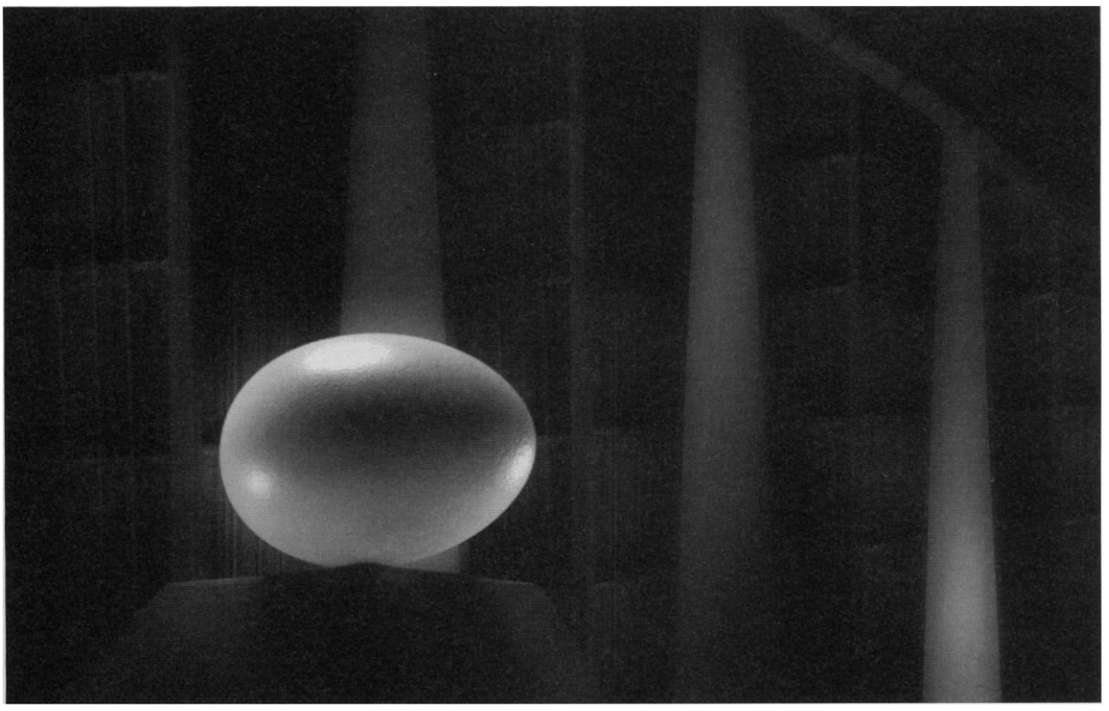

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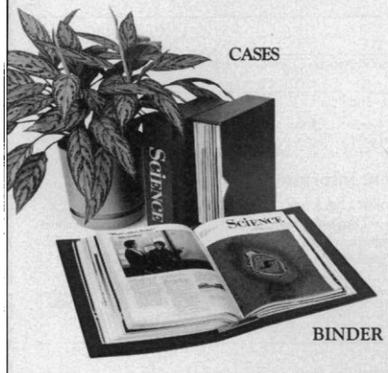

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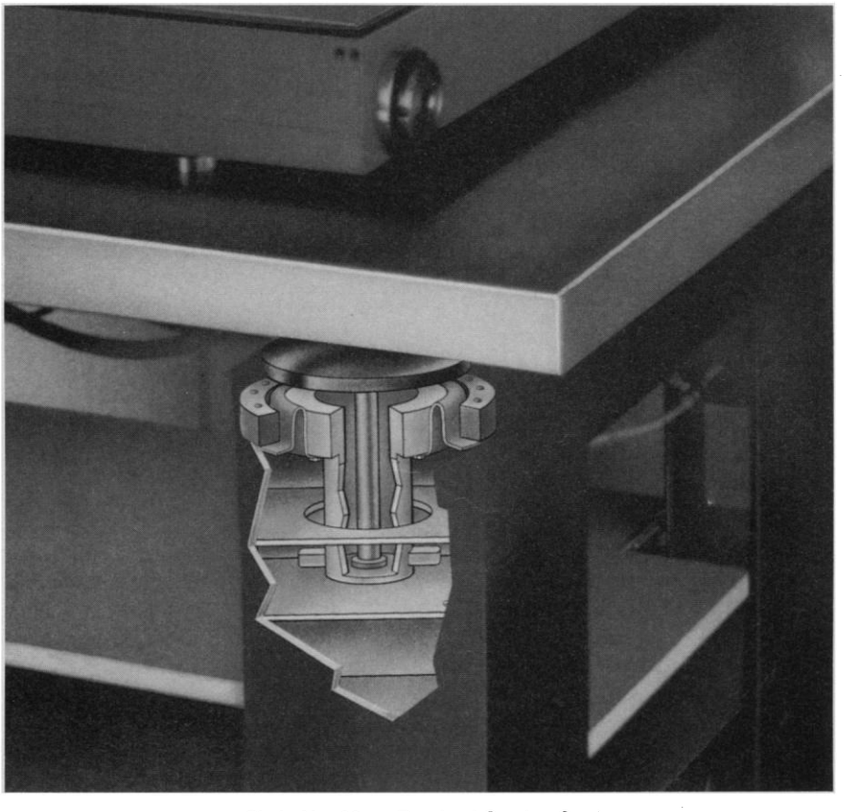

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Pictured: Turnip yellow mosaic virus crystal. LWD 10x objective. The 3D perspective provides a clear understanding of the crystal structure that cannot be obtained from a single, 2D photo. (Dr. Yurii Kuznetsov, UC Riverside.)

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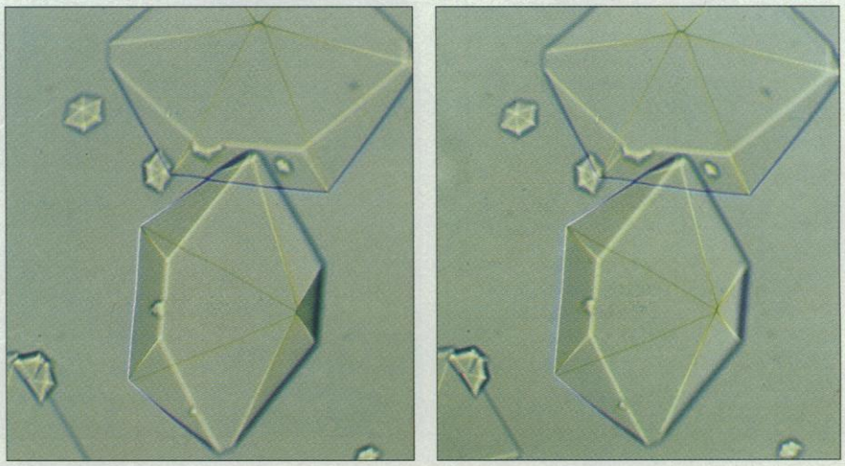

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edited by DIANA PABST

Building for the Future

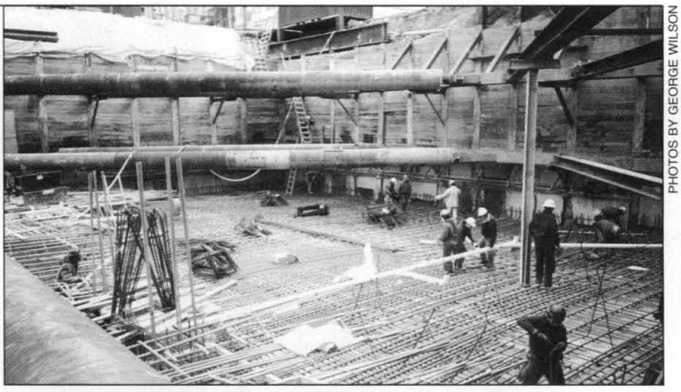
From a sidewalk vantage, the sheeting, shoring, and excavation phase of AAAS's new Center for Science and Engineering resembles that of any typical office building construction site. But underground, the story is more interesting.

Only 14 feet below the foundation of the planned 12-story building, subway trains follow their scheduled runs through two tunnels. "This is one of the few buildings in Washington to be built on top of and this close to a Metro tunnel," says AAAS construction manager George Wilson.

Because of the proximity, the design engineers worked a full year with the Washington Metropolitan Area Transit Authority to fine-tune a plan to prevent tunnel movement and ground shifting during excavation. As the excavation progresses, the weight on the subway tunnels is lessened by about 120 pounds per cubic foot of soil; under the reduced burden, the tunnels tend to move upward.

To prevent such movement, 13 "tie-downs" were installed, using a principle similar to a bolt, washer, and nut. Sixty-foot reinforcing rods with threaded ends at the top—called dywidags—were placed in pre-drilled holes and anchored firmly; a concrete block (the "washer") was formed at the surface level of each dywidag, and a hydraulic wrench was applied to large nuts to stress the rods and press the blocks down against the soil and tunnels.

Then, a 5-foot-thick reinforcing concrete and steel mat foundation, which spreads the building load over the entire site, was laid in five carefully coordinated stages.



PHOTOS BY GEORGE WILSON

Concrete results. Reinforcing steel and concrete mat foundation spreads the building load and prevents the soil from shifting.

Every night the tunnels were surveyed from within with lasers to measure any movement and ensure that they remained within tolerances.

As the building is erected and the weight of the concrete structure replaces the weight of the removed soil, the upward pressure will be gradually eased by loosening the nuts, until the construction is complete and the situation is stabilized.

The building, scheduled for completion early next year, will serve as AAAS headquarters and also have facilities for a wide range of activities for scientists, educators, and members of the public. Other nonprofit and science-related organizations have agreed to lease three floors.

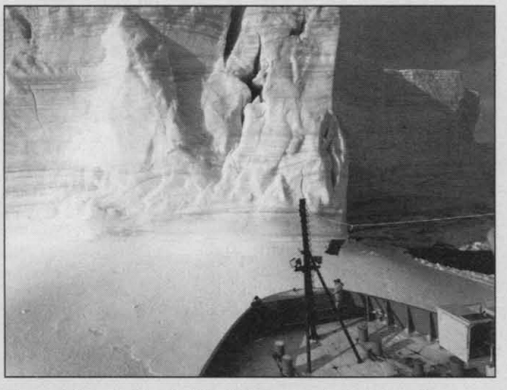
At the End of the Earth: Journeys to the Ice

Photographer Neelon Crawford has spent most of the last 5 years documenting the stark beauty of Antarctica. But the very idea of that remote and mystical place was planted decades ago. "I can distinctly remember walking home from school in New York City at the age of 9 and buying a copy of *Popular Science* that had an article on Antarctica," he recalls. "I devoured it."

The fascination remained through a 25-year career in photography. Finally in 1989, he traveled to Antarctica. He later returned four more times, distilling scenes of the land and ice, the dark and light, the machines and the people who labor in the cold isolation. Many were taken in 1993 during a 10-month winter-over, when he was based at McMurdo Station. An exhibit of the work is on display at AAAS headquarters through 7 April.

Support for Crawford's journeys came from the National Science Foundation's Antarctic Artists and Writers Program. It aims to expand understanding of the continent through the aesthetic explorations of artists, writers, photographers, poets, and other scholars in the humanities.

Crawford, a resident of Baltimore, Maryland, does months of painstaking preparation for a trip, anticipating field conditions, natural light, and the kinds of equipment he will need for the particular work he has in mind. For some of the Antarctic photos he designed and built a special 600 millimeter, 4 by 5 inch film box camera with its focus fixed at infinity, to get detailed images of subjects in the far distance. He usually spends a week to 10 days at a location, using different film emulsions "as a palette."



Bow of the *Nathaniel B. Palmer* Against Large Berg South of South Orkney Islands, 1992.

"I want to make as concise a statement as I can, and know that on top of that there will be a great deal of spontaneity," he says. "The challenge is to make a picture that captures what's there."

He works in both black and white and color. But "my heart is in black and white," he says. "It's a more faithful medium, with no illusion of correctness. Color emulsions are never as good as your eye but suggest the false illusion of being right."

Crawford has worked in many wild and remote places. His favorite images are published in three photogravure portfolios: *Icons of Spirit*, *Vintage Machines*, and *Southern Lights: Antarctica*. Subjects include ancient Buddhas in Burma, production of steam locomotives in China, and blind men in the streets of India. "The common thread for me in all this work," he says, "is that it has to do with savoring things, photographing them with an eye to understanding them. It's a process of exploration, and my motivation is a search for things that interest me."

For more information, call Virginia Stern at AAAS's Art of Science and Technology Program, 202-326-6672. For details about the Antarctic Artists and Writers Program, write to: Polar Information Program, National Science Foundation, 4210 Wilson Blvd., Arlington, VA 22230.

Getting into it. Laborer enters "tie-down" casing to prepare for drilling.

Designed by Henry N. Cobb of Pei Cobb Freed & Partners, the center will be one of the most energy-efficient and "environmentally friendly" buildings in the country [see "Inside AAAS," 26 November 1993]. Randolph Croxton of Croxton Collaborative, a New York City firm specializing in "green" architecture, is a consultant for the project.

One engineering feature that will save time and tempers is a "rapid-deployment" elevator system. "It addresses one of the most common complaints we heard from AAAS staff," says Wilson.

Users punch in the floor they want on electronic key pads in the lobby of each floor. The computer-controlled design assigns riders to specific cars based on their destination, so each car can bypass some floors. A "voice" program guides people with disabilities and holds the elevator doors open for longer periods at the push of a button.

The system, manufactured by Schindler Elevator Corp., is quite new, but is already operating successfully in two other office buildings in the United States.

The site of the building is a block away from the association's present offices, allowing AAAS staff and visitors to follow the progress of construction. One of the questions Wilson got is reminiscent of the popular children's storybook about Mike Mulligan and his faithful steam shovel, Maryann. "How," several observers asked, "do they get the digging equipment out of the hole?"

Awards Salute Contributions to Science

At the annual meeting in Atlanta, AAAS honored a number of scientists, public servants, and journalists for their significant contributions to the advancement of science and public understanding of science.

AAAS Philip Hauge Abelson Prize

The prize was given to **Frank Press** for his pioneering contributions to the development of modern geophysics and methods of natural disaster mitigation, and for his outstanding personal leadership in national science planning and administration.

AAAS Newcomb Cleveland Prize

The recipients were **Michael F. Crommie, Chris P. Lutz,** and **Donald M. Eigler** for "Confinement of Electrons on Quantum Corrals on a Metal Surface" in the Reports section of *Science* on 8 October 1993.

Also **Jerome Faist, Federico Capasso, Deborah L. Sivco, Carlo Sirtori, Albert L. Hutchinson,** and **Alfred Y. Cho** for "Quantum Cascade Laser" in the Reports section of *Science* on 22 April 1994.

AAAS Award for International Scientific Cooperation

Harold K. Jacobson was recognized for his tireless and continuing achievement in promoting multinational, interdisciplinary studies that have contributed to international cooperation in the scientific study of the human dimensions of global environmental change.

AAAS Award for Public Understanding of Science and Technology

The recipient was **Edward O. Wilson** for increasing the public's understanding of science by blending unique and comprehensive communication skills with extraordinary scientific achievements in his writings and lectures.

AAAS Hilliard Roderick Prize in Science, Arms Control, and International Security

Theodore Postol received the prize for his excellence in the field of science, arms control, and international security and for providing critically important technical analyses related to controversial issues that have influenced public discourse about appropriate public policy in these areas.

AAAS Mentor Award for Lifetime Achievement

Mary W. Gray was honored for devoting her career to increasing the number of women and minorities in mathematics, in addition to contributing her talents and energies to advocating the rights of women and minorities in academia.

Joe L. Martinez Jr. received the award for guiding thousands of students, including hundreds of women and ethnic minorities, to educational pursuits and careers in science as a teacher, adviser, role model, friend, and confidant.

AAAS Mentor Award

Joseph S. Francisco was honored for his exemplary commitment to students, unique approach to teaching, and desire to make a difference in the recruiting of minorities for careers in science.

AAAS Scientific Freedom and Responsibility Award

The recipient was **Vil Sultanovich Mirzayanov** for his integrity as a scientist, strength of character, and exceptional personal courage that served to promote the health, safety, and welfare of the Russian people and all humankind.

AAAS-Westinghouse Science Journalism Awards

■ **Newspapers with circulation less than 100,000:** The winner was **Karl Leif Bates** for three separate articles, "Chlorine: Cornucopia or Pandora's Box?," "Lasers: New Applications Point to Bright Future," and "A Perfect Match," published in *The Ann Arbor News* on 7 October 1993, 9 December 1993, and 26 May 1994.

David Brooks got an honorable mention for three articles, "The Water Under the Bridge," "The Proof Is in the Four-Chromatic, Digital Pudding," and "Cold Fusion Returns, In a New Hampshire Magazine," published in *The Nashua Telegraph* on 8 August 1993, 20 February 1994, and 1 May 1994.

■ **General circulation magazine: Robert Kunzig** won for his article "Between Home and the Abyss" in the December 1993 *Discover.*

Terence Monmaney won for his article "Marshall's Hunch" published in *The New Yorker* on 20 September 1993.

■ **Television:** Recipient **Jon Palfreman** won for "Prisoners of Silence," broadcast on PBS's *Frontline* on 19 October 1993.

Other winners were **Kathy Slobogin** and **LeeAnn Stauffer** for "Edge of a Miracle," aired on CNN on 14 April 1994.

Cara Birrittieri received an honorable mention for "Farm-a-cology," broadcast on New England Cable News on 30 August 1993.

■ **Radio: David Baron** was the winner for "Pigs in Paradise," aired on National Public Radio's *Soundprint* on 17 July 1993.

An honorable mention was given to **Richard Harris** for "Alien Species Threaten Native Wildlife," broadcast on National Public Radios's *All Things Considered* on 9 August 1993.

Braving the 'New World'

"A New Era in Science and Technology" is the theme of this year's AAAS Colloquium on Science and Technology Policy, from 12 to 14 April at the Capitol Hilton Hotel in Washington, D.C.

Now in its 20th year, the forum draws scientists, administrators, industrial R&D managers, policy-makers, academicians, and others to discuss key issues in science and technology policy. It will provide an overview of federal budget proposals for R&D in FY1996. Other sessions will focus on economic performance, human resources and career opportunities, the future of the national labs, reinventing the federal science agencies, the new congressional leadership and R&D, and megascience and international collaboration.

The fee is $240, or $180 for registrants from nonprofits and $60 for students (with discounts for AAAS members). To register, call 202-326-7075. For more information, phone 202-326-6600 or send an e-mail message to: snelson@aaas.org.

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The Long Ranger gel solution is now available in premixed format for convenient DNA sequencing gel preparation. The patented formulation improves resolution and read-length for all sequencing techniques, obtaining up to 30% more sequence information than with acrylamide, according to the manufacturer. **J. T. Baker. Circle 141.**

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The RecA Protein isolated from *Escherichia coli* catalyzes the formation of stable, sequence-specific triplex DNA-protein complexes that protect the target double-stranded DNA from the activity of various DNA modifying enzymes. Genomic mapping experiments that rely on rare-cutting restriction enzymes can take advantage of RecA-assisted restriction endonuclease cleavage. DNA subcloning techniques can benefit from the RecA protection of internal restriction enzyme sites within the cloned fragment. **Promega. Circle 142.**

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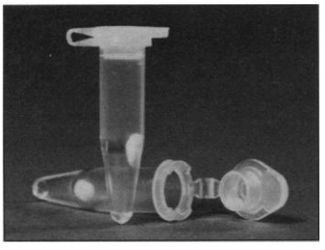
HotStart Micro 20 and HotStart Micro 50 Storage and Reaction Tubes are new members of a family designed to facilitate advanced polymerase chain reaction methods such as the hot start technique. The tubes' wax-mediated convective barrier allows for the separation of key reaction components to increase sensitivity, specificity, and yield by decreasing misprimes, primer-dimers, and premature annealing. The HotStart Micro 20 tubes are available for reactions of 15 to 25 μl and the HotStart Micro 50 tubes are for 25 to 50 μl. These 0.2-ml thin-walled tubes are certified RNase- and DNase-free. **Molecular Bio-Products. Circle 143.**



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■

Contour Viewer and Editor

The 3-D-E is Windows-based software designed to take two-dimensional image data and reconstruct a three-dimensional surface-rendered object. It allows the user to view, rotate, and zoom in real time on a 486 personal computer. **DataCell. Circle 145.**

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Video Documentation System

Model EVD-1000 is a stand-alone electronic video documentation system that is a natural upgrade from conventional 35-mm and instant photography for biotechnology researchers. The system is capable of recording trace amounts of nucleic acid and protein samples when viewed under either ultraviolet or white light. It makes use of a 1/2 inch black-and-white charge-coupled device camera with a typical horizontal resolution of 570 lines, which allows the user to record distortion-free prints with quality comparable to instant photography at a tenth of the cost. Prior to printing, images can be previewed on the 9-inch high-resolution monitor. The EVD-1000's Model EAS-1000 Electronic Archival System enables digital data storage and image retrieval for analysis and reprints of nucleic acid and protein samples. The images, which are stored in DOS-compatible TIF and BMP formats, are compatible with all personal computer–based image analysis programs. **Spectronics. Circle 146.**

■

Literature

DSC 6 Differential Scanning Calorimeter describes a unit designed for quality control and university laboratories with full capabilities for experiments such as melting point and glass transition determination, percent crystallinity, heat of fusion, oxidative stability, purity, thermal stability, and boiling point. **Perkin-Elmer. Circle 147.**

ENVIROLINK by Teknivent: A Generalized Solution for Environmental GC/MS Automation is a brochure on a third-generation data system for the automation of gas chromatography (GC) and mass spectrometry (MS) instruments. **Teknivent. Circle 148.**

DNA/RNA/Oligo Quantitation Using DU Series 600 and 7000 Spectrophotometers from Beckman is a technical information bulletin covering this subject in detail. **Beckman Instruments. Circle 149.**

Environmental Notes newsletter includes in a recent issue articles on the use of liquid chromatography and mass spectrometry for herbicide and pesticide compound identification, techniques for monitoring waste water, explosives analysis, and monitoring aldehydes in indoor air. **Waters Corp. Circle 150.**

