this person will be to conduct and supervise various ongoing research projects.

Requirements: a Ph.D. required and a strong background in biomedical engineering or biophysics. Must be self-directed and able to work effectively with others. A background in signal processing and computer programming/interfacing highly desirable.

Interested applicants should send curriculum vitae and references to: Professor Richard J. Cohen, Harvard-MIT Division of Health Sciences and Technology, MIT, Room E25-335, 45 Carleton Street, Cambridge, MA 02142. Email: rjcohen@mit.edu.

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STAFF SCIENTIST

The Samuel Lunenfeld Research Institute of Mount Sinai Hospital is seeking a principal investigator in the general area of protein function. This independent faculty-level position is part of a new initiative in Proteomics and Bioinformatics that currently includes **T. Pawson** (signal transduction), **M. Tyers** (cell cycle), **F. Sicheri** (structural biology), **C. Hogue** (bioinformatics), **J. Wrana** (TGF-ß signalling), and **D. Figeys** (proteomics). Technology available within the Institute includes a state-of-the-art mass spectrometry facility, advanced instrumentation for X-ray crystallography and other spectroscopic methods, a supercomputer cluster, DNA microarrays and a transgenic mouse facility.

The successful candidate will complement the existing strengths of the group and should have expertise in one of the following areas: mass spectrometry, protein chemistry, imaging, cytoskeleton, signal transduction, cell cycle, or proteomics of model organisms. Please send a curriculum vitae, a brief statement of future research interests, and three letters of reference to: **M. Tyers and J. Wrana, Proteomics Search Committee, Samuel Lunenfeld Research Institute, Mount Sinai Hospital, 600 University Ave., Rm. 1075, Toronto, Ontario, M5G 1X5, Canada.** In accordance with Canadian immigration requirements, this advertisement is directed at Canadian citizens and permanent residents. Applications will be considered as of June 1, 2000.

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Functional Analysis of a Human Centromere

The Division of Basic Sciences (DBS), National Cancer Institute (NCI), National Institutes of Health (NIH), is recruiting for two positions: Research Fellow and Postdoctoral. Research will be conducted in the Laboratory of Biosystems and Cancer, Structure and Function of Mammalian Centromere Section. NCI is the world's leading cancer research center. It maintains strong programs in cell biology, carcinogenesis and mutagenesis.

Research Fellow Position

The selected individual will participate in studies of organization of a human centromere. It is preferred that the individual have experience in studying chromosome cycles, cultivations and transfections of mammalian cell lines.

Candidates must hold a Ph.D. or equivalent degree. Doctoral degrees must have been awarded in a biomedical, behavioral, or related science or certified by a university as meeting all the requirements leading to such a doctorate. In addition, candidates must be either a U.S. citizen, a citizen of a treaty-allied country, or a nonresident alien with a valid work visa. Total annual compensation will range from $31,000 to $118,400.

Postdoctoral Position

The selected individual will participate in studies of organization of a human centromere using a novel approach that provides for the selective isolation of large chromosomal regions by TAR cloning (Transformation Associated Recombination) in yeast. It is preferred that the individual have experience in molecular biology and human genetics and possess a strong interest to participate in elucidating the mechanism of chromosome segregation in eukaryotic cells.

Candidates must hold a doctoral level degree (M.D. and/or Ph.D.). In addition, candidates must be either a U.S. citizen, a citizen of a treaty-allied country, or a nonresident alien with a valid work visa. Total annual compensation will range from $31,500 to $42,910.

Applicants should send a letter expressing their interest in these positions, a statement of research interests, curriculum vitae, bibliography, and the names and addresses of five individuals who can be contacted as references. Letters of reference should not be submitted by the applicant. Completed applications should be sent by June 15, 2000. This material should be sent to:

Dr. Vladimir Larionov
Structure and Function
of Mammalian Centromere Section
NIEHS, Box 12233
Research Triangle Park, NC 27709
Telephone number: (919) 541-2935
FAX: (919) 541-7593
email: larionov@niehs.nih.gov

Selection for these positions will be based solely on merit, with no discrimination for non-merit reasons such as race, color, gender, national origin, age, religion, sexual orientation, or physical or mental disability.

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For over a century, Hoffmann-La Roche has been at the forefront of pharmaceutical innovation. Today, we draw our strength from a unique synergy between traditional biomedicine and the very best advances in biotechnology and genetics. Currently, we're seeking a Principal Scientist for our Pathology Department.

PRINCIPAL SCIENTIST

Working closely with our Discovery teams, you will be responsible for providing expert technical direction and conducting a wide variety of state-of-the-art tissue examinations to provide results for the selection of lead compounds. We are looking for someone to take a leadership role within the group and to provide a strong capability in all investigative aspects of Pathology, including the introduction of new methodologies. In addition to our immunohistochemistry and ISH capabilities, we have excellent facilities for electron microscopy, image analysis and laser capture microscopy.

To qualify, you must have a sound knowledge of immunohistochemistry and molecular pathology techniques. You will also need expertise in all aspects of routine histology, the ability to produce high quality work with minimal supervision, 2+ years' related experience, strong communication and computer skills, and a Master's degree or Ph.D in a related discipline.

Hoffmann-La Roche Inc. offers competitive salaries and an outstanding benefits package that includes an on-site childcare center, a variety of employee services, and fitness center. For consideration, please send your resume with salary requirements to: **Roche Pharmaceuticals, Bldg. 123/5, 340 Kingsland Street, Nutley, NJ 07110. You may fax your resume to: (973) 235-2767 or email to: nutley.research@roche.com.** You must reference Job Code AD000962FM as subject. We appreciate your interest in Hoffmann-La Roche Inc., but can only respond to qualified candidates. We are an equal opportunity employer, fully committed to diversity in the workplace.

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TOXICOLOGIST

We are seeking a Scientist with a minimum of 5 years experience and Ph.D. or DVM with formal training in toxicology.

This individual will be responsible for the design, implementation and analysis of GLP toxicology studies to support the regulatory filings of protein-based human parenteral drugs with the FDA & EMEA. The successful candidate will be familiar with GLP, FDA & ICH guidelines for drug licensure. Certification by American Board of Toxicology (ie. DABT) & experience in placing studies with contract laboratories are assets. Experience in performing toxicological studies with biologicals is preferred. **Job Code: TOX/111**

PHARMACOLOGIST

Reporting to the VP of Clinical Development, we seek a motivated team player to direct pharmacology studies in development & research programs, generate data, and develop in vivo models & in vitro assays to evaluate efficacy of novel molecules, with a focus in protein base therapeutics. In addition, individual will supervise pharmacology group & work with research groups on late stage research projects & also through transition to development. Qualified candidate must possess Ph.D., minimum 5 years industry experience in preclinical pharmacology & strong research experience & publication record. Strong background in inflammatory diseases & immunology a plus. Excellent written & oral communication skills are also essential. **Job Code: NS/888**

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THE OHIO STATE UNIVERSITY

The Ohio State University Academic Enrichment Program in Antioxidant and Oxidative Stress in Health and Disease

Three tenure-track Assistant or Associate Professor positions.

Successful candidates will develop nationally funded innovative research programs to study problems in the following areas.

1) **Dietary antioxidants in health promotion and disease prevention:** Position located in the Department of Human Nutrition and Food Management, College of Human Ecology. Applicants should have a Ph.D. in nutritional and food sciences, biochemistry, pharmacology, toxicology or related area with postdoctoral experience.

2) **Oxidative stress in gene expression and cell signaling and the molecular mechanism of free radical mediated diseases:** Position located in the Department of Molecular and Cellular Biochemistry, College of Medicine and Public Health. Applicants should have a Ph.D. in molecular biology, biochemistry, molecular genetics or related area with a minimum of three years of postdoctoral experience.

3) **Genetic interactions with oxidative stress and interactions between nutrition and genetics in carcinogenesis:** Position located in the Division of Environmental Health Sciences, College of Medicine and Public Health. Applicants should have a Ph.D. in nutrition, molecular and cellular biology, molecular genetics or related area with postdoctoral experience.

Applications will be reviewed after June 30, 2000. Send a curriculum vitae, representative publications, a summary of past research and teaching accomplishments, a statement of future research plans, and arrange for at least 3 letters of reference to be sent to:

Dr. Tammy M. Bray
350E Campbell Hall
College of Human Ecology
1787 Neil Avenue
The Ohio State University
Columbus, OH 43210-1290

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

Announcements

Call for Papers

The Association for the Environmental Health of Soils (AEHS) and The Navy present

11th Annual West Coast Conference on Contaminated

Soils, Sediments and Water

Sessions

- Bioavailability
- Chemical Analysis
- Cleanup Standard Setting
- Contamination at Military Installations
- Environmental Forensics
- Environmental Fate and Modeling
- Heavy Metals (arsenic, lead, chromium and mercury)
- Innovative Remedial Technologies
- MTBE/Oxygenates
- Natural Attenuation
- Perchlorates
- Phytoremediation
- Regulatory Programs and Policies
- Risk Communication
- Soil Chemistry
- Sediments
- Site Assessment /Field Sampling
- And case studies on any of the above

Deadline for Submission is July 16, 2000

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Tel: 413-549-5561 • Fax: 413-549-0579
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Bristol-Myers Squibb

Bristol-Myers Squibb, a recognized leader in discovering and developing novel, cost-effective pharmaceutical therapies that improve health and quality of life, is seeking top scientific talent for our Syracuse, NY facility.

The Fermentation and Biocatalysis Development group has three challenging positions available for development scientists. This highly interdisciplinary group applies biocatalysis to the development of efficient and cost-effective synthetic routes to chiral drug intermediates and products. The successful candidates will have experience in several of the following areas: identification of enzymes capable of catalyzing stereoselective synthetic reactions, enzyme isolation and immobilization, enzymatic process development, and product isolation from fermentation or enzyme reaction mixtures.

Other requirements include a degree in Organic Chemistry, Biochemistry or a related field, a Ph.D. with 0-4 years of experience or a B.S./M.S. with a minimum of 5 years of experience. Working knowledge of spectroscopic techniques and analytical instrumentation required.

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Fellowships

Postdoctoral Fellowships

The Human Vaccine Institute at Duke University Medical Center has positions open for postdoctoral fellows to perform innovative research in the areas of lymphocyte development, immune reconstitution and pathogenesis of autoimmune diseases. Start date is September 2000.

The specific senior investigators and the areas of interest that are available for postdoctoral positions include:

Dr. Nelson Chao, Human Stem Cell Biology; Immune Reconstitution

Dr. Barton F. Haynes, HIV Vaccine Development, Immune Reconstitution, Thymus and T Cell Immunobiology

Dr. Garnett Kelsoe, B Cell Development

Dr. Dhaval Patel, Chemokine Biology, Leukocyte Migration

Dr. David Pisetsky, Pathogenesis of Autoimmune Diseases, DNA Adjuvants and Vaccines

Dr. Thomas Tedder, B Cell Biology, Leukocyte Migration

Candidates should send a letter of indicating interest along with a current curriculum vitae and have three reference letters sent to: **Barton F. Haynes, M.D., Human Vaccine Institute, Box 3258, Duke University Medical Center, Durham, NC 27710**

hr.duke.edu

Duke University Medical Center

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Assistant or Associate Professor of Biochemistry and Molecular Biology

The Department of Biochemistry and Molecular Biology at the Medical College of Georgia invites applications for two tenure track faculty positions at the Assistant/Associate Professor rank. The positions are available effective September 1, 2000. A Ph.D. or M.D. degree with post-doctoral experience is required. Successful candidates are expected to have extramural funding (Associate Professor level) or be ready to apply for extramural funding (Assistant Professor level). Established areas of research in the department in which the candidates can interact are vision research, molecular biology of transport proteins, transcriptional control and gene regulation, and stem cell biology. However, all areas of biochemistry and molecular biology will be considered. The quality of research will be the primary criterion for selection. Applicants are also expected to participate in teaching courses in the Schools of Medicine, Allied Health Sciences, and Graduate Studies.

Interested persons should send a *curriculum vitae*, a statement of research interests, teaching experience and names of three references to:

Dr. F. H. Leibach, Chair
Department of Biochemistry and Molecular Biology
Medical College of Georgia
Augusta, GA 30912-2100

The Medical College of Georgia is an Affirmative Action/Equal Educational and Employment Opportunity institution and does not discriminate on the basis of race, religion, sex, age, national origin or disability in employment or provision of services.

Pacific Northwest National Laboratory

Operated by Battelle for the U.S. Department of Energy

Director of Environmental Microbial Sciences

The Environmental and Health Sciences Division of DOE's Pacific Northwest National Laboratory (PNNL) is seeking an individual with internationally-recognized scientific expertise in environmental microbiology to lead expanding multidisciplinary research into the functioning of the microbial cell and the interactions of microbial cells with each other and their environment. The individual will contribute to existing expertise at PNNL in environmental microbiology and biogeochemistry and interface directly with microbiologists, molecular biologists, geochemists, and molecular spectroscopists at PNNL including scientists in the new Environmental Molecular Sciences Laboratory (EMSL). State-of-science instrumentation in EMSL is available to probe biological, biochemical, and biogeochemical processes and properties at the fundamental molecular level. Opportunities will also exist for utilizing DOE capabilities in synchrotron-based X-ray spectroscopy, high-throughput DNA sequencing and proteomics, structural biology and computational science. The efforts of the incumbent are expected to provide fundamental scientific support for core missions of the U.S. Department of Energy in the use of organisms to facilitate energy production and to cleanse the environment. Candidates must have a Ph.D. in microbiology, environmental science, or related field. This position requires a broad-thinking, well-published candidate who is recognized as an international leader in environmental microbiology in terms of scientific accomplishments and vision. The individual should have a minimum of ten years of experience with demonstrated program development and management skills necessary to lead and direct new research programs in environmental microbiology.

PNNL, one of nine DOE multiprogram laboratories, is a leader in basic and applied research in environmental science and technology. It is located in southeastern Washington State in the city of Richland, employs 3,400 and has an annual budget of more than $500 million. For more information on PNNL, please visit our website at: http://pnl.gov/.

For confidential consideration, interested individuals should send a scannable resume or curriculum vitae to: **Charlotte Peterson, Pacific Northwest National Laboratory, Ref. #40875, PO Box 999, Richland, Washington 99352** or E-mail to charlotte peterson@pnl.gov or FAX to (509) 375-4304. PNNL is an Affirmative Action/Equal Opportunity Employer and supports diversity in the workplace. Minorities, women, Vietnam-era veterans, and the disabled are encouraged to apply.

United States Food and Drug Administration, Center for Veterinary Medicine (CVM), Office of New Animal Drug Evaluation (ONADE), Rockville, MD is seeking an Interdisciplinary Scientist GS-12/13 (Biologist, GS-401; Microbiologist, GS-403; Ecologist, GS-408; Toxicologist, GS-415; Physical Scientist, GS-1301; Chemist, GS-1320) as an environmental science reviewer for the Environmental Assessment Team. The Team evaluates new animal drugs for environmental safety and on the basis of the evaluation recommends approval or refusal to approve the use of new animal drugs for proposed uses and conditions of use. The incumbent will provide expert evaluation of environmental fate and effects studies, data derived from the studies and environmental risk assessments developed to show the environmental safety of veterinary products. Applies knowledge of pertinent environmental laws and regulations, knowledge of standardized environmental testing methods, and knowledge of environmental risk assessment methods. Determines the adequacy of test methods relative to applicable standards, the validity of the tests for the intended purpose, strength and weaknesses of the methods and interpretation of the results for determining the risk to the environment. Initiates and develops new, or revises existing, study protocols and risk assessment criteria in order to address relevant problems which arise in the course of conducting the environmental risk assessment of veterinary products. Interacts with scientific, technical and regulatory experts in the Center, FDA, other government agencies, such as US EPA and states, the regulated industry, trade associations and academia. Vacancy # FDA-04020 for STATUS government candidates, vacancy #FDA 0-0110 for NON-STATUS government candidates. Graduates of foreign colleges/universities must provide proof of U.S. education equivalency certification. This position is a permanent Career or Career-Conditional Appointment open to All Sources, i.e., status and non-status candidates. The salary range for GS-12 is $51,204 - $66,564 and GS-13 is $60,890 - $79,155 and is commensurate with experience. To receive a faxed copy of this announcement call FAXBACK at (301) 827-4287. For further information please contact Vernelle Dewberry at (301) 827-1592. All applications will receive equal consideration without regard to race, origin, color, religion, sex, disability, or any other non-merit factor. U.S. Citizenship required. All vacancy announcements can be viewed on the Internet at **http://www.usajobs.opm.gov/a9.htm**. Please review vacancy announcement for qualifications. This vacancy closes on May 22, 2000. *FDA is an Equal Opportunity Employer and has a smoke free environment.*

The E. & J. Gallo Winery Corporate Research & Technical Services Department is seeking highly motivated candidates to fill two job positions. Plant Biochemist and Molecular Horticulturist.

