The future evolution of healthcare delivery will involve seeking a balance between
the goal of access to quality care at an affordable cost while ensuring that the dis-
covery of innovative drugs, vaccines and diagnostic tests to meet unmet medical
needs will continue, and being able to exploit the remarkable progress being made
in understanding disease processes.

At SmithKline Beecham, these
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enable you to contribute to the chal-
lenging endeavor of the discovery and
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care, please send your resume to:
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S2/24, PO Box 401, Conshohocken,
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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.

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.
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 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

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### THE BIGGEST LOOKS FOR THE BEST AT HÖCHST

**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. Jörgen 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, development. Trivially, 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 inherent. 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.

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### 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 Valero, 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.
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 (ref):

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., by 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 post-doctoral 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 discovery 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 his/her 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 post-doctoral 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.
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. Biotecnology 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 made, you still have to be able to make excellent medicines and keep 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.”

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 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.”

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,” says Brian Lee. 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,” says Lee, “including fields such as genetic engineering; microbiology; and enzymology; human cell biology, in which we are actively recruiting for our skin program; and diagnostics, for our program in biorecognition.”

Lifford 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 forecasts 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,” says Lee, “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 advisers 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, Lifford 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.”
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, Turnhoutse-weg 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 CIP 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 is a problem 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 few people we must look to the few pharma-ceutical 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."

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 1. 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 Transgene 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 people, with 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 fruiting of partnerships.

A company of 28 people is performa a fluid organization with a constant need for communication. "When you've got a company of this size, there isn't any room for 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 range of skills 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 pharmaceutical products, 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.
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, Pharmacologists 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).
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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.


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
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.
**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.

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**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.
**FACULTY POSITION**

**BIOCHEMIST OR CELLULAR/MOLECULAR BIOLOGIST**

The Musculoskeletal Research Center of the Department of Orthopedic Surgery at the University of Pittsburgh School of Medicine, Children’s Hospital of Pittsburgh are seeking a qualified individual to conduct research and develop a research program directed at determining the cause and development of 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 continue 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 interests and funding, and three letters of recommendation to: S. I. Y. Woo, Ph.D., Ferguson Professor and Chair for Research, Department of Orthopedic Surgery, University of Pittsburgh, Suite 1010 Linda Konkle Building, 447 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 seeks for an appropriate appointee 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 biomolecular structure and function. A fully equipped NMR spectrometer laboratory with a Varian VX 500 NMR Spectrometer is available as well as substantial institutional support to expand/upgrade this facility. Dedicated molecular modeling computer and online access to the University of Kentucky IBM 3090 supercomputer are also in place. The successful candidate will be expected to secure an independently funded research program and to play a substantial role in the planned development of a new major program in Structural Biology. Appointment and teaching opportunities for a tenure-track position will be in the University of Kentucky College of Medicine Department of Biophysics. Interested persons should submit a curriculum vitae, a summary of present and future research interests, and names of three references to:

M. B. M. Kaufmann, Ph.D., Department of Radiation Science, University of Kentucky, Lexington, KY 40536-0084. An Equal Opportunity/Affirmative Action Employer.

**POSITIONS OPEN**

**PLANT MOLECULAR SYSTEMATIST/EVOLUTIONARY BIOLGIST**

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. Michigan State University is 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 Aijers, 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 over-expression, and purification. Projects are carried out in a multidisciplinary setting using 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 accepted until 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 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-major courses. 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 the position is filled. An Equal Opportunity/Civilian/Community 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 methodologies. Position is 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.

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 refolding, 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 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 Tt1 (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 rodent 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 classical and novel mutations that alter the sensitivity of D. melanogaster to anesthetics in behavioral assays. Electrophysiological measurements assess 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 RNAIII 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 (wyburl.et.nlm.gov) or modem (1,301-402-2221 or 1,800-358-2221) with parameters set at "7,Eten,1". When connected to NIH, type in "ynt100" for terminal emulation, "P5E" for initials, and "AJL" 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

Office Of Education

The NIH is an Equal Opportunity Employer
The Department of Radiation Oncology at the University of Pennsylvania is seeking applicants for appointment as ASSOCIATE PROFESSOR level and FULL PROFESSOR level who will pursue research in molecular genetics or molecular biology with strong connections to the field of Radiation Oncology. Applicants should hold an M.D. or Ph.D. degree. Board certification in Radiation Oncology is desirable but is not an absolute requirement for appointment in these positions. Applicants should 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. Thomas Montville, Ph.D.
Chairman, Department of Radiation Oncology
University of Pennsylvania Medical Center
534 and Spruce Streets
Philadelphia, PA 19104-4283

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

The combination of experience 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 Drosophila 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 your 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.

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 to the Department Chair. The incumbent will serve as Assistant to the Department Chair and work 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
Room 1215 WARB Bldg.
610 Walnut St.
Madison, WI 53706
(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.