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

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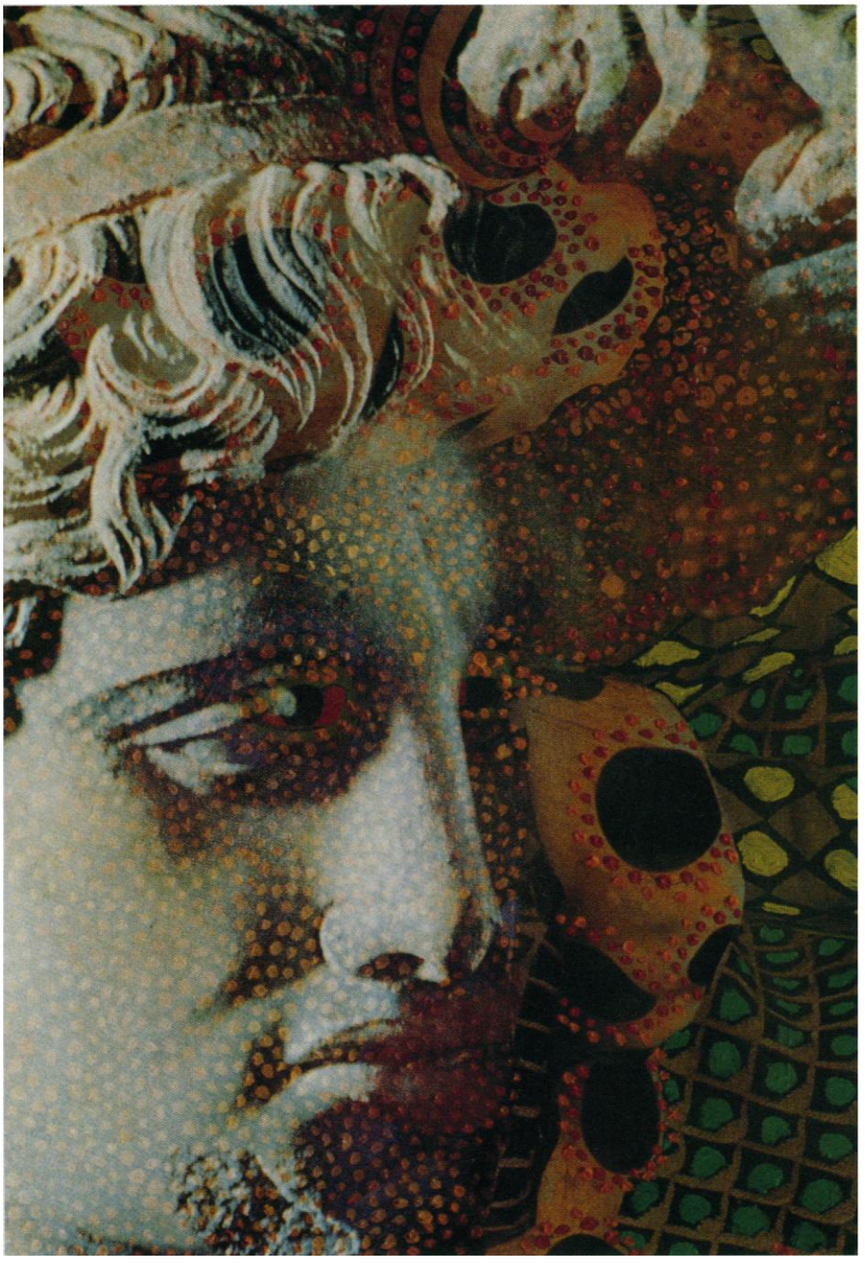

Henry Lewis, Photo Montage, Circa 1972

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EuroScience at Work:

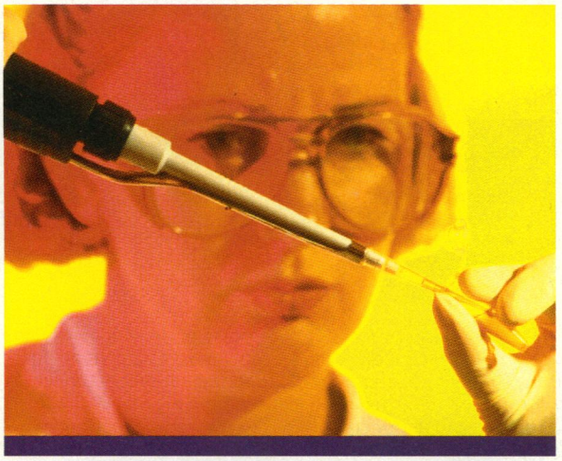
Career Opportunities in European Pharmaceuticals and Biotechnology

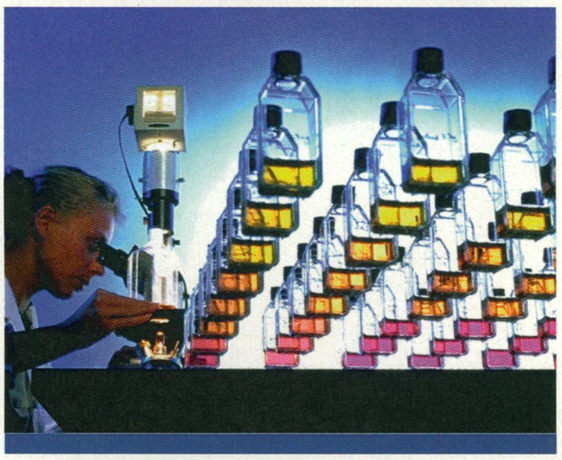
by John Timpane

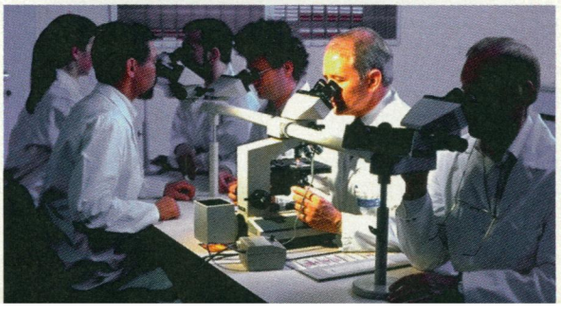
According to a theory called "the butterfly effect," first posited by E.N. Lorenz, when a butterfly beats its wings in Patagonia, forces are released that could result in an Arctic typhoon. Everything, that is, depends heavily on everything else.

Much the same holds true for the complex biopharmaceutical marketplace. What happens in the United States is happening in Europe is happening in Japan. Turbulence in these markets involves more than butterfly wings. It's The Pinch versus The Explosion. Concern over costs has led governments worldwide to review their health care systems. The result has been budget cutting, downsizing, and a wide-scale reorganization of the traditional pharmaceutical company. Biotechnology, with novelty and promise that grab headlines, rides the peaks and troughs of market fortunes.

In Europe, despite the economic corset, productivity has seen an unexampled explosion of new ideas, new leads, new products. Almost everyone, from the multinationals to the smallest garage-scale company, is moving toward biotechnology. The Human Genome Project is already producing an entire realm of new targets for drug discovery, new approaches to alleviating diseases and syndromes that were complete mysteries only a few years ago, and new ways of making drugs. And so-called "traditional pharma" is no longer so traditional: New methods of creating and combing through chemical libraries have revitalized the classical search for new drug candidates.







Top photo: courtesy of Cambridge Antibody Technology/ Quadraphic Design Consultants Limited; Middle and bottom photo: courtesy of Hoechst AG

Promise and paradox are everywhere—but so is opportunity. While there may be a few managerial, political, and cultural barriers, scientific Europe is virtually borderless. This is the time of the international scientist whose vision and skills can make things happen no matter where the lab is located.

Below we hear about science careers from scientists and managers at seven European companies—Hoechst, Novo Nordisk, Unilever, Transgène, Wellcome, IntroGene, and Cambridge Antibody Technology. They agree that talented scientists are in demand all over Europe and will be for the foreseeable future. In tough times, added value can make the difference. Everyone agrees on four elements that add the greatest value: Excellence in a relevant field; a broad background in related sciences; knowledge or experience in industry; and an ability to be flexible, to see how one thing depends on another.

SCIENCES IN DEMAND

In European pharmaceuticals, hiring is "intensive" at the moment rather than "expansive": Companies are seeking to bolster quality in all sectors—especially development—rather than create large new departments. Biotechnology, however, is still growing. According to Project BEMET (Biotechnology in Europe, Manpower, Education, and Training), over 75 percent of all European biotechs are increasing their work forces. Below are seven sciences currently in demand.

✚ Biochemistry
—needed in research as well as in process development and manufacturing

✚ Microbiology
—like biochemistry, needed in all areas from research through development

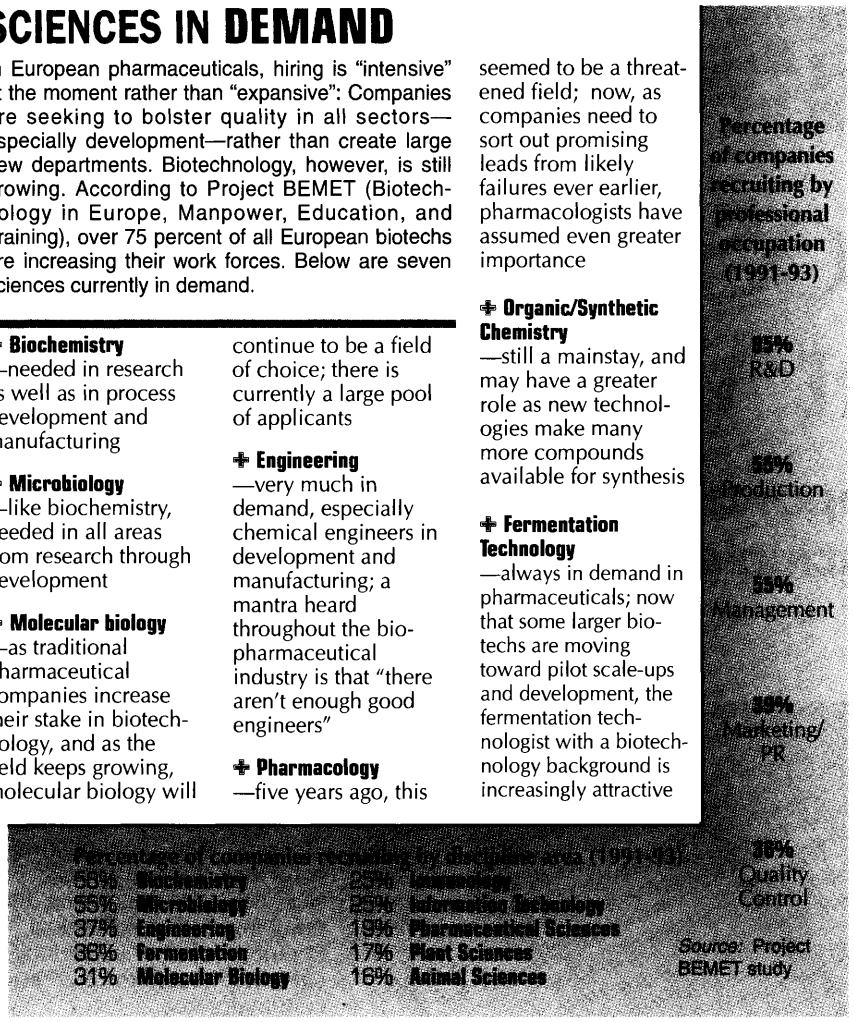
✚ Molecular biology
—as traditional pharmaceutical companies increase their stake in biotechnology, and as the field keeps growing, molecular biology will continue to be a field of choice; there is currently a large pool of applicants

✚ Engineering
—very much in demand, especially chemical engineers in development and manufacturing; a mantra heard throughout the biopharmaceutical industry is that "there aren't enough good engineers"

✚ Pharmacology
—five years ago, this seemed to be a threatened field; now, as companies need to sort out promising leads from likely failures ever earlier, pharmacologists have assumed even greater importance

✚ Organic/Synthetic Chemistry
—still a mainstay, and may have a greater role as new technologies make many more compounds available for synthesis

✚ Fermentation Technology
—always in demand in pharmaceuticals; now that some larger biotechs are moving toward pilot scale-ups and development, the fermentation technologist with a biotechnology background is increasingly attractive



BIOSHORTAGES

Many biotech managers in Europe believe that there is a "training gap." They want scientists who have not only a degree but also some training in biotechnology or industrial science. Dinko Valerio, CEO of IntroGene in Rijswijk, The Netherlands, says, "We in Europe need to change our attitude to entrepreneurship in the sciences. Until recently, university scientists in Europe had no access to industrial training at all. They have only just now become aware of the possibilities in starting companies, in commercializing breakthroughs. The European Union has done a few things to help, but the training gap is still there."

European universities are only beginning to offer relevant degrees in industrial science. For example, University College London and the University of Kent have recently started MSc courses in bioprocessing. As of now, however, the supply of properly trained scientists is widely perceived as inadequate, especially in the following fields, grouped in a Project BEMET study in order of greatest need:

- Fermentation Technology
- Information Science
- Immunology
- Chemical Engineering
- Biochemistry

Qualified candidates with industrial experience or training have an advantage over the rest of the field. How to get such experience? Suggestions include industrial postdoctoral programs and summer internships.

THE BIGGEST LOOKS FOR THE BEST AT

HOECHST

FRANKFURT, GERMANY

The Hoechst Group is a multinational giant, one of the largest pharmaceutical companies in the world, as well as one of the largest industrial manufacturers of chemicals, plastics, and fibers. Research at Hoechst focuses on creating therapeutics and diagnostics in a variety of fields, including cardiovascular disease, metabolic diseases, anti-infectives, central nervous system disorders, rheumatology, immunology, and—a new field of study—metabolic bone diseases. Jørgen Reden, head of research for the Hoechst Group, says that "you need to understand the industry to understand what companies are looking for in their employees."

There is almost universal interest in biotechnology among the major pharmaceutical companies. A good example is the recent purchase by Ciba Geigy of 49.9 percent of Chiron. Through collaboration and acquisition, Hoechst is trying to strengthen our competence and expertise in biotech. We're seeing two especially exciting developments: Gene therapy and combinatorial chemistry. The former is of course well known, and the latter means quite a change in the way we handle chemistry for finding and optimizing product leads.

As for molecular biologists, in general there is a demand. At Hoechst, we are handling it carefully at present, as new molecular biologists come into the company through acquisitions. We are, however, also trying to build up a rational drug design facility, with special emphasis in cell biology.

The need for chemists and pharmacologists will remain high. There may be changes in the way things are done—chemists will be working more with libraries and less with single compounds—but the need for excellent chemists will stay high. That reflects the regulation of our industry, particularly in process development. In the course of developing a drug, we now must establish the final production process much earlier. This may actually increase the importance of chemists.

Of course we will continue to need good pharmacology departments. True, the number of animal experiments is decreasing because molecular biology has afforded new models by which to test drug candidates. We can select compounds earlier on the basis of mode of action and receptor interaction models. But on the other side, the leads evolving out of these studies have to be evaluated carefully in pharmacological models for their safety and efficacy as potential drugs. In the new climate of regulatory and cost pressures, the successful company must have a development team that can identify promising candidates as early as possible. Chemists and pharmacologists will be instrumental in helping us spot successful candidates and avoid costly dead ends.

Our other problem is innovation itself. To be successful, we are moving into new areas to find new treatments for diseases which have no cure. In these areas, clinical development is much riskier, because you can't check on how someone else did it before you. We must endeavor to make new approaches, explore new modes of action. Thus the risks increase. As we focus more and more on chronic diseases, we need long, high-risk clinical trials. This new potential for risk adds to the urgent need to be careful when selecting a new drug for development.

Desirable job candidates are specialists in their field and have a broad understanding of related disciplines. In other words, you need both excellence in your area of specialization and experience or education in other relevant areas. The very narrow specialist will not be our first choice. Teamwork is without question a necessity, as is flexibility, because, especially today, projects can change. In the past, we'd work on a project for years and years. Now we have to make the hard decisions earlier and earlier. Scientists must be able to adjust, to make the switch to new areas with a good outlook.

Vaccine Research

SmithKline Beecham Biologicals, a subsidiary of the SmithKline Beecham Group, is one of the world's largest vaccine producers, both in terms of sales and volume. SmithKline Beecham Biologicals marketed the first recombinant vaccine for human use (Engerix B) and more recently the world's first vaccine against Hepatitis A and is launching a range of new combined paediatric vaccines.

Our research and development projects are managed within multidisciplinary teams at our worldwide headquarters located in pleasant surroundings 20 km south of Brussels, Belgium. Thus knowledge of French is an asset but not a prerequisite.

Construction of state-of-the-art extensions to facilities in Research, Development and Manufacturing is ongoing on the same site, allowing an integrated approach to research, development and manufacturing which, we believe, is unique in the industry. Building on our current momentum, we are expanding our Research and Development organisation and have immediate openings for the following positions (m/f):

OUTSIDE R&D (ref. 95/171)

Our Research and Development efforts are sustained and complemented by collaborative research agreements and out-contracting to third parties. this individual will support R&D Senior Management in defining our long term research strategy. He/She will identify potential collaborators, implement and manage collaborative programs in close cooperation with in house scientists. Ph.D., he/she will have a broad scientific base in biological sciences and an understanding of scientific and technical issues related to vaccine discovery and development. He/She is also willing to travel.

SCIENTIST - BACTERIAL MOLECULAR BIOLOGIST (ref. 95/1713)

(Department of Molecular Biology)

Candidates will hold a doctoral degree in the field of Molecular Biology of bacteria and bacterial pathogenesis, with 3 to 5 years post-doctoral experience in related fields.

He/She will have a strong interest in the development and use of state-of-the-art techniques in genetic engineering as they apply to the development of new vaccines, and a good background in general immunology will be a definite asset.

His/Her participation and input in multidisciplinary teams will be required. The successful candidate will be able to integrate his/her own work into the objectives of the team and this element will be of crucial importance in the successful performance of this function.

SCIENTIST - NUCLEIC ACIDS-BASED TECHNOLOGIES (ref. 95/1714)

(Department of Molecular Biology)

Candidates should be Molecular Biologists holding a doctoral degree and having 2-4 years postdoctoral experience in fields of research requiring the extensive application of the most modern nucleic acids based technologies.

Candidates should have proven theoretical and practical expertise in the use and development of such techniques as RT-PCR, Q-PCR, in vitro and in situ nucleic acids identification and quantitation assays.
The ability to understand and anticipate the potential applications of these new technologies in Research & Development activities associated with the discov..., of new vaccines, is an indispensable requirement for this position.
A strong desire to innovate and implement new technological advances and an ability to coach others in her/his fields of expertise will be an integral part of this scientist's function.

SCIENTIST IMMUNOLOGY/BACTERIOLOGY (ref. 95/174)

The candidate will set up and lead the work of a research unit within the Immunology/Biology department, aimed at setting up and using state-of-the-art biological read-outs for antibacterial effector antibody responses (bactericidal, opsonisation, ...). The work will involve both preclinical and clinical sample testing.

He/She will have a Ph.D. in Biological Sciences/Bacteriology and a postdoctoral experience in Immunology/Bacteriology. Previous experience in immunity to bacteria is a plus. The candidate will have an in-depth knowledge in bacteriology and immunology so as to actively participate and impact on our ongoing research programs, aimed at the development of novel vaccines.

SCIENTISTS IMMUNOLOGY/VIROLOGY (ref. 95/1711)

Candidates will hold a Ph.D., with post doctoral experience in the fields of immunology/virology. Theoretical and practical expertise with retroviruses, herpesviruses or hepatotropic viruses, involving both virological aspects, and protective immune responses is a prerequisite.

Candidates will be expected to lead the immunovirological aspects of our efforts towards the research and development of vaccines against human retroviruses, herpesviruses or hepatotropic viruses.

SCIENTIST IMMUNOLOGY/DISCOVERY (ref. 95/1712)

Candidates will hold a Ph.D., with 2 to 4 years post doctoral experience in the field of immunology. Candidates should have an in-depth understanding of the mechanisms involved in induction of specific immune responses, and a practical experience in measuring immune responses in rodents and/or primates. Innovation, and prospection of novel avenues for induction of protective immune responses, through alternative strategies than the classical protein antigens will be an integral part of this function.

All positions carry a competitive salary/incentive package and comprehensive benefits, including pension and medical plan.

If you are interested in joining our team in one of the positions above, please send your application and curriculum vitae, quoting the relevant reference, to: SmithKline Beecham Biologicals, Human Resources Department, rue de l'Institut 89, B-1330 Rixensart, Belgium.

SB
SmithKline Beecham
Biologicals

FUTURE SCIENCE AND
"THE GOOD OLD VIRTUES" AT

NOVO NORDISK

BAGSVÆRD, DENMARK

It may seem strange that a senior vice president at a giant health care company would be speaking as much about classical science as about the new biologies—but that is the case with Niels Fiil, senior vice president of bioscience at Novo Nordisk.

The Novo Nordisk mission is "to develop and market products which satisfy real needs—a very good basic purpose," says Fiil, one that, despite its simple sound, will call upon the utmost powers of both classical scientists and new biologists everywhere. Novo Nordisk employs about 12,000 people worldwide, with 8,000 to 9,000 of those in Denmark. Biotechnology plays an important role in two major fields—health care (products such as insulin and human growth hormone) and bioindustrial enzymes (most of which are engineered using genetically manipulated organisms).

"In Europe, most of the research-intensive companies involve biotech. It's more than just making proteins. A lot of the revolution is information. Biological and genetic advances are generating new information, new possible targets for research, new knowledge about the 'insides' of biological processes. We're really into the third generation now, where we need to turn again to the classical disciplines to help us make sense of all this new information. The stage is set for the integration of this avalanche of molecular details into a big picture.

"Academic scientists are already getting set for this integration process. Much of the recent work on signal transduction shows how hard people are trying to fit new details into a larger paradigm. Everybody, I think, feels the same way. We're all ready."

So alongside the scientists everyone seems to want—molecular biologists, biochemists, biophysicists, chemists, and technologists—Fiil sees a renewed need for people with what he calls "the classical virtues" to help piece together "a whole animal or human model." That means people with knowledge of the new biologies but also with advanced training in physiology, pathophysiology, and classical biology. "With the glamorous new sciences of the past 15 to 20 years, there is a tendency to forget good old-fashioned knowledge about proteins, to forget the great importance of knowledge on the whole-body level. It's even hard to find classical pharmacologists—pharmacology is becoming a hard-to-fill area.

"We'll always want organic and synthetic chemists, especially those whose skills embrace the new technologies. After all the breakthroughs have been made, you still have to be able to make exactly what you want and know your chemistry. And nothing can substitute for good broad-scale biology."

Those considering graduate science degrees should look at what the industry will need seven to eight years from now and direct their energies accordingly. "Have a state-of-the-art PhD and an international postdoc of at least two years in a leading-edge lab somewhere in the world."

"We're really into the third generation now, where we need to turn again to the classical disciplines to help us make sense of all this new information."

—Niels Fiil, Novo Nordisk

Perhaps the biggest paradox, says Fiil, is that the successful industrial scientist is a star who works as part of a team. "That's a hard one, and absolutely vital. Science today is a team sport. Yet we also know that the breakthroughs often happen first in individual elite minds. So somehow you need to be able to contribute as part of a team, yet not submerge yourself so much that you become anonymous. You have to make an impact."

Fiil acknowledges the recent ups and downs for biotechnology in Europe. But with a 13.7% growth rate last year in a very tough market, Novo Nordisk is in an excellent position. "We feel very excited about our products and about what's in the pipeline."

THE MANY USES OF NEW SCIENCE AT

UNILEVER

ROTTERDAM, THE NETHERLANDS

Unilever is a sprawling multinational company employing scientists in many fields, from foods to detergents to personal products. Research programs include those in the bioscience of the human cell, molecular biology, plant bioscience, biorecognition (including antibodies, sensors, and diagnostics), and biocatalysis.

Excellent scientists are needed both at the entry level and at other career stages. Anthony Lee, head of exploratory research at Unilever, says, "We are recruiting people mid-career, as well as early in their research careers, in order to strengthen middle management and operational science." A good record of achievement is a must; industrial experience is definitely desirable. Peter Lillford, principal scientist, points out that even though Unilever recruits worldwide, "we tend to recruit in the countries where our labs are placed, meaning there tend to be more English scientists in our English labs, more Dutch scientists in our Dutch labs, more Americans in our US labs—but we do scour Europe pretty widely for the right sort of person."