The Life Sciences Research program encompasses a diverse portfolio of genomic and proteomic research projects. Individual research projects will be aligned with other group research efforts in gene discovery and expression analysis, mapping, and germplasm assessment. The successful candidates will participate, as team members, in other Life Science group projects, as well as cross-functional projects encompassing other research programs and production groups.

Post-Doctoral Researcher: Plant Biochemistry

This is an opportunity for an enthusiastic scientist to apply his/her talents to ongoing team research projects involving grapevine metabolism and physiology. As a member of our Life Sciences Research program, the successful candidate will be responsible for conducting research toward elucidating principal biochemical/genetic components and processes linked with vine and fruit growth, differentiation and maturation. Job activities will include constant interface with other company research programs tied with fruit and wine chemistry, viticulture and winemaking.

The position requires a Ph.D. degree in Plant Biochemistry, or related field. Experience in Protein Chemistry is required. Prior knowledge of fruit crop physiology is highly desirable. Preference will be given to individuals with expertise in proteomics and fruit metabolism.

Research Scientist: Plant Physiology/ Horticulture

As a member of the Life Sciences Research program, the Successful candidate will be responsible for the development and application of grape tissue culture and regeneration systems. The applicant will be accountable for conducting various research projects relevant to germplasm assessment, propagation and improvement. Responsibilities will also include supervision of research greenhouse and germplasm materials.

Must have a Ph.D. degree in Horticulture, Plant Physiology or related field. Proficiency with establishment and utilization of plant regeneration and tissue culture systems is required. Prior experience with germplasm assessment, propagation and maintenance is also required. Preference will be given to candidates with experience in woody species and fruit crops. Experience with molecular techniques (i.e., PCR, cloning, DNA/RNA sequencing) is required.

Qualified candidates please submit your resume via one of the following methods:

Fax (801) 881-9758
e-mail jobs@ejgallo.com
air mail P.O. Box 1130
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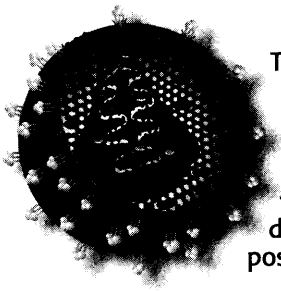
Postdoctoral Positions



The National Cancer Institute is paving the way for new programs and discoveries at the Frederick Cancer Research and Development Center (NCI-FCRDC), National Institutes of Health. Under the direction of ***John M. Coffin, Ph.D.***, the ***HIV Drug Resistance Program (DRP)*** is creating a world-class center for retrovirology research in a highly collaborative environment dedicated purely to research and supported by a wide spectrum of state-of-the-art core facilities. The emphasis of the DRP is on basic and translational research related to genetic diversity and drug resistance. As a component of its ongoing recruitment efforts, postdoctoral positions are currently available in laboratories headed by the following investigators:

Wei-Shau Hu, Ph.D.	Mechanisms of reverse transcription and recombination; RNA packaging and virus assembly; interactions between distinct viruses
Stephen H. Hughes, Ph.D.	Retroviral replication; structure and function of HIV reverse transcriptase; retroviral vectors
Vineet N. KewalRamani, Ph.D.	Virus-host interactions; co-factors in HIV infection; development of murine models for HIV infection
Stuart F.J. Le Grice, Ph.D.	DNA/protein and RNA/protein interactions controlling reverse transcription; comparative analysis of retroviral enzymes
Vinay K. Pathak, Ph.D.	Retroviral mutations and RT template switching; RT structure and fidelity; development of gene therapy vectors
Alan Rein, Ph.D.	Molecular mechanisms of retroviral replication; interactions of retroviral proteins with nucleic acids; viral pathogenicity

Applicants must possess a Ph.D. and/or an M.D. Appointment duration is for 5 years, renewed on a yearly basis. Stipend is commensurate with education and experience, with a range of $31,500 – $49,430. Please submit a cover letter, CV including bibliography, and contact information for 3 references to Ms. Susan Beth Jordan, HIV Drug Resistance Program, NCI-FCRDC, P.O. Box B, Building 535, Room 309, Frederick, MD 21702-1201. In addition to postdoctoral positions, the DRP periodically recruits for **technical positions**. For further recruitment information, please visit our web site at www.ncifcrf.gov/hivdrp.

NATIONAL® CANCER INSTITUTE

The National Cancer Institute is an Equal Employment Opportunity and Affirmative Action employer that values and fosters diversity throughout the entire organization.

POSTDOCTORAL TRAINING IN IMMUNOLOGY

CORNELL UNIVERSITY

Weill Graduate School of Medical Sciences
Weill Medical College Division

An NIH T32 Immunology Research Training Grant supports postdoctoral research by American citizens or Permanent Resident Aliens. There are currently four openings for postdoctoral trainees in this program. Faculty and their research interests are: **L. Bergsagel**, neoplastic B cell transformation; **P. Casali** (Director), B cell differentiation, Ig class switching, somatic hypermutation; **E. Cesarman**, KSHV/HHV-8 in lymphoma and Kaposi's sarcoma; **S. Chen-Kiang**, cell cycle, apoptosis, cytokine signaling, B cell terminal differentiation; **E. Chuang**, regulation of T cell activation; **M. Crow**, T and B lymphocyte regulation in autoimmunity; **K. Elkon**, mechanisms of autoimmunity; **L. Ivashkiv**, cytokine signaling and inflammation; **P. King**, signal integration in T cells; **H.-C. Liou**, molecular immunology of lymphocyte proliferation and survival; **J. Moore**, immunobiology of HIV infection; **W. Muller**, adhesion molecules and inflammation; leukocyte/endothelial cell interactions, signaling; **C. Nathan**, phagocyte cytotoxicity and regulation; **D. Posnett**, immune responses to microbial antigens and superantigens; **J. Salmon**, human Fc receptor and phagocyte biology; **E. Schattner**, apoptosis regulation in normal and malignant human B cells; **K. Smith**, cytokine-induced gene expression and cytokine immunotherapy; **M. Weksler**, immune senescence; **H. Wu**, structural studies of receptor signaling and apoptosis; **J. Zhang**, JAK/STAT signaling pathways. Incoming faculty **X. Ma** works on regulation of IL-12 and development of immune responses.

Send cover letter, CV (with U.S. citizenship/permanent resident status clearly stated), and 3 reference letters to: **Denise Cruz, Department of Microbiology and Immunology, Box 62, Weill Medical College of Cornell University, 1300 York Avenue, New York, NY 10021. Tel: 212-746-6505; fax: 212-746-8587. E-mail:** dec2004@med.cornell.edu

EEO/AA/M/F/D/V

*At **Centocor**, a wholly owned subsidiary of Johnson & Johnson, we are creating, acquiring, and marketing cost-effective therapies that yield long-term benefits for patients and the healthcare community at large. Our products, developed through monoclonal antibody and DNA-based technology, help physicians deliver innovative treatments that work to restore patients' quality of life. If you have the ability to contribute to our goals, investigate the following opportunities:*

SR. RESEARCH SCIENTIST—To participate in clinical pharmacology research to investigate how cellular inflammation is mediated. Will have responsibility for managing a variety of external preclinical investigations in novel anti-cytokine therapies as well as to conduct in-house research using invitro systems or clinical samples. To qualify, must have a Ph.D. in immunology or other relevant field along with 5+ years of research experience. Strong communication, organizational and writing skills required. Pharmaceutical experience with a therapeutic clinical program desirable. **Code: 277-00-LU-01R**

ASSOCIATE SCIENTIST II—Key position designing, implementing and participating in in vitro and ex vivo experiments characterizing anti-angiogenic and anti-tumor effects of antibodies and other therapeutics. Areas of research include tumor growth, angiogenesis, apoptosis and metastasis. Must have experience with tissue sectioning, immunohistochemistry, in situ hybridization and immunocytochemistry with emphasis on angiogenesis and apoptosis. Requires BS in Biology plus 4-7 years or MS and 2-5 years laboratory experience as well as proficiency with several cell biology techniques. **Code: 277-00-CC-02A.**

ASSISTANT SCIENTIST I/ASSOCIATE SCIENTIST—Will support in-vitro studies (platelet and integrin biology, vascular cell interactions) investigating novel mechanisms and indications for clinically approved products as well as those still in the pipeline. Familiarity with thrombosis research, cell culture, cell biology and protein techniques and BS in Biology plus 2-4 years or MS plus 0-2 years experience required. **Code: 277-00-CC-02R.**

Centocor offers compensation packages in accordance with its leadership role in healthcare technology including career development opportunities and a state of the art work environment. To apply, please send resume with appropriate code to: **Human Resources, Centocor, 200 Great Valley Parkway, Malvern, PA 19355. Fax: (610)651-6330. Or Email: jobbank@centocor.com For more information or a listing of other positions now available, please visit our website at www.centocor.com.** EOE M/F/D/V.

Centocor
Making A World of Difference

VAN ANDEL RESEARCH INSTITUTE

Postdoctoral Fellowships

Van Andel Research Institute, an independent organization dedicated to becoming one of the world's pre-eminent private medical research institutes by building on the extraordinary discoveries in molecular biology and genetics, is recruiting world-class investigators.

George F. Vande Woude, PhD – Research Director
Molecular basis of cancer.

Principal Investigators

Art Alberts, PhD – Cell Structure and Signal Integration
Intracellular signalling networks that regulate proliferation and cell shape/motility.

Nick Duesbery, PhD – Developmental Cell Biology
Cellular aspects of oogenesis and meiosis vertebrate model organisms.

Han-Mo Koo, PhD – Cancer Pharmacogenetics
Molecular mechanisms underlying chemosensitivity of tumor cells and the development of novel therapeutic strategies.

Cindy Miranti, PhD – Integrin Signaling and Tumorigenesis
Integrin signalling and function in tumorigenesis.

Bin Tean Teh, MD, PhD – Cancer Genetics
Identification and investigation of the functions of cancer-related genes in endocrine tumors and nasopharyngeal cancer.

Craig Webb, PhD – Tumor Metastasis and Angiogenesis
Molecular mechanisms of tumor metastasis and angiogenesis in the identification of novel targets for therapeutic intervention.

Michael Weinreich, PhD – Chromosome Replication
Cell cycle control of DNA replication and checkpoint responses to the inhibition of replication fork movement.

Bart Williams, PhD – Cell Signaling and Carcinogenesis
The Wnt signaling pathway in carcinogenesis and the development and utilization of mouse model systems to study tumor initiation and progression.

Nian Zhang, PhD – Mammalian Developmental Genetics
Pattern formation during mammalian embryo development and germ cell development.

Opportunities in our Special Programs

Brian Cao, PhD – Monoclonal Antibody Production
Production, characterization, engineering and humanization of monoclonal antibodies for cancer research, developmental biology and clinical studies.

Brian Haab, PhD – Microarray Technology
Protein and DNA microarray technology, discovery of novel diagnostic protein and DNA markers in cancer.

Jim Resau, PhD – Analytical, Cellular & Molecular Microscopy
Analytical and molecular quantification of imagery produced using confocal, multiphoton and electron microscopy.

Fellowships are awarded on an equal opportunity basis to recent recipients of a PhD, MD or an equivalent degree in the biological or biochemical sciences. Appointments are made for one year, renewable annually with supervisor's approval, for a total of three years.

Annual stipends generally start at $32,000 depending upon experience.

Applications are accepted at any time during the calendar year for open positions. Interested candidates are encouraged to apply well in advance of their availability date.

To apply, send a letter describing your research interests, curriculum vitae, and the names and addresses of three references to:

Investigator's Name of Interest
ATTENTION: Human Resources Department
Van Andel Research Institute
201 Monroe N.W. Suite 400
Grand Rapids, Michigan 49503

Website: www.vai.org
Equal Employment Opportunity

BREAST CANCER TRAINING PROGRAM
at the Fox Chase Cancer Center

THE PROGRAM CONSISTS OF 16 EDUCATIONAL MODULES ENCOMPASSING:

- Cellular and Molecular Biology of Breast Cancer
- Molecular Cytogenetics
- DNA Repair, Mutation Detection in Breast Cancer Genes, and Modern Technologies of Protein Analysis
- Mechanism of Inherited Breast Cancer
- Genetic & Molecular Basis of Cancer Metastasis
- Regulation of Mitogenic and Apoptotic Signals
- Cyclins and Regulation of Stress Response
- Genetic Complementation
- Drug Resistance and Targeted Immunotherapy
- Genetic Epidemiology/Control of Breast Cancer
- Bioinformatics Methods
- Breast Cancer Prevention
- Psychosocial and Behavioral Medicine in Breast Cancer
- Breast Cancer Diagnosis and Treatment
- Biostatistics
- Library Instruction

Faculty

K.M. Albert	N. Galpern	S.M. Miller	R Strich
M.B. Daly	L. Goldstein	B. Patriotis	J.D. Tisdall
J. Dorgan	E.A. Golemis	A. Rogatko	J. Testa
B. Eisenberg	B.A. Lewis	J. Russo	L. Weiner
A. Godwin	F.J. Manion	I.H. Russo	A.T. Yeung

Applications for the training program must include:

1. A letter of intent addressed to the Program's Director (J. Russo, MD, Director of Department of Defense Breast Cancer Training Program; Fox Chase Cancer Center, 7701 Burholme Avenue, Philadelphia, PA 19111).
2. A statement of the fellow's background, training, and professional interests and goals.
3. A complete curriculum vitae.
4. A minimum of three letters of recommendation.

Fox Chase Cancer Center is committed to a policy of equal opportunity and affirmative action and decisions concerning admission to the program will be established on the qualifications of the applicant.

For more information on individual research modules, please visit our web-page at www.fccc.edu/postdoc/BreastCaTraining.html

Center for Immunology & Microbial Disease
Albany Medical College
Faculty Positions in Immunology

The Center for Immunology & Microbial Disease at Albany Medical College invites applications for two tenure-track faculty positions at the Assistant Professor level from individuals who have a doctoral degree, postdoctoral experience, and demonstrated research productivity. We are particularly interested in applicants with expertise in immunology as related to protection from microbial disease. The successful candidates will be expected to establish independent, extramurally funded research programs and participate in the teaching of medical and graduate students. The Institution's new Strategic Research Plan approved by the Board of Directors is designed to promote and expand biomedical research at Albany Medical College by recruiting new faculty who will receive competitive salaries, attractive start-up packages, newly renovated research laboratories, and access to outstanding core facilities. In addition, the Center has established close relationships with the New York State Wadsworth Laboratories and the Trudeau Institute, providing a diverse environment that is rich in immunology and infectious disease expertise. Albany Medical College is located in a mid-sized city within the New York Capital Region, and has easy access to Boston, New York City, and the Adirondack Mountains.

Applicants should send by June 15, 2000, their curriculum vitae, a statement of research plans, and three letters of reference to:

Dennis W. Metzger, Ph.D.
Professor and Director
Center for Immunology & Microbial Disease
Albany Medical College
47 New Scotland Avenue, MC-151
Albany, NY 12208

For further information about the Center, visit
www.amc.edu/Academic/Research/imd.htm

An Equal Opportunity/Affirmative Action Employer. Women and minorities are encouraged to apply.