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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 DEPARTMENT, 15049 SAN PABLO AVE., DEPT. 894-048, RICHMOND, CA 94804-0099. Principals only, please. EOE.

BERLEX
THE BEST IS YET TO COME
The University of Pittsburgh, 500 H. H. Hinz, P. O. Box 1569, Pittsburgh, PA 15260.

Applications are invited for an Academic Position in the Department of Cell and Molecular Biology, University of Pittsburgh, Three Rivers Life Sciences Building, 200 Lothrop Street, Pittsburgh, PA 15261.
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 range 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-168; Bethesda, MD 20892. Apply before closing date of 4/30/96.

NIH IS AN EQUAL OPPORTUNITY EMPLOYER
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, with a 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 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.

POSSESSION OPEN

Three RESEARCH ASSOCIATE/POSTDOCTORAL POSITIONS in Virology and Neurobiology are available involving studies of: (a) HSV-neuron interactions including the role of nitric oxide and caspase sensitive neuronal function; (b) 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. work and/or M.D. training and research experience in molecular biology, microbiology, pathogenesis, retrovirology, or neuropathology. Candidates should send a current 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, 5333 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 the role of the plant signal transduction pathway(s) (Plant Cell, 4:359, 1992; Plant J., 4:593, 1993) and characterization of the salicylic acid receptor (PNAS, 90:5533, 1993; Science, 262:1883, 1993). Applicants should have research experience in genetics and/or molecular biology. Send curriculum vitae and a cover letter detailing expected year of graduation and put 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. Telephone: 404-842-9122. FAX: 404-842-4038; Email: weerasuriya@mercer.peachnet.edu. An Affirmative Action/Equal Opportunity Employer.

POSTDOCTORAL FELLOWSHIPS

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. Send curriculum vitae, research interests and references to: Professor Gordon Clark, Head, 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 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.

MIT is an Equal Opportunity/Affirmative Action Employer.

MIT is a non-smoking environment.

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At Pfizer, we're taking medicine to new frontiers.

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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Leading Edge Research

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# 50224-SP)

Scientist in Mass Spectroscopy

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 spectrometric 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, electrophoresis and CZE separation techniques. (Job# 50224-MS)

Arris offers generous salaries & benefits, the potential for career advancement and the opportunity to make significant scientific contributions. For consideration, please send resume & cover letter to:

Arris Pharmaceutical Corp.
Human Resources, Attn: Job# 385 Oyster Point Blvd., Suite 3
South San Francisco, CA 94080.
Equal Opportunity Employer
Two POSTDOCTORAL RESEARCH positions are available in the Musso's laboratory to conduct molecular and biochemical studies of the mechanisms of a novel antibiotic resistance gene in pathogenic bacteria. The research will focus on the role of the gene in bacterial resistance to beta-lactam antibiotics and its potential for use in the development of new therapeutic strategies. Candidates must have a Ph.D. or M.D./Ph.D. degree in the relevant field and should have a strong background in molecular biology and genetics. Send curriculum vitae and three letters of recommendation to: Dr. David Musso, Department of Microbiology, University of California, San Diego, La Jolla, CA 92037. Applications will be accepted until the positions are filled.
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) 573-9199. 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 75336-0601. 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 13:378; PNAS 91:7560; 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 evaluation of on/off "rescue" systems for these viruses to examine basic question 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/and infection and illness caused by 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 Ph.D. and M.D.'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:

Joann Martin
NIH Bldg. 31, Room 7A27
9000 Rockville Pike
Bethesda, MD 20892
FAX: (301) 496-1940

Vacancy Announcement No. PA-16

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With over 162,000 subscribers worldwide, SCIENCE reaches the largest number of qualified candidates with your recruitment message. To advertise, contact:

U.S.: Call Janis Crowley at (212) 496-7704, or fax to (202) 682-0816.
Internet Address: science_classifieds@aaas.org
Europe: Call Gordon Clark at (+44) 01223 302067, or fax to (+44) 01223 302068.
Australia: Call Keith Sandell at (+61) 02 922 2977, or fax to (+61) 02 922 1100.
Japan: Call Masayoshi Yoshikawa at (+81) 3 3235-5961, or fax to (+81) 3 3235-5852.

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 important position 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 Assistant 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 for 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.

Centaur Pharmaceuticals is an Equal Opportunity Employer.
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.
**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:

**Human Resources**

**1201 Eastlake Avenue East**

**Seattle, WA 98102**

ZymoGenetics is committed to equal opportunity and diversity.
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 Humayan: 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.

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) 982-2444.

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 M.D. 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 total is 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, Montreal, Quebec, 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 11794-5922. 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.
BIOREMEDIATION 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 and 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/HV.