Unilever also recruits at levels other than the PhD. "These people may come into research and then be asked to think quite hard about their next step—whether they want to stay in research or want to be trained as managers," Lillford says. Unilever has an intensive training program, as well as a dual career path with both a science ladder and a managerial ladder.

"We are of course interested in mainstream biotechnology," Lee says, "including fields such as genetic engineering; microbiology; enzymology; human cell biology, in which we are actively recruiting for our skin program; and diagnostics, for our program in biorecognition."

Lillford says biochemical engineers seem difficult to find, "perhaps because everyone wants them." Lee says the same for plant biotechnologists, of obvious importance in food research: "Perhaps the dramatic advances in mainstream pharmaceuticals have rendered areas such as human skin and plant cell biology less fashionable." Still, most forecasters see the nonmedical applications of biotechnology growing more quickly than the medical ones in the next decade.

In both foods and personal products, physical chemistry, particularly colloid science, is in the Unilever mainstream. Material scientists and mechanical engineers work with composite structures, studying the composition and properties of vegetable matter, muscle, and other food materials, to understand how these retain or alter their properties during cooking and storage.

"Colloid and material physics is taking off in a big way," Lee says. "It's not so much changes in the sciences—our industry is, after all, fairly mature. It's more that these sciences are now adapting to new technologies. Classically trained physical chemists are now augmenting their arsenals with information science and other new methods and techniques."

Unilever is forging an increasing number of strategic alliances with academic scientists and departments. The idea is to enlist academics, not only as research partners but also as true advisors for research and strategy, advisors who will be part of the planning process. Examples include tomato expert Donald Grierson of the University of Nottingham; Terence Keeley, who works in hair and skin cell biology at Cambridge; and University of Amsterdam fermentation technologists.

When asked what successful industrial scientists have in common, Lillford immediately says, "Bravery. Seriously. You have to be brave enough to believe that you're as right as the next person and lead with your chin. Successful scientists have that bravery. The rest is training, which you can pick up."

JANSSEN RESEARCH FOUNDATION

The Janssen Research Foundation is the research division of Janssen Pharmaceutica, employing more than 850 scientific researchers and specialized technicians. They have made Janssen Pharmaceutica the most innovative pharmaceutical research company in the world. The company has set itself very high qualitative and ethical standards and has great ambitions for the future.

MOLECULAR BIOLOGY RESEARCH SCIENTIST

Applications are invited for a research scientist to join the Molecular Biology Group of the Janssen Research Foundation. The position is available immediately. Applicants must have a Ph. D. in Biochemistry or Molecular Biology, preferably followed by post-doctoral training. Extensive experience with recombinant DNA techniques is essential; expertise in automated fluorescent DNA sequencing and heterologous expression of (especially membrane) proteins is desirable; experience with yeast molecular biology is an advantage; background knowledge in pharmacology, genetics or enzymology is commendable. Proficiency in English is required. Salary is commensurate with experience and seniority.

The Molecular Biology Group of the Janssen Research Foundation has been charged with developing recombinant systems at the molecular, cellular or organismal level to aid in the discovery and development of novel human therapeutics. This includes the molecular cloning and heterologous expression of human proteins as targets for drug screening, the expression in cell lines of cloned proteins such as receptors for functional assays, and the use of transgenic animal models of human disease. In addition, the potential of the human genome project is being explored. The group works closely with other in-house research departments and has a number of active academic collaborations both in Belgium and abroad; it also serves as an interface for contacts with biotechnology firms. Candidates will be expected to guide and supervise ongoing projects, set up supplementary techniques and develop new research programmes.

Informal inquiries can be addressed to Dr. Walter Luyten (32-14-60.26.18). Applications in the form of a resumé with the names, addresses and phone numbers of at least two references can be sent to Rudi Van den Bergh, Personnel Department, Janssen Research Foundation, Turnhoutseweg 30, B-2340 Beerse, Belgium. Fax: 32-14-60.28.41, with reference number 95.1235.

THE DEVELOPMENT OF DEVELOPMENT AT

TRANSGÈNE

STRASBOURG, FRANCE

According to BEMET, the great majority of European biotechs are less than ten years old and have 40 or fewer employees. By that scale, Transgène is what Michael Courtney, scientific director, calls "big and middle-aged." Out of 172 employees, 128 (of whom 66 are PhDs) are on the R&D staff. They span a broad range of expertise, from biochemistry, molecular biology, and cell culture to virology, immunology, and fermentation science. "Our focus," says Courtney, "is on gene therapy products. Since 1989, our main project goals have been in gene therapy and vaccines."

Although Courtney characterizes activity at Transgène as being "one quarter development and three quarters research," the past year has seen a decided trend in the direction of development. "More recently, we're converting people from research to development, and recruiting new people into our development effort, including cell culture biologists and virologists with experience in production. A majority of these scientists have been recruited from traditional pharmas."

Transgène now has a GMP pilot manufacturing facility to produce vectors for gene therapy. "We intend to develop our manufacturing capacity further in the next five years," Courtney says. Quality control and quality assurance are two other areas of need, preferably with a very specialized background in biotechnology. A growing clinical effort requires MDs. Also, detailed pharmacological data are required at every step of the development process, meaning that pharmacologists will play an important role.

Courtney agrees that in Europe there is a dearth of scientists qualified to work in development. "It has long been said that you can't get development experience in university—but that sector is beginning to respond. There is a definite move in universities across Europe to encourage applied science, and, while the number is still limited, more biotech courses are available. Most academic scientists are by now aware of the opportunities in this area and are alerting their students to them."

Finding good scientists to work in drug development is a priority for many biotech firms, but finding development scientists is all the more difficult for a company, like Transgène, whose focus is especially specific. "We're interested in people with experience in mammalian cell culture and development. Such people are very difficult to find. Many of the senior people already here have this expertise, but for new people, we must look to the few pharmaceutical companies that do operate in this area—and to university sources."

A precise fit between the candidate's skills and the company's needs is crucial at Transgène. In research, Courtney looks for evidence of an individual's ability to perform. "A graduate student or postdoc needs to amass evidence—for example, through publication—of being able to organize successful research. For development scientists, on the other hand, the key is an early move from university into industry, and, above all, direct experience in development."

Scientists at Wellcome (below) demonstrate that European biopharmaceutical science today is a team sport.

THE FUTURE THAT IS NOW AT

WELLCOME

LONDON, ENGLAND

As James Cochrane, operations director for the Wellcome Foundation, Ltd., puts it, "The pharmaceutical business worldwide has changed more in the last 30 months than in the last 30 years."

Wellcome is predominantly an ethical pharmaceuticals business that, through a recent major alliance with Warner Lambert, has made a move toward consumer health care. Ian Griffiths, human resources manager for research, development, and medical, says, "Our goal is to retain preeminence in the antiviral field, with products such as Retrovir® and Zovirax®, while expanding markets in cardiopulmonary and CNS medicine, oncology, anesthesia, and critical care."

It is the job of Rob Lifely, head of screening automation, to keep up with the changes, even to anticipate them before they happen. Both Lifely and Griffiths speak about the revolution at hand in both research and development. "Drug discovery is changing very rapidly," Lifely says. "The main goals in research are finding and optimizing promising leads. We need to find more robust leads more quickly."

Wellcome is already doing that, with an automated robotic system by which compounds from the large Wellcome collection are prepared and sent to scientists for screening up to 100 times more quickly than ever before. "What one person could do in a year, we can do in three days," Lifely says. "Each day thousands of samples can be provided for screening and robots can assay tens of thousands of compounds. Combinatorial chemistry and array chemistry promise the ability to synthesize millions of compounds at great speed."

Information and computer science are being challenged to design ways to spot active leads; process, store, and retrieve the new information; and ease the conversation between peptide and nucleotide libraries on one hand and organic molecule libraries on the other. "We're not all the way there yet," Lifely says, "but we're well on the way."

Who, then, are the scientists of this future that is now? "Chemists and biologists will continue to be key players at the leading edge," says Griffiths.

"What one person could do in a year, we can do in three days. Each day thousands of samples can be provided for screening. . . . Combinatorial chemistry and array chemistry promise the ability to synthesize millions of compounds at great speed."

—Rob Lifely, Wellcome

"These skills are at the core of the discovery process. Also, like other companies, we've put a lot more investment, relatively speaking, into development in recent years, so that we can evaluate the fruits of discovery as quickly as possible. Our preclinical and clinical departments need MDs and nurses, as well as pharmacological and statistical expertise. Other facets of our development process similarly require a wide range of scientific disciplines: Information scientists, biochemists, and chemists, for example. Most would come to us with experience in pharmaceuticals research and development. We'll continue to need chemical engineers to handle our scale-ups and analytical chemists and pharmacists, among others, to drive our development units."

Lifely warns that robots are never going to replace people. "All they can do is speed up the process. Computer scientists and mechanical engineers will of course become more important. But I see this revolution as making synthetic chemists more rather than less important, for now they will have more to do, more lead compounds to select from, more issues of structure and synthesis coming at them."

Molecular biologists remain important as the "scientists of the moment," in Lifely's words. He also sees increased need for physical sciences. "As we improve our computational methods, rational drug design is going to return as an important approach."

At Wellcome, productivity continues to increase despite concerns about global economics, regulation, and an increasingly competitive market. "There is a tremendous amount of energy and competition in discovering new methods and new products," Griffiths says. As Lifely puts it, "I've never known a time when the science was this exciting."

FORGING CONNECTIONS AT
INTROGENE
RIJSWIJK, THE NETHERLANDS

Dinko Valerio is CEO of IntroGene, a gene therapy company founded in July 1993. "We're busy with developing gene therapy products for cancer, AIDS, and genetic disorders," he says. IntroGene *per se* is 15 scientists strong—although it is part of a group of scientists twice that size, including a research group Valerio heads at the University of Leiden.

Among these scientists are molecular biologists, cell biologists, immunologists, and protein chemists. "It's extremely important for people to work interdisciplinarily without fear," Valerio says. He points out that gene therapy, perhaps more than other fields, requires the capacity to test novel intervention methods directly in the clinic. "Differences between successful and less successful methods will be so subtle that we need to adapt protocols at very early phases. Research, in other words, isn't finished after Phase I. With gene therapy, you're still searching for the very best delivery methods well into the clinical stage."

IntroGene has been able to accommodate this need through its alliances with universities. These include the University of Leiden, which supports the academically oriented research group, and the University Hospital of Rotterdam, a major shareholder and supporter, as well as the site for initial clinical studies of therapeutic candidates.

Which brings up the most burning recruitment need at IntroGene. "We need clinicians trained as scientists who can cross boundaries from lab to clinic and introduce our intervention methods into the clinical process," Valerio says. "IntroGene now has two or three and is looking for more. But they are hard to find. Often, they must be trained locally."

European attitudes toward gene therapy are somewhat more low-key than are those in the United States, which Valerio sees as a good thing. "In general, you will find that European attitudes to new developments are not influenced by the US hype that you see quite often. We should be grateful for that, especially since I think the financiers take a much more international view of what is taking place. More and more, investors accept that in the medical arena, hype is something to avoid. It's especially a problem when you're working in quite difficult disease areas in which conventional therapeutic intervention strategies have not resulted in much progress recently. Patients can get unrealistically high hopes for a cure that might be more than ten years away."

Still, there is a great deal of mature excitement about the prospects for gene therapy. "The field has really shifted, from just a few examples in which scientists have worked very hard on disorders that seemed amenable to such therapy, to a wide range of different diseases that could be tackled with gene therapeutic approaches."

Two parallel developments are especially important for the future of gene therapy. "On one hand, you have the discovery and development of novel genes," Valerio says. "On the other, you have had great recent successes in developing viral and nonviral delivery methods. Add creativity, and you have a lot of new possibilities."

Only a year after founding IntroGene, Valerio is struck by how exciting it has been. "Recently we signed a research and license agreement with Genzyme Inc. to develop a gene therapy for Gaucher's disease. This agreement also includes a small equity investment in our company. That shows we can attract high-quality American investors. We also have an alliance with Transgène to test therapy vectors for cystic fibrosis in nonhuman primates. These and other ties have made it possible to implement our plans. It has been very rewarding so far."

REACHING CRITICAL MASS AT
CAT
CAMBRIDGE, ENGLAND

David Chiswell is general manager of Cambridge Antibody Technology (CAT), a biotechnology company focusing on research and development of human antibodies. Founded four years ago, CAT at present has 28 scientists and is hiring more, principally in its specialty.

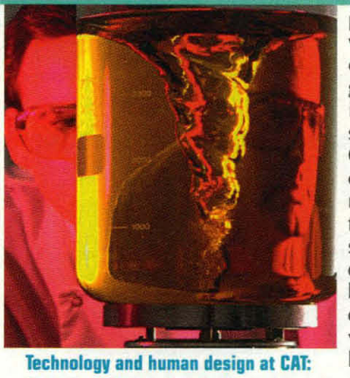
"Particularly in the UK," Chiswell says, "we're beginning to build something of a critical mass in biotechnology. Though there have been some successes, in many ways we're still an embryonic industry. One important factor limiting growth is that the stock market may not be mature enough in its understanding of biotech."

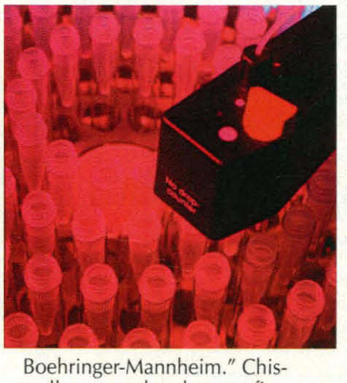
The coming-together of recombinant DNA technology and human antibody research has greatly enhanced scientists' ability to isolate human antibodies. "On one hand, we now have huge repertoires of antibody genes; on the other, we have the ability to select for them on bacteriophage. That has made it practically possible to isolate human antibodies to almost anything. There's still the question of which targets to go for, and that, I think, is the next major territory."

For the specific needs of CAT, molecular biology skills are important, together with one other particular: "We like people with lots of experience in molecular biology, whether it be in academics or industry. We're looking for good, solid, demonstrably successful expertise—several years of postdoctoral success, for example, or an established record of excellence in industrial research. To shore up our already strong research base, we're looking at more research scientists—some immunologists, as well as some biochemists."

Is there anybody really difficult to find? "What we find more difficult to get are the more traditional protein biochemists. There's a definite need for such people, but they get snapped up elsewhere, often by the traditional pharmas."

CAT intends to focus on what it does best—isolate antibodies and pursue new product leads—and contract out downstream elements such as pharmacology, clinical research, and manufacturing. "We've been operating that way from the beginning," Chiswell says. "We already have quite a few strategic alliances in place, including partnerships with BASF Pharma and with Boehringer-Mannheim." Chiswell expects that the next five years will bring real demonstrations of clinical efficacy and the growing and fruition of partnerships.





Technology and human design at CAT: Centrifuge (above) and robotic arm with test tubes (below)

A company of 28 people is perforce a fluid organization with a constant need for communication. "When you've got a company of this size, there isn't room for huge, highly specialized departments," Chiswell says. Further, the nature of the company's major focus means that the culture remains fluid. "With antibodies, we don't specialize in any particular disease area, so we've got a broad spectrum of tasks always on the table. For each new task, you have to make sure everyone knows what everyone else is doing. When one person has a problem, you have to make sure that the right people know about it. It's a very interactive process.

"Our scientists therefore need to be both excellent in their chosen science and also very broad in another way. Our perfect hire would not only know his or her specialized niche but also be aware of possible applications—in inflammation and infectious diseases, for example—and be able to make effective, timely judgments in those fields. Such a person must therefore have three things: A commitment to making product leads happen, established excellence in a core skill, and the breadth of knowledge to be able to make the most of it."

John Timpane, PhD, writes frequently about the worldwide biotechnology and pharmaceuticals industries.

A major French pharmaceutical company wishes to recruit a

RESEARCH SCIENTIST NEUROCHEMISTRY AND MOLECULAR BIOLOGY

The candidate will develop new models of drug discovery using neuronal tissue culture, allied with molecular biology techniques and will be expected to focus a drug discovery project in neurodegenerative processes, collaborating with other biological disciplines.

Thus collaborative skills and enthusiasm are important in leading a small group and integrating into a successful team at the forefront of Alzheimer's research. The candidate will have a PhD with a background in a suitable area with at least three years relevant experience, preferably in an industrial setting.

The research center, with excellent facilities, is located near Paris.

Please address a letter, CV and photo to Media System, quoting reference 57118, 6 impasse des Deux Cousins, 75849 Paris Cedex 17.

MEDIA SYSTEM

Pulmonary Physiologist/Pathologist

We seek a young PhD with experience in lung physiology and/or pathology to join the Pulmonary Research Unit of the Ciba Pharmaceuticals Division in Basel, Switzerland. The Unit is involved in the search for novel therapies for asthma and related chronic pulmonary diseases and we are looking for a candidate who can help us in the design and development of laboratory animal models of lung disease. The successful applicant should have 2-3 years of proven post-doctoral achievement.

Knowledge of English is a pre-requisite and an understanding of German would be an advantage but is not essential.

As a company Ciba is committed to pulmonary disease Research and Development in the long term and the successful applicant will join a dynamic research team of approximately fifty persons including Immunologists, Pharmaco logists and Cell Biologists with the clear mission to develop new, innovative therapies for asthma and related pulmonary diseases.

Please address your application with copies of all necessary documents to: Mr. U. Girard, Ref. 13330, Personnel Department, Ciba-Geigy Ltd, P.O. Box 2543, CH-4002 Basel (Switzerland).

ciba

UNSW

THE UNIVERSITY OF NEW SOUTH WALES AUSTRALIA

CENTRE FOR THROMBOSIS AND VASCULAR RESEARCH SCHOOL OF PATHOLOGY

POSTDOCTORAL FELLOW

Fixed Term

Salary: A$36,793 - A$39,495 per annum depending on qualifications and experience.

Applications are sought to join a team in the Centre investigating the role of platelet membrane glycoproteins in the formation of blood clots. Thrombosis is the underlying mechanism of a number of diseases including heart attack, stroke and gangrene of the extremities and is responsible for about half the deaths in the western world. Techniques involved include gene expression in cell lines and site-directed mutagenesis to define structure-function relationship.

Applicants must hold a PhD with experience in molecular biology. Experience in gene expression and site-directed mutagenesis is desirable, though not essential. A knowledge and understanding of EEO/AA principles is required.

Appointment is for an initial period of one year, renewable annually for up to three years subject to funding.

Enquiries may be directed to Associate Professor B H Chong, Department of Haematology, Prince of Wales Hospital, on telephone (61 2) 399 4049 or facsimile (61 2) 398 4275.

Applications close 10 March 1995.

PLEASE QUOTE Ref 076SCI

APPLICATION PROCEDURE

Written applications systematically addressing the selection criteria QUOTING REFERENCE NUMBER, and a complete resumé should be sent to: The Recruitment Officer, Human Resources, The University of New South Wales, Sydney 2052 Australia by applications close date. Include business and private telephone numbers; (copies of qualifications where appropriate); and the names, addresses, and preferably facsimile numbers of at least two referees. People from EEO groups are encouraged to apply.

53276

Equality of employment opportunity is University policy
The University is a smoke free work environment

The Research Centre of a leading Pharmaceutical Company based in the Paris Region is recruiting a

MEDICINAL CHEMIST

TO LEAD ONE AT ITS CHEMISTRY TEAMS

With the responsibility for drug discovery in several therapeutic areas. A dynamic research environment encourages creativity and the development of novel projects.

The ideal candidate will have a minimum of 10 years post-doctoral experience, preferably in the pharmaceutical industry. Good interpersonal skills are considered essential.

Please send your CV, photo and salary objectives to **PUBLIVAL/2034** 27 Route des Gardes, 92190 MEUDON (France)

EMBL

The European Molecular Biology Laboratory, an international research organization consisting of three outstations and a headquarters laboratory situated in Heidelberg, Germany, has the following vacancies:

GROUP LEADER POSITIONS IN MOUSE GENETICS

The EMBL invites applications for four research group leader positions in mouse biology, in areas that use modern tools of genetic analysis, such as developmental genetics, cell biology, gene expression, immunogenetics or neurogenetics. These positions will be established at the Monterotondo campus, near Rome, at a site which is also a strong candidate for hosting an Independent European repository of mouse strains, similar to the Jackson Laboratory. The facilities will include a well equipped animal house and laboratory. The selected candidates will be given standard EMBL group leader appointments including some research and personnel costs, initially for 5 years. They will also hold associate appointments in the EMBL headquarters laboratory in Heidelberg, which includes groups working on vertebrate gene expression, cell biology, differentiation and development.

Closing date for applications: 15 May 1995. Appointments would be available from autumn 1995.

EMBL is an inclusive international organization and encourages applications from women and nationals of currently underrepresented Member States. The Laboratory provides financial help in relocating families.

Informal inquiries are welcomed, and can be made to the chair of the search committee: Dr. Thomas Graf, tel: +49 6221 387410, fax: +49 6221 387516.

Applications, comprising a curriculum vitae, a short description of research accomplishments and future plans, and three letters of reference should be sent to:

EMBL, Personnel Section, Postfach 10.2209, D-69012 Heidelberg, Germany (Fax: +49 6221 387555)

The EMBL search committee will be assisted in its task by an international advisory panel, including:

Mary Osborn, Göttingen, Germany (Chair)

Rosa Beddington, London, UK
Anton Berns, Amsterdam, Holland
Margaret Buckingham, Paris, France
Mario Cappechi, Salt Lake City, U.S.A.
Pierre Chambon, Strasbourg, France
Denis Duboule, Geneva, Switzerland
Frank Grosveld, Rotterdam, Netherlands
Peter Gruss, Göttingen, Germany
Leroy Hood, Seattle, U.S.A.
Carlos Martinez-Alonso, Madrid, Spain
Klaus Rajewsky, Köln, Germany
Peter Rigby, London, UK
Davor Solter, Freiburg, Germany
Glauco Tocchini-Valentini, Rome, Italy
Erwin Wagner, Vienna, Austria

Nestlé®

The Nestlé Research Center at Lausanne, Switzerland seeks a

SCIENTIST

for studies in toxicology and safety evaluation of contaminants. A Ph.D. is required in toxicology or related field. Experience in molecular biology and in nucleic acid, synthetic and analytical chemistry is desired.

Please send curriculum vitae, letter of interests and three references (names, address and telephone) to

Nestlé Research Center,
Human Resources department,
P.O. Box 44, CH-1000 Lausanne 26.

A major French pharmaceutical company is seeking a :

Computational Chemist/ molecular modeller

Within our molecular modelling group, you will be engaged in challenging research projects with the aim of developing new drugs. You will be responsible for performing studies to generate predictive chemical and biological models for medicinal chemistry.

The position requires a PhD in chemistry, a strong background in physical organic chemistry and an experience in the practical aspects of molecular modelling. A post-doctoral or a pharmaceutical experience in molecular modelling and drug design would be an asset.

You demonstrate dynamism and good communication skills. We offer you a stimulating working environment. Our research center is located closed to Paris.