POSITIONS OPEN

FACULTY POSITION in large animal reproduction. The Department of Clinical Studies, New Bolton Center, University of Pennsylvania School of Veterinary Medicine, invites applications for a full-time tenure-track position in large animal reproduction. The position involves research and teaching of large animal reproductive biology. The new laboratory will be part of the Center for Animal Transgenesis and Germ Cell Research (**website: http://www.vet.upenn.edu/catgcr**), and a primary responsibility of the candidate will be translational research in collaboration with the Center. The successful applicant must have demonstrated research capabilities in reproductive biology and will be expected to establish an independent research program. The candidate is expected to participate in the academic program of the Section of Reproduction, including didactic and laboratory teaching of veterinary students and residents. Qualifications include a V.M.D. (or equivalent)/Ph.D. or Ph.D. in reproductive biology. Preference will be given to candidates with additional postdoctoral training and the capability of attracting extramural funding. Salary and rank will be commensurate with qualifications and experience. Application must be received by September 1, 2000, or until the position is filled. Applicants should submit curriculum vitae, letter of intent, and names and addresses of three references to: **Dr. David Nunamaker, Chairman, Department of Clinical Studies, New Bolton Center, 382 West Street Road, Kennett Square, PA 19348**. New Bolton Center is in a rural setting approximately 35 miles southwest of the main university campus in Philadelphia. *The University of Pennsylvania is an Affirmative Action/Equal Opportunity Employer.*

MOLECULAR MICROBIOLOGY
UNIVERSITY OF TENNESSEE–KNOXVILLE

The Department of Microbiology (**website: http://www.bio.utk.edu/microbio.nsf**) seeks to fill an academic position at the rank of **ASSISTANT PROFESSOR** (tenure track). Candidates must have a Ph.D. in microbiology or a related area, postdoctoral experience, and publications in reviewed journals of excellent quality. They must also have interest in teaching at the graduate level in their area of expertise and at the undergraduate level in microbial physiology and molecular biology. Candidates must have the capacity to establish a research program in molecular microbiology, fundable at the national level. Applicants should send a letter of interest accompanied by curriculum vitae, bibliography, statement of research and teaching interests, and names and addresses of three references to: **Dr. Gary Stacey, Chairman, Search Committee, University of Tennessee, Department of Microbiology, M409 Walters Life Science Building, Knoxville, TN 37996-0845**. Evaluation of applicants will begin on June 1, 2000, and continue until the position is filled. *University of Tennessee–Knoxville is an Equal Employment Opportunity/Affirmative Action/Title VI/Title IX/Section 504/Americans With Disabilities Act/Age Discrimination in Employment Act Institution in the provision of its education and employment programs and services.*

INSTRUCTOR/
RESEARCH ASSISTANT PROFESSOR
IMMUNOLOGY CORE LABORATORY

An excellent opportunity for an Assistant Director of the Immunology Core Laboratory for the Cancer Gene Therapy Program is available for an individual with experience in cellular and molecular immunology. The successful candidate will interact closely with the Director to supervise and instruct laboratory personnel, as well as participate in developing creative new protocols to monitor immune responses elicited in patients participating in clinical trials. A Ph.D. and postdoctoral experience are required. Please send curriculum vitae, a letter describing your qualifications for this position, and the names and contact information for three references to: **Karen Zier, Ph.D., Mount Sinai School of Medicine, Box 1089, New York, NY 10029**. Visit our **website: www.mssm.edu**. *We are an Equal Opportunity Employer fostering diversity in the workplace.*

LIFESPAN BIOSCIENCES, INC.

LifeSpan BioSciences, a Seattle genomics company focusing on molecular pathology and localization in human diseases, is seeking candidates for the following divisions:

In situ hybridization technology. **PH.D. SCIENTISTS** or **M.S./B.S. RESEARCH ASSOCIATES**. The candidate should have at least three years of experience with *in situ* hybridization methods, including radioactive and nonradioactive detection methods, and their application to human or rodent model systems. Positions are open for both managers and laboratory personnel.

Ligand-binding localization technology. Candidates should have at least three years of experience with ligand-binding assays and localization using either radiometric or nonradiometric methods.

Imaging technology. Candidates should have experience with microscopic imaging systems and software used for quantitative morphometry and densitometry.

Interested candidates should send a résumé and names and addresses of three professional references to: **Human Resources, LifeSpan BioSciences, Inc., 700 Blanchard Street, Seattle, WA 98121. FAX: 206-464-1723; e-mail: hr@lsbio.com.**

UNIVERSITY OF FLORIDA

The Division of Hematology/Oncology of the Department of Medicine at the University of Florida, College of Medicine, seeks applicants for a tenure-track faculty at the **ASSISTANT/ASSOCIATE/PROFESSOR** level with interests in breast, gynecourinary, gastrointestinal, lung or central nervous system solid tumor malignancies. The individual will be expected to establish a program of clinical or transnational research and participate in the active clinical services and teaching activities of the Division. The individual will be expected to interact with laboratory investigators in the cancer center and to collaborate in multidisciplinary disease-focused working groups. Board certification/eligibility in internal medicine and medical oncology are required. Salary and benefits commensurate with experience. Recruiting deadline: June 1, 2000. Anticipated starting date: July 1, 2000. Reply with curriculum vitae to: **John R. Wingard, M.D., Division of Hematology/Oncology, Box 100277, JHMHC, Gainesville, FL 32610**. *Affirmative Action/Equal Opportunity Employer.*

Seeking **RESEARCH SCIENTIST** and **POSTDOCTORAL FELLOW** to characterize bacterial pathogenesis and host resistance to *Yersinia pestis, Bacillus anthracis*, and *Burkholderia maleii*. One position supports basic and advanced development of vaccines and therapeutics against bioterrorism threats by expression and purification of protein antigens, biochemical and physical characterization of candidate vaccines, and physiological analysis of candidate therapeutics. Another position supports examination of proteome profiles from pathogens and host sera to help construct an interagency bioinformatics database of infectious diseases. Demonstrated skills in process development, analytical protein biochemistry, proteomics/MS data collection, or bioinformatics software design and data management. Send résumés to: **Dr. Bradford Powell, U.S. Army Medical Research Institute of Infectious Diseases, 1425 Porter Street, Fort Detrick, MD 21702. FAX: 301-619-2152; e-mail: Bradford.Powell@det.amedd.army.mil.**

POSTDOCTORAL POSITION available immediately in DNA-based nanotechnology. This NSF-funded project is a collaboration between **Professors Richard Kiehl** (electrical engineering) and **Karin Musier-Forsyth** (chemistry) at the University of Minnesota and **Professor Nadrian C. Seeman** at New York University. The objective of this exciting multidisciplinary project is to use two-dimensional DNA crystals as a scaffolding for the self-assembly of arrays of nanocomponents for the development of new electronic devices. Candidates should have background or strong interests in organic chemistry and bioconjugation strategies. Send curriculum vitae and three letters of recommendation to: **Professor Richard Kiehl** at **e-mail: kiehl@ece.umn.edu.**

SENIOR STAFF FELLOW
IMMUNOLOGY

The Division of Bacterial Products, Office of Vaccines Research and Review, Center for Biologics Evaluation and Research, Food and Drug Administration, has an immediate opening for a Senior Staff Fellow who would be expected to develop an independent program to study the immunology and protective immunity induced by bacterial polysaccharides and polysaccharide-protein conjugates. These include Hib, meningococcal, pneumococcal, and/or Group B streptococcal antigens. The selected candidate would also be expected to participate in review and regulation of bacterial polysaccharide-containing vaccines. The laboratories are located on the NIH campus in Bethesda, Maryland. The appointment is for an initial two-year period and may be extended up to a total of seven years by mutual agreement. This appointment is equivalent to a tenure-track appointment, i.e., the candidate would be eligible for conversion to a permanent position if successful. Candidates must have an advanced degree, e.g., Ph.D., and at least two years of postdoctoral experience and *must be either U.S. citizens or resident aliens eligible for citizenship within four years.* Salary range for candidates is from $40,714 to $80,658 per annum depending on training and experience. Candidates should send curriculum vitae, bibliography, statement of research interests, and names/contact information for three references to: **Carl Frasch, Division of Bacterial Products, Center for Biologics Evaluation and Research, HFM–428, 1401 Rockville Pike, Rockville, MD 20852.** *FDA is an Equal Opportunity Employer.*

FACULTY POSITIONS
LEHMAN COLLEGE
CITY UNIVERSITY OF NEW YORK

Tenure-track **ASSISTANT/ASSOCIATE PROFESSOR** of plant physiology and tenure-track **ASSISTANT/ASSOCIATE PROFESSOR** of plant genetics: positions effective September 1, 2000. Salary range for Assistant Professor: $32,703 to $60,571. Associate Professor: $42,616 to $71,818 per qualifications and experience. Send curriculum vitae and related materials to: **Dr. Thomas E. Jensen, Professor and Chairman, Department of Biological Sciences, Lehman College/CUNY, 250 Bedford Park Boulevard West–D217, Bronx, NY 10468-1589**. Additional information at **website: http://www.lehman.cuny.edu** (see Job Opportunities). *Affirmative Action/Equal Employment Opportunity/Americans With Disabilities Act Employer.*

AMERICAN MUSEUM OF
NATURAL HISTORY

LABORATORY TECHNICIAN must have a B.S. degree and at least one year of experience with DNA extraction from a variety of animal tissues, PCR, direct sequencing on an ABI 3700, primary sequence editing, and contig building. Cloning and cDNA library construction skills will make an application more competitive. Salary and benefits commensurate with experience. Appointments will be made on a two-year-term basis with possibility of renewal. Application should include a brief statement of research interests and experience, three letters of reference, and curriculum vitae. Please contact Daniel Janies at **e-mail: djanies@amnh.org.** *Equal Opportunity Employer.*

ASSISTANT PROFESSOR
DEPARTMENT OF NEUROLOGY
Oregon Health Sciences University

Immediate position available for Assistant Professor to join neuroimmunology research group. Cellular and molecular biology required, with experience in EAE preferred. Duties will include research, administration, and teaching. Salary $60,000 plus full benefits. Curriculum vitae to: **Halina Offner, M.D., Professor, Neuroimmunology Research Research and Development–31, Portland VA Medical Center, 3710 S.W. U.S. Veterans Hospital Road, Portland, OR 97201.** *Oregon Health Sciences University is an Equal Opportunity/Affirmative Action Employer.*

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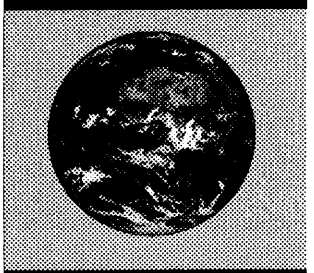
Where on Earth will Science take You?



Research Scientist

Color Measurement

UNILEVER has the distinction of ranking with the top consumer products companies in the world in sales and innovation. Our success is built upon collaborative scientific research and product development efforts resulting in over 1000 nationally and internationally known brands including Dove, Lever 2000, Vaseline Intensive Care, Suave, Pond's, and premium fragrance and skin care products including Elizabeth Arden and Calvin Klein Cosmetics. This position is based at our global research facility in Edgewater, NJ, located on the Hudson River within 20 minutes of Manhattan's diverse academic, entertainment and cultural resources.

Research Scientist
Color Measurement

Unilever Research U.S. is seeking a Research Scientist to lead a multidisciplinary research team to measure color and textural changes in the skin with product effects. Will involve development of novel methodologies as well as application of established techniques.

To qualify you must have a PhD in a physical or measurement science area (e.g. biomedical engineering, electrical engineering, physics, computer science) with significant interest and experience in applied color measurement and image analysis. Experience with biological materials helpful but not essential. An MS in an appropriate field with at least 4 years relevant experience may be acceptable. Must have good communication skills and be able to work within a multidisciplinary team environment.

We offer a competitive salary, flexible benefits including tuition assistance, and a dynamic environment filled with learning and discovery beyond conventional scientific boundaries. For consideration please forward your resume to: Human Resources Dept. RSSC, Unilever Research US, 45 River Road, Edgewater, NJ 07020 or E-Mail: job.mca@unilever.com Please place only the letters RSSC as the subject of the e-mail. We appreciate your interest in our company and will contact applicants who most closely meet our immediate requirements. Applicants must be authorized to work in the U.S.A. Unilever is an Equal Opportunity Employer m/f/d/v

Unilever
Unilever Research

For more information about Unilever Research and Unilever visit our Internet Web Site at http://www.unilever.com

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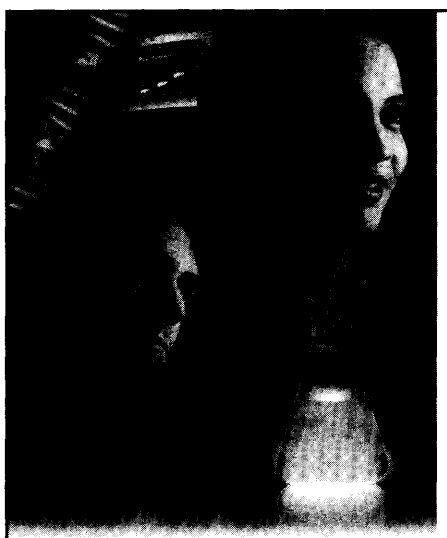

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careers that matter

Pfizer Central Research is the R&D division of Pfizer Inc, a global, research-based pharmaceutical company at the forefront of a dynamic, rapidly growing industry. We're known for both our unparalleled drug development pipeline and the respect and resources we give to our people. If that appeals to you, maybe yours could be the new Face of Pfizer. Join us in the following opportunities at our Central Research facility in Groton, Connecticut.

ASSISTANT SCIENTIST II, BIOLOGY
Combine your scientific and communication skills as you work with project teams to perform discovery research on vaccines for viral pathogens. Your responsibilities will include accurately performing, recording, and interpreting virological and immunological assays; preparing summaries of primary data and discussing results with project teams; contributing to the maintenance and efficient function of laboratories; and maintaining strong relationships with team members. For this position, you'll need an MS in Virology, Immunology, Bacteriology, or a related field, or a BS and 2-3 years research experience. In addition, experience in the following is desired: routine maintenance and propagation of mammalian cell lines, growth and maintenance of virus stocks, immunohistochemistry and immunofluorescence assays, and DNA and RNA preparation from bacteria, mammalian cells and tissues. Industry experience in vaccines would be a plus. Ad Code: 0003442SCI

RESEARCH SCIENTIST, BIOLOGY
Your knowledge of veterinary science and strong interpersonal and leadership skills will contribute to your success as you perform a range of activities, such as cloning, characterization and expression of genes, design of gene transfer and expression vectors to animals, leading teams and presenting findings to teams and management. We may also call on you for tissue culture generation, preparation and maintenance of cell lines, RNA analysis by RT-PCR RACE, and Northern hybridization serological assays, including ELISA and Western blotting. This position requires a PhD with graduate-level work in molecular and cell biology, working knowledge of immunology and hands-on experience in gene transfer and expression. Knowledge of the animal health business with emphasis in therapeutics and vaccine discovery and 1-2 years of postdoctoral experience are desired, as is the ability to multitask and meet timelines. Ad Code: 0003441SCI

Recently ranked among *Fortune's* 100 Best Companies to Work For, Pfizer offers an exceptional work environment complete with training opportunities designed to develop your supervisory effectiveness and professional talents. We encourage all candidates to apply online through our website at **www.pfizer.com**. If necessary, you may also mail your resume, indicating the appropriate Ad Code, to: Pfizer Inc, Central Research, c/o Aon Consulting, P.O. Box 25, Findlay, OH 45839. Pfizer offers a workplace rich with diversity and potential—an Equal Opportunity Employer.

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Life is our life's work.