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 1227, 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.
Special Advertising Supplement

Careers in Biotechnology and Pharmaceuticals:
Beyond Discovery
17 March 1995

On 17 March, *Science* will publish a special advertising section titled "Careers in Biotechnology and Pharmaceuticals: Beyond Discovery - Science Careers Up and Down the Production Stream." This is a popular annual advertising section dedicated to biopharmaceutical employment matters with bonus distribution to two U.S. job fairs, one on each coast. This section will explore the exciting next phase of the biotech industry. It will look at how the manufacturing, regulatory, and service sectors of the modern biopharmaceutical company are growing, and it will highlight various career paths.

**Job Fair Bonus Distributions**
This highly visible issue will be distributed at two job fairs:
- Biotech/Pharmaceutical Job Fair, 24-25 March, La Jolla, California.
- Biotech/Pharmaceutical Job Fair, 28-29 April, Cambridge, Massachusetts, held on the MIT campus - open to all.

**Benefits of Running a Full Page Advertisement**
This issue is an excellent opportunity for full page advertisers to get extra attention:
- A directory of full page recruitment advertisements will be published in this issue referring readers to your ad in the special section by listing your company name and the page number on which your ad appears.
- Names of the full page recruitment advertisers with the page numbers on which their ad appears will be listed on an index affixed to the covers of the magazines distributed at the job fairs.
- Full page recruitment advertisements will receive placement throughout the career-related special advertising section.

**Advertising space reservation deadline:**
28 February 1995

To advertise, contact: Janis Crowley
phone (212) 496-7704, fax (202) 682-0816.
POSTDOCTORAL RESEARCH ASSOCIATE

Position available to study the regulation of 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

DEKALB

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 10570-9799. An Affirmative Action Equal Opportunity Employer. Women and Minorities are encouraged to apply.

RESEARCH ASSOCIATE

Protein Biochemistry (Job #1044)

Pioneer Hi-Bred International, Inc., is a worldwide leader in agricultural genetics. Founded in 1920, 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 ongoing 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, HPLC or enzymeology are essential. FACULTY 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 50131-6212. Pioneer Hi-Bred International, Inc. is an Equal Opportunity Employer.
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 677140 Fax + 971 3 671228

Applications will be closed four weeks after the date of publication.
POSTDOCTORAL RESEARCH ASSOCIATE position in human behavioral pharmacology is available in the Department of Psychology and Pharmacology at the Bowman Gray School of Medicine, Wake Forest University. Candidates with a Ph.D. in Psychology with background in evaluating the behavioral effects of psychoactive compounds to assist in the direction of research projects are preferred. To be considered, please apply with a curriculum vitae, date you are available and three letters of reference sent to Dr. John Robson, Bowman Gray School of Medicine, Winston-Salem, NC 27157-1083.

SCIENTIST III

TheraTech Inc., a leader in the development of technologically advanced biological 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 letter of application for position to: Denice Barnett, TheraTech, Inc., 417 Wakara Way, Salt Lake City, UT 84108. Equal Opportunity Employer.

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

Horticultural Crops Research Laboratory, Fresno, California, is seeking an innovative RESEARCH SCIENTIST. The area of research is composition and 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 improving methods for identifying and characterizing antagonistic microbes and natural metabolites against major soil-borne 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 maintaining 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 allelopathy/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. Application forms and forms are available at Denice Greenwell on 209-453-3005. Mail application forms to: Gloria Sipes, USDA, ARS, Human Resources, 6308 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, Northeastern University is advertising for an application 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 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 postdoctoral experience is required. Applicants with industrial experience are encouraged to apply. Please send curriculum vitae and a statement of research interests to: Dr. Barry L. Karger, Barnett Institute of Chemical Analysis and Materials Science, Northeastern University, 360 Huntington Avenue, Boston, MA 02115. Northeastern University is an Equal Opportunity/Affirmative Action Employer.

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) Characterization of collagen abnormalities, 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 ECOLIST—U.S. Department of the Interior, National Biological Service, Forest & Range Lands Ecological System Center at Corvallis, Oregon, seeks an ecosystem-level, landscape ecologist (GS-401/460/486-13, $50,700 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 resume to: Joe C. Files, M.D., Director, Division of Hematology, University of Mississippi Medical Center, 2500 North State Street, Jackson, MS 39216-4505.

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Applications are invited for admission to a multidisciplinary Ph.D. program in Cellular and Molecular Biodynamics, funded by the NSF and consisting of research faculty from the Departments of Chemistry, Biological Science, Physics, and Behavior and Neural Sciences. The students receive five years of full support ($14,000 + tuition). There is a strong emphasis on training in research techniques and strategies in Biophysics with special courses in: Biological Spectroscopy, Biological Optics and Cellular Biophysics. General areas of research training in laboratories well-equipped with state-of-the-art instrumentation include: Biochemistry, Biophysics, Biomolecular Spectroscopy, Computational Modeling, Immunology, Laser Optics, Light and Electron Microscopy, The user