Please submit a CV, a photo and a letter to ***PUBLIVAL/2046*** *— 27 route des Gardes 92190 MEUDON (FRANCE)*

EISAI LONDON RESEARCH LABORATORIES
UNIVERSITY COLLEGE LONDON

Eisai

Neuronal Cell Death and Signal Transduction Group Leader and Postdoctoral Positions

UCL

Eisai London Research Laboratories was founded on the University College London campus with the goal of carrying out basic research concerning molecular mechanisms underlying various neurodegenerative diseases. Our new laboratory building opened in 1992 and currently has a scientific staff of approximately 30 people. All positions are funded permanently by Eisai Company Ltd., a major Japanese pharmaceutical company. Joint appointments in basic science departments at University College London are encouraged. We are currently seeking to fill the positions listed below.

Neuronal Cell Death: Group Leader & Postdoctoral Fellows
All applicants should have a Ph.D. in cell biology, biochemistry, or neuroscience and potential group leaders should have at least 3 postdoctoral years training. Prior experience in a signal transduction or protein kinase laboratory would be most valuable. Experiments are directed at identifying molecules that regulate cell survival and cell death in primary cultures of peripheral and CNS neurons.

An excellent salary and benefits package is offered. All interested parties should send their Curriculum Vitae and names of three professional referees to Prof. Lee L. Rubin, Eisai London Research Laboratories Limited, Bernard Katz Building, University College London, Gower Street, London, WC1E 6BT.

Post-Doctoral Research Fellowships

Fondation pour la Recherche Inter-Universitaire en Vaccinologie (Foundation for Inter-University Vaccine Research-Belgium cosponsored by Walloon Government and SmithKline Beecham Biologicals).

Three post-doctoral positions are available to join a research team studying the interaction of the human immune system and human papilloma virus-induced tumors with the aim of designing strategies of therapeutic vaccination.

Candidates should hold a Ph.D. and professional experience either in organotypic culture from skin or mucosae, or in human cellular immunology. Positions are available for up to 4 years, starting from April 1995; salaries at Research Fellow or Senior Research Fellow levels according to age and experience.

The research project will be conducted in the Department of Pathology at the University of Liège (Belgium) under the direction of Prof. Jacques BONIVER, to whom informal inquiries may be made (Fax# 32-41 -662919).

Applications in the form of a curriculum vitae and naming two referees should be sent to Prof. Jacques BONIVER by no later than 31 March 1995.

A NEW RESEARCH CENTRE
OF A LEADING FRENCH
PHARMACEUTICAL COMPANY IN THE
OUTSKIRTS OF PARIS IS SEEKING

a Behavioural Pharmacologist

Possessing a PhD and preferably significant post-doctoral experience in the fields of operant techniques and experimental models of anxiety, depression and schizophrenia. The successful candidate will join an interdisciplinary team active in both drug discovery and basic research.
A knowledge of French would be an advantage but is not essential.
Please send a CV together with a hand written letter and photo to PUBLIVAL/2040, 27 route des Gardes 92190 MEUDON (FRANCE)

Senior Research Associate in Electrophysiology

A Post-Doctoral Appointment as a Senior Research Associate to carry out research on the structure and function of receptors for ATP will be available in the Glaxo Institute of Applied Pharmacology (GIAP) from 1st October 1995.

The Institute is fully integrated with the Department of Pharmacology in Cambridge University. The main aim of the Institute is to pursue long term fundamental research. The Institute is autonomous, though funded by Glaxo, which provides additional resources including chemistry. Suitable candidates are invited to apply for academic positions within the Institute.

The main areas of research within GIAP are in novel aspects of characterisation and classification of receptors for somatostatin and ATP. We are currently seeking a high calibre candidate with expertise in electrophysiology and an interest in characterising neurotransmitter receptors. The appointee will need to demonstrate a commitment to basic research and offer specific technical skills. Electrophysiology techniques of interest will include measurement of neuronal activity *in vivo* and electrical recordings in spinal cord or brain.

If you think you would like to work in such an environment, we would be pleased to hear from you to discuss the opportunities available.

Please send a letter of application and full CV to: Mrs. Ann Horn, Administrator, Department of Pharmacology, University of Cambridge, Tennis Court Road, Cambridge CB2 1QJ.
Fax: (0223) 334040.

Senior Research Associate in Molecular Pharmacology

A Post-Doctoral Appointment as a Senior Research Associate to carry out research on the structure and function of receptors for somatostatin will be available in the Glaxo Institute of Applied Pharmacology (GIAP) from 1st October 1995.

The Institute is fully integrated with the Department of Pharmacology in Cambridge University. The main aim of the Institute is to pursue long term fundamental research. The Institute is autonomous, though funded by Glaxo, which provides additional resources including chemistry. Suitable candidates are invited to apply for academic positions within the Institute.

The main areas of research within GIAP are in novel aspects of characterisation and classification of receptors for somatostatin and ATP. We are currently seeking a high calibre candidate with expertise in molecular biology and an interest in characterising neurotransmitter receptors. The appointee will need to demonstrate a commitment to basic research and offer specific technical skills. Molecular biology techniques of interest will include reverse transcriptase PCR, product sequencing, receptor transfection and site directed mutagenesis.

If you think you would like to work in such an environment, we would be pleased to hear from you to discuss the opportunities available.

Please send a letter of application and full CV to: Mrs. Ann Horn, Administrator, Department of Pharmacology, University of Cambridge, Tennis Court Road, Cambridge CB2 1QJ.
Fax: (0223) 334040.

UWA

The University of Western Australia

Perth

RESEARCH OFFICER

DEPARTMENT OF PHYSIOLOGY
(Ref: 30/95)

A full-time position for 3 years funded by the Australian Research Grants Scheme is available from early 1995 to undertake research in a renowned research laboratory within the Department of Physiology at The University of Western Australia. The project is to characterise the physiology and pharmacology of neurones of the auditory brainstem, using brainslice techniques. The successful applicant will possess a PhD or equivalent competency. Proven ability to design and carry out experiments and to analyse and write up experimental results is also essential. The position requires previous experience with brain slice recording techniques, preferably both microelectrode and whole-cell patch methods, both current and voltage clamp. Basic techniques are already developed in the laboratory and the researcher would be expected to work in close collaboration with Dr. D Robertson. Some assistance with relocation expenses may be negotiated.
Intending applicants must request the duty statement and selection criteria by faxing (61 9) 380 1036. Further enquiries to Associate Professor D Robertson on fax (61 9) 380 1025 or email drobed@uniwa.uwa.edu.au. Candidates should ask referees to provide written comments in support of their application direct to Associate Professor D Robertson, The Auditory Laboratory, Department of Physiology, The University of Western Australia, Nedlands WA 6907, Australia.
SALARY RANGE: HEE Level 5/6 A$29,709 - A$36,493 p.a. (Minimum starting salary for appointee with PhD will be A$31,814 p.a.).
Conditions of appointment will be specified in any offer of appointment which may be made as a result of this advertisement.
Written applications quoting reference number, telephone number, qualifications and experience and the names, addresses (including Email) and fax/telephone numbers of three referees should reach the Director, Human Resources, The University of Western Australia, Nedlands WA 6907, Australia as soon as possible.
The University is an equal opportunity employer and promotes a smoke-free work environment.

SCIENCE

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Prepare double-spaced typewritten copy. Do not include any abbreviations. *Science* will edit and typeset ads according to *Science* guidelines. Include billing information, and desired publication date. Available categories: Positions Open, Meetings, Announcements, Courses and Training, Search Firms. *Science* cannot provide proofs of typeset line ads.

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FAX: 202-682-0816

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FAX: 202-682-0816

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European Recruitment Advertising
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FAX: +44 223 302 068

CONDITIONS: The AAAS encourages employers to actively recruit and employ underrepresented minority groups. *Science* reserves the right, at its discretion, to edit or decline to publish advertisements submitted to it.

POSITIONS OPEN

FACULTY POSITION
BIOCHEMIST OR
CELLULAR/MOLECULAR BIOLOGIST

The Musculoskeletal Research Center of the Department of Orthopaedic Surgery at the University of Pittsburgh School of Medicine and Children's Hospital of Pittsburgh are seeking a qualified individual to conduct research and build a research program directed at determining cellular function in immature and developing musculoskeletal tissues. This is a tenure-track, full-time **FACULTY POSITION** at a level commensurate with the candidate's qualifications and experience. The successful applicant will be expected to merit secondary appointments in the Department of Microbiology/Biochemistry or Molecular Genetics and Biochemistry.

Applicants must have a Ph.D. in biochemistry, cell biology, or related field with a strong background in tissue culture and be able to work well in collaborative research. Preference will be given to candidates interested in the metabolic and cell growth alterations resulting from limb lengthening procedures and the mechanical stimulation of soft tissues. The individual occupying this position will be expected to secure grant funds and participate in classroom teaching.

Interested candidates should send their curriculum vitae, summary of research background, and three letters of recommendation to: **Savio L-Y. Woo, Ph.D., Ferguson Professor and Vice Chair for Research, Department of Orthopaedic Surgery, University of Pittsburgh, Suite 1010 Liliane Kaufmann Building, 3471 Fifth Avenue, Pittsburgh, PA 15213.**

The University of Pittsburgh School of Medicine and Children's Hospital of Pittsburgh are Equal Opportunity/Affirmative Action Employers. Women and minorities are encouraged to apply.

The Department of Radiation Oncology at the University of Pennsylvania is seeking applicants for appointment in the Tenure Track at the **ASSISTANT PROFESSOR** level who will pursue research in molecular genetics or molecular biology with strong application in the field of Radiation Oncology. The applicant should hold an M.D. or M.D./Ph.D. degree. Board certification in Radiation Oncology is desirable but is not an absolute requirement for appointment in this position if the candidate can demonstrate a strong background in research relevant to the field of Radiation Oncology. A generous resource package will be made available to establish the applicant's research effort at the University of Pennsylvania. Salary and benefits will be commensurate with the applicant's experience and academic rank. Please forward curriculum vitae to:

W. Gillies McKenna, M.D., Ph.D.
Chairman, Department of Radiation Oncology
University of Pennsylvania Medical Center
34th and Spruce Streets
Philadelphia, PA 19104-4283

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

ASSISTANT/ASSOCIATE PROFESSOR

A **TENURE-TRACK POSITION** is available for a structural biologist using multi-nuclear NMR techniques to study biomolecule structure and function. A fully equipped NMR spectroscopy laboratory with a Varian VXR 500S NMR Spectrometer is available as well as substantial institutional support to expand/upgrade this facility. Dedicated molecular modeling computers and online access to the University of Kentucky IBM 3090 supercomputer are also in place. The successful candidate will be expected to pursue an independently funded research program and to play a substantial role in the planned development of a major new program in Structural Biology. Appointment and teaching responsibilities will be in the University of Kentucky College of Medicine Department of Biochemistry. Interested persons should submit a curriculum vitae, a summary of present and future research interests and three letters of recommendation to: **NMR Faculty Search Committee, Department of Biochemistry, University of Kentucky Medical Center, Lexington, KY 40536-0084.** *An Equal Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

PLANT MOLECULAR SYSTEMATIST
EVOLUTIONARY BIOLOGIST

The Department of Botany and Plant Pathology at Michigan State University invites applications for a tenure-track **ASSISTANT PROFESSOR** position (academic year appointment) in molecular systematics. Responsibilities will include teaching undergraduate and graduate courses and maintaining an active research program. A Ph.D. in Botany or a related field is required and postdoctoral experience is desirable. Candidates should have expertise in molecular methods as applied to the study of vascular or non-vascular plant systematics or evolution. The successful candidate will be expected to develop programs that complement and enhance the botanical collections of the Department and the University. Attractive salary and set-up are available and will depend on experience and needs. The campus has a stimulating atmosphere and excellent facilities for plant research.

Applicants should send a curriculum vitae, a statement of teaching and research interests and reprints of significant publications, and have four letters of recommendation sent to: **Dr. Frank Ewers, Chair of Search Committee, Plant Molecular Systematist Position, Department of Botany and Plant Pathology, Michigan State University, East Lansing, MI 48824.** Review of applications will begin on April 1, 1995, and will continue until a suitable candidate is found.

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

RESEARCH ASSISTANT PROFESSOR
Protein Engineering

A **RESEARCH ASSISTANT PROFESSOR** is sought to investigate the functioning of medically relevant proteins and to engineer proteins with improved therapeutic properties. Interest in infectious disease and structure-based drug design projects essential. Experience with phage display technique desired. Applicant should be familiar with site-directed mutagenesis, protein overexpression and purification. Projects are carried out in a multidisciplinary setting including structural biology, molecular modeling, and medicinal chemistry. The successful applicant is expected to participate in existing research projects as well as to independently raise funds for collaborative projects.

Interested applicants should submit a letter of application, curriculum vitae, statement of career goals, and the names and full addresses of three or more referees to: **Dr. Wim Hol, Department of Biological Structure SM-20, University of Washington, Seattle, WA 98195.** Applications will be reviewed beginning February 15, 1995, and will continue until the position is filled. *The University of Washington is an Equal Opportunity/Affirmative Action Employer.*

Invertebrate Zoologist. The Department of Biology at Illinois Wesleyan University has a one-year opening, with the possibility of becoming tenure-track, at the **ASSISTANT PROFESSOR** level in invertebrate zoology for the 1995-96 academic year. The candidate should have a Ph.D., a broad background in biology and a strong commitment to undergraduate excellence. Responsibilities for the academic year include teaching invertebrate zoology (introductory and upper-level), invertebrate lectures of general biology course (six lectures), two general biology labs each semester, and non-majors course. Applicants should submit a letter of application, curriculum vitae, transcripts, a one-page statement of teaching philosophy and three letters of recommendation (including comments on teaching effectiveness) to: **Dr. Bruce B. Criley, Chair, Biology Department, Illinois Wesleyan University, P.O. Box 2900, Bloomington, IL 61702.** Review of applications begins immediately and will continue until position is filled. *An Equal Opportunity Employer; women and minorities are encouraged to apply.*

ASSISTANT/ASSOCIATE/FULL PROFESSOR of Pharmacology. Scientist with interest in neuroscience and molecular biology preferably with experience in transgenic methodology is sought for a tenure-track position. Send nomination/applications including curriculum vitae, a statement of research goals and teaching interest and names of three references by May 1, 1995, to: **Search Committee, Department of Pharmacology, University of North Texas, Health Science Center at Fort Worth, 3500 Camp Bowie Boulevard, Fort Worth, TX 76107.**

Affirmative Action/Equal Opportunity Employer and Educator.

Postdoctoral Opportunities In The Biomedical Sciences.

Listed below are some of the outstanding research training opportunities that are currently available at the National Institutes of Health.

Biochemistry and Cell Biology of Molecular Chaperones
Evan Eisenberg, MD, PhD

The 70-kDa heat-shock proteins, known as molecular chaperones, are involved in ATP-dependent, protein folding, dissociation of protein complexes, and protein translocation across membranes. Their mechanism of action is being studied, in particular, the effects of nucleotide and protein cofactors on their function. Endocytosis is being used as a model system, and site-directed mutagenesis is being used to clarify the role of ATP hydrolysis. Cell-free assays are also being developed. Laboratory of Cell Biology (OE-69), NHLBI, Building 3, Room B1-22, 3 CENTER DR MSC 0301, BETHESDA MD 20892-0301.

HIV Regulatory Proteins
Jon W. Marsh, PhD

The ability of HIV-1 regulatory proteins to alter normal cell function is being investigated. This work is focused both on the biochemical activities of these proteins and on how these activities might bring about immunological dysfunction. Experience in immunological cell function, retrovirology, and/or signal transduction is desirable. Applicants should have less than five years postdoctoral experience. Laboratory of Molecular Biology (OE-69), Building 36, Room 1B08, 36 CONVENT DR MSC 4034, BETHESDA MD 20892-4034.

Molecular Biology
Henry Levin, PhD

A position is available to study the process of retrotransposition in the fission yeast, *Schizosaccharomyces pombe.* Genetics, molecular biology, and biochemistry will be used to identify interactions between the yeast cell and the retrovirus-like element Tf1 (Transposon of Fission yeast 1), a retrotransposon that encodes functional protease, reverse transcriptase, and integrase proteins. Laboratory of Molecular Genetics (OE-69), NICHD, Building 6B, Room 2B-220, 6 CENTER DR MSC 2780, BETHESDA MD 20892-2780.

Neurotoxicology and Neuroimmunopathology
Melvyn P. Heyes, PhD

A position is available to investigate the functional and clinical significance of the accumulations of the neurotoxin, quinolinic acid, in CNS immune activation, including AIDS, infectious diseases and autoimmune conditions. The applicant should have experience in the quantitative evaluation of neuropathologic and/or functional responses to immune or excitotoxin-mediated CNS damage, as well as experience with the use of *in vivo* animal models of inflammatory neurologic diseases. Laboratory of Clinical Science (OE-69), NIMH, Building 10, Room 3D40, 10 CENTER DR MSC 1261, BETHESDA MD 20892-1262.

Neurogenetics of General Anesthesia
Howard A. Nash, MD, PhD

The cellular and molecular targets of general anesthetics are under investigation. The work uses clssical and novel mutations that alter the sensitivity of D. melanogaster to anesthetics in behavioral assays. Electrophysiological measurements assay an element of the fruit fly's brain that is sensitive to anesthetics and affected by some of the above mutations. Experience in fly genetics, molecular biology and/or electrophysiology desirable. Laboratory of Molecular Biology (OE-69), NIMH, Building 36, Room 1B08, 36 CONVENT DR MSC 4034, BETHESDA MD 20892-4034.

Protein Structure and Neurodegenerative Disease
Byron Caughey, PhD

The formation of scrapie-associated prion protein is under investigation to define the molecular basis of scrapie pathogenesis. These studies suggest therapeutic strategies for treating transmissible spongiform encephalopathies (TSE) and other amyloidoses such as Alzheimer's disease. A strong background in protein or glycosaminoglycan biochemistry is preferred. Applicants must have less than five years postdoctoral experience. Laboratory of Persistent Viral Diseases (OE-69), NIAID, Rocky Mountain Laboratories, Hamilton, MT 59840.

Regulation of Viral Gene Expression
Thomas Kristie, PhD

Herpes simplex virus is used as a model for the analysis of cellular and viral factors involved in the transcription of RNAPII genes. These studies focus on the molecular interactions involved in the regulated assembly of enhancer-promoter complexes and on the biochemical mechanisms of gene expression. Applicants should have experience in molecular biology and biochemistry. Laboratory of Viral Diseases (OE-69), NIAID, Building 4, Room 133, 4 CENTER DR MSC 0455, BETHESDA MD 20892-0455.

Additional Postdoctoral Fellowship Opportunities

For an on-line listing of additional postdoctoral openings, you may access the NIH EDNET Bulletin Board POSTDOC conference via Internet **(wylbur.cu.nih.gov)** or modem (1,301-402-2221 or 1,800-358-2221) with parameters set at "7,Even,1". When connected to NIH, type in ",vt100" for terminal emulation, "F5E" for initials, and "AJL1" for account number.

The Postdoctoral Research Fellowship Opportunities catalog, which describes intramural laboratories at the NIH, is also available by request. An electronic version of the catalog may be accessed via the Internet using either the Gopher Information System **(gopher.nih.gov)** or the World Wide Web **(http://www.nih.gov/)**. When connected, select *Research Opportunities at the NIH Office of Education.* If you would like to request a catalog or have further questions, please contact the NIH Office of Education, Building 10, Room 1C129, 10 CENTER DR MSC 1158, BETHESDA MD 20892-1158, 301-402-1603, Fax 301-402-0483.

To Apply

If you hold a doctoral degree (e.g., PhD, MD/PhD, MD, DO, DDS, DMD or DVM) accompanied by previous laboratory research experience, and would like to be considered for one of these positions, please send a cover letter, *curriculum vitae,* bibliography, and statement of research interests to the address listed with each position. In addition, please arrange to have letters of recommendation sent from three scientists who can provide an evaluation of your qualifications.

NATIONAL INSTITUTES OF HEALTH

National Institutes Of Health

Office Of Education

The NIH is an Equal Opportunity Employer

POSITIONS OPEN

ASSISTANT PROFESSOR
University of Connecticut
Physiology

The Department of Physiology and Neurobiology at the University of Connecticut is seeking candidates for an anticipated tenure-track position as **ASSISTANT PROFESSOR** to be based at the Hartford Regional Campus, effective September 1, 1995. The appointee will teach lectures in a two-semester undergraduate course in Anatomy and Physiology at branch campuses, but will teach the laboratory part of the course and maintain a research laboratory at the Storrs Campus. Requirements include a doctoral degree and two or more years of postdoctoral experience. A physiologist with research interests in molecular endocrinology or regulation of muscle function and development is preferred. Applicants should send a curriculum vitae, a brief statement of research direction, and names of three references to: **Professor G. Pilar, Head, Department of Physiology and Neurobiology, U-42, The University of Connecticut, Storrs, CT 06269-3042.** *We encourage applications from underrepresented groups, including minorities, women, and people with disabilities.* (Search No. 5A247)

The Department of Radiation Oncology at the University of Pennsylvania is seeking applicants for appointment in the Tenure Track at the **ASSOCIATE PROFESSOR** level and **FULL PROFESSOR** level who will pursue research in molecular genetics or molecular biology with strong application in the field of Radiation Oncology. Applicants should hold an M.D. or M.D./Ph.D. degree. Board certification in Radiation Oncology is desirable but is not an absolute requirement for appointment in these positions if the candidate can demonstrate a strong background in research relevant to the field of Radiation Oncology. A generous resource package will be made available to establish the applicants' research effort at the University of Pennsylvania. Salary and benefits will be commensurate with the applicants' experience and academic rank. Please forward curriculum vitae to:

W. Gillies McKenna, M.D., Ph.D.
Chairman, Department of Radiation Oncology
University of Pennsylvania Medical Center
34th and Spruce Streets
Philadelphia, PA 19104-4283

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

FOOD SAFETY
MOLECULAR MICROBIOLOGIST

Rutgers University Food Science Department seeks an **ASSISTANT PROFESSOR** (tenure-track) in the area of microbial safety of foods. A Ph.D. in food science, microbiology, molecular biology or related field; experience in molecular biology/genetics; and U.S. citizenship or permanent visa are required. Candidates should have postdoctoral experience, excellent communications skills and ability to work as team member. Submit curriculum vitae, transcripts, peer-reviewed papers, research and teaching plans and have three recommendation letters sent to: **Dr. Thomas Montville, Department of Food Science, Rutgers University, New Brunswick, NJ 08903.** Application deadline is April 14, 1995, or until a suitable candidate is identified. *Rutgers is an Equal Opportunity/Affirmative Action Employer and encourages women and minorities to apply.*

ASSISTANT PROFESSOR of Entomology, Toxicology: Tenure-track (12 month appointment). Research (80%) dealing with toxicology of insecticidal agents using biochemical, neurophysiological, and/or molecular biological approaches. Teach (20%) an undergraduate/graduate-level course dealing with insecticidal agents and a graduate course in insect toxicology. Detailed position announcements available upon request. Required: Ph.D. with postdoctoral experience in a biological science, specialization in toxicology and experience with insects or other arthropods. Strong publication record, demonstrated ability to obtain extramural funding and good interpersonal skills to work with students, postdoctorals and colleagues. Deadline: May 1, 1995. Send letter of application; résumé; transcripts; and names, addresses and telephone numbers of three references to: **C. Michael Smith, Head, Department of Entomology, 123 Waters Hall, Kansas State University, Manhattan, KS 66506-4004. Telephone: 913-532-6154; FAX: 913-532-6232.** *An Affirmative Action/Equal Opportunity Employer. Kansas State University encourages diversity among its employees.*

RESEARCH ASSISTANT PROFESSOR
Biomolecular and Medicinal Chemistry

A **RESEARCH ASSISTANT PROFESSOR** is sought to carry out synthesis of novel protein inhibitors and employ combinatorial chemistry for the discovery of high affinity protein ligands. Interest in infectious diseases and structure-based drug design essential. Experience in solid state synthesis with non-natural amino-acids desired. The successful applicant will play a critical role within the multidisciplinary Biomolecular Structure Center of the School of Medicine, involving interactions with structural biologists, molecular modeling experts and protein engineers, and is expected to participate in existing research projects and independently raise funds for collaborative projects.