RESEARCH POSITION IN TRANSFUSION MEDICINE

The University of Minnesota is seeking a full-time Research Scientist with an established research program in transfusion medicine, cellular/tissue transplantation, or hematopoiesis. The University of Minnesota provides an excellent environment to establish a productive research laboratory in these scientific disciplines. Specific areas of interest include but are not limited to platelet, red cell, or neutrophil physiology and pathophysiology; stem cell biology; cellular engineering; gene therapy; or immunobiology. The candidate must have the M.D. or Ph.D. degree and demonstrate the ability to obtain funding to support the program. The selected candidate will be appointed based on qualifications at the rank of **ASSISTANT** or **ASSOCIATE PROFESSOR** in the Department of Laboratory Medicine and Pathology. Applicants are expected to develop areas of independent research while interacting with existing faculty in key areas of interest. The selected candidate will be part of the transfusion medicine faculty and expected to virtually devote his or her full time to developing and conducting the research program. Other duties will include participation in education programs and modest operational activities. Interested persons should send a letter of application, curriculum vitae, a two-to-five-page description of research interests and long-term goals, and names of three references to:

Transfusion Medicine Search, c/o Marilyn Green
Department of Laboratory Medicine and Pathology
Box 609 Mayo
420 Delaware Street S.E.
Minneapolis, MN 55455

Application deadline is August 1, 2000. *The University of Minnesota is an Equal Opportunity Educator and Employer.*

FACULTY POSITIONS

The Monell Chemical Senses Center invites applications for permanent faculty positions in either of two areas. (1) Development/regeneration of chemosensory systems: We are seeking an individual to complement existing programs and to initiate new studies on development and regeneration of chemosensory receptor systems at the molecular or cellular levels. Applicants should have experience with contemporary concepts and techniques necessary for studying development and regeneration but may not necessarily have direct experience with the chemical senses. (2) Integrative/behavioral neuroscience: Investigators with interests in central nervous system processes as they apply to the chemical senses, appetitive behaviors, and nutritional physiology are encouraged to apply. A technical focus on neurochemistry and/or neuroanatomy is desirable. Successful applicants will be expected to develop strong, independently funded research programs while taking advantage of the interdisciplinary and collaborative environment offered by the Monell Center. Monell is a nonprofit research institute devoted to the multidisciplinary study of taste and smell. See **website: www.monell.org**. Send a letter of interest, curriculum vitae, and names and addresses of three references to: **Personnel Officer, Monell Chemical Senses Center, 3500 Market Street, Philadelphia, PA 19104-3308**. *The Monell Center is an Equal Opportunity Employer and encourages applications by women and minorities.*

POSTDOCTORAL POSITION in behavioral neuroscience. Investigate CNS signal transduction, IEG expression, and behavioral responses to drugs of abuse in calorie-restricted and diabetic rats. *Must be U.S. citizen or permanent resident.* Contact: **Dr. Kenneth Carr, Millhauser Laboratories, Department of Psychiatry, New York University School of Medicine, 550 First Avenue, New York, NY 10016. E-mail: kc16@is4.nyu.edu.** *Affirmative Action/Equal Opportunity Employer.*

POSITIONS OPEN

PharMingen

PharMingen, a subsidiary of Becton Dickenson and Company, is a rapidly growing biotechnology company that develops, manufactures, and markets cutting-edge products for immunology, cell biology, and molecular biology research. PharMingen offers a competitive salary and benefits package, including a matching 401(k) plan and pension plan as well as a stimulating work environment at a beautiful coastal location in San Diego, California. We invite all qualified candidates with a strong scientific background to play a key role in the development of our products to serve the research community. Our continuous growth has resulted in the following opportunities. To apply, please send your résumé or curriculum vitae with a cover letter indicating the position of interest. For continuing updates, please visit our **website: www.pharmingen.com**.

Mail: 10975 Torreyana Road, San Diego, CA 92121-1106 U.S.A.; Attention Human Resources
FAX: 858-812-8893
E-mail: hr@pharmingen.com

DIRECTOR OF MOLECULAR BIOLOGY (#655): Ph.D. in molecular biology/related science with a minimum of five to 10 years of research and management experience in an academic or industrial environment. Possess skills in genomics, gene array displays, phage library, RNAse protection assays, gene cloning, and protein expression in prokaryotic and eukaryotic systems including generation of transfected cell lines. Demonstrated experience supervising 10 or more subordinates. Must possess excellent written and verbal communication skills in conjunction with strong organizational skills. Responsible for the overall management and coordination of all aspects of the molecular biology product line as well as outside collaborations. Will establish and maintain compliance with all procedures, regulations, specifications, and budgeting for the Department. Also responsible for managing multiple projects concurrently and developing and administering revenue budgets, schedules, and performance requirements. Some travel required.

SCIENTIST I: IMMUNOPATHOLOGY (#504): Ph.D. in scientific discipline or M.D. with a minimum of one to four years of experience in a research and development (R & D) environment or postdoctoral experience required. Previous related industry experience preferred. Responsibilities include developing new products using molecular probes and other immunopathology technique/applications. Must demonstrate proficiency in technical abilities, collaboration with others, and independent thought. Experience with tissue sectioning, reading tissue slides, microscopy, tissue processing, frozen and paraffin, and all IHC techniques is required. *In situ* hybridization, FISH, and PCR *in situ* amplification techniques preferred. Must have good documentation, organization, and communication skills.

SCIENTIST I: RESEARCH IMMUNOCYTOMETRY (#604): Ph.D. in immunology/related science with a minimum of one to four years of experience in an R & D environment or postdoctoral experience required. Experience with mammalian cell culture, animal handling, flow cytometric analysis, cell-based functional assays, and protein biochemistry required. Experience with development or characterization of mAbs preferred. Responsibilities include initiating, directing, and executing R & D projects in collaboration with others. Ideal candidate will be creative, motivated, able to work independently, and initiate development of new products. Must have excellent oral and written documentation skills and familiarity with current scientific literature in the field of immunology.

POSITIONS OPEN

BioAgri Corporation is a young, dynamic biotech company in the Los Angeles area. It utilizes a novel gene transfer technology to produce transgenic farm animals for agricultural and biopharmaceutical purposes. It is currently recuiting for the following positions:

RESEARCH SCIENTIST

The successful candidates will work on the identification of genotype and phenotype of transgenic farm animals and develop gene construct for these animals. Candidate will possess a Ph.D. with postdoctoral experience. Strong molecular biology and immunology expertise as well as techniques in genomic PCR and Southern blot are required.

RESEARCH ASSOCIATE

This position requires B.S./M.S. in molecular biology discipline and more than three years of research experience.

BioAgri offers competitive salaries, a comprehensive benefits package, stock options, and significant opportunities for professional growth. Send your curriculum vitae including names of three references to: **Human Resources, BioAgri Corporation, 17711 Rowland Street, City of Industry, CA 91748. FAX: 626-810-2743.**

POSTDOCTORAL FELLOW IN MOLECULAR ONCOLOGY
Children's Hospital of Pittsburgh

Immediate opening for an NIH-funded Postdoctoral Fellow to study members of the myc oncoprotein family. We are particularly interested in the molecular basis by which these proteins participate in the control of the cell cycle, apoptosis, and maintenance of genomic integrity. We are also interested in the use of DNA microarray technology to identify novel transcriptional targets for myc proteins. The applicant should be familiar with basic techniques in cell and molecular biology including mammalian tissue culture, DNA cloning and sequencing, recombinant protein expression and purification, and yeast two-hybrid assays. Experience in bioinformatics would be a plus. *U.S. citizenship or permanent residency status is also highly preferred.* Please send curriculum vitae to: **Edward V. Prochownik, M.D., Ph.D., Hematology/Oncology, Children's Hospital of Pittsburgh, 3705 Fifth Avenue, Pittsburgh, PA 15213. Telephone: 412-692-6797; FAX: 412-692-5723; e-mail: edward_prochownik@poplar.chp.ed.**

POSTDOCTORAL FELLOW WAYNE STATE UNIVERSITY/ KARMANOS CANCER INSTITUTE

Postdoctoral position available immediately to study molecular and cellular interactions between prostate carcinoma and bone. We are currently exploring the role of proteases in the colonization of bone by metastatic prostate cancer cells using the SCID-human model (*Cancer Res.* **59**:1987–1993, 1999) and other *in vivo/in vitro* metastasis models. Postdoctoral candidates at all levels of experience will be considered. We offer an extremely competitive salary and benefits package. Please send brief statement of research interests, capabilities, and goals; curriculum vitae; and names of three references to: **Michael L. Cher, M.D., Departments of Pathology and Urology, Wayne State University, 540 East Canfield, Room 9105, Detroit, MI 48201. E-mail: mcher@med.wayne.edu.**

A **POSTDOCTORAL POSITION** is immediately available to study the mechanism of cancer development in a knockout mouse model for colon cancer (*Canc. Res.* **59**:3379, 1999). Experimental approaches include mouse genetic engineering, genomics, and molecular and immunohistochemical techniques. Individuals highly motivated in research with experience in molecular genetics and cell biology are required. Send curriculum vitae and letters from three references to: **Thomas Doetschman, Department of Molecular Genetics, University of Cincinnati College of Medicine, Cincinnati, OH 45267-0524. E-mail: thomas.doetschman@uc.edu.**

POSTDOCTORAL POSITIONS

Genome Technology Branch
National Human Genome Research Institute
National Institutes of Health

Postdoctoral research positions are available for individuals interested in mammalian genetics and genome analysis at the National Human Genome Research Institute (NHGRI).

- **Identification and Characterization of Genes Associated with Human Genetic Diseases**
- **Mammalian Chromosome Mapping and Sequencing**
- **Laboratory- and Computational-based Comparative Genome Analysis**
- **Sequence and Structure Analysis using Computational Techniques**

Information on research programs and investigators within the Branch can be found at: **http://www.nhgri.nih.gov/DIR/GTB**

Candidates should possess an MD and/or PhD and have less than five years of postdoctoral experience. Please send a letter, CV, and three letters of reference to: **Ms. Dana Jordan, NHGRI/NIH, 49 Convent Dr., Bldg. 49, Rm. 2C-72, MSC 4431, Bethesda, MD 20892 (or gtbapply@nhgri.nih.gov).**

The NIH is an Equal Opportunity Employer and applications by women and minorities are strongly encouraged.

University of California – San Francisco,
Department of Surgery

The University of California – San Francisco (UCSF) Department of Surgery - Division of Vascular Surgery and the Cardiovascular Research Institute at UCSF seek a Director for the newly funded Pacific Vascular Research Laboratory. A joint appointment at the Assistant or Associate Professor in Residence level in the Department of Surgery, an appropriate basic science department, and the Cardiovascular Research Institute will be provided, as will membership in UCSF's Biomedical Sciences Graduate Program. The Director of this laboratory will be expected to develop and lead an outstanding basic and/or translational research program in angiogenesis or other aspects of vascular biology relevant to vascular disease. Possible topics include but are not limited to fundamental mechanisms of angiogenesis during embryonic development and in response to ischemia and inflammation as well as the study of relevant genetics and signaling mechanisms. The Director will also stimulate and guide the interaction of basic and clinical scientists, and provide mentoring of students and postdoctoral and clinical fellows. Applicants should possess either a Ph.D. or M.D. Applicants at the Associate level will have already established leading programs in their fields. Send curriculum vitae to:

Shaun R. Coughlin, M.D., Ph.D.
PVRL Search Committee
c/o Louis M. Messina, M.D., Chief,
Division of Vascular Surgery
505 Parnassus Avenue, Box 0222
San Francisco, CA 94143-0222

Position will be open until July 31, 2000. The University of California, San Francisco is an Equal Opportunity/Affirmative Action Employer. The University undertakes Affirmative Action to assure Equal Employment opportunities for underutilized minorities and women, for persons with disabilities, and for Vietnam-era veterans and special disabled veterans.

Parke-Davis, a Division of Warner-Lambert Company, is devoted to discovering, developing, manufacturing, and marketing quality pharmaceutical products. Through the work of the finest scientific talent and dedication, we have demonstrated an excellent record of innovation through the use of great science to discover drugs for unmet medical needs. Currently, we have the following opportunities available in Ann Arbor, MI:

SCIENTIST/SENIOR SCIENTIST PDS

JOB CODE: HS/OO-0449SC

Working within our PDS Analytical R&D department, you will be responsible for the design, implementation, and evaluation of data from laboratory studies in support of biologics development projects. Additionally, you will perform detailed analytical characterization of adenovirus products with an emphasis on mass spectrometry techniques, and their application for the structural analysis of proteins and post-translational modifications.

Minimum qualifications include a Ph.D. in Biochemistry or a related science and 0-4 years experience in the analysis of biological macromolecules using techniques such as reversed phase HPLC and mass spectrometry; BS with 8-12 years' experience or MS with 5-8 years' experience. Demonstrated knowledge and understanding of state-of-the-art analytical methods employed to characterize biomolecules; ability to apply understanding of protein and DNA chemistry to the development and evaluation of appropriate test procedures for development support and regulatory submissions; and demonstrated ability to achieve established objectives and time lines on multiple projects and/or multiple aspects of projects are also required. Outstanding interpersonal and communication effectiveness (written and oral) are required to present project work to management and project team colleagues, and to interact effectively with colleagues across departments. Understanding of cGMP, ICH, and regulatory agency standards as applied to biologics development projects is a strong plus.

ASSOCIATE SCIENTIST MOLECULAR BIOLOGY

JOB CODE: HS/OO-0434SC

In this position, you will be responsible for the purification and characterization of recombinant proteins for use in drug discovery; development and scale-up of protein purification methodologies; and verification of suitability of product for intended use (biochemical research, mass screening, x-ray, crystallography and NMR). Additionally, you will be responsible for the operation of analytical and preparative liquid chromatography systems, gel electrophoresis and host cell lysis equipment, and the occasional assistance with bacterial fermentations.

Minimum qualifications include a B.S. or M.S. in Biochemistry, Microbiology, Cell Biology or related field. Must have demonstrated knowledge of protein biochemistry, expression, characterization and purification of recombinant proteins. Experience with liquid chromatography, HPLC, gel electrophoresis and western blotting is also required. Outstanding interpersonal and communication skills are required as you will interact and collaborate with colleagues.

We offer an excellent compensation package and a positive environment that encourages continuous learning and growth. Qualified candidates, please mail, fax or e-mail your resume, indicating JOB CODE, to: **Parke-Davis, 2800 Plymouth Road, Ann Arbor, MI 48105. Fax: (734) 622-7617. E-mail: HumanResources.resume@wl.com.** Equal opportunity employer in action. Smoke-free work environment.

PARKE-DAVIS
A Warner-Lambert Division
www.parke-davis.com

ADMIRAL PIHL ENDOWED CHAIR IN NEUROSCIENCE
Medical University of South Carolina
Department of Physiology and Neuroscience

Applications are invited to fill an endowed chair in the Department of Physiology and Neuroscience at the Medical University of South Carolina. The position is tenure track at the level of **PROFESSOR**. The applicant will be expected to play a significant role in the growth of the Neuroscience Institute. The applicant must have a Ph.D., M.D., or the equivalent and have a record of sustained extramural funding in the neurosciences. Priority will be given to individuals with research programs that augment areas of existing research excellence including aging, cell signaling, neuroregeneration, retinal and cochlear physiology, neuropsychiatric disorders, and substance abuse. Outstanding laboratory space and development funds are available as well as the potential to make an additional tenure-track hire. Review of applications will begin August 1, 2001, and continue until the position is filled. Send complete curriculum vitae, statement of research interests and accomplishments, and five letters of reference to: **Peter Kalivas, Ph.D., Department of Physiology/Neuroscience, Medical University of South Carolina, P.O. Box 250677, Charleston, SC 29425. E-mail: kalivasp@musc.edu; website: www2.musc.edu/PGY/PGY.html.**

Medical University of South Carolina is an Equal Employment Opportunity/Affirmative Action Employer.

RESEARCH NEUROPATHOLOGIST

The Stanley Foundation Research Programs, a nonprofit institution supporting research on the neurobiology of severe mental illness, seeks a Board-eligible or Board-certified Neuropathologist (M.D./Ph.D. preferred) to conduct research on a large, well-characterized postmortem collection. The laboratory is in the Uniformed Services University of the Health Sciences in Bethesda, Maryland, and is associated with multidisciplinary research groups at USUHS, NIH, and Johns Hopkins Medical Center. Demonstrated competence in molecular biological techniques (*in situ* hybridization, quantitative PCR, and gel electrophoretic techniques) is required. Academic appointment at USUHS is possible. Salary commensurate with prior experience. Please forward curriculum vitae to:

Maree Webster, Ph.D., Director
Stanley Foundation Brain Research Laboratory
Uniformed Services University of the Health Sciences
Department of Psychiatry
4301 Jones Bridge Road
Bethesda, MD 20814

Two **POSTDOCTORAL POSITIONS** in behavioral/cognitive neuroscience at The Ohio State University, Department of Psychology, are available in a collaborative research program focusing on the cognitive functions of cortical acetylcholine and the effects of aging on plasticity in the cortical cholinergic input system. One position is for a neurophysiologist with experience in the technique of extracellular recording of single neurons. The other position is for a behavioral neuroscientist, preferably with some familiarity with *in vivo* neurochemical techniques. Please contact: **Ben Givens (Telephone: 614-292-0385; e-mail: givens.7@osu.edu), John P. Bruno (Telephone: 614-292-1770; e-mail: bruno.1@osu.edu),** or **Martin Sarter (Telephone: 614-292-1751; e-mail: sarter.2@osu.edu).**

POSTDOCTORAL POSITION in microbial molecular genetics. Development of new antibiotic mechanisms based on bactericidal genes of *B. subtilis* bacteriophage SPO1. Analysis of mechanisms by which the phage subverts the host's biosynthetic machinery to its own purposes. Please send curriculum vitae, summary of research experience, and names of three references to: **Dr. Charles Stewart, Department of Biochemistry and Cell Biology, Rice University, P.O. Box 1892, Houston, TX 77251. E-mail: crs@bioc.rice.edu.** *Equal Opportunity Employer.*

POSITIONS OPEN

POSTDOCTORAL ASSOCIATE. National Center for Ecological Analysis and Synthesis (NCEAS)/University of California, Santa Barbara: Collaborate with two working groups undertaking studies on (1) the spatial ecology of infectious disease in humans, wildlife, and plants; and (2) the implications of wildlife disease for the conservation of biological diversity.

Responsibilities: The successful candidate will coordinate data analyses among subgroups within these two larger working groups and will be expected to develop their own core research associated with one or both of the working groups. Applicants should possess Ph.D. or research experience with statistical analysis and theoretical modeling of populations in spatial and temporal ecological systems. The applicant should be familiar with computer programming and data visualization and management. An understanding of infectious disease processes is highly desirable.

Initial funding is for one year; possible extension for a second year. All work conducted at NCEAS. Position open until filled. Desired start date: July 1, 2000. Send letter of application, statement of research interest, curriculum vitae, and names (with e-mail addresses) of three references. Applications should have "Disease Ecology" as subject field and be **e-mailed** to: **postapp@nceas.ucsb.edu** or **mailed** to: **Dr. S. Andelman, Deputy Director, NCEAS, 735 State Street, Suite 300, Santa Barbara, CA 93101-3351.** NCEAS solicits proposals twice a year for supported activities including working groups, Sabbatical Fellows, and Postdoctoral Associates. Information about NCEAS and proposal guidelines at **website: http://www.nceas.ucsb.edu.** *The University of California is an Equal Opportunity/Affirmative Action Employer.*

MOLECULAR PARASITOLOGY FACULTY POSITION

The World Health Organization (WHO) Collaborating Center for Tropical Diseases and the Department of Microbiology and Immunology of the University of Texas Medical Branch invite applications for a tenure-track faculty position at the **ASSISTANT/ASSOCIATE PROFESSOR** level. The position will focus on the genomics of emerging and reemerging infectious diseases; the emphasis can be on eukaryotic or prokaryotic pathogens. The ideal candidate will have a proven track record of experimentation in molecular, biochemical, or cell biological aspects of parasitic or bacterial disease pathogenesis and be committed to developing the necessary skills for becoming an integral member of an overall University program in computational molecular biology/functional genomics. Excellent opportunities exist for productive collaborations with colleagues in basic science and clinical departments, including the Sealy Centers for Molecular Science and Structural Biology. Applications, including curriculum vitae, research plans, and contact information for three references to: **David H. Walker, M.D., WHO Collaborating Center for Tropical Diseases, The University of Texas Medical Branch, 301 University Boulevard, Galveston, TX 77555-0609.** *UTMB hires only persons authorized to work in the United States. UTMB is an Affirmative Action/Equal Opportunity Employer; Minorities/Females/Disabled/Veterans.*

The Division of Pediatrics Infectious Diseases, Johns Hopkins School of Medicine, is recruiting Physician Scientists at the level of **ASSISTANT** and **ASSOCIATE PROFESSORS**. The applicant must be Board-certified/Board-eligible in pediatric infectious diseases and interested in spending 80–90% of time in research. A strong background in laboratory research and a potential (or proven record) of extramural funding are desirable. The faculty rank will be commensurate with Johns Hopkins School of Medicine. Interested individuals send their curricula vitae to: **Kwang Sik Kim, M.D., Chief, Pediatric Infectious Diseases, Johns Hopkins University, 600 North Wolfe Street, Park 256, Baltimore, MD 21287-4933. E-mail: kskim@jhmi.edu.** *Johns Hopkins University is an Equal Opportunity Employer. Women and minorities are encouraged to apply.*

POSITIONS OPEN

MOLECULAR GENETICIST CARDIOVASCULAR DISEASE

The Department of Genetics at the Southwest Foundation for Biomedical Research is seeking a senior-level (at least seven years of experience after the Doctorate) Molecular Geneticist who will develop an extramurally funded program to investigate the genetic determinants of cardiovascular disease and/or risk factors for cardiovascular disease. The successful candidate must be willing to integrate into ongoing programs in the Department of Genetics and should have a strong interest in nonhuman primate models of disease. The Department of Genetics has 17 faculty-level scientists, many of whom collaborate in two program project grants concerning the genetics of atherosclerosis in human and nonhuman primate (*Papio hamadryas*) populations. The broad range of research programs present in the Department is described on the Department's **website: http://www.sfbr.org/sfbr/departments/genetics/genetics.html.** Resources available at the Southwest Foundation include the large nonhuman primate colonies maintained by the Southwest Regional Primate Research Center and extensive laboratory and computer facilities. The successful candidate will be appointed at the **ASSOCIATE SCIENTIST** or **SCIENTIST** level. Applicants should submit curriculum vitae and the names, addresses, and telephone numbers of three references to: **Mr. Michael Moore, Director of Human Resources (025S), Southwest Foundation for Biomedical Research, P.O. Box 760549, San Antonio, TX 78245-0549.** *Equal Opportunity Employer.*

The Academy of Natural Sciences invites applications for a **CURATORIAL POSITION** in **MALACOLOGY** at any rank. This curator will have responsibilities in the malacological or invertebrate paleontological collections of the Academy or both and potentially in the general invertebrate collection. The successful candidate will have or be expected to establish an internationally recognized program of externally funded, collection-based research on the systematics and evolution of recent or fossil *Mollusca*. Where possible, this person will seek opportunities for collaborative research with other curators in the Biodiversity Group and with fellow scientists in the Academy's environmental centers. In addition to research, other equally important duties include curatorial oversight of relevant collections and participation in public education, museum programs, donor cultivation, and service to professional organizations.

Qualifications: Ph.D. in an appropriate field; research experience in systematics and evolution of *Mollusca*. Target starting date: January 2001. To apply: By 31 July 2000, send curriculum vitae; names and contact information for three references; and a cover letter that describes your research program, curatorial experience, and philosophy of public education on systematics and environmental issues to: **Malacology Search Committee, c/o Mark Isaksen, Academy of Natural Sciences, 1900 Benjamin Franklin Parkway, Philadelphia, PA 19103-1195 U.S.A. FAX: 215-299-1028; e-mail: isaksen@acnatsci.org.**

SENIOR FACULTY POSITION COGNITIVE SCIENCE DEPARTMENT
Johns Hopkins University

We seek to hire at **FULL PROFESSOR** rank a cognitive scientist conducting computational research informed by generative linguistics and addressing problems in human language processing and/or acquisition. Also desirable are broad interests in formal approaches to cognitive science and experimental research in psycholinguistics and/or neurolinguistics. Position commences on or after January 1, 2001; review of applications begins immediately. Please send curriculum vitae and representative reprints/preprints to: **Search Committee, Department of Cognitive Science, Krieger Hall, Johns Hopkins University, Baltimore, MD 21218-2685.** *The Johns Hopkins University is an Equal Opportunity/Affirmative Action Employer. Women and members of underrepresented minorities are especially encouraged.*

Scientists
at Aventis Pharma

Aventis Pharma

The merger of the pharmaceutical companies Hoechst Marion Roussel and Rhône-Poulenc Rorer into the new global player Aventis Pharma is creating new opportunities within the pharmaceutical industry. Aventis Pharma combines an innovative pipeline with strong growth of new products in all of the world's major markets.

The Martinsried Genomics Center

is based in the Munich (Germany) area within one of the most important European regions for academic as well as industrial research in the field of Biotechnology.

For the Martinsried Genomics Center we are currently looking for:

Senior Scientist Mammalian Cell Biology

Ref.# 1:

The candidate will be responsible to establish and lead a team dedicated to integrate aspects of modern Cell Biology into the target validation process for drug development.

The focus of this group will be the functional analysis of proteins and signaling pathways in mammalian cell culture systems.

The candidate should be able to implement techniques required for the manipulation of gene and protein functions in cell culture systems.

A broad scientific knowledge should enable the candidate to develop genomic approaches for the characterization and validation of gene families.

We are looking for a PhD cell biologist or molecular biologist with a strong background in mammalian cell culture and cytology techniques, antisense or antibody approaches for protein inactivation, and an excellent understanding of modern functional genomics.

Scientist Proteomics / Functional Protein Analysis

Ref.# 2:

The candidate will be responsible for a team dedicated to integrate functional proteomics into the target validation process for drug development. The focus of this group will be the functional analysis of protein complexes and pathway elucidation. The candidate should be able to oversee the operations of the proteomics section, including training and supervision of scientific staff, and identification, evaluation and implementation of new technologies for proteomics.

We are looking for a PhD biochemist, protein chemist or molecular biologist with a strong background in protein interaction analysis by Mass Spectrometry. We expect good experience in sample preparation for functional protein analysis projects (protein extractions, subcellular fractionation, etc.), in protein separation techniques (currently mostly 2DE, HPLC, protein complex purifications, etc.), and in data analysis such as image analysis for 2DE.

Scientist C. Elegans Genomics

Ref.# 3:

The candidate will be responsible for a team dedicated to integrate C. elegans genomics into the target validation process for drug development and to establish human disease models.

A broad scientific knowledge should enable the candidate to implement genomic approaches in C. elegans for the characterization and validation of proteins of interest and entire gene families.

We are looking for a PhD cell biologist or molecular biologist with a strong background in C. elegans genetics and molecular biology, including protein inactivation by gene deletion or RNA interference techniques.

Scientist Bioinformatics / Bioanalysis

Ref.# 4:

The candidate will contribute to target identification and validation projects by developing innovative solutions that enhance our data processing and interpretation capabilities.

Further responsibilities include training and consulting, as well as testing and evaluating new applications and analysis approaches in the context of real, disease-oriented projects. A broad scientific knowledge should enable the candidate to guide genomic approaches for the characterization and validation of gene families, and to support modeling of pathways and/or prediction of protein interactions.

We are looking for candidates with Ph.D. in biology, statistics, computer science or a related field, basic knowledge of molecular biology, genetics and/or drug development, and significant experience with common bioinformatics software and biological databases. Shell- and Perl-scripting experience on UNIX systems, as well as basic knowledge of relational databases and SQL would be an advantage.

We expect

For all of the Scientist positions, an excellent proven record in the field and at least 2-3 years of postdoctoral experience are prerequisite. The proper coordination with other groups involved in the target validation process will require the ability to work efficiently within a multidisciplinary team. For members of an international team, excellent communication skills in English is a must.

In addition to the Scientist positions, we are also recruiting ***Postdoctoral Scientists*** in the above stated areas of research.

Please indicate the reference # for the desired position and whether you are applying for a Postdoc or a Scientist position.

We offer

Compensation commensurate with performance and requirements, the wide-ranging benefits package you would expect from a large company and good opportunities for carrer development.

A highly motivated, internationally focused team awaits you.

For application, send a resume and curriculum vitae indicating your full career details to:

Aventis Pharma Deutschland GmbH
Application Service
Building K 607
D-65926 Frankfurt
Germany

RADIOBIOLOGY SECTION HEAD
WAKE FOREST UNIVERSITY SCHOOL OF MEDICINE

The Department of Radiation Oncology and the Comprehensive Cancer Center of Wake Forest University have unparalleled opportunity available for an individual at the level of **ASSOCIATE PROFESSOR** or **PROFESSOR** for the position of Radiobiology Section Head with an appointment in the Department of Cancer Biology. The individual selected will direct the growing basic and translational research efforts of the Radiobiology Section, which will include up to five Ph.D. basic scientists and three M.D. or M.D./Ph.D. clinician-investigators, as well as facilitating collaborative/translational research efforts within the basic science component of the Cancer Center. The Section Head will have the authority to recruit at least two new faculty members. This position includes an outstanding resource package and access to excellent research facilities: new laboratory space (including 3,500 square feet of "open design" wet laboratory space); 1,000 square feet of support space; and more than 500 square feet of office space, all of which occupy one-half floor of a new research building. Outstanding recruit package includes space, equipment, laboratory technicians, postdoctorals, graduate students, and discretionary funds. Generous salary/benefits package.

Wake Forest University is located in Winston-Salem, North Carolina, in the west central Piedmont region of the state. Located within one hour of the Blue Ridge Mountains and four hours of the Atlantic Ocean, Winston-Salem's climate encourages year-round activities. Winston-Salem has excellent public, private, and parochial schools as well as a strong arts community.

Interested applicants should submit curriculum vitae and cover letter to: **Edward G. Shaw, M.D., Professor and Chairman, Department of Radiation Oncology, Wake Forest University School of Medicine, Medical Center Boulevard, Winston-Salem, NC 27157-1030. E-mail: eshaw@wfubmc.edu; Telephone: 336-716-4647; FAX: 336-716-7837**. Additionally, please contact: **Steven G. Swarts, Ph.D., Associate Professor and Acting Section Head, Department of Radiation Oncology (same address and FAX as Dr. Shaw). E-mail: sswarts@wfubmc.edu; Telephone: 336-716-6110.**

ASSISTANT PROFESSOR of botany. Biology department emphasizing teaching seeks a Botanist; tenure-track position; Ph.D. required. Candidate must be able to teach general biology, general botany, plant systematics, and plant community ecology or range ecology and management. Direction of graduate students, research program, and university service expected. Position starts August 2000. Send curriculum vitae; transcripts; statement of research interests and teaching philosophy; and names, addresses, and telephone numbers of three references to: **Botany Search, Personnel, Station 21, Eastern New Mexico University, Portales, NM 88130**. Screening begins May 30, 2000; applications accepted until filled. For more information, **Telephone: 505-562-2753; website: www.enmu.edu**. *Affirmative Action/Equal Opportunity/Title IX Employer.*

VISITING ASSISTANT PROFESSOR BIOCHEMISTRY

A one-year, nontenure-track Visiting Assistant Professor position is available in the Department of Chemistry, Georgetown University, beginning August 2000. Duties will include but not be limited to teaching introductory biochemistry and chemistry courses. Send curriculum vitae and arrange for two letters of recommendation to be sent to: **Faculty Search Committee/Biochemistry, Department of Chemistry SCI, Georgetown University, Box 571227, Washington, DC 20057-1227. Website: www.georgetown.edu/departments/chemistry**. *Georgetown University is an Equal Opportunity/Affirmative Action Employer; applications from qualified women and minority candidates are encouraged.*

POSITIONS OPEN

NEXtran

AN AFFILIATE OF BAXTER HEALTHCARE CORPORATION

POSTDOCTORAL RESEARCH APPOINTMENT

Nextran is an established leader in xenotransplantation research. We are currently looking for a Postdoctoral candidate specializing in cell and embryo culture. The targeted two-year appointment will entail spending up to one year in Australia plus up to one year in Ohio. Responsibilities include scientific development and subsequent transfer of embryo manipulation technology. Duties will also include cryopreservation of semen and embryos and training in embryo manipulation procedures.

Requirements: Ph.D. with expertise in cell and embryo culture and molecular biology techniques. Background in swine preferred. Qualified applicants are encouraged to apply. Please respond with a summary of research interests and curriculum vitae.