Interested applicants should submit a letter of application, curriculum vitae, statement of career goals, and the names and full addresses of three or more referees to: **Dr. Wim Hol, Department of Biological Structure SM-20, University of Washington, Seattle, WA 98195.** Applications will be reviewed beginning February 15, 1995, and will continue until the position is filled. *The University of Washington is an Equal Opportunity/Affirmative Action Employer.*

The Department of Radiation Oncology at the University of Pennsylvania is seeking applicants for appointment in the Research Track at the **ASSISTANT PROFESSOR** level who will pursue research in molecular genetics or molecular biology with strong application in the field of Radiation Oncology. A generous resource package will be made available to establish the applicant's research effort at the University of Pennsylvania. Please forward curriculum vitae to:

W. Gillies McKenna, M.D., Ph.D.
Chairman, Department of Radiation Oncology
University of Pennsylvania Medical Center
34th and Spruce Streets
Philadelphia, PA 19104-4283

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

OCEANOGRAPHER

We seek a Ph.D. oceanographer for a nine-month, tenure-track position at the **ASSISTANT PROFESSOR** level to begin August 1996. The position involves research, teaching at the graduate and undergraduate levels, and service. We seek a person who would be able to offer coursework relevant to both chemical and biological curricula and whose research interests complement those of faculty in both areas. Please send a letter describing your research and teaching interests together with a curriculum vitae, and the names, addresses, and telephone numbers of three references to: **Search Committee, Department of Oceanography, Florida State University, Tallahassee, FL 32306-3048.** Application review will begin in May 1995 and continue until a suitable candidate is found. *Florida State University is an Equal Opportunity/Affirmative Action Employer.*

ASSISTANT PROFESSOR
PLANT ECOLOGY

The Botany Department at Oklahoma State University seeks candidates for a **TENURE-TRACK POSITION** in Ecology, beginning September 1, 1995. Expertise at the ecosystem level is preferred. Duties include teaching graduate and undergraduate courses in the Botany Department, teaching graduate courses for the Environmental Sciences Program, and developing an externally funded research program. By March 24, 1995, applicants should send curriculum vitae, statements of teaching and research interests, and have three referees send letters to: **Search Committee, Department of Botany, Oklahoma State University, Stillwater, OK 74078. FAX: 405-744-7673.** *An Equal Opportunity/Affirmative Action Employer.*

Experimental Pathologist—Opening available at any level (**ASSISTANT/ASSOCIATE** or **PROFESSOR**). Individual with established research program in experimental pathology. Send curricula vitae to: **Dr. Michael Prystowsky, Interim Chairman, Department of Pathology, Albert Einstein College of Medicine, F358, Jack and Pearl Resnick Campus, 1300 Morris Park Avenue, Bronx, NY 10461.** *An Equal Opportunity Employer.*

VICE PRESIDENT FOR RESEARCH
UNIVERSITY OF WYOMING

Position: Provides leadership for enhancement/facilitation of research at this land-grant, research university. Reports directly to the president.

Qualifications: Earned doctorate; distinguished accomplishments; academic credentials meriting a tenured appointment as professor. Familiarity with sources of extramural funding, experience and ability to represent the university to all external constituencies. Excellent communication skills, sensitivity to and ability to work with faculty and others with diverse backgrounds. Past experience in administration of research required.

Availability: July 1, 1995. Screening begins April 15, 1995, continues until a suitable candidate is identified. Nominations or letters of application (including a current curriculum vitae, and the names, addresses, and telephone numbers of five references) to:

Dean Martha S. Williams, Chair
Search Committee, Vice President for Research
College of Health Sciences
P.O. Box 3432
Laramie, WY 82071-3432
Telephone: 307-766-6556
FAX: 307-766-6608

The University of Wyoming is an Equal Opportunity Employer and specifically invites and encourages applications from women and minorities.

PROFESSOR

The Department of Cell Biology, Neurobiology and Anatomy at Loyola University Chicago, Stritch School of Medicine is seeking a Cell Biologist/Neurobiologist to fill a tenure-track position at the **PROFESSOR** level. Applicants should have a well established independent research program and a record of long term extramural support, although some financial assistance will be available for relocating a laboratory. Individuals utilizing cell and molecular approaches in glial-neuronal cell interactions as well as neuroimmunology are encouraged to apply. Teaching responsibilities will include some participation in medical and graduate cell biology and neuroimmunology courses. Applicants should submit a letter indicating qualifications and research goals, curriculum vitae, and three letters of recommendation by March 15, 1995, to: **John Clancy, Jr., Ph.D., Department of Cell Biology, Neurobiology and Anatomy, Loyola University Stritch School of Medicine, 2160 South First Avenue, Maywood, IL 60153.** *Loyola University is an Equal Opportunity Employer.*

Tenure-track **FACULTY POSITION** available no later than September 1, 1995, in the Department of Pharmacology, University of Wisconsin Medical School, Madison, Wisconsin. Applications are invited from individuals who possess the Ph.D. and/or M.D. degree and who will develop a vigorous research program in molecular and/or cellular pharmacology. Especially interested in candidates at the Assistant Professor level. Submit curriculum vitae and names of three references to: **Dr. Arnold Ruoho, Chair, Search Committee, Department of Pharmacology, University of Wisconsin Medical School, 1300 University Avenue, Madison, WI 53706.**

The first-round deadline for this advertisement is April 15, 1994; however, the position will remain open until filled.

The University of Wisconsin-Madison is an Equal Opportunity/Affirmative Action Employer.

M.D. or **PH.D. OPENING.** The Division of Hematology at The Children's Hospital of Philadelphia and The Department of Pediatrics, University of Pennsylvania School of Medicine is seeking an M.D. or Ph.D. with demonstrated research expertise, independence and productivity in sickle cell disease, hematopoiesis, or coagulation to interact with established investigators in these areas. Candidate must be recognized as an outstanding investigator at the national level. He/she will join existing faculty in a new research facility, which will be one of the largest pediatric research institutes in the nation. Level of academic appointment and tenure status commensurate with qualifications. Address replies with curriculum vitae to: **Alan Cohen, M.D., Chief, Division of Hematology, Civic Center Boulevard, Philadelphia, PA 19104. FAX: 215-590-3525; Email:mcavoy@email.chop.edu.** *Equal Opportunity Employer/Affirmative Action/Minorities/Females/Disabled/Veterans.*

Discoveries

IN MOLECULAR GENETICS RESEARCH

POSTDOCTORAL POSITION

The Hospital for Sick Children Research Institute, located in Toronto, Canada, is internationally recognized for excellence and innovation in a broad spectrum of research initiatives. This postdoctoral opportunity calls for a research professional to study the molecular genetics of early development in *Drosophila*.

Current projects include studies in: (i) the mechanisms and function of RNA localization in the *Drosophaila* oocyte and early embryo (*BioEssays* **15**:651, 1993: *Zygote* **1**:251, 1993: *PNAS* **90**:2512, 1993: *Dev. Biol.* **163**: 503, 1994); (ii) the developmental functions of the Hsp83 regulatory molecular chaperone in the embryo and in the germ line (*Mol. Cell. Biol.* **13**:3773, 1993); and (iii) molecular genetic control of morphogenesis in the *Drosophila* embryo. As these studies use methods in genetics, molecular biology, cell biology and biochemistry, a strong background in one or more of these areas is required.

. . . . . .

If you would like to apply your expertise with a facility dedicated to leading edge research programs, please forward you curriculum vitae, along with three references, by **March 24, 1995**, to: **Celeste Walton-Ruzic, Human Resource Services, The Hospital for Sick Children, 555 University Avenue, Toronto, Ontario, Canada M5G 1X8.** *In accordance with Canadian Immigration requirements, this advertisement is directed to Canadian citizens and permanent residents of Canada.*

HSC THE HOSPITAL FOR SICK CHILDREN

UNIVERSITY OF WISCONSIN-MADISON
College of Agricultural and Life Sciences
University-Industry Relations

The College of Agricultural and Life Sciences and the office of University-Industry Relations are seeking nominations and applications for an Assistant Dean position. The incumbent will serve as Assistant Dean working with the College of Agricultural and Life Sciences faculty and staff on technology transfer efforts at the UW-Madison.

Degree and Specialization

Ph.D. in biological sciences is required, along with demonstrated research abilities related to disciplines within the College of Agricultural and Life Sciences.

Experience

At least ten years of experience which includes a combination of management, marketing, technology transfer and research. Both business and academic experience is necessary, as well as a detailed understanding of research in the Agricultural and Life Sciences. Appreciation for the mission and priorities of universities as institutions of higher learning as distinct from industrial research laboratories is essential.

Unless confidentiality is requested in writing, information regarding applicants and nominees must be released upon request. Finalists cannot be guaranteed confidentiality.

Deadline Date for Receipt of Application:
April 15, 1995

For full consideration, send a cover letter, complete resume, and the names and addresses of at least three references to:

Dr. Steven C. Price, Director
University-Industry Relations (UIR)
University of Wisconsin-Madison
Rm. 1215 WARF Bldg.
610 Walnut St.
Madison, WI 53705
(608) 263-2840

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At Berlex, we've built our reputation on FDA-approved product successes and a proven track record in the pharmaceutical industry. Currently, we are seeking a highly motivated, independent bench scientist to join our renowned San Francisco Bay Area team and advance our scientific mission in the following position.

SCIENTIST

As part of the Discovery Research Program at Berlex Biosciences, you will have the opportunity to help understand and solve serious medical problems. Based on information you acquire from literature, academic contacts, and in-house research, you will identify new drug-discovery targets and technologies to pursue. A Ph.D. in biology or biochemistry, along with postdoctoral or industrial experience and a strong background in molecular biology are required. Biochemistry, cell biology and computer experience are preferred.

As a US subsidiary of an international Fortune 500 company, Berlex is proud to offer competitive salaries and a generous benefits package. To apply, send your resume to: BERLEX, HUMAN RESOURCES EMPLOYMENT, 15049 SAN PABLO AVE., DEPT. B94-048, RICHMOND, CA 94804-0099. Principals only, please. EOE.

BERLEX

THE BEST IS YET TO COME

POSITIONS OPEN

FACULTY POSITION—DEPARTMENT OF MICROBIOLOGY & MOLECULAR GENETICS UMDNJ-NEW JERSEY MEDICAL SCHOOL

The Department of Microbiology and Molecular Genetics seeks outstanding scholars for a tenure-track **FACULTY POSITION** in microbial pathogenesis, human molecular genetics or other areas of molecular biology. Faculty are expected to develop independent research programs and participate in teaching graduate and medical students. The department has 17 full-time faculty, is fully equipped for molecular biological and genetics research, and is associated with the newly established Center for Human and Molecular Genetics and the National Center for Tuberculosis. New Jersey Medical School is part of the University of Medicine and Dentistry of New Jersey (UMDNJ) and is located in the University Heights section of Newark, New Jersey, minutes from both pleasant suburbs and downtown New York City. A curriculum vitae including future research plans and three letters of recommendation should be sent to: **Dr. Harvey Ozer, Chairman, Department of Microbiology and Molecular Genetics (S), UMDNJ-New Jersey Medical School, 185 South Orange Avenue, Newark, NJ 07103-2714.** *UMDNJ is an Affirmative Action/Equal Opportunity Employer/Minorities/Females/Disabled/Veterans and a member of the University Health System of New Jersey.*

ASSOCIATE PROFESSOR. The Infectious Disease Division at the Hospital of the University of Pennsylvania has opening at rank of Associate Professor in tenure track. Candidate must have a strong research program and have NIH funding. Preference given to investigators interested in biochemistry of inflammation, microbial pathogenesis or HIV molecular biology. Send curriculum vitae to: **Harvey Friedman, M.D., Chief, Infectious Disease, 536 Johnson Pavilion, University of Pennsylvania, Philadelphia, PA 19104-6073.** *An Equal Opportunity/Affirmative Action Employer, minority/female/disabled/veterans.*

NEW YORK UNIVERSITY
Courant Institute of Mathematical Sciences

New York University/the Courant Institute anticipate at least one interdisciplinary **FACULTY POSITION** in the biosciences, to begin as early as September 1995. The appointment may be at either a junior or senior level, with some preference for a senior scientist. Applicants should have outstanding research accomplishments in one of the biosciences, with interdisciplinary, computational, and mathematical interests. Applications should be addressed to: **Frances Adamo, Courant Institute of Mathematical Sciences, 251 Mercer Street, New York, NY 10012.** *New York University is an Affirmative Action/Equal Opportunity Employer.*

Biology. Methodist College welcomes applications for a **TENURE-TRACK POSITION** starting August 1995. Doctorate required, previous teaching experience preferred. Responsibilities include teaching Introductory Biology courses for majors. Send application, résumé, graduate transcripts, and three letters of reference by March 15, 1995, to: **Dr. Margaret Folsom, Director, Division of Science, Methodist College, 5400 Ramsey Street, Fayetteville, NC 28311-1420. Telephone: 910-630-7127.** *An Equal Opportunity Employer; minority candidates are especially encouraged to apply.*

MOLECULAR NEUROBIOLOGIST

Applications are invited for a **TENURE-TRACK FACULTY** position in the Division of Neurobiology and Behavior Research of the Department of Psychiatry and Human Behavior at the University of Mississippi Medical Center. Candidates should have a Ph.D. and/or M.D. degree. Expertise in molecular biology is required. Background in research on CNS-active drugs and the biology of psychiatric disease is highly desirable. The successful candidate will be expected to establish an active, externally funded research program, collaborate with colleagues, and participate in departmental teaching. Adequate space and start-up funds are available. Salary will be commensurate with rank and experience. Please submit a curriculum vitae, a statement of research interests, and names of three references to: **Dr. Gregory A. Ordway, Search Committee, Department of Psychiatry and Human Behavior, University of Mississippi Medical Center, 2500 North State Street, Jackson, MS 39216.** *Equal Opportunity Employer. Male/Female/Disabled/Veterans.*

POSITIONS OPEN

PROFESSORS
PHYSICAL AND BIOLOGICAL SCIENCES

California State University, Monterey Bay is seeking **FACULTY** in all areas of Physical and Biological Sciences who are exceptionally well-qualified for the teaching and development of multidisciplinary curriculum based on service learning. Candidates must be able to work cooperatively and effectively in atypical environments. Applicants please specify: (1) areas of teaching expertise, (2) record of scholarly achievement, (3) experience in service-based learning, (4) skills in the use of technology as resources for teaching and learning, and (5) cross-disciplinary interests.

To receive a complete position announcement in the mail, call: **408-393-3364**. All correspondence should be addressed to: **Faculty Recruitment Office, California State University, Monterey Bay, 100 Campus Center, Seaside, CA 93955-8001. California Relay System (TDD users): 1-800-735-2929; Email: faculty_recruitment@monterey.edu**.

Priority screening of applications: March 3, 1995. Position closing date: March 17, 1995.

The California State University is an Equal Opportunity/Affirmative Action and ADA Employer committed to excellence through diversity.

FACULTY POSITION
The Gladstone Institute of Virology and Immunology
The University of California, San Francisco

The Gladstone Institute of Virology and Immunology and the University of California, San Francisco (UCSF) seek applicants for an **ASSISTANT/ASSOCIATE/FULL INVESTIGATOR** position within the Gladstone Institutes with a concurrent position at the level of Assistant, Associate or Full Professor, In Residence series at the University of California, San Francisco. Applicants should have a M.D. and/or Ph.D. and a strong research interest in HIV biology and experimental immunology coupled with a strong record of scientific accomplishment. Please submit a curriculum vitae and the names of three references to: **Chair, Search Committee, Gladstone Institute of Virology and Immunology, UCSF, P.O. Box 419100, San Francisco, CA 94141-9100.** *UCSF is an Equal Opportunity/Affirmative Action Employer. Women and minorities are encouraged to apply.*

Temporary, full-time **TEACHING POSITION** in Department of Wildlife. Appointment for 1995-1996 academic year, starting August 21, 1995. Candidates must demonstrate expertise in ornithology, experience with upland game desirable, and a background appropriate to teach wildlife courses in: ornithology, upland game, upland habitat management, principles of wildlife management, and wildlife techniques. Ph.D. required or near completion when appointed. University teaching experience desirable. Experience in applied ecology and wildlife preferred. Submit curriculum vitae, reprints, transcripts of academic work, and three letters of reference to: **Dr. David W. Kitchen, Chair, Department of Wildlife, Humboldt State University, Arcata, CA 95521. Telephone: 707-826-3953.** Applications must be completed by April 30, 1995. *Humboldt State is an Equal Opportunity/Affirmative Action/Title IX Employer.*

ENVIRONMENTAL SCIENTIST—DIRECTOR

Claremont McKenna College, a member of The Claremont Colleges, seeks to hire at the advanced level a **DIRECTOR** of the Roberts Environmental Center, an institute for research and undergraduate education in environmental problems. Responsibilities will include research (preferably applied biological research pertinent to Southern California), administration, and undergraduate teaching in environmental science. Prior experience in each of these areas is essential. Salary commensurate with experience. Claremont McKenna College is a small, selective liberal arts college that emphasizes economics and policy studies. Send a résumé and arrange to have three to five letters of recommendation forwarded to: **Anthony Fucaloro, Dean of the Faculty, Claremont McKenna College, 500 East 9th Street, Claremont, CA 91711-6400** by March 31, 1995. Review of applications will begin immediately and continue until the position is filled.

Claremont McKenna College is an Affirmative Action/Equal Opportunity Employer. Women and minority candidates are encouraged to apply.

POSITIONS OPEN

VASCULAR BIOLOGIST/PHYSIOLOGIST
ASSISTANT PROFESSOR

The Department of Physiology at Jefferson Medical College, Thomas Jefferson University, Philadelphia, Pennsylvania, has a full-time, 12-month faculty position for a vascular biologist/physiologist at the **ASSISTANT PROFESSOR** level starting 1 July 1995. Excellent space and working conditions are available. Candidates should have a Ph.D. or M.D. degree and two to three years of relevant postdoctoral experience. Investigators in the area of cell signaling, endothelial cells, pulmonary vasculature, nitric oxide biology, adhesive molecules, neutrophil mediators, or growth factors and cytokine research are preferred. A strong program in endothelial, neutrophil and vascular smooth muscle physiology and pathophysiology already exists. Evidence of independent research and ability to develop grant applications is important. Funded investigators will be given preference. Applicants should send their curriculum vitae, including a statement of their research interests and experience, and arrange to have three letters of recommendation sent to: **Dr. Allan M. Lefer, Chairman, Department of Physiology, Jefferson Medical College, 1020 Locust Street, Philadelphia, PA 19107-6799.** *An Equal Opportunity/Affirmative Action Employer.*

UNIVERSITY OF OTTAWA
HEART INSTITUTE
HYPERTENSION RESEARCH PROGRAM

Two faculty positions (**ASSISTANT** or **ASSOCIATE PROFESSOR** level) available. Candidates (Ph.D. or M.D./Ph.D.) must have a strong background in: Molecular Biology, Cellular Biology or Neurobiology and are expected to establish a strong independent research program relevant to hypertension and to collaborate with other scientists on the study of (brain) ouabain-like compounds.

In accordance with Canadian immigration requirements, this advertisement is directed to Canadian citizens and permanent residents. Applications (including curriculum vitae, description of prior research experience, current research interests and three references) to: **Dr. Yves L. Marcel, Director, Academic Affairs, University of Ottawa Heart Institute, 1053 Carling Avenue, Ottawa, Ontario K1Y 4E9 Canada. FAX: 613-761-5281.**

The University of Illinois College of Medicine at Peoria seeks qualified candidates for the position of **RESEARCH ASSISTANT PROFESSOR** of Pharmacology (non-tenure-track) with primary emphasis on animal models of epilepsy beginning April 1, 1995. Candidates should have a Ph.D. and/or M.D., five years of postgraduate experience, and research achievement in the area of *in vivo* pharmacology, with an emphasis on neuropharmacology. Skills required include intracerebral microdialysis for analyses of brain neurotransmitters via HPLC; use of intracerebral microdialysis and micro injection drug delivery systems; expertise in stereotaxic surgery, histology, and rat brain histology and dissection; and experience in evaluation of seizures in animal models, including use of maximal electroshock and kindling techniques. Documentation of qualifications will include relevant publications in peer-reviewed biomedical scientific literature. Salary commensurate with experience and training. Applicants should send a curriculum vitae, and three letters of reference to: **John W. Dailey, Ph.D., Department of Basic Sciences, UICOM-P Box 1649, Peoria, IL 61605.** Application Deadline: April 1, 1995. *The University of Illinois is an Affirmative Action/Equal Opportunity Employer.*

PITTSBURGH TRANSPLANTATION INSTITUTE

POSTDOCTORAL POSITION available to study the role of Urease antigen in experimental hepatic encephalopathy. Candidates must be an M.D., Ph.D., or M.D./Ph.D., with strong background in immunology or biochemistry. Send curriculum vitae and names of three references to: **Abdul S. Rao, M.D., D. Phil, Pittsburgh Transplantation Institute, University of Pittsburgh, E1545 Biomedical Science Tower, 200 Lothrop Street, Pittsburgh, PA 15261.**

PARKE-DAVIS
UNIVERSITY OF MICHIGAN

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speakers....

Professor Samuel Danishefsky
Columbia University
Professor Chi-Huey Wong
The Scripps Research Institute
Professor Bertram Frasier-Reid
Duke University
Professor Daniel Kahne
Princeton University

moderated by....

Dr. James A. Bristol
Vice-President, Chemistry
Parke-Davis Pharmaceutical Research

April 28, 1995, 9 am - 4 pm
1800 Chemistry Building
University of Michigan

No Registration Required

contact: Dr. Anthony Czarnik, (313) 996-5246, czarnia@aa.wl.com

Deputy Director
Division of Nutrition Research Coordination

The Division of Nutrition Research Coordination (DNRC), National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), is recruiting for Deputy Director. The DNRC advises the Director, NIDDK, and the Director, NIH, in the areas of nutrition, nutrition research, and related policy matters.

The incumbent assists the DNRC Director in the coordination of nutrition research and research training activities at the NIH. Incumbent provides leadership for the activities of the NIH Nutrition Coordinating Committee including responsibility for reports preparation on nutrition research and research training activities. Maintains working relationships with other Federal personnel who are involved in biomedical and behavioral nutrition research, training and policy issues, and with individuals from professional scientific societies, academic institutions, and other organizations involved in nutrition research and implementation of nutrition policy. Represents the NIH in a broad range of nutrition-related activities including Federal interagency committees, scientific conferences, and congressional hearings or testimony. Applicants must have recognized professional expertise in the field of nutrition/nutrition research and related nutrition activities. Salary ranges between $71,664 - $93,166 annually depending on qualifications. Submit curriculum vitae and a summary of professional achievement to: **Van S. Hubbard, M.D., NIDDK, NIH, Natcher Building, Rm. 6AN-18F; Bethesda, MD 20982. Apply before closing date of 4/30/95.**

NIH IS AN EQUAL OPPORTUNITY EMPLOYER

ASSISTANT PROFESSOR OF BIOCHEMISTRY

The Department of Biochemistry at the University of Minnesota Medical School is seeking outstanding candidates for appointment to its faculty. The Graduate Program in Biochemistry, Molecular Biology and Biophysics has established strengths in molecular biology, cell signaling and biomolecular structure. We are seeking candidates who will complement one or more of those areas. We are particularly interested in attracting candidates whose research has physiological or medical significance. The appointment is at the assistant professor level (tenure-track position). Applicants should hold a Ph.D. or equivalent degree in biochemistry or a closely related discipline, have completed at least one year of postdoctoral training at the time of application and should have an outstanding record of research productivity.

Send your curriculum vitae, a statement of research plans, recent reprints, and arrange to have three letters of recommendation sent to the address given below. The application must be postmarked by March 31, 1995.

Faculty Search Committee
Department of Biochemistry
4-225 Millard Hall
435 Delaware St. SE
University of Minnesota
Minneapolis, MN 55455

The University of Minnesota is an equal opportunity educator and employer.

DIRECTOR
UNIVERSITY OF KENTUCKY
TOBACCO AND HEALTH RESEARCH INSTITUTE

The University of Kentucky seeks to recruit an investigator with outstanding scientific credentials and a long term extramurally supported research program in the area of plant biochemistry/molecular genetics to become Director of the Tobacco and Health Research Institute (THRI). The individual must have academic credentials to qualify for the rank of tenured Full Professor in an academic department at the University of Kentucky. The Director will be expected to establish and guide a broadly based research effort in biochemistry/molecular genetics of both plants and animals. The goal is to build a research program directed at genetically engineering tobacco and other higher plants to produce substances such as protein, chemicals, enzymes, fibers, etc., which would have commercial value. Portions of the broad based research program could also encompass areas such as plant or animal-derived pharmaceuticals and genetically linked aspects of plant and animal biology and disease. The THRI is a free standing facility with excellent research space on the University of Kentucky campus. Women and minorities are encouraged to apply. Applications should be sent to: THRI Director's Search, University of Kentucky, Office of The Vice President for Research and Graduate Studies, 207 Administration Building, Lexington, Kentucky 40506-0032. Review of applications will begin March 15, 1995.

The University of Kentucky is an Equal Opportunity Employer.

CHEMISTS

Merck Research Laboratories, a leader in pharmaceutical research, has career opportunities for scientists in Bioanalytical Chemistry in support of human vaccine development.

The successful candidate(s) will need a diverse scientific background, strong problem solving ability and excellent communication skills to work in this highly interactive multi-discipline team environment. This Person(s) will be responsible for the characterization of vaccine products using biochemical and biophysical technology with a strong emphasis on methods development and validation.

The Senior Chemist position requires a Ph.D. in biochemistry, protein chemistry, molecular biology or a related discipline with 0-5 years of post-graduate training/experience. The Chemist position requires an MS/BS with at least two years of molecular biology research laboratory experience.

Excellent salary and benefit programs accompany this position at our modern research facilities located 25 miles northwest of Philadelphia.

Please send curriculum vitae with cover letter, transcripts, and the names of three references to: **Personnel Manager, Ad #C-17, MRL Human Resources WP42-2, Merck Research Laboratories, P.O. Box 4, West Point, PA 19486.** EEO/AA/VH/Employer.

MERCK
Research Laboratories

T · H · E
OHIO
STATE
UNIVERSITY

DEAN OF THE COLLEGE OF BIOLOGICAL SCIENCES THE OHIO STATE UNIVERSITY

The Ohio State University invites nominations and applications for the position of Dean of the College of Biological Sciences. Ohio State is one of the nation's leading comprehensive research universities. It is situated in Columbus, Ohio, a thriving metropolitan area of about 1.4 million and the capital of the State of Ohio. The dean of the college is administratively responsible for the departments of Biochemistry, Entomology, Microbiology, Molecular Genetics, Plant Biology, and Zoology. The college has 101 regular faculty, an annual budget of $14.2 million, research funding of $8.9 million, and a tradition of excellence in teaching and research.

The dean provides leadership for the educational and research activities of the college and works collaboratively with the faculty of the college, the university administration, and other constituent groups both within and outside the University. The dean is responsible for faculty recruitment, for development and advancement of academic programs, administration of personnel affairs, and projection and allocation of budgets for units in the college. In addition, the dean has responsibilities for encouraging and developing collaborations with the College of Food, Agricultural, and Environmental Sciences, the College of Mathematical and Physical Sciences, and six health sciences colleges. Further, the University is undergoing a major expansion in the life sciences, including new initiatives in molecular life sciences (which will entail at least thirty new faculty positions university-wide), cancer genetics, plant molecular biology, and biotechnology; the dean will play a major leadership role in these endeavors. The dean reports to the provost, who is the chief academic officer of the University.

A candidate must possess an earned doctorate or its equivalent in one of the disciplines in the college. Additional qualifications for the position should include a distinguished record in research, teaching, and service; demonstrated excellence in leadership and administration; and a clear record of effective commitment to and support of cultural and ethnic diversity and affirmative action. Candidates must have the qualifications for appointment as Professor in one of the units of the college.

The Search Committee will begin reviewing dossiers on **April 17, 1995**, and will continue to review applications until the dean is selected. Applicants should send a letter expressing their interest and qualifications, a curriculum vitae, and the names, addresses, and telephone numbers of three or four references to:

Dean James C. Garland, Chair
Search Committee for Dean of
the College of Biological Sciences
203 Bricker Hall
190 North Oval Mall
Columbus , OH 43210-1358

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

POSITIONS OPEN

Three **RESEARCH ASSOCIATE/POSTDOCTORAL POSITIONS** in Virology and Neurobiology available involving studies of: (a) HSV-neuron interactions including the role of nitric oxide and capsaicin sensitive neuronal functions; (b) HSV, CMV, VZV and HIV pathogenesis *in vivo* including use of chimeric and intertypic mutants; (c) new anti-viral drugs, vaccines and topical microbicides evaluations in animal models. Qualifications include recent Ph.D., D.V.M. and/or M.D. training and research experience in molecular biology, neurobiology, microbial pathogenesis, retrovirology, or neuropharmacology. Candidates should send a curriculum vitae, statement of research interests and names of three references to: **Dr. L. R. Stanberry, Division of Infectious Diseases, Children's Hospital Research Foundation, University of Cincinnati, 3333 Burnet Avenue, Cincinnati, OH 45229.** *Children's Hospital Research Foundation is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL FELLOWSHIPS IN PLANT SIGNAL TRANSDUCTION
Waksman Institute, Rutgers University

A **POSTDOCTORAL RESEARCH POSITION** is available immediately to study signal transduction during induction of disease resistance to viral infections of tobacco and *Arabidopsis*. Particular emphasis is being placed on defining components of the salicylic acid signal transduction pathway(s) (*Plant Cell*, **4**:359, 1992; *Plant J.*, **4**:593, 1993) and characterization of the salicylic acid receptor (*PNAS*, **90**:9533, 1993; *Science*, **262**:1883, 1993).

Applicants should have research experience in genetics and/or molecular biology. Send curriculum vitae and a cover letter detailing experience and have sent three letters of recommendation to: **Dr. Daniel Klessig, Waksman Institute, Rutgers University, P.O. Box 759, Piscataway, NJ 08855.**

Rutgers University is an Equal Opportunity/Affirmative Action Employer.

POSTDOCTORAL POSITION available immediately for three years to investigate neuroethological aspects of anuran prey capture. This position is associated with an NSF-sponsored collaborative research project between **Michael Arbib** (University of Southern California) and **Ananda Weerasuriya** (Mercer University School of Medicine, Georgia), and will be at the latter location. The primary focus will be on characterizing the behavior and EMG of rapidly adapting prey capture patterns of frogs. Experience with chronic electrophysiological recording techniques is desirable. Please send curriculum vitae, summary of research experience, and three letters of references to: **Ananda Weerasuriya, Division of Basic Sciences, Mercer Medical School, Macon, GA 31207. FAX: 912-752-4038; Email: weerasuriy_a@mercer.peachnet.edu.** *An Affirmative Action/Equal Opportunity Employer.*

POSITIONS OPEN

ASSISTANT PROFESSOR
TURFGRASS PLANT PATHOLOGY
THE OHIO STATE UNIVERSITY

Eleven-month, tenure-track position, 45% teaching, 40% research and 15% extension. Strong commitment to undergraduate/graduate education, teach turfgrass course and others in plant pathology. Strong research program in turf pathology with emphasis on identification, ecology and management of plant pathogenic fungi affecting turf. Position involves working closely with full time extension associate and interacting with Ohio's turf industry on projects of mutual interest. Ph.D. in plant pathology or equivalent experience in allied discipline is required. Research interests and experience in biological control, microbial ecology and use of molecular techniques highly desirable. Applicants should send a résumé, names and addresses of five references to be contacted, brief description of teaching goals and proposed research focus to the **Search Committee Chair, Department of Plant Pathology, The Ohio State University, 201 Kottman Hall, 2021 Coffey Road, Columbus, OH 43210. Telephone: 614-292-1375.**

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

POSTDOCTORAL FELLOWSHIP

Position available in cellular and molecular neurobiology for a Ph.D. or M.D./Ph.D. Research projects involve transgenic and gene targeting strategies to generate animal models of human neurodegenerative diseases, including Alzheimer's disease, ALS, and spinal muscular atrophy. Studies of the mechanisms of neuronal injury and cell death are integral to our program. A strong background in cellular and molecular biology and familiarity with neurobiology are desirable. Send curriculum vitae and references to: **Donald L. Price, M.D., Neuropathology Laboratory, The Johns Hopkins University School of Medicine, 558 Ross Research Building, 720 Rutland Avenue, Baltimore, MD 21205-2196.** *Please, U.S. citizens or permanent residents only (because of funding limitations). An Equal Opportunity Employer; women and minorities are encouraged to apply.*

POSTDOCTORAL RESEARCH ASSOCIATE
Molecular Oncology/Retrovirology

Position available immediately in a laboratory studying the molecular mechanisms of malignant transformation and developing new immuno- and antisense therapeutics. Must have Ph.D. and documented experience with PCR, DNA, and RNA analysis and gene cloning. The candidate will be involved in cloning and characterization of a new female cancer virus. Previous experience with HIV or other viruses preferred. Please send or FAX curriculum vitae and names of three references to: **Dr. Ewa M. Rakowicz-Szulczynska, Associate Professor, Director of Molecular Oncology Laboratories, Department of Obstetrics and Gynecology and Eppley Cancer Institute, University of Nebraska Medical Center, 600 South 42nd Street, Omaha, NE 68198-3255. FAX: 402-559-8112.**

The University of Nebraska Medical Center is an Affirmative Action/Equal Employment Opportunity Employer.

POSTDOCTORAL POSITION
ALBERT EINSTEIN COLLEGE OF MEDICINE

A **POSTDOCTORAL RESEARCH POSITION** is available in molecular virology. The project involves the study of human immunodeficiency virus reverse transcriptase (RT) with emphasis on genetic and biochemical approaches to dissect structure-function of RT, the mechanism of drug-resistance in HIV and the molecular biology of HIV DNA synthesis. Applicant must hold a Ph.D. degree in biochemistry, molecular biology, molecular virology or a related field. Minimal requirements are an expertise in molecular biology and a serious interest in AIDS research. Applicants should send curriculum vitae and names and addresses of three references to: **Dr. Vinayaka R. Prasad, Department of Microbiology and Immunology, Albert Einstein College of Medicine, Jack and Pearl Resnick Campus, 1300 Morris Park Avenue, Bronx, NY 10461.** *An Equal Opportunity Employer.*

MIT

MIT Co-Director of the Harvard-MIT Division of Health Sciences and Technology

MIT has initiated a search for the MIT Co-Director of the Harvard University-Massachusetts Institute of Technology Division of Health Sciences and Technology (HST), who, together with the Harvard Co-Director, leads the HST Division. HST is a joint Division of Harvard and MIT, committed to the application of basic knowledge from the biological, physical and engineering sciences to the solution of biomedical problems. HST has a small core faculty having primary appointments in HST, and about 175 affiliated faculty who participate in HST's teaching and research programs. Approximately 175 students are enrolled in the HST MD program and 110 students are enrolled in HST's interdisciplinary PhD programs.

The Harvard and MIT Co-Directors collaborate closely in providing leadership for the research and educational activities of the HST Division. The MIT Co-Director has principal responsibility, and acts as department head for, MIT faculty and staff whose appointments are in HST and HST students who receive MIT degrees. The Co-Directors are responsible for ensuring that HST attains its goals by attracting outstanding individuals to the HST core and affiliated faculty and by effective and efficient administration of the HST educational programs. The Co-Directors' responsibilities include forming collaborative links with academic and clinical departments at MIT and the Harvard Medical School, and with the science, engineering and medical communities at both institutions. The Co-Directors also guide fund raising activities for the HST Division.

The MIT Co-Director should hold an MD or PhD degree and be an outstanding scholar whose contributions to biomedical engineering and/or the health sciences are widely respected nationally. This person should have the ability to function comfortably across departmental and institutional boundaries, and work smoothly with individuals from widely varying academic backgrounds and traditions.

Confidential contact should be made by March 31, 1995, to: Professor Richard J. Cohen, Co-Chairman, HST Co-Director Search Committee, Room E25-330d, Massachusetts Institute of Technology, 77 Massachusetts Avenue, Cambridge, MA 02139-4307 USA; Telephone: 617-253-7430; Fax: 617-253-3019.

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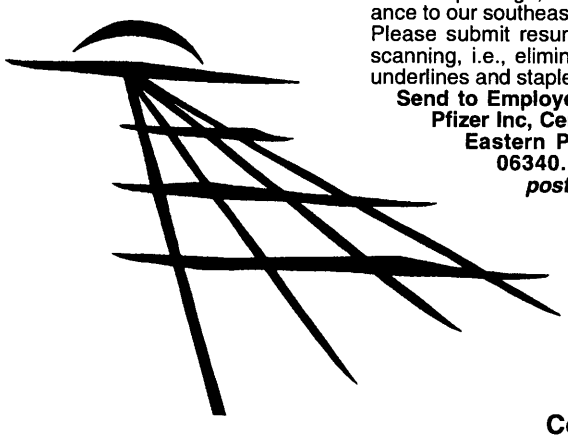

Pfizer Inc, is a Fortune 100 leader in pharmaceutical research and health care products. Currently, the Department of Drug Safety Evaluation at our Central Research facility in Groton, Connecticut has a need for a:

VETERINARY PATHOLOGIST

The candidate must be Board Certified by the American College of Veterinary Pathologists and have industry/toxicologic pathology experience. Good communication skills are essential. This position involves close collaboration with colleagues in a variety of scientific disciplines.

In addition to a stimulating research environment, we offer a competitive compensation and benefits package, including relocation assistance to our southeastern shoreline community. Please submit resume suitable for electronic scanning, i.e., eliminate italics, bullets, bolds, underlines and staples, laser printed preferred.

Send to Employee Resources, AD 1007, Pfizer Inc, Central Research Division, Eastern Point Road, Groton, CT 06340. *All resumes must be postmarked by April 17, 1995.*

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Arris Pharmaceutical Corporation is a growing biopharmaceutical company dedicated to the rapid development of novel human therapeutics. We are committed to an innovative multidisciplinary & team oriented approach that encourages both creativity and collaboration. We currently have two exceptional Molecular Pharmacology opportunities.

Scientist in Molecular Pharmacology

Enzymologist, Ph.D. Candidate will have 3-5 years post-doctoral experience in enzyme kinetics, inhibitor characterization, protein purification, spectrophotometric and fluorometric assay methods. Good communication skills and the ability to interact in a highly interdisciplinary environment are expected. Supervisory experience and familiarity with high-throughput assay methods are pluses. (Job# S0224-MP)

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Working closely with a team of synthetic chemists, molecular biologists and pharmacologists, you will participate in the discovery of novel therapeutics. Successful candidate will be expected to maintain a diverse group of mass spectroscopic instrumentation and to be the primary resource in the company for mass spectrometrically based analytical data for organic molecules as well as proteins. He/she should have a Ph.D. in Mass Spectroscopy with at least 2 years of post doctoral experience and a solid publication record. The candidate should also have experience with ESI, MALDI, FAB, EI, CI mass spectrometry and HPLC, SDS/PAGE, electroblotting and CZE separation techniques. (Job# S0224-MS)

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POSITIONS OPEN

Two **POSTDOCTORAL RESEARCH** positions available immediately in wetlands hydrology and paleoecological studies in the Everglades of South Florida. For hydrology position, experience in directing field studies, automated instrumentation and flow measurements desirable. For the second position, we seek a Ph.D. in Biology or Ecology with expertise in paleoecology, pollen analysis or diatom. Interested candidates should send curriculum vitae and names of three references to: **Curtis J. Richardson, Director, Duke Wetland Center, Box 90333, School of the Environment, Durham, NC 27708-0333.** *Duke University is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL RESEARCH POSITION available at the Hormel Institute of the University of Minnesota, Austin, Minnesota, to study the molecular mechanisms of tumor promotion. The work will focus on the roles of kinases and transcription factors in the process of tumor promotion. The candidate must have a Ph.D. in molecular biology/biochemistry or a related discipline and a broad knowledge of biochemical and molecular biological techniques. Candidates with experience in protein expression/purification, the yeast two-hybrid system and zymograms are especially encouraged to apply. Send curriculum vitae and names of three references by April 15, 1995, to: **Dr. Zigang Dong, The Hormel Institute, University of Minnesota, 801 16th Avenue NE, Austin, MN 55912.** *The University of Minnesota is an Equal Opportunity Educator and Employer.*

POSTDOCTORAL POSITION
YALE UNIVERSITY
Department of Pharmacology

One position is available immediately for the study of biogenic amine transporters using molecular and cell biologic approaches. We plan to identify domains of the protein involved in substrate and inhibitor binding, translocation, and targeting to nerve terminals. For a review see: *Biochim. Biophys. Acta*, **1144**: 249-263. Experience in molecular biology, cell biology or transport is preferred, but not essential. If interested, send a complete curriculum vitae and three letters of reference to: **Dr. Gary Rudnick, Department of Pharmacology, Yale University School of Medicine, 333 Cedar Street, P.O. Box 3333, New Haven, CT 06510-8066.**

POSTDOCTORAL POSITIONS at the University of Utah Health Sciences Center are available to recent Ph.D.'s or M.D./Ph.D.'s with experience in single cell electrophysiology. NIH-funded projects in Departments of Cardiology and Physiology, including laboratories of **Drs. Michael Sanguinetti, Kenneth Spitzer, John Bridge,** and **William Barry,** are investigating K^+ channel function, Na^+/Ca^{2+} exchange, and Na^+ pump and SR function in isolated myocytes from human and animal ventricular myocardium. Previous experience of applicants with cardiac myocytes and fluorescence microscopy desirable but not required. Send curriculum vitae and names, addresses and telephone numbers of three references to: **Dr. William H. Barry, Cardiology Division, University of Utah Medical Center, 50 North Medical Drive, Salt Lake City, UT 84132.** *The University of Utah is an Affirmative Action/Equal Opportunity Employer and encourages applications from women and minorities, and persons with disabilities.*

POSTDOCTORAL POSITION, available to study the molecular basis of multidrug resistance as related to overexpression of the Multidrug Resistance-associated protein gene (MRP). Studies will be conducted to examine regulation of MRP transcription and detailed studies will be conducted to examine the structure and function of the MRP encoded protein P190. Some background in recombinant DNA technology is preferred. Send curriculum vitae containing names of references to: **Dr. Melvin Center, Kansas State University, Division of Biology, Ackert Hall, Manhattan, KS 66506** or call **913-532-6661.** *Kansas State University is an Affirmative Action/Equal Opportunity Employer and encourages applications from women and minorities.*

PITTSBURGH TRANSPLANTATION INSTITUTE

POSTDOCTORAL POSITION available to study the role of Urease antigen in experimental hepatic encephalopathy. Candidates must be an M.D., Ph.D., or M.D./Ph.D., with strong background in immunology or biochemistry. Send curriculum vitae and names of three references to: **Abdul S. Rao, M.D., D. Phil, Pittsburgh Transplantation Institute, University of Pittsburgh, E1545 Biomedical Science Tower, 200 Lothrop Street, Pittsburgh, PA 15261.**

POSTDOCTORAL POSITION

A **POSTDOCTORAL POSITION** is available immediately to study the renal mechanisms of hypertension in ren-2 transgenic rats. Applicants must have a Ph.D. and/or an M.D. and should have a strong background in physiology and/or pharmacology. Experience with renal clearance and/or micropuncture techniques is desirable. Send curriculum vitae, a brief statement of research interests and three letters of recommendation to: **Dr. Kenneth D. Mitchell, Department of Physiology SL39, Tulane University School of Medicine, 1430 Tulane Avenue, New Orleans, LA 70112.**

POSTDOCTORAL POSITIONS. Two postdoctoral positions are immediately available in the following areas: (1) the structure, function, and mechanism of action of primase during pRNA synthesis in initiation of DNA replication; (2) the role of a specific mRNA degradation in regulating gene expression. Candidates should have Ph.D. degree. A strong background in general molecular biology, together with a familiarity with molecular biological techniques is required. Experience of protein biochemistry is desirable. Send curriculum vitae with bibliography, description of research experience, reprints of recent publications, and names of three referees to: **Dr. G. Nigel Godson, Department of Biochemistry, New York University Medical Center, 550 First Avenue, New York, NY 10016.**

POSTDOCTORAL POSITION available to investigate mechanical, biochemical, and physiological aspects of smooth muscle contraction. Studies include isolated contractile proteins, detergent and alpha-toxin permeabilized fibers, and intact tissues to examine Ca^{2+} dependent regulation of contraction and G-protein dependent signal transduction pathways with an emphasis on kinase/phosphatase regulation, specifically MAP kinases and protein kinase C. Experience in muscle research desirable but not necessary. Please send curriculum vitae and names, addresses, and telephone numbers of three references to: **Dr. Robert S. Moreland, Bockus Research Institute, Graduate Hospital, 415 South 19th Street, Philadelphia, PA 19146.**

Two **POSTDOCTORAL POSITIONS**: Cell and Molecular Biology. Two postdoctoral research positions are now open to study: (1) Endocrine regulation of liver cytochrome P450 gene transcription and (2) Gene therapy applications in cancer pharmacology. Strong research experience in molecular biology, cell biology or biochemical pharmacology is essential. Flexible start date. Send curriculum vitae with brief summary of research experience, copies of select publications and names of three references to: **Dr. David J. Waxman, Professor of Cell and Molecular Biology, Department of Biology, Boston University, 5 Cummington Street, Boston, MA 02215.** *Minority candidates are encouraged to apply.*

Available immediately: **POSTDOCTORAL POSITIONS** available to investigate the role of intracellular infection in the resurgence of highly invasive group A streptococcal infections and/or explore environmental signaling initiated by the interaction of plasma protein with streptococcal surface proteins. Qualifications include a Ph.D. with research experience in molecular biology, cell biology or microbiology. Send or FAX a curriculum vitae to: **Dr. Patrick Cleary, University of Minnesota, Department of Microbiology, Box 196 UMHC, Minneapolis, MN 55455. FAX: 612-626-0623.**

POSTDOCTORAL POSITION available to study regulation of glycosylation in the Golgi apparatus as well as other aspects of glycobiology. A strong background in biochemistry and/or molecular biology required; experience in mammalian cell culture desirable. Please send statement of research interests and experience, curriculum vitae, and three letters of recommendation to: **Dr. Barbara Criscuolo Waldman, Department of Biological Sciences, CLS 401, University of South Carolina, Columbia, SC 29208.**

POSTDOCTORAL POSITION available immediately to study gene regulation in mouse retina using cell transfection and transgenic mice. Prior background in molecular biology required. Send curriculum vitae and references to: **Dr. V. Sarthy, Ophthalmology, Northwestern University, 300 East Superior, Tarry 5-715, Chicago, IL 60611. FAX: 312-503-1210.** *Northwestern University is an Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL FELLOWSHIPS AND RESEARCH ASSOCIATE POSITIONS
in Molecular Retrovirology and Gene Therapy

New **POSTDOCTORAL POSITIONS** are now available in the fields of Genetic Therapies for HIV-1-induced diseases and Molecular Neuropathogenesis of HIV-1. Studies will include: (1) gene therapy and intracellular immunization techniques to combat HIV-1 infection. Particular emphasis will be placed on intracellular expression of single chain antibodies to viral regulatory genes and novel ribozymes; (2) molecular neuropathogenesis of HIV-1-induced encephalopathy, and molecular techniques to combat HIV-1 replication in the central nervous system.

The successful candidate will have a Ph.D. and/or M.D. degree and previous expertise in retrovirology.

Please send curriculum vitae, a short letter describing previous research experience, and names of three references to: **Dr. Roger J. Pomerantz, Professor of Medicine, Director, Center for Human Retrovirology, Chief, Infectious Disease Division, Thomas Jefferson University, Jefferson Alumni Hall, 1020 Locust Street, Suite 329, Philadelphia, PA 19107-6799. FAX: 215-923-1956.**

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POSTDOCTORAL RESEARCH ASSOCIATE to study the mechanisms of GnRH pulse generation and the onset of puberty. Candidate should have a Ph.D. and a strong background in either electrophysiology or molecular biology. Salary is dependent on training and experience according to NIH guidelines. Send curriculum vitae and two letters of reference to: **Dr. Ei Terasawa, Wisconsin Regional Primate Research Center, University of Wisconsin, 1223 Capitol Court, Madison, WI 53715-1299.**

POSTDOCTORAL POSITION

Available in X-ray Crystallography to determine the structures of DNA helicases (**Wong and Lohman,** *Science*, **256**:350, 1992). Send curriculum vitae, summary of research experience and interests, and names of three references to: **Dr. Gabriel Waksman** or **Dr. Tim Lohman, Washington University School of Medicine, Department of Biochemistry and Molecular Biophysics, Box 8231, 660 South Euclid Avenue, St. Louis, MO 63110.**

POSTDOCTORAL RESEARCH FELLOW position. University of California, San Francisco (UCSF). The Department of Neurology at UCSF and the Gallo Center seek a postdoctoral research fellow to help identify genetic loci that contribute to susceptibility to alcoholism and neurodegenerative diseases. The projects involve both gene mapping and positional cloning. Candidates must have a working knowledge of molecular biology. Send curriculum vitae and bibliography, a statement of research experience and interests, and the names of three references to: **Kirk C. Wilhelmsen, M.D., Ph.D., Department of Neurology, Building 1, Room 101, 1001 Potrero Avenue, San Francisco, CA 94110.** *The University of California, San Francisco and the Ernest Gallo Clinic and Research Center are Equal Opportunity/Affirmative Action Employers. Women, minority groups and disabled individuals are encouraged to apply.*

POSTDOCTORAL FELLOWSHIP
Washington University School of Medicine

Applications are invited for a **POSTDOCTORAL POSITION** to study the cell and molecular biology of receptor-mediated endocytosis and its regulation of blood coagulant protein physiology. Interested candidates should send curriculum vitae, names of three references and a brief summary of research experience to: **Alan L. Schwartz, Ph.D., M.D., Box 8116, School of Medicine, Washington University, St. Louis, MO 63110 USA. FAX: 314-454-2685.**

POSTDOCTORAL TRAINEES, Neuroscience. Research with **Drs. Eric Simon** (opioid receptors), **Eric Stone** (catecholamines and stress) or **Ken Carr** (opioids and motivated behavior). Start April 1 to September 1, 1995. Contact: **Dr. Carr, Millhauser Lab, NYU Medical Center, 550 First Avenue, New York, NY 10016.** *U.S. citizenship or permanent residency required. An Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL POSITIONS

University of Pennsylvania

A postdoctoral associate position is available for an individual interested in cell cycle regulation, tumor suppressor genes, chemotherapeutic drug resistance or gene therapy for cancer. Qualified candidates should possess a Ph.D., or M.D., or M.D./Ph.D. Please send or fax a curriculum vitae and three references to: **Dr. Wafik El-Deiry, University of Pennsylvania School of Medicine, 437A CRB, 415 Curie Blvd., Philadelphia, PA 19104-6148. Fax: (215) 573-9139.** EOE.

University of Texas Southwestern Medical Center

A postdoctoral position is available for a scientist with an interest in developing strategies to engineer proteins and nucleic acids for new function. Successful applicants should possess a willingness to aggressively exploit both biological and chemical techniques. Projects include the dissection of the basis for native protein specificity, novel engineered specificities, and applications for combinatorial chemistry. Please send C.V. and three letters of reference to: **Dr. David Corey, The University of Texas Southwestern Medical Center at Dallas, 5323 Harry Hines Blvd., Dallas, TX 75235-9050.** EOE.

University of Michigan School of Medicine

A postdoctoral position is available for studies of signal transduction and transcription regulation in a laboratory applying cutting edge biochemical and biophysical techniques. Current studies focus on transcription factor interactions, protein induced changes in DNA structure and the regulation of transcription factor activity (see Cell 66:317; Science 254:1210; MCB 13:3782; PNAS 91:7360; Nature 373:199). Please send curriculum vitae, a summary of research interests and the names of three references to: **Dr. Tom Kerppola, University of Michigan School of Medicine, 1150 W. Medical Center Drive, Ann Arbor, MI 48109-0650. E-mail: kerppola@umich.edu.** EOE.

VIROLOGIST

NATIONAL INSTITUTES OF HEALTH

Positions will be available in the Laboratory of Infectious Diseases, National Institutes of Allergy and Infectious Diseases. The Research activity involves (1) the development of live attenuated influenza A virus, respiratory syncytial virus, and parainfluenza virus vaccines and their characterization in rodents, in non-human primates, and in humans; (2) the use of new "rescue" systems for these viruses to examine basic questions of viral genetics, molecular virology, viral pathogenesis, and the molecular basis of attenuation; (3) production of new candidate vaccines using site-directed mutagenesis to introduce desired attenuating mutations into viral genomes; and (4) the evaluation of the immunologic determinants of resistance to /0. -infection and illness caused by these respiratory viruses. These full-time research positions offer a unique opportunity to work on investigations that range from basic molecular biology to applied vaccinology, and they provide excellent laboratory-based experiences for PhD's and MD's at all levels of training who plan a career in research in virology or infectious diseases caused by viruses. Salary will be commensurate with experience. "NIH is an Equal Opportunity Employer." U.S. Citizenship or Permanent Resident Alien. Position targeted for EEO recruitment efforts.

Qualified and interested scientists should send their curriculum vitae and names and addresses of three (3) references to:

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SCIENCE

Associate For Dean for Research
University of Illinois
College of Medicine

The University of Illinois College of Medicine is seeking an Associate Dean for Research. This individual will be responsible for fostering research in the College of Medicine. He/She will promote the development of interdepartmental research proposals, including Center grants and Program Projects; assist Department Heads in the recruitment of new investigators; work with the Development Office to obtain philanthropic support for research; and be responsible for scientific integrity issues. The successful candidate should have a Ph.D., M.D., or equivalent doctoral degree, a record of scholarly achievement, and have conducted an active research program. Preference will be given to candidates with demonstrated administrative experience. He/She must qualify for faculty rank. Salary and benefits are competitive.

Letters of nomination and/or CV's should be submitted to Truman O. Anderson, MD, PhD, Chair, Search Committee for the Associate Dean of Research, University of Illinois College of Medicine, Department of Medicine, 1029 CSB, Mail Code 787, 840 South Wood Street, Chicago, Illinois 60612. *The University of Illinois is an equal opportunity/affirmative action employer.*

CENTAUR PHARMACEUTICALS, INC.

Centaur Pharmaceuticals, Inc. is an early stage pharmaceutical company located in Sunnyvale, California. Centaur was formed to develop proprietary pharmaceuticals which slow, prevent or reverse the process of oxidation. Centaur seeks entrepreneurial professionals to staff its chemical synthesis, drug screening and preclinical pharmacology laboratories. The following positions are currently available:

RESEARCH SCIENTIST

Qualifications include an M.D., Ph.D., or M.S. degree and 5 to 10 years experience in one or more of the following areas: Project Management, Research Management, Animal Behavior, Animal Surgery, Biochemistry, Cell Biology, Analytical Chemistry, Organic Chemistry, Histopathology, Neuroanatomy, and Pharmacology.

RESEARCH ASSOCIATE/ RESEARCH ASSISTANT

Qualifications include a B.A., B.S., or M.S. degree in a scientific discipline and 1 to 5 years experience in one of the following areas: Animal Behavior, Animal Surgery, Biochemistry, Cell Biology, Analytical Chemistry, Organic Chemistry, Histopathology, Neuroanatomy, and Pharmacology.

Qualified applicants should send a copy of their resume, salary history, and references to the attention of the Human Resources Manager, Centaur Pharmaceuticals, Inc., 484 Oakmead Parkway, Sunnyvale, CA 94086.

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Turn to page 1204 for more great jobs!

EuroScience at Work:

Career Opportunities in European Pharmaceuticals and Biotechnology

by John Timpane

According to a theory called "the butterfly effect," first posited by E.N. Lorenz, when a butterfly beats its wings in Patagonia, forces are released that could result in an Arctic typhoon. Everything, that is, depends heavily on everything else.

Much the same holds true for the complex biopharmaceutical marketplace. What happens in the United States is happening in Europe is happening in Japan. Turbulence in these markets involves more than butterfly wings. It's The Pinch versus The Explosion. Concern over costs has led governments worldwide to review their health care systems. The result has been budget cutting, downsizing, and a wide-scale reorganization of the traditional pharmaceutical company. Biotechnology, with novelty and promise that grab headlines, rides the peaks and troughs of market fortunes.

In Europe, despite the economic corset, productivity has seen an unexampled explosion of new ideas, new leads, new products. Almost everyone, from the multinationals to the smallest garagescale company, is moving toward biotechnology. The Human Genome Project is already producing an entire realm of new targets for drug discovery, new approaches to alleviating diseases and syndromes that were complete mysteries only a few years ago, and new ways of making drugs. And so-called "traditional pharma" is no longer so traditional. New methods of creating and curating through chemical libraries have revitalized the classical search for new drug candidates.

Promise and paradox are everywhere—but so is opportunity. While there may be a few managerial, political, and cultural barriers, scientific Europe is virtually borderless. This is the time of the international scientist whose vision and skills can make things happen no matter where the lab is located.

Below, we hear about science careers from scientists and managers at seven European companies—Hoechst, Novo Nordisk, Unilever, Transgène, Wellcome, IntroGene, and Cambridge Antibody Technology. They agree that talented scientists are in demand all over Europe and will be for the foreseeable future. In tough times, added value can make the difference. Everyone agrees on four elements that add the greatest value: Excellence in a relevant field; a broad background in related sciences; knowledge or experience in industry; and an ability to be flexible, to see how one thing depends on another.

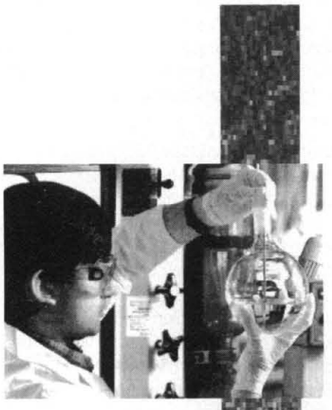
Top photo: courtesy of Cambridge Antibody Technology; Quadrophic Design Consultants Limited. Middle and bottom photo: courtesy of Hoechst AG.

Turn to the *Euroscience at Work* advertising supplement in this issue of SCIENCE for more great career opportunities. The full-page advertisements in the supplement highlight jobs from top companies and institutions looking for talented scientists just like you. When you turn to *Euroscience at Work*, you'll be joining thousands of scientists who look to SCIENCE each week for the most comprehensive listing of scientific employment opportunities found anywhere. Find out what you've been missing in SCIENCE.

SCIENCE

ZYMOGENETICS

ZymoGenetics, Inc. is a Seattle-based biotechnology company making important strides in the areas of diabetes research, hemostasis, and tissue repair. The company also focuses on the research and development of human and other proteins of pharmaceutical and industrial value. Currently, we are recruiting for the following positions:



Director, Clinical Development

Responsibilities include the identification and medical evaluation of potential products, preparation of clinical development plans for new projects and management of all relevant aspects of clinical study design, follow-up, analysis and reporting. Experience with the design and implementation of all levels of clinical trials and management of projects and CRAs required. FDA and IND process experience preferred. The selected candidate should possess an MD, preferably specializing in hematology/oncology and have 5+ years' experience in clinical development/medical affairs functions. **Ref.#21N195**

Associate Director, Protein Purification

Responsibilities include leading the protein purification group within the development department. The successful candidate should have a Ph.D. and 8+ years' experience in the development of scale up methods for purification of therapeutic proteins. Experience in the biopharmaceutical industry is essential. A strong research background and excellent communication/team building skills are also required. **Ref.#31N1695**

Scientists

Molecular Technology - Sr. Scientist

Responsibilities include cDNA synthesis, expression cloning, subtraction libraries, signal-trap libraries and exon-trap libraries. The successful candidate should have a Ph.D. with a strong background in molecular technology. **Ref.#13N194**

Drug Discovery

Responsibilities include designing and conducting studies aimed at the discovery and evaluation of new agents for the treatment of non-insulin dependent diabetes (NIDDM) and its complications. The successful candidate should have a Ph.D. in the Life Sciences and 2+ years' postdoctoral experience, preferably in receptor-mediated signaling research and/or drug discovery. **Ref.#15R894**

Analytical Biochemistry

Responsibilities include developing analytical procedures for the biophysical characterization of therapeutic proteins. The successful candidate should have a Ph.D., experience in analytical biochemistry, and familiarity with analytical HPLC, amino acid analysis and peptide sequencing technologies. **Ref.#31N395**

Mammalian Cell Physiology

Responsibilities include developing mammalian cell culture processes for the production of genetically engineered proteins. The successful candidate should have a Ph.D. and at least 3 years' experience in a mammalian cell culture environment with a strong understanding of mammalian cell physiology. **Ref.#31N495**

Molecular Biology

Responsibilities include generating analytical procedures used in process development and product characterization. The successful candidate should have a Ph.D. with experience in molecular biology and familiarity with mammalian cell expression systems. Expertise in the molecular biological aspects of therapeutic protein product development is an advantage. **Ref.#31N695**

ZymoGenetics offers intellectual challenge, state-of-the-art facilities and a research-oriented work atmosphere. Salary is commensurate with experience and ZymoGenetics offers a competitive benefits package including a tuition reimbursement program. Qualified candidates may apply by sending a CV, noting the reference number for the position of interest, to:

ZYMOGENETICS

Human Resources
1201 Eastlake Avenue East
Seattle, WA 98102

ZymoGenetics is committed to equal opportunity and diversity.

Novo Nordisk

POST-DOCTORAL OPPORTUNITIES

Department of Microbiology and Molecular Genetics
UMDNJ–New Jersey Medical School

The Dept. of Microbiology and Molecular Genetics at the New Jersey Medical School is housed in a modern building and is equipped for state-of-the-art research in molecular biology, cell biology, biochemistry, virology,and human genetics. The campus is located in the New York metropolitan area, providing a rich scientific environment and many cultural attractions. Benefits include competitive salaries and health insurance. Positions are available in the laboratories of the following investigators:

Dr. Vivian Bellofatto: *DNA-protein interactions that regulate mRNA synthesis in trypanosomes.*
Dr. Paul Boehmer: *Enzymology of herpes simplex virus DNA replication.*
Dr. Marjorie Brandriss: *Transcriptional regulation and protein-protein interactions in gene expression in yeast.*
Dr. Nancy Connell: *Genetic analysis of membrane proteins in mycobacteria.*
Dr. Emanuel Goldman: *Bacterial protein synthesis.*
Dr. M. Zafri Humayun: *Mechanisms of inducible mutagenesis.*
Dr. David Kaback: *Control of meiotic recombination and chromosome segregation in yeast.*
Dr. Carol Newlon: *Genetic and molecular analysis of yeast chromosome replication.*
Dr. Harvey Ozer: *SV40-mediated transformation and cell senescence (available September 1995).*
Dr. Lynn Ripley: *Enzymology and DNA structure in mutagenesis.*
Dr. Michael Small: *Cell proliferation and death mediated by the c-myc oncogene.*
Dr. Emilia Vitale: *Genetic mapping of hereditary hearing impairment.*
Dr. Jeffery Wilusz: *Post-transcriptional regulation of gene expression.*

UMD NEW JERSEY 25 1970-1995

To apply, please indicate two projects of interest and send a complete CV, summary of research interests, and names and addresses of 2 to 3 references to **Dr. Paul Boehmer, Dept. of Microbiology and Molecular Genetics, UMDNJ-New Jersey Medical School, 185 South Orange Avenue, Newark, NJ 07103-2714. Fax (201) 982-3644.**

UMDNJ is an Affirmative Action Equal Opportunity Employer, M/F/D/V and is a member of the University Health System of New Jersey.

NEW.....NEUROSCIENCE

THE EJLB FOUNDATION SCHOLAR RESEARCH PROGRAMME

The EJLB Foundation announces that it will award each year up to six (6) grants for research projects in all areas of neuroscience that pertain directly or indirectly to schizophrenia and mental disease.

Eligibility for such grants is restricted to young scientists who are pursuing an independent research career and have given evidence of having significant potential. It is also a requirement that these scientists have earned an MD and/or a Ph.D. degree, have completed their post-graduate training and been admitted, after June 15, 1990, as faculty members of a leading university or an affiliated non-profit research centre, in Canada or elsewhere in the world.

Each grant totals CAN$300,000, is disbursed over three (3) years and is non-renewable.

The next closing date for receipt of letters of intent is June 15, 1995.

Full details and letter of intent forms may be obtained from The EJLB Foundation, 1350 Sherbrooke Street West, Suite 1050, Montréal, Québec, H3B 1J1. Fax (*for inquiries only* 514-843-4080).

Program Analyst

The Howard Hughes Medical Institute, the nation's largest private philanthropic organization, conducts scientific research in leading academic medical centers throughout the United States. Currently, we have a position available for a Program Analyst in our grants department at our headquarters in **Chevy Chase, MD.**

Candidates will work with the Program Officer in the administration of Predoctoral Fellowships in the Biological Sciences program. Responsibilities include assisting in the development and implementation of fellowship program policies; publicizing fellowships; preparing for annual application, review, and award cycles; organization of an annual meeting of fellows; and development of follow-up surveys. Additional fellowship program duties include review of annual progress reports, preparation of reports summarizing the fellowship programs, background research relevant to fellowship program activities and serving as a liaison with the National Research Council.

Qualifications include a Master's degree in biological sciences, with training in cell or molecular biology, or equivalent. Strong organizational and communication skills are required. Laboratory research experience, knowledge of the university research environment, and grant administration experience is a plus. Strong computer skills and at least two years work experience is desirable.

HHMI offers a competitive salary and excellent benefits package. Please send resume with cover letter and salary history to: **Howard Hughes Medical Institute, Human Resources Department, Attn: CL, 4000 Jones Bridge Road, Chevy Chase, MD 20815-6789.** EOE.

Vita Per HHMI Scientiam

DIRECTOR, INSTITUTE FOR HUMAN GENETICS

The State University of New York at Stony Brook seeks applications from investigators with established research programs for the position of Director of a newly established Institute for Human Genetics. The Director will have a tenured appointment as Associate Professor or Professor in the Department of Molecular Genetics and Microbiology in the School of Medicine. The Director's responsibilities will include: 1) conducting research in some area of human genetics or gene therapy; 2) fostering the development of the Institute, including the recruitment of additional faculty into clinical and basic medical sciences departments; and 3) interfacing with a clinical research center to promote human genetics and gene therapy.

Applicants should send curriculum vitae and research plans, and arrange to have three letters of reference sent to:
Genetics Search Committee,
Department of Molecular Genetics and Microbiology
State University of New York at Stony Brook
Stony Brook, NY 11794-5222

Applications should be received by June 15,1995 and will be considered as they are received.

SUNY at Stony Brook is an Equal Opportunity/Affirmative Action Employer.

STONY BROOK

2308-SC

BIOREMEDITATION POSTDOCTORAL RESEARCH POSITIONS

The Bioremediation Group of the Environmental Research Division at Argonne National Laboratory is seeking two postdoctoral research associates for work in the broad area of bioremediation. The Bioremediation Group conducts both basic and applied research and field demonstrations to develop new biologically based technologies for analyzing and remediating sites contaminated with hazardous and toxic materials. Currently, the group conducts laboratory and pilot/field research activities examining the biodegradation of nitroaromatics (explosives) and petroleum products. Both in situ and ex situ systems are being examined. Both postdoctoral positions require participation in field activities at sites contaminated with hazardous materials. Applicants must have received their Ph.D. not more than 3 years prior to the beginning of the appointment.

The first position is open to applicants with training in soil physics, microbiology, biochemistry, or microbial ecology. A Ph.D. in an appropriate discipline is required. Activities will include (1) investigating the basic microbiology and the metabolic pathways involved in the degradation of contaminants in the environment and (2) optimizing the application of microbiological and metabolic principles in engineered systems that can be tested in the field. Beneficial experience includes isolating and culturing aerobic and anaerobic bacteria; using analytical instruments such as the high-performance liquid chromatograph, gas chromatograph, and gas chromatograph-mass spectrometer; and using and applying techniques like ultraviolet spectroscopy, microscopy, and enzyme purification and analysis. **Reply to Box ER-Postdoc2-55.**

The second position is open to applicants with an ability to use civil, environmental, or chemical engineering training in bioremediation applications. A Ph.D. in an appropriate discipline is required. Activities will include investigating laboratory systems that mimic potential field systems for the remediation of sites with organic contamination. These systems will primarily involve biological treatment concepts, but they also could involve development of treatment trains to accomplish tasks. Field work will be required to apply newly developed technologies at hazardous waste sites. Experience should include the operation of laboratory experimental systems. **Reply to Box ER-Postdoc3-55.**

Both positions are dependent on continued funding. Application deadline is **March 31, 1995.** Anticipated start dates are **May 1, 1995,** or on the earliest mutually convenient date.