Nextran, Attention: Human Resources Manager
Job Code: PDAUS
303B College Road East
Princeton, NJ 08540
FAX: 609-520-1235
E-mail: llevine@nextran.com

Nextran is an Equal Opportunity Employer.

POSTDOCTORAL RESEARCH POSITIONS IN MICROBIOLOGY
American Society for Microbiology/ National Center for Infectious Diseases

Positions are available for Postdoctoral Scientists to conduct novel research with the overall objective of developing practical applications of microbiology, immunology, and epidemiology for diagnosis and prevention of infectious diseases. Associates will perform research in residence at the National Center for Infectious Diseases, which is headquartered at the Centers for Diseases Control and Prevention in Atlanta, Georgia.

Deadline for applications is November 15, 2000. **Website: http://www.asmusa.org/edusrc/edu23e.htm; e-mail: fellowships-careerinformation@asmusa.org** or **ihulede@asmusa.org.**

PHYSICIST. Design/build optoelectronic measurement devices including a stroboscopic system and specialized compact disc reader by developing theories and laws on the basis of observation and experiments. Use a scanning tunneling device and atomic force microscope to study optical discs. Develop binary codes that can be used to store and retrieve biological information from optical discs. Required: Bachelor of physics or mathematics. Job/interview site: Irvine, California; $36.97 per hour; 40 hours per week. Send ad and résumé to: **Job Number JSA 34470, P.O. Box 269065, Sacramento, CA 95826-9065.**

POSTDOCTORAL POSITION available to study cell signaling mechanisms of neuronal process extension and migration. Experimental approaches include cellular and molecular assays of L1 mutations, immunohistochemistry of mouse knockouts, and biolistic gene transfer into cortical slices. Visit our **website: www.unc.edu/~srclab/**. *Applicant must be U.S. citizen or green card holder.* Send curriculum vitae to: **Patricia Maness, Ph.D., Department of Biochemistry, University of North Carolina School of Medicine, Chapel Hill, NC 27599-7260.**

POSTDOCTORAL FELLOWSHIP available immediately to investigate the effects of alcohol on hepatocyte pathology, fibrogenesis, and liver-specific gene regulation. Applicants should have an M.D. or Ph.D. degree and *be citizens or permanent residents of the United States*. Please send your curriculum vitae and the names and telephone numbers of three references to: **Dr. Esteban Mezey, Professor of Medicine, 921 Ross Research Building, The Johns Hopkins University School of Medicine, 720 Rutland Avenue, Baltimore, MD 21205.**

POSITIONS OPEN

SCIENCE WRITER/EDITOR

The American Society of Plant Physiologists has an opening for a news and reviews editor of its journal, *The Plant Cell*. Full responsibility for content and editing of journal front section, including writing and editing articles; all aspects of publishing review articles; and editing and production of special issues. Will attend scientific meetings and communicate with plant cellular, molecular, and developmental biologists. Must have demonstrated writing skills including ability to synthesize complex scientific concepts and explain them in a clear, intelligible fashion. Ability to communicate effectively and tactfully with authors, to gain rapid understanding of unfamiliar research areas, and to recognize what topics in current plant biological research merit commentary. Master's degree in genetics or biology; Ph.D. desirable. Salary commensurate with experience; excellent benefits. Send cover letter, résumé, salary history, and writing samples to: ***The Plant Cell* Job Search, ASPP, 15501 Monona Drive, Rockville, MD 20855-2768**. No calls, please. *Equal Opportunity Employer.*

POSTDOCTORAL POSITIONS in neurochemistry at the University of California, San Diego, are available immediately to investigate (1) proteolytic mechanisms required for converting protein precursors into neuropeptides that function as neurotransmitters and hormones or (2) proteolytic mechanisms in Huntington's disease. Projects involve identification of proneuropeptide-derived proteolytic products by interdisciplinary approaches in peptide/protein biochemistry, proteome analyses by mass spectrometry, analyses of cellular production of neuropeptides in cultured cells, and molecular biology for gene expression and cloning. Ph.D. in relevant discipline is required, as well as laboratory experience in these areas. Send curriculum vitae and names of three references to: **Dr. V. Hook, c/o M. Richards, Department of Medicine, University of California, San Diego, 9500 Gilman Drive #0822, La Jolla, CA 92093-0822. FAX: 619-543-2881; e-mail: mlrichards@ucsd.edu.**

POSTDOCTORAL POSITION available immediately to study terminal differentiation and apoptosis in preneoplastic and neoplastic lesions of the lung with a focus on prevention and treatment of disease. Experience in molecular genetics and cell biology including cDNA library construction, cell culture, and immunological assays is required. Please send curriculum vitae and the names of three references to: **Patrick P. Koty, Ph.D., Department of Environmental and Occupational Health, University of Pittsburgh, 260 Kappa Drive, Pittsburgh, PA 15238. E-mail: koty+@pitt.edu**. *The University of Pittsburgh is an Affirmative Action/Equal Opportunity Employer.*

A **POSTDOCTORAL POSITION** is available immediately to study the molecular mechanisms of site-specific DNA endonucleases. Ph.D. in biochemistry, molecular biology, or related field required. Send curriculum vitae and three letters of recommendation to: **Dr. Frederick Gimble, c/o Human Resources, Texas A&M University System Health Science Center, Institute of Biosciences and Technology, 2121 West Holcombe Boulevard, Houston, TX 77030-3303. FAX: 713-677-7725; website: http://www-ibt.tamu.edu**.

Texas A&M University System Health Science Center, Institute of Biosciences and Technology, is an Equal Opportunity/Affirmative Action Employer.

POSTDOCTORAL POSITIONS are available to study liver stem cells in (1) adult liver and bone marrow (**Petersen**, *Science* **284**:1168) or (2) *in vitro* differentiating embryonic stem cells (**Terada**, *PNAS* **96**:15127). The positions require Ph.D. in cell and/or molecular biology. Send curriculum vitae and names of three references to: **Dr. Bryon Petersen** or **Dr. Naohiro Terada, University of Florida College of Medicine, Department of Pathology, P.O. Box 100275, Gainesville, FL 32610**. *University of Florida is an Equal Opportunity Employer.*

Medicines for Malaria Venture

Medicines for Malaria Ventures (MMV)
Funding Opportunities
CALL FOR LETTERS OF INTEREST

1. Malaria Drug Discovery Research Proposals
2. Malaria Drug Development Proposals

MMV was recently established in Geneva as an Independent Foundation committed to the sustainable discovery and development of affordable antimalarial chemotherapies into the 21st century. It is based on a partnership between several public sector agencies, philanthropic organisations and the pharmaceutical industry. The venture will operate under the umbrella of the World Health Organisation Roll Back Malaria Project.

Last year three major drug discovery projects involving academic and industrial research groups were selected for funding at a combined total of $4 million per year. In addition, several projects were selected for smaller 'seedcorn' grants. Generous donations from several agencies now enable MMV to initiate a second round of project support for the year 2000. Two categories are defined for this years proposals.

1 **Malaria drug discovery projects** that are directed toward the identification of a candidate compound for entry into preclinical development

- Projects may be at an early or late stage of the discovery process but must clearly outline the steps that will be followed and the issues that will be addressed to identify a candidate molecule.
- Most projects selected for funding last year were based on a partnership between an academic centre and a pharmaceutical company. However, this should not be seen as restrictive and applications are also welcome from stand-alone academic groups or from biotechnology and other pharmaceutical companies. The key determinant for funding will be the perceived chance of project success.
- Where it is thought that a project would benefit from the establishment of a partnership, MMV will make efforts and offer its services to facilitate this.

2 **Malaria drug development projects** where a single molecule or combination (perhaps with a back-up compound) has been identified with demonstrably acceptable preclinical properties and a potential for clinical development.

- The molecule (or combination) may be at either a preclinical or clinical stage of development. It must have a well documented activity in an appropriate animal model and / or in humans. Full details of available data, including preliminary chemistry, formulation, analytics, toxicology and ADME (adsorption, distribution, metabolism, excretion) should be provided.
- An established partnership or organisation to take forward the candidate drug through clinical development to registration is desirable, but not an essential prerequisite for funding, as MMV can assist in organising preclinical and clinical development to registration.

Application for funding is initially requested through submission of a 3 page letter of interest to reach MMV offices by September 30th, 2000. Further details outlining the desired content of such a letter for either category (drug discovery or drug development) can be obtained by directing enquiries to MMV offices (see below) or can be obtained from the MMV web site (www.malariamedicines.org)

Subsequent to the letter of interest, a pre-selection of projects will be made by an Expert Scientific Advisory Committee. The Principle Investigators of these projects will then be asked to prepare a more detailed written proposal and representatives of the project teams will be invited to Geneva for an oral presentation of their projects to the committee in early 2001.

For further information please contact:
Medicines for Malaria Venture, MMV Office (L 249),
Tropical Disease Research (TDR), World Health Organisation
CH-1211 Geneva 27, Switzerland

Fax: +41 22 791 4854
E-mail: mmv@who.int

MMV gratefully recognises the funding and support it has received from the following organisations: Bill and Melinda Gates Foundation, Global Forum for Health Research, International Federation of Pharmaceutical Manufacturers Associations, Rockefeller Foundation, Roll Back Malaria Partnership, Swiss Agency for Development and Cooperation, The Netherlands Minister for Development Cooperation, United Kingdom Department for International Development, World Bank, World Health Organisation

PHARMACOLOGY/PHYSIOLOGY FACULTY

The Department of Physiology and Pharmacology in the University of New England College of Osteopathic Medicine invites applications for a 12-month, tenure-track appointment at the level of **ASSISTANT** or **ASSOCIATE PROFESSOR**. We are seeking applicants who hold a Doctoral degree and who will seek to establish and maintain an extramurally funded research program, preferably in the areas of neuropharmacology, cardiovascular pharmacology, and/or diabetes. Preference will be given to applicants who can demonstrate excellence in teaching pharmacology and therapeutics to graduate and medical students. Salary and level of appointment will be commensurate with background and experience. Applicants should submit curriculum vitae; a statement of teaching philosophy with copies of teaching evaluations and selected course materials; a statement of research interests and goals with reprints of selected recent publications in peer-reviewed journals; and the names of three references by July 15, 2000, to: **Sally Libby, Assistant Director of Human Resources, University of New England, 11 Hill's Beach Road, Biddeford, ME 04005. E-mail: slibby@mailbox.une.edu**.

The University of New England is an Equal Opportunity/Affirmative Action Employer and welcomes female and minority candidates.

POSTDOCTORAL POSITIONS MOLECULAR BIOLOGY/GENOMICS PENN STATE UNIVERSITY

Postdoctoral positions are available for investigating novel principles of transcriptional regulation and cell biochemistry/physiology using a whole genome molecular approach. The recent sequencing of the genome of *Methanosarcina thermophila* (archaea domain) and availability of a genetic exchange system positions this organism for fundamental discoveries in molecular biology using a variety of approaches, including DNA microarrays. Funding is currently available from the NASA Astrobiology Institute, the National Institutes of Health, the Department of Energy, and the National Science Foundation. Send résumé and addresses of three references to: **James G. Ferry, Department of Biochemistry and Molecular Biology, University Park, PA 16802. Telephone: 814-863-5721; e-mail: jgf3@psu.edu; website: http://www.bmb.psu.edu/deptpage/Ferry.htm.**

POSTDOCTORAL POSITIONS in HIV pathogenesis available immediately to study the role of CD4 downmodulation during infection and to characterize host cell factors involved in HIV replication. Applicants should have a solid background in molecular biology/virology. Experience with HIV is desirable. Send curriculum vitae and the names and addresses of three references to: **Dr. Juan Lama, Department of Medicine, University of California, San Diego, 9500 Gilman Drive, La Jolla, CA 92093-0665. Telephone: 858-534-4304; FAX: 858-534-7743; e-mail: jlama@ucsd.edu.**

The Division of Neurosurgery at Harvard Medical School and Brigham and Women's Hospital invites applications for **JUNIOR FACULTY POSITIONS** for a new Brain Microtumor Research Program. We seek applicants who will take a creative approach to the attack of microscopic brain tumor (tumor that is too small to be imaged or accessed by conventional means). Applicants with a Ph.D. and/or M.D. in a variety of disciplines (neurobiology, cell or molecular biology, immunology, neuropharmacology, etc.) are eligible. Productivity, NIH funding history (or strong potential), and teaching experience are important. To apply, send brief statement of interests, stressing your approach to brain microtumor research; curriculum vitae; three reprints; and names of three references to: **Lois A. Lampson, Ph.D., Search Committee Chair, 221 Longwood Avenue/LMRC 111, Boston, MA 02115. E-mail: lampson@rics.bwh.harvard.edu.**

POSITIONS OPEN

INTERESTED IN CLINICAL OR POSTDOCTORAL RESEARCH TRAINING?

The National Institutes of Health has both! For more information, visit our website which lists an array of clinical and postdoctoral opportunities, including tenure-track positions.

http://www.training.nih.gov

The NIH is an Equal Opportunity Employer.

ENZYMOLOGY AND PROTEOMICS PENN STATE UNIVERSITY

POSTDOCTORAL POSITIONS are available to investigate the structure/function of prokaryotic enzymes with broad importance that are distributed in both the archaea and bacteria domains. Examples of enzymes currently under study are acetate kinase, phosphotransacetylase, two novel carbonic anhydrases, and a new electron-transferring iron-sulfur flavoprotein. Crystal structures have either been solved or are imminent for each, providing a firm foundation for investigating enzyme mechanism and structure/function applied to an understanding at the whole cell level. The recent availability of the entire genomic sequence of the archaeon *Methanosarcina thermophila* and the current development of DNA microarrays affords new opportunities for investigation of novel enzymes with universal importance in prokaryotic physiology. Send résumé and three references to: **James G. Ferry, Department of Biochemistry and Molecular Biology, University Park, PA 16802. Telephone: 814-863-5721; e-mail: jgf3@psu.edu; website: http://www.bmb.psu.edu/deptpage/Ferry.htm.**

POSTDOCTORAL POSITIONS FUNCTIONAL GENOMICS OF HYPERTENSION

Postdoctoral positions are available in the Center on Functional Genomics of Hypertension using transgenic, knockout, recombinase, gene transfer, and microarray systems to examine the genetics of hypertension. Postdoctorals can expect to apply many aspects of molecular genetics, molecular biology, and whole animal physiology in their projects. A Ph.D. in genetics, molecular biology, physiology, or related discipline is required. Send curriculum vitae and names of three references to:

Curt D. Sigmund, Ph.D., Director
Center on Functional Genomics of Hypertension
2191 ML, University of Iowa
Iowa City, IA 52242
E-mail: curt-sigmund@uiowa.edu

POSTDOCTORAL POSITION

This position is available immediately to study glutamate transport in relationship to neuroprotection, anesthesia mechanisms, and mechanisms of neurodegenerative diseases. Applicants must hold a Ph.D. or M.D. and have advance training in cell biology, biochemistry, or neuroscience. Expertise is desirable in areas of cell signaling. Submit curriculum vitae with names of three references to: **Zhiyi Zuo, M.D., Ph.D., Department of Anesthesiology, University of Virginia Health System, P.O. Box 800710, Charlottesville, VA 22908**. *University of Virginia is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL POSITION available late summer in the Laboratory of Neural Control of Locomotion. We cut across levels of organization in lamprey and neonatal mouse with neurophysiology, immunohistochemistry, mathematical modeling, and neuromorphic engineering. Preference for a strong candidate experienced in neuroanatomy, neurophysiology, or bioengineering. Ph.D. required. Benefits and congenial environment. Send curriculum vitae, research interests, and three letters of recommendation to: **Dr. Avis H. Cohen, Department of Biology, Biology/Psychology Building, University of Maryland, College Park, MD 20742. E-mail: ac61@umail.umd.edu.**

POSITIONS OPEN

ASSOCIATE SCIENTIST 2000–24

Corixa Corporation is a leading-edge biotechnology company based in Seattle, Washington, dedicated to the discovery of vaccines for the treatment of cancer and infectious diseases. We currently have an opening at our Hamilton, Montana, location for a person to direct immunology-related experimentation with Corixa adjuvants and vaccine delivery systems. This will include but is not limited to conducting adjuvant screening, developing new assays/methods as needed, and conducting dose response and mechanism of action studies. This position includes supervising technician(s) and writing regulatory reports. Successful candidates will have a minimum of two to five years of experience and a Ph.D. in immunology or associated field. Technical skills include experience with *in vivo*, *in vitro*, immune response assays, and/or vaccine development plus computer skills for data reduction. This job also requires an individual who can design, execute, analyze, and communicate experimental results with a minimum of supervision.

Corixa offers an attractive compensation and benefits package and a progressive work environment. Please apply by June 12, 2000, to: **Corixa Corporation, Attention: 2000–24, 553 Old Corvallis Road, Hamilton, MT 59840. FAX: 406-363-6129; website: www.corixa.com**. *Equal Opportunity Employer.*

POSTDOCTORAL POSITION: We are seeking a highly motivated individual capable of independent work and stimulated by the challenges of understanding membrane protein structure and function. Projects include: (1) sequence determinants of glucose transporter function; (2) mapping glucose transporter ligand binding domains; and (3) analysis of glucose transporter structure by biophysical, chemical, and mutagenesis approaches. The successful candidate will hold a Ph.D. in biology, biochemistry, chemistry, physics, or equivalent. Experience in molecular biology preferred. A description of this laboratory's research program may be found at **website: http://glutx.umassmed.edu/**. Send curriculum vitae and three letters of reference to: **Dr. Anthony Carruthers, University of Massachusetts Medical School, Department of Biochemistry and Molecular Biology, 55 Lake Avenue North, Worcester, MA 01655. E-mail: anthony.carruthers@umassmed.edu**. *University of Massachusetts Medical School is an Equal Employment Opportunity/Affirmative Action Employer.*

POSTDOCTORAL FELLOWSHIPS in nicotine and tobacco research. As part of the NCI- and NIDA-funded Transdisciplinary Tobacco Use Research Center, Fellows will be trained in multidisciplinary tobacco research and will gain research experience in the genetic basis of nicotine addiction, mechanisms of tobacco-induced genetic damage, and biobehavioral predictors of response to smoking treatment. Salary is $32,000 to $45,000 per year depending on training/experience. *Applicants must reside in the United States.* Send letter, curriculum vitae, and reference letters to: **Dr. S. Chrysogelos, Lombardi Cancer Center, TRB E407A, 3970 Reservoir Road N.W., Washington, DC 20007**. Deadline is June 15, 2000. Early applications encouraged. LCC is an NCI-designated Comprehensive Cancer Center. *Georgetown University is an Equal Opportunity Employer.*

PH.D., M.S., AND B.S. MOLECULAR BIOLOGISTS AND CHEMISTS

We are an Evanston, Illinois-based biotech start-up company seeking highly motivated individuals to conduct research in DNA diagnostics. Qualified candidates must have relevant experience. Send curriculum vitae or résumé to:

Nanosphere, Inc.
1801 Maple Avenue, Suite 2502
Evanston, IL 60201
E-mail: jpickett@nanosphere-inc.com
Website: http://www.nanosphere-inc.com

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Patch Clamp Electrophysiologist

AstraZeneca is one of the world's leading pharmaceutical companies, with approximately 50,000 employees. Operations are based on innovative research and development of pharmaceuticals in a number of major therapeutic areas. AstraZeneca has a highly developed marketing organisation around the globe, with a number of world-leading products. Production is conducted in some 20 countries. For further information, see: www.astrazeneca.com.

AstraZeneca R&D Södertälje conducts research and development with focus on the two therapeutic areas CNS and Pain Control. The site has approximately 1.500 employees.

Join the creative and innovative atmosphere at the In vitro Pharmacology Section of the Department of Bioscience, AstraZeneca R&D Södertälje, in our challenging task to characterize and validate as well as screen compounds on ion channel drug targets. Our activities are focused on ion channels relevant to Research Area CNS & Pain Control. We are currently seeking an experienced in vitro electrophysiologist to continue the build-up of the electrophysiology team.

Successful candidates will have a Ph.D. in biological sciences, physics or engineering with a strong background and several years of independent research utilizing patch-clamp or voltage-clamp methods. Furthermore, is a proven track record from independent research required. Candidates must be experts in slice and/or isolated cell patch-clamp techniques. Experience from single-channel recordings or combinations with calcium imaging will be appreciated. General experience in cell biology, molecular biology, pharmacology and/or neurobiology are additional strengths. Excellent organizational, interpersonal, networking as well as communicational skills in English are essential.

For further information, please contact;
Jacques Näsström +46 8 553 254 37, jacques.näsström@astrazeneca.com.

Your written application, marked Electrophysiologist, should be sent to AstraZeneca R&D Södertälje, Ulla Eriksson, Human Resources, 151 85 Södertälje. Closing date for applications Maj 17, 2000.

AstraZeneca

ETH ZÜRICH

The Swiss Federal Institute of Technology in Zurich (ETHZ) invites applications for a faculty position of a

Professor of Cell Biology

Research will focus on the molecular mechanisms of gene regulation, cell proliferation and differentiation, or signal transduction. The new professor will join the Institute of Cell Biology within the Department of Biology on the Hönggerberg-Campus in the immediate vicinity of the Institutes of Biochemistry, Biotechnology, and Molecular Biology and Biophysics. This location offers excellent conditions for an active research program in a scientifically dynamic environment.

Candidates should provide evidence of internationally recognized achievements in cell biology and the ability to cooperate with colleagues. Moreover, the position requires a firm commitment to teaching at the graduate and undergraduate levels.

Applications with a curriculum vitae, list of publications and current and future research should be submitted **to the President of ETH Zurich, Prof. Dr. O. Kübler, ETH Zentrum, Ch-8092 Zurich no later than July 15, 2000.** The ETHZ specifically encourages female candidates to apply with a view towards increasing the proportion of female professors.

THE UNIVERSITY of York

DEPARTMENT OF BIOLOGY

POSTDOCTORAL RESEARCH FELLOW IN DEVELOPMENTAL BIOLOGY

Applications are invited for a 3-year Wellcome Trust funded postdoctoral fellowship.

The position will be to study the transcriptional regulation of the Cdx family of homeodomain transcription factors during the establishment of the anteroposterior axis of the frog, *Xenopus laevis*. Candidates should have a PhD and a strong background in molecular biology. A keen interest in developmental biology is essential.

Starting salary is up to £20,811 per annum.

Informal enquiries can be made to Dr Harv Isaacs (tel 01904 434480; e-mail hvi1@york.ac.uk). Department of Biology, University of York, PO Box 373, York YO10 5YW, United Kingdom)

For further particulars and details of how to apply please write to the Personnel Office, University of York, Heslington, York YO10 5DD (e-mail: jobs@york.ac.uk), quoting reference number /6033 or see: http://www.york.ac.uk/admin/persnl/jobs/6033.htm. The closing date for applications is Friday 16 June 2000.

POSITIONS OPEN

DUKE UNIVERSITY MEDICAL CENTER

A **POSTDOCTORAL POSITION** is available in an NIH-sponsored project at the Duke Liver Center to study the cellular and molecular pathogenesis of hepatic fibrosis. Studies involve a complete range of molecular and cell biology techniques. Funding is available for interested/qualified postdoctoral applicants for up to four years. Applications will be reviewed until successful candidates are identified. Interested individuals should contact: **Don Rockey; e-mail: dcrockey@acpub.duke.edu; Telephone: 919-681-5054.** *Duke University Medical Center is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL POSITION AVAILABLE LABORATORY OF ALLERGIC DISEASES NIAID/NIH

A Postdoctoral position is available in the Laboratory of Allergic Diseases in the National Institute of Allergy and Infectious Diseases, National Institutes of Health. This project will involve the examination of FcεRI-dependent signaling mechanisms in mast cells with emphasis on tyrosine kinases and phosphatases. We are looking for a motivated individual with a Ph.D. in molecular biology, protein biochemistry, cell biology, or related fields who preferably also has experience/interest in signal transduction. Interested individuals should send a copy of their curriculum vitae and contact details of three references to:

Alasdair M. Gilfillan, Ph.D.
LAD/NIAID/NIH
Building 10, Room 11C213
10 Center Drive
Bethesda, MD 20892
FAX: 301-480-8384
E-mail: agilfillan@niaid.nih.gov

NIH is an Equal Opportunity Employer.

POSTDOCTORAL ASSOCIATE POSITION

Two Postdoctoral Associate positions, Department of Veterinary Pathobiology, University of Minnesota. Duties include research on (first position): molecular immunopathogenesis of infectious bursal disease virus in chickens and (second position): host range and tumor cell destruction by oncolytic avian viruses. Candidates must have completed a Ph.D. degree or foreign equivalent by start date; have experience in virology, immunology, and molecular biology; and a publication record in international, peer-reviewed English-language journals. Candidates with a D.V.M. and Ph.D. and/or one to three years of research experience will be given preference. Applications will be accepted through May 26, 2000, or until the positions are filled. Send a cover letter (describing research experience and interests); curriculum vitae; and the names, mail, telephone, and e-mail addresses of three references to: **Dr. Jagdev Sharma, Department of Veterinary Pathobiology, College of Veterinary Medicine, University of Minnesota, 205 VSB, 1971 Commonwealth Avenue, St. Paul, MN 55108.** *The University of Minnesota is an Equal Opportunity Educator and Employer.*

POSTDOCTORAL FELLOW THE UNIVERSITY OF TEXAS SOUTHWESTERN MEDICAL CENTER

Position available immediately to study kidney-specific gene regulation, kidney development, or polycystic kidney disease. Ph.D. and/or M.D. with strong background in molecular genetics or developmental biology required. Send curriculum vitae and names of three references to: **Dr. Peter Igarashi, Chief, Division of Nephrology, University of Texas Southwestern, 5323 Harry Hines Boulevard, Dallas, TX 75390-8856. FAX: 214-648-2071; website: http://www.swmed.edu/home_pages/nephrology/.** *UT Southwestern is an Equal Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

A **POSTDOCTORAL POSITION** in microbial pathogenesis is available to investigate virulence mechanisms of *Haemophilus ducreyi*, the etiologic agent of chancroid and a cofactor in transmission of HIV infection. Emphasis will be placed on characterization of *H. ducreyi* gene products involved in the regulation of expression of virulence factors. Experience with recombinant DNA techniques is required; this project makes extensive use of mutant analysis in conjunction with a relevant animal model. Position includes salary, fringe benefits, and the opportunity to work in a dynamic research environment. Position available after July 1, 2000. Send curriculum vitae and the names and telephone numbers of three references to: **Dr. Eric J. Hansen, Department of Microbiology, The University of Texas Southwestern Medical Center at Dallas, 5323 Harry Hines Boulevard, Dallas, TX 75390-9048. FAX: 214-648-5905. E-mail: hansen01@utsw.swmed.edu.** *UT Southwestern is an Equal Opportunity/Affirmative Action Employer.*

The Center for *In Vivo* Microscopy at Duke University invites applications for a two-year appointment at the level of **POSTDOCTORAL FELLOW** in the Department of Radiology. Candidates should have a Ph.D. in pulmonary physiology and/or biomedical engineering. The successful candidate will join a team of scientists engaged in leading-edge pulmonary imaging using magnetic resonance microscopy and hyperpolarized gas. Experience in pulmonary function and/or pathology is desired. Familiarity with computer technology and imaging systems will be beneficial. For more information about the work, please see our **website: http://www.civm.mc.duke.edu.** Interested parties should send a résumé and names of at least two references to: **Sue Behringer, Box 3302, Duke University Medical Center, Durham, NC 27710. E-mail: seb@orion.mc.duke.edu; FAX: 919-684-7122.** *Duke is an Equal Opportunity Employer.*

POSTDOCTORAL POSITION ELECTROPHYSIOLOGY

NIH-funded position open immediately to study the electrophysiological properties of vestibular sensory neurons in brain slices. Studies are focused on changes in K^+ currents and synaptic currents during development and after vestibular-nerve lesions using patch clamp recordings, dye injections, pharmacological testing, and computer analysis. Experience in patch clamp recording required and a background in neurobiology preferred. Send résumé, statement of research interests, and names of three references to: **Dr. K. Peusner, Department of Anatomy and Cell Biology, George Washington University School of Medicine, 2300 I Street N.W., Washington, DC 20037. E-mail: anakdp@gwumc.edu.**

POSTDOCTORAL TRAINING FELLOWSHIPS

NIH-supported Postdoctoral Fellowships are available to study gene regulation in *Streptococcus mutans*, structural/function of peptide antibiotics, and microbial diversity and ecology of oral microbiota. Experience in microbiology or biochemistry required. Applicants must have Doctoral degree and *U.S. citizenship or permanent resident status.*

If interested, please send curriculum vitae and names and telephone numbers/e-mail addresses of three references to: **Dr. Page W. Caufield, Department of Oral Biology, University of Alabama at Birmingham, LHRB 250, 1919 Seventh Avenue South, Birmingham, AL 35294. FAX: 205-975-6773; e-mail: page@uab.edu.**

POSTDOCTORAL ELECTROPHYSIOLOGIST to study ion channel modulation in normal and pathological conditions. Research projects include a membrane-delimited modulation of NMDA/AMPA receptors and the ionic mechanism of apoptosis. Highly motivated candidates experienced in patch clamp and molecular biology should please send curriculum vitae with names of three references to: **Shan Ping Yu, M.D., Ph.D., Department of Neurology, Box 8111, Washington University, St. Louis, MO 63110. E-mail: yus@neuro.wustl.edu.**

POSITIONS OPEN

THE CLEVELAND CLINIC FOUNDATION

POSTDOCTORAL POSITION IN BRAIN TUMOR BIOLOGY
The Cleveland Clinic Foundation and Lerner Research Institute

A Postdoctoral position is available immediately to study the molecular and cellular biology of DNA damage-induced apoptosis in primary brain tumors. Potential areas of study include P53 signal transduction as it relates to apoptosis, mechanisms of resistance to proapoptotic stimuli, and interactions between growth factor and apoptosis signal transduction pathways. The laboratory is located in a state-of-the-art facility with a highly interactive, collaborative environment. Candidates should have strong experience in molecular biology, cell culture, and biochemistry. Experience with protein expression and purification would be helpful. Salary will be commensurate with experience. Please send curriculum vitae and three references to: **Dr. Michael A. Vogelbaum, Department of Neurosurgery and the Center for Molecular Genetics, Cleveland Clinic Foundation, 9500 Euclid Avenue, Cleveland, OH 44195. E-mail: vogelbm@ccf.org.**

POSTDOCTORAL POSITION

The University of Medicine and Dentistry of New Jersey (UMDNJ)–Robert Wood Johnson Medical School has a Postdoctoral position available to investigate the pathogenesis and experimental therapeutics of spinal cord injury. Research will focus on the immunocytochemical, histological, pathological, and genomic consequences of spinal cord injury. Focus shall be on the expression of growth and trophic factors in the spinal cord as part of an international consortium devoted to cure and recovery of function. The applicant with a Ph.D. degree will be in the salary range of $25,000 to $30,000 per annum and will be afforded appropriate opportunities for advancement. Work will be performed at the Center for Neuroscience, a major interdisciplinary facility.