Send curriculum vitae, transcripts, and three letters of reference to: **Susan Walker (insert appropriate box number), Employment and Placement, Argonne National Laboratory, 9700 South Cass Ave., Argonne, IL 60439. Direct technical questions to Dr. John Manning, Environmental Research Division, Argonne National Laboratory, Argonne, IL 60439, USA (Telephone - (708)252-7854: Fax - (708)252-8895: email - jfmanning@anl.gov). Telecommunications Device for the Deaf (708) 252-7722.** Argonne is an equal opportunity/affirmative action employer.

Beyond Discovery...

Oncogene Science is a leader in the field of small molecule drug discovery by automated high-throughput screening of chemical files, natural products and combinatorial libraries. We have pioneered the development of such screens for the identification of novel drugs which act by modulating the transcription of physiologically important genes. This approach has led to the identification of several exciting classes of transcription modulators. In order to move these and other lead molecules into clinical development, Oncogene Science is expanding its drug discovery & development function in **Cambridge, MA.** Towards this end, we have created a position on our development team for an experienced, high energy Ph.D. Pharmaceutical Pharmacologist with exceptional communications skills.

Pharmaceutical Pharmacologist

The immediate responsibilities of this position include establishing an in vitro & in vivo pharmacology function in our Cambridge facility, as well as conducting lead evaluation in concert with both external collaborators and our Discovery Team located on Long Island, NY. As the program matures, this individual will be additionally responsible for coordinating safety assessment and being a partner in the process of transitioning novel entities from preclinical to clinical investigation.

The ideal candidate will have experience in oncology and hematology, will be self-motivated and will have demonstrated the ability to perform well in a multidisciplinary, multi-site environment. We anticipate that this individual will have a Ph.D. in Pharmacology or related discipline and at least 3 years' Pharmaceutical industry experience, or an M.S. degree with at least 10 years' industrial experience.

Oncogene Science offers an excellent compensation & benefits package, along with superb opportunities for career development. If this is the type of opportunity that you have been looking for, you may apply in confidence by sending your resume with references to: **Oncogene Science, Inc., 84 Rogers St., Cambridge, MA 02142, Attn: Human Resources; fax (617) 492-8438.** Equal Opportunity Employer M/F/H/V.

Oncogene Science™

MRI / MRS PHYSICIST
Laboratory of Diagnostic Radiology Research
Office of Intramural Research
National Institutes of Health

Applications are invited from candidates having a Ph.D. degree and at least 6 years of postdoctoral training experience sufficient to develop an independent and collaborative research program in Magnetic Resonance Imaging and Magnetic Resonance Spectroscopy (MRI/MRS). The position will receive laboratory resource support and up to 2 postdoctoral fellows. The position requires that the candidate have expertise and creativity in the development and utilization of new innovative MR pulse sequence design; proton and phosphorus multislice spectroscopic imaging studies; skill in fast imaging techniques on at least two MR units produced by different manufacturers; and proven ability to produce MR pulse programming using EPIC, Unix, and IDL software. The position is located in Bethesda, Maryland at the (tenure track) level with a salary of $55,000 to $65,000 per annum based on the candidate's qualifications. The candidate selected will be evaluated for tenure within a period of four years from the selection and appointment. The National Institutes of Health is an Equal Opportunity Employer and encourages all qualified individuals to apply. If interested, please send your curriculum vitae, a two-page description of past activities and research interests and three letters of recommendation to: OD Personnel Office, Bldg 31, Rm 1C27, 31 CENTER DR 2264, BETHESDA, MD 20892-2264. ***Applications must be received by March 31, 1995.*** **Position information and qualification requirements may be obtained by contacting Deborah Kraut on 301-496-2400.**

POSTDOCTORAL RESEARCH ASSOCIATE

Position available to study the regulation of a human DNA repair gene (MGMT) involved in anticancer drug resistance. The candidate should have a recent Ph.D. in molecular biology or related field. Experience with reporter gene systems and DNA-protein interaction assays is desirable. Send curriculum vitae to: **Dr. Thomas Brent, Dept. Molecular Pharmacology, St. Jude Children's Research Hospital (Danny Thomas, *Founder*), 332 N. Lauderdale, Memphis, Tennessee 38105. Fax: 901-521-1668.**

St. Jude Children's Research Hospital

An Equal Opportunity/ Affirmative Action Employer

Somatogen, a biopharmaceutical company currently engaged in clinical and preclinical development of a recombinant human hemoglobin has the following exciting employment opportunities available in Research and Development.

Director, Molecular Biology

This is a senior leadership position responsible for E Coli strain development of high level expression of hemoglobin and the expression of novel recombinant hemoglobins as part of a multidisciplinary approach to new product discovery. This position will report to the Vice President of Research and Development. Responsibilities include managing the Molecular Biology Department, and performing hands on laboratory work if needed. Requires a PH.D. in a related field plus a minimum of 10 years of industrial experience in E Coli genetics or equivalent. Protein expression, mutagenesis experience, proficiency with strain development and metabolic pathway enhancement, demonstrated record of achievement in the field and experience managing professional level scientists successfully, is also required. **Dept. 837**

Scientist, Pharmacology

Responsibilities include developing in-house, and through external collaborations, a research program focusing on cardiovascular pharmacology/physiology, pharmacokinetics and microcirculation and blood flow. Requires a Ph.D. in Pharmacology or Physiology, and 0-3 years postdoctoral experience. Experience preferred in the areas mentioned above. **Dept. 708**

Somatogen offers competitive salaries, relocation assistance, and generous benefits. Interested candidates may submit their resume indicating department number and position desired to:

SOMATOGEN
2545 Central Avenue
Boulder, CO 80301

Somatogen is an equal opportunity employer

SOMATOGEN

DEKALB Genetics Corporation

Regulatory Affairs

DEKALB Genetics Corporation's long-term investment in agricultural seed biotechnology has produced a full pipeline of exciting new product candidates. To ensure timely commercial introduction of these new bioengineered seed products, DEKALB seeks additional personnel to accomplish product regulatory approval. Individuals with experience in one or more of the following areas are encouraged to apply.

- EPA or FDA regulatory affairs
- GLP
- Protein Biochemistry
- Analytical Chemistry/Biochemistry

The successful candidates will be located at DEKALB's new Discovery Research Laboratory facility in Mystic, CT, a scenic shoreline community located on Long Island Sound halfway between New York and Boston. DEKALB offers competitive compensation, an attractive benefits package and an outstanding working environment.

Send applications and the names and addresses of three professional references to Ms. Katrina Henry, DEKALB Discovery Research, 62 Maritime Drive, Mystic, CT 06365-1958.

ASSISTANT PROFESSOR ECOLOGY/ ENVIRONMENTAL SCIENCES

The Dyson College of Arts and Sciences of Pace University anticipates a full-time tenure track position for the Fall of 1995.

Teaching program to include undergraduate, introductory and advanced courses in the development of an M.S. program in Environmental Sciences. Successful candidate will possess a doctorate with research interest in chemical or ecosystem ecology. Background in biology, including biotechnology is desirable.

To ensure full consideration send letter of application, curriculum vita (citing specialty), statement of teaching, one publication, and the names of three references to: **Office of the Dean, The Dyson College of Arts and Sciences, Pace University, Bedford Road, Pleasantville, NY 10570-2799.** An Affirmative Action Equal Opportunity Employer. Women and Minorities are encouraged to apply.

PACE UNIVERSITY

RESEARCH ASSOCIATE

Protein Biochemistry (Job #1044)

Pioneer Hi-Bred International, Inc., is a worldwide leader in agricultural genetics. Founded in 1926, we are a publicly-held corporation with research, production, and sales organizations worldwide. Our dynamic RESEARCH AND PRODUCT DEVELOPMENT DIVISION is currently seeking motivated and experienced professionals to join us in our on-going program of crop improvement.

This person will join a laboratory that is responsible for analysis of transgenic plants. The individual will use molecular biology and protein biochemistry methods to characterize and purify proteins in seeds of transgenic plants. Excellent data organization and good interpersonal skills are necessary. Knowledge of basic protein analytical methods with additional background in protein purification, FPLC or enzymology are essential. EDUCATION/EXPERIENCE: MS degree or equivalent in biochemistry, molecular biology, or related field OR a BS degree plus 2 years of relevant research experience is required. Experience in protein biochemistry analysis is desired. Strong communication skills are also essential.

Applications received by March 17, 1995 will be assured of consideration. However, applications will be considered until the position is filled. Please send cover letter indicating job name and job number, two complete sets of resumes/application information to: **Jon Day, Pioneer Hi-Bred International, Inc., 6800 Pioneer Parkway-Box 212, Johnston, IA 50131-0212.** Pioneer Hi-Bred International, Inc. is an Equal Opportunity Employer.

PIONEER.
PIONEER HI-BRED INTERNATIONAL, INC.

UNITED ARAB EMIRATES
ABU DHABI GOVERNMENT

ZAYED COMPLEX FOR HERBAL RESEARCH AND TRADITIONAL MEDICINE RESEARCH CENTRE

Applications are invited for the following positions:

Post: **PROFESSOR (research)**
Qualifications and experience: - Ph.D (Phytochemistry)
- at least 12 years experience after Ph.D.
- Ability to offer leadership to a research team
Job Nature: - Head of Phytochemistry Research Department

Post: **ASSOCIATE PROFESSOR (research)**
Qualifications and experience: - Ph.D. (Pharmacology)
- at least 7 years experience
- ability to offer leadership to junior researchers
Job Nature:- execution of research programmes
- taking part in planning of research programmes
- supervising a research unit

Post: **ASSOCIATE PROFESSOR (research)**
Qualifications and experience:- MRCP/FRCP or equivalent
- 5 years experience in clinical pharmacology
- ability to offer leadership to junior researchers
Job Nature: - planning of clinical studies
- design and evaluation of Phase 1 and 11 clinical trials.

Post: **ASSISTANT PROFESSOR (research)**
Qualifications and experience:- Ph.D.(Pharmacology)
- at least 2 years post-doctoral experience
Job Nature: -execution of research programmes
- analysis of research data.

Post: **ASSISTANT PROFESSOR (research)**
Qualifications and experience: - Ph.D.(Phytochemistry)
-at least 2 years post-doctoral experience
- high ability to interpret spectral data
Job Nature: -execution of research programmes
-analysis of research data.

Notes:
1. Experience required in the field of natural products research in the appropriate specialization.
2. Publications in international journals is a prerequisite to selection and should be appropriate to the advertised post.
3. Candidates should show a high level of interpersonal relations and an excellent attitude to group work.
4. Benefits for these posts will be sent to short-listed candidates.
5. The United Arab Emirates provides a very attractive secure lifestyle with all facilities of any modern society.

Formal applications in the form of a comprehensive curriculum vitae, list of publications and names and addresses of three referees may be forwarded to:
Tawam Hospital, Ref:ZCH, P.O.Box 15258, Al Ain, Abu Dhabi, United Arab Emirates
Tel + 971 3 677410 Fax + 971 3 671228
Applications will be closed four weeks after the date of publication

The Royal Society

VACANT RESEARCH PROFESSORSHIPS

The Royal Society invites applications for **four** vacant research professorships tenable from 1 October 1995. The appointments will be made as follows:

1. At least one Royal Society Professorship in physical sciences (embracing all branches of the physical sciences including mathematics, engineering and technology).
2. At least one Royal Society Professorship in biological sciences, (embracing all branches of biological sciences including agriculture and medicine).

And

3. The Royal Society Napier Research Professorship for research 'with the object of ascertaining the cause of cancer including any corresponding or allied disease and the means of its prevention, cure and alleviation.'*

*excerpt from will of M.S. Napier

The salary currently offered by the Society is £43, 621, i.e. the national professorial minimum plus 40%. (It is open to the host university to supplement the salary if it so wishes.) Professors may apply for research expenses of up to £16 000 per annum and they can bid for support for a research or technical assistant. A start up grant of up to £35 000 will be provided. Assistance will be given with removal expenses for successful applicants from overseas.

Successful candidates will normally be employed until normal retiring age but responsibility for the funding of these posts will be shared between the Society and the host university. Each appointment will start with a period of Royal Society funding, the duration of which will be determined by the Society's Council as follows:

– candidates under 40 years	15 years
– candidates over 40 years	10 years or up to age 55 (whichever the longer)

After this period all responsibility for the post, financial and otherwise, will pass to the host university alone.

The appointment must be held in an appropriate higher educational or research institution in the UK. There is no restriction as to citizenship of candidates.

Applications details are available from Mr K.A. Wylde, The Royal Society, 6 Carlton House Terrace, London SW1Y 5AG (Fax: 0171–930 2170). The closing date for applications is 7 April 1995, no applications arriving after 4 p.m. on that date will be considered.

UNIVERSITY COLLEGE CORK
DEPARTMENT OF PHARMACOLOGY AND THERAPEUTICS

Applications are invited for a full-time permanent post as College Lecturer in Toxicology/ Biochemical Pharmacology.

For informal discussion contact Professor Michael Murphy

Tel:(+353-21) 345599.
Email: MDPM8001@IRUCCVAX.UCC.IE

Salary scale IR£15,961-IR£21,950 Bar IR£25,921-IR£33,061 p.a. plus additional remuneration for a medial qualification.

Application forms and further details of the post may be obtained from the Academic Appointments Office, University College, Cork, Ireland.

Tel: (+353-21) 276871, ext. 2364.
Fax: (+353-21) 276995

Closing date: **31 March 1995**

University College Cork is an Equal Opportunities Employer

POSITIONS OPEN

POSTDOCTORAL RESEARCH ASSOCIATE position in human behavioral pharmacology is available in the Department of Physiology and Pharmacology at the Bowman Gray School of Medicine, Wake Forest University. We are seeking applicants with a Ph.D. in Psychology with background in evaluating the behavioral effects of psychoactive compounds to assist in the direction of a newly completed human performance laboratory. To be considered please apply with a curriculum vitae, date you are available and three letters of reference sent to: **Drs. Steven Dworkin** or **John Robinson, Bowman Gray School of Medicine, Winston-Salem, NC 27157-1083.**

SCIENTIST III

TheraTech Inc., a leader in the development of technologically advanced pharmaceutical products is looking for a **SCIENTIST III** in our Analytical R&D Department. The qualified applicant will have a Ph.D. in Analytical, Organic or Pharmaceutical Sciences and up to three years of industrial experience or a B.S./M.S. in Analytical, Organic or Pharmaceutical Sciences with five to seven years of industrial experience or equivalent combination of education and experience. A strong background in HPLC, GC, GC/MS, NMR, and MS is required. Please submit cover letter and résumé to: **TheraTech, Inc., 417 Wakara Way, Salt Lake City, UT 84108.** *Equal Opportunity Employer.*

Agricultural Research Service — United States Department of Agriculture

PLANT PATHOLOGIST/BIOCHEMIST HORTICULTURIST (GS-12/13)

Horticultural Crops Research Laboratory, Fresno, California, is seeking an innovative **RESEARCH SCIENTIST**. The area of research encompasses the development of alternatives to methyl bromide for the management of soilborne diseases and pathogens of tree fruit crops and strawberries. Considerable efforts will be directed to improve strategies for identifying/characterizing antagonistic microbes and natural metabolites against major soilborne pathogens for tree fruit crops and strawberries, and to develop an integrated approach using resistance germplasm and cultural practices to minimize soilborne pathogen populations for reducing crop losses and maintain quality. Application of analytical, microbiological and biochemical techniques to solve multidisciplinary problems is encouraged. The successful individual will be expected to develop an innovative vigorous independent research program, collaborate with the other scientists and to publish research results in refereed publications. Must be a U.S. citizen. A Ph.D. is highly desirable. Candidates with postdoctoral experience and interest in alleiopathy/natural products chemistry are preferred. Salary will be commensurate with experience ($43,000 to $65,000). Call **Dr. Louis H. Aung** on **209-453-3160** for position information. For application information and forms call **Denice Greenwell** on **209-453-3005**. Mail application forms to: **Gloria Snipes, USDA, ARS, Human Resources, 6305 Ivy Lane, Room 318, Greenbelt, MD 20770-1435.** Applications in response to this advertisement should be marked W0054. Applications must be received by March 21, 1995. *USDA, ARS is an Equal Opportunity Employer; women and minorities are encouraged to apply.*

STAFF SCIENTIST

The Barnett Institute of Chemical Analysis and Materials Science at Northeastern University invites applications for a **STAFF SCIENTIST** position. We are seeking a researcher of exceptional promise using molecular, genetic and biophysical approaches for developing new analytical techniques. The successful candidate will work in a multidisciplinary environment on problems of broad interest in the biomedical sciences. A Ph.D. in the physical or life sciences and at least two years of postdoctoral experience is required. Applicants with industrial experience are encouraged to apply. Please send a curriculum vitae and a statement of research interests to: **Prof. Barry L. Karger, Barnett Institute of Chemical Analysis and Materials Science, Northwestern University, 360 Huntington Avenue, Boston, MA 02115.**

Northeastern University is an Equal Opportunity/Affirmative Action Employer.

POSITIONS OPEN

NIH **POSTDOCTORAL FELLOWSHIPS** are available in the Division of Dermatology, Duke University Medical Center to work in areas which include 1) Characterization of molecular defects in inherited connective tissue disorders, 2) Regulation of collagen biosynthesis, 3) Molecular mechanism of human autoimmune disease, 4) Characterization of dermal extracellular matrix-epithelial cell interactions, and 5) Melanocyte/melanoma cytokine regulatory pathways. Only U.S. citizens, permanent residents, and non-citizen nationals are eligible for this program. Salary negotiable. Send curriculum vitae and names of three references to: **Dr. H. N. Yeowell, Box 3135, DUMC, Durham, NC 27710.** *Duke University is an Equal Opportunity Employer.*

RESEARCH ECOLOGIST—U.S. Department of the Interior, National Biological Service, Forest & Rangeland Ecosystem Science Center at Corvallis, Oregon, seeks an ecosystem-level, watershed research ecologist (GS-401/460/486-13, $50,706 to $65,915 per annum) to lead a field-oriented research program relating management of forest or rangeland natural resources to the proper function of ecosystems in the Pacific Northwest and Intermountain West. Ph.D. equivalent experience in ecology, watershed science or in a closely related field is required. Opening date: 13 February 1995. Closing date: 13 March 1995. Contact: **Carla Clark, 503-750-7307** for complete announcement and informational details.

RESEARCH SCIENTIST/PH.D.
University of Mississippi School of Medicine
Division of Hematology

The University of Mississippi seeks a **RESEARCH SCIENTIST** with a background of gene manipulation in hemopoietic stem cells. The capacity to develop and maintain a grant-supported research program and to participate in collaborative research within the Division is critical.

Start-up funds and initial technical support is available. Active bone marrow transplant program and research in stem cells and hemopoiesis is ongoing.

Please send résumé to:

Joe C. Files, M.D.
Director, Division of Hematology
University of Mississippi Medical Center
2500 North State Street
Jackson, MS 39216-4505

The University of Mississippi Medical Center is an Equal Opportunity Employer/Male/Female/Disabled/Veterans.

COURSES AND TRAINING

THE STATE UNIVERSITY OF NEW JERSEY
RUTGERS

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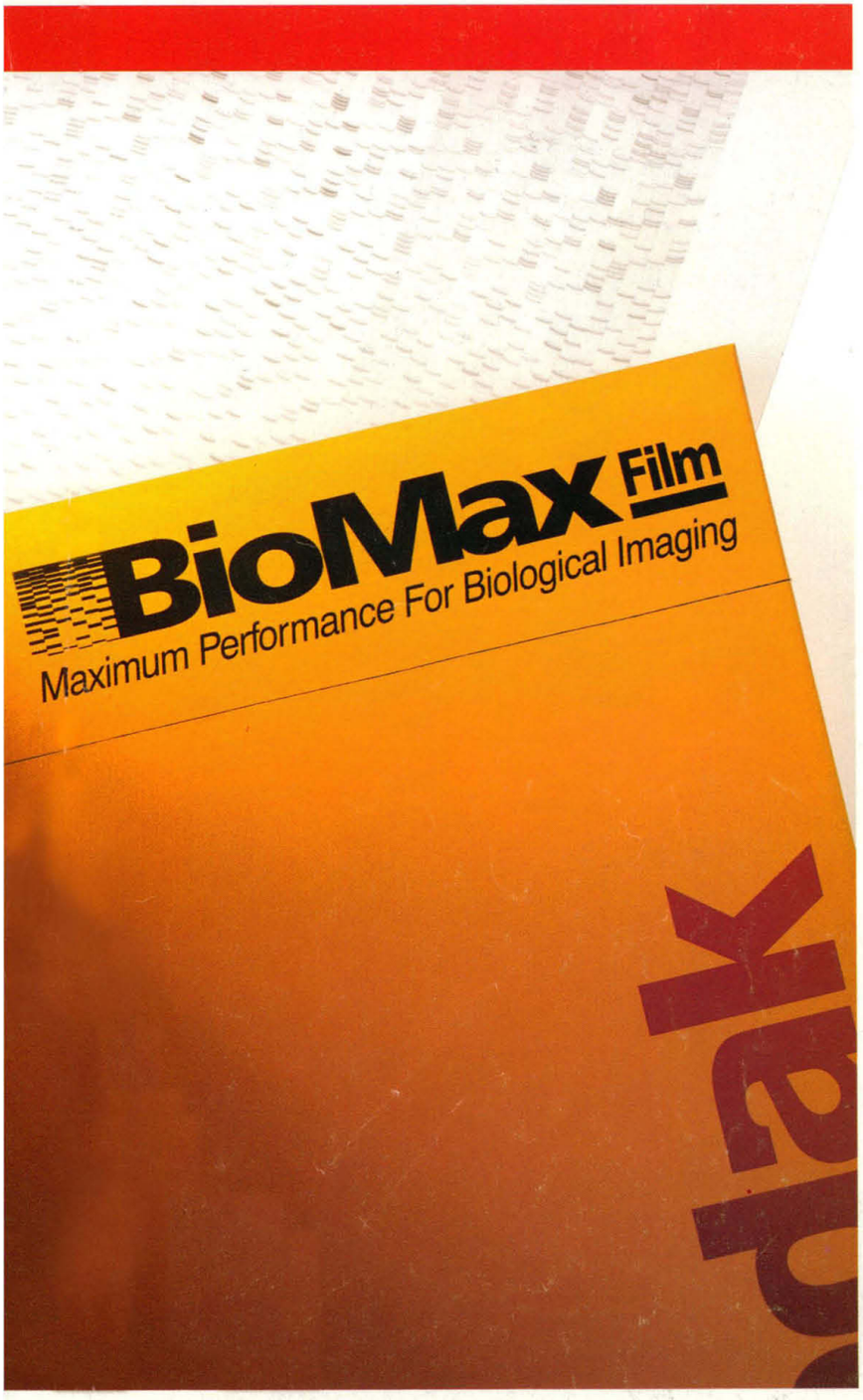

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