Send curriculum vitae and cover letter to: **Ira B. Black, M.D., Professor and Chair, Neuroscience and Cell Biology, UMDNJ–Robert Wood Johnson Medical School, 675 Hoes Lane, CABM 342, Piscataway, NJ 08854. Telephone: 732-235-5388; FAX: 732-235-5885; e-mail: black@cabm.rutgers.edu; website: http://www.umdnj.edu.** *UMDNJ is an Affirmative Action/Equal Opportunity Employer, Minorities/Females/Disabled/Veterans, and a member of the University Health System of New Jersey.*

Mayo Clinic clinical biochemistry **POSTDOCTORAL FELLOWSHIPS.** Seeking applicants for two-year ComACC-approved Fellowship directed toward qualified individuals (Ph.D. or M.D. required) pursuing careers in clinical biochemistry. Individuals completing the program are eligible for certification by the American Board of Clinical Chemistry. Applications on file by October 1, 2000, will be considered for appointment beginning in July 2001. Contact: **Thomas P. Moyer, Ph.D., Division of Clinical Biochemistry and Immunology, Mayo Clinic, Rochester, MN 55905** for more information. *Mayo Foundation is an Affirmative Action and Equal Opportunity Employer and Educator.*

POSTDOCTORAL POSITIONS available in musculoskeletal program project. A major area of focus includes defining the nuclear events that transduce a mechanical signal into a change in collagen and matrix metalloproteinase expression in connective tissue. The mechanotransduction pathways contributing to the osteoblast response to parathyroid hormone is also an ongoing study. Experience in molecular and cellular biology required. Send curriculum vitae and references to: **Dr. Joseph Bidwell, Department of Anatomy and Cell Biology, Indiana University School of Medicine, 635 Barnhill Drive MS5035, Indianapolis, IN 46202-5120. E-mail: jbidwell@iupui.edu; FAX: 317-274-4233.**

European Opportunities

Ludwig— LMU
Maximilians–
Universität—
München—

Tenure Track Assistant Professorship in

Biophysics

(C3 with tenure evaluation after 5 years)

The Department of Physics of the University of Munich is searching for a courageous and ambitious junior scientist to strengthen our ongoing activities in the field of mechanical single molecule spectroscopy and the biophysics of molecular motors at the Physics Department, in the local SFBs and in the Center for NanoScience (for details see http://www.physik.uni-muenchen.de).

The successful candidate has an excellent academic education, outstanding scientific qualifications, superb pedagogical skills and actively represents biophysics in research as well as in teaching.

Applications including the usual documents should be sent to the Dekanat der Fakultät für Physik der Ludwig-Maximilians-Universität München, Schellingstrasse 4, 80799 Müchen by June 30, 2000.

European Opportunities

UNIVERSITY OF BRISTOL

Lectureship in Pharmacology

Applications are invited for a permanent Lectureship, from individuals working in any area of Pharmacology, although preference may be given to those whose research is in Cardiovascular Pharmacology.The Department of Pharmacology has an international reputation (graded 5A in the last RAE) in neuropharmacology, cell signalling and cardiovascular research. The prime criteria for appointment will be demonstrated ability to carry out research of international quality and commitment to excellence in teaching.

The Faculty of Medicine provides outstanding facilities and opportunities for interdisciplinary research and is host to an MRC Centre, 4 MRC Co-operatives, an MRC Cell Imaging Facility and a Wellcome Trust-funded Cardiovascular Research Centre.

The appointment is likely to be made at Lecturer Grade B level, salary range £23,521-£30,065 per annum, though for an exceptional candidate, appointment at a more senior level would be considered.

Informal enquiries should be made to Professor Peter Roberts, telephone (0117) 928 7632, or E-Mail p.j.roberts@bristol.ac.uk Information about the Department is available at: http://www.bris.ac.uk/depts/pharmacology/

For further details telephone (0117) 954 6947, minicom (0117) 928 8894 or E-Mail Recruitment@bris.ac.uk (stating postal address ONLY) quoting reference 6411.

The closing date for applications is 26th May 2000.

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Global Opportunities

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ALL APPOINTEES will be familiar with ECFMG and MCCEE and will join a dynamic team with academic balance in progressive medical education, basic science and clinical research, clinical care, and community and university service.

BASIC REQUIREMENTS for appointment in Departments of **ANATOMY, BIOCHEMISTRY, MEDICAL EDUCATION, MICROBIOLOGY, PATHOLOGY, PHARMACOLOGY, and PHYSIOLOGY:** PhD or MD obtained by research, experience teaching medical students, and research productivity.

BASIC REQUIREMENTS for appointment in **COMMUNITY MEDICINE, FAMILY MEDICINE, INTERNAL MEDICINE, OBSTETRICS AND GYNECOLOGY, PEDIATRICS, PSYCHIATRY, RADIOLOGY, and SURGERY:** MD or MBBS followed by well-supervised advanced training, higher professional recognition, experience teaching medical students and advanced trainees, research productivity, and understanding of GME accreditation and requirements of membership/fellowship/certification in North America, Australia, Europe and the Arab Board.

The UAE is open, tolerant, and highly attractive; faculty receive tax-free salary, support for accommodation/furnishings, annual air fares, educational assistance for up to three children, and international conferences, and generous leave.

Further information at http://www.uaeu.ac.ae or from the respective Department Chair: Tel: +971-3-7672000 or Fax: +971-3-7672001.

Applications should include letter indicating depth of interest, experience and suitability for the position sought, full CV/publication list and names/addresses/fax of four referees to:

The Dean (c/o Mr C. P. Nair)
FMHS, UAE University
P.O. Box 17666
Al Ain, United Arab Emirates

Applications closed 1 September 2000. Previous applicants need not apply.

POSITIONS OPEN

RESEARCH GENETICIST (POSTDOCTORAL RESEARCH ASSOCIATE), U.S. Department of Agriculture (USDA), Agricultural Research Service, Corn Insects and Crop Genetics Research Unit, Ames, Iowa. Incumbent will assist in research on the biology of improving grain and forage crops. Responsibilities will include conducting of experiments, data collection and analysis, and preparing the results for publication. The incumbent will join a team that is investigating the genetics and molecular biology of soybean gene organization and gene expression though a large-scale analysis of expressed sequence tags (ESTs). Candidates must have experience in application of molecular genetic techniques. Desirable skills include construction of cDNA libraries and DNA sequencing. Experience with BLAST and bioinformatic computer programs applicable to sequence analyses is preferred but not essential. Ph.D. is required and should have been awarded within the past four years. Position is funded for a minimum of 18 months. Salary commensurate with experience ($41,834 to $54,385 per year). Benefits available. Position will be open until filled. For information on the position, contact: **Dr. Randy Shoemaker; Telephone: 515-294-6233; e-mail: rcsshoe@iastate.edu**. Applications in response to advertisement should be sent along with the names of three references to: **Dr. Randy Shoemaker, USDA/ARS Corn Insects and Crop Genetics Research Unit, G401, Agronomy, Iowa State University, Ames, IA 50011.** *USDA/ARS is an Equal Opportunity Employer.*

POSTDOCTORAL POSITIONS
Harvard Medical School
Massachusetts Eye and Ear Infirmary

Two Postdoctoral positions are available at Harvard Medical School/Massachusetts Eye and Ear Infirmary to study aspects of retinal development and cell biology. Areas of research include (1) study of the early steps of eye formation in *Drosophila* and *Xenopus* and (2) use of *Drosophila* and *Xenopus* as model systems for congenital eye disorders. Genetic, molecular, and biochemical approaches will be used. Up to three years of support are available. Send curriculum vitae and names of three references to: **Dr. F. Pignoni, Department of Ophthalmology, Harvard Medical School, 243 Charles Street #507, Boston, MA 02114. E-mail: Francesca_Pignoni@hms.harvard.edu; website: http://www.howelaboratory.harvard.edu/fphomepage/index.htm.** *Harvard Medical School/Massachusetts Eye and Ear Infirmary is an Equal Opportunity/Affirmative Action Employer.*

The Center for *In Vivo* Microscopy at Duke University invites applications for a **POSTDOCTORAL FELLOW** for a two-year appointment in the Department of Radiology. Candidates should have a Ph.D. in pathology, molecular biology, or toxicology. The successful candidate will join a team of scientists engaged in understanding the potential of magnetic resonance histology in applications of morphologic phenotyping, toxicology, and pathology. Familiarity with computer technology and imaging systems will be beneficial. For more information about the work, please see our **website http://www.civm.mc.duke.edu**. Interested parties should send a résumé and names of at least two references to: **Sue Behringer, Box 3302, Duke University Medical Center, Durham, NC 27710. E-mail: seb@orion.mc.duke.edu; FAX: 919-684-7122.** *Duke is an Equal Opportunity Employer.*

POSTDOCTORAL POSITION
GERM LINE STEM CELLS

Studies include culture and transfection of male germ line stem cells (spermatogonia) and identification and isolation of genes active in stem cell self-renewal and differentiation. Send curriculum vitae, names of three references, and a letter describing research experience to: **Dr. R. L. Brinster, School of Veterinary Medicine, University of Pennsylvania, 3850 Baltimore Avenue, Philadelphia, PA 19104.**

POSITIONS OPEN

POSTDOCTORAL POSITIONS
McLaughlin Research Institute

(1) To study the role of Casein Kinase II in spermatogenesis (*Nat. Genet.* **23**:118–121), including identification of the CK2 target protein and epistatic analysis with other candidate genes under **Dr. Xin Xu**. Previous experience in protein-protein interaction, kinase signaling, and knockout and transgenic mouse analysis would be helpful.

(2) To study the role of Eyes Absent (Eya) genes during mammalian development and organogenesis under **Dr. Pin-Xian Xu**. Previous work established that Eya1 gene is required for development of several organs. (*Nat. Genet.* **23**:113–117). Current efforts are focused on using Eya1-deficient mice to understand the developmental and molecular pathogenesis of organ defects that occur in Brancio-Oto-Renal syndrome, a human Eya1-deficiency. Molecular technologies are being used to dissect the genetic regulatory hierarchies that are required for auditory and other organ development. Candidates should have a strong molecular biology background. A good basic knowledge of embryology and mammalian genetics and experience in handling mice and mouse embryos is desirable.

To apply: Please send by mail a summary of prior research accomplishments and current research interests; curriculum vitae; recent reprints/preprints; and names, telephone numbers, and e-mail addresses of three references to: **Dr. Pin-Xian Xu (Auditory System Development)** or **Dr. Xin Xu (Spermatogenesis), McLaughlin Research Institute, 1520 23rd Street South, Great Falls, MT 59405. FAX: 406-454-6019. Website: www.montana.edu/wwwmri.**

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Trudeau Institute has a **POSTDOCTORAL POSITION** available analyzing the role of IFN-g in suppressing CD4 T cell responses of mice during experimental autoimmune encephalomyelitis. This will involve elucidating the cellular and molecular mechanisms of IFN-g-mediated anergy and apoptosis of CD4 T cells during EAE using normal and IFN-g knockout mice. Experience in basic cellular immunology is required, and some molecular biology is desirable.

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Dyana Dalton, Ph.D.
Trudeau Institute, Inc.
P.O. Box 59
Saranac Lake, NY 12983
Telephone: 518-891-3080
FAX: 518-891-5126
E-mail: ddalton@trudeauinstitute.org

Further information is available at **website: www.trudeauinstitute.org** or by written or telephone request.

POSTDOCTORAL POSITIONS funded by NIH available immediately to study mechanisms that (1) regulate tumor necrosis, factor-induced apoptosis, and induction of NF-κB activity; (2) affect signaling through receptors for vascular endothelial cell growth factor and tumor-induced angiogenesis. Experience in biochemistry and molecular biology highly desirable. Send curriculum vitae and names, FAX numbers and/or e-mail addresses of three references to: **Dr. David B. Donner, Walther Oncology Center, Indiana University School of Medicine, 1044 West Walnut Street, Indianapolis, IN 46202. FAX: 317-274-7592; e-mail: ddonner@iupui.edu.**

POSITIONS OPEN

RESEARCH SCIENTIST wanted: Ph.D. in biology or related field. Duties include development of *in vivo* animal models, enzyme assays, and cell culture-based assays. Excellent laboratory, problem-solving skills, and people skills required. Excellent benefit package. Please send résumé with salary requirements to: **BioCryst Pharmaceuticals, Inc., Personnel, 2190 Parkway Lake Drive, Birmingham, AL 35244. FAX: 205-444-4640.**

CONFERENCES

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Scientific Secretariat: Dr. F. Xavier Bosch
Institut Catala d'Oncologia
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Telephone: +3493 260 7812
E-mail: HPV2000@ico.scs.es or
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An applicant should send full curriculum vitae and photograph, a list of publications, one copy each of five key publications, a statement explaining research experience and key techniques used, reasons for his/her application proposals for research at RIKEN (these should not exceed five pages of A4-sized paper), and the names and addresses of three references. Further details are available from the address below. All applications should be received by August 4, 2000.

Applicants should address all correspondence to:

Professor Masakazu Aono
Head of the Chief Scientist Nominating Committee
Surface and Interface Laboratory
RIKEN (The Institute of Physical and Chemical Research)
2-1 Hirosawa,
Wako-shi, Saitama 351-0198, Japan
Telephone: +81-48-467-9300
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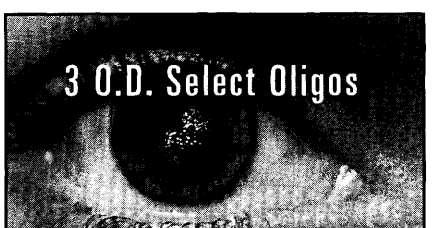

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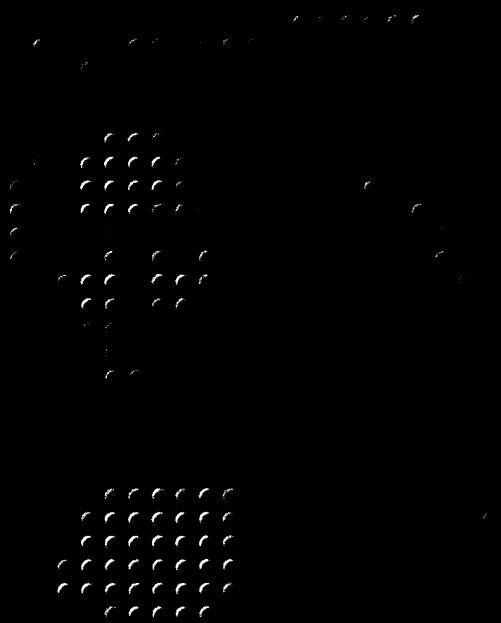

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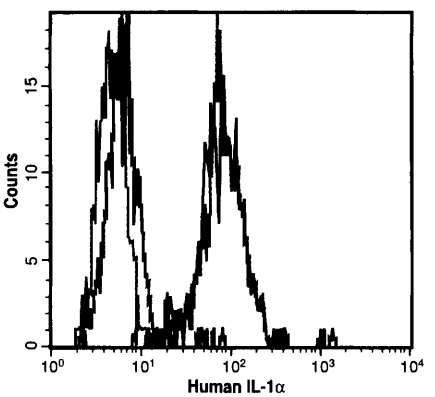

TF-1 cells stained with the human IL-1α Fluorokine Kit (pink, Cat # NFLA0) or with a negative staining control (green). Reaction specificity is demonstrated by effect that the blocking antibody (blue) and the negative blocking control (red) have on the staining reaction.

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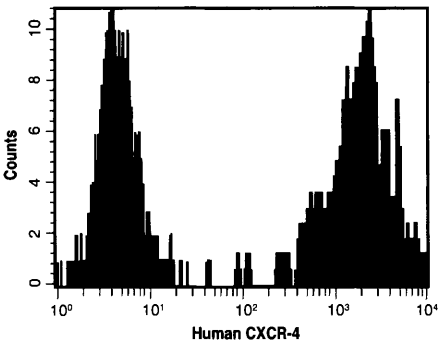
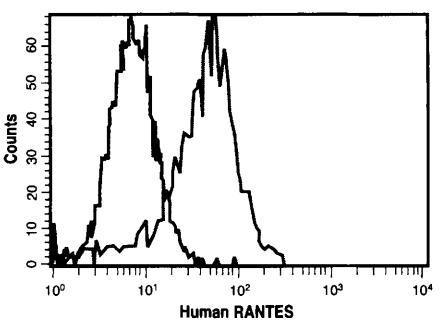
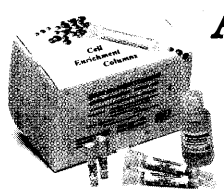


CXCR-4 transfected (red) and non-transfected NSO cells (green) stained with anti-human CXCR-4 monoclonal antibody (Cat # FAB173P) conjugated to phycoerythrin.

Intracellular Cytokine Staining



Permeabilized (green) vs. non-permeabilized (blue) staining of NSO cells transfected with human RANTES. Cells were stained with anti-human RANTES (Cat # IC278F) monoclonal antibody conjugated to fluorescein.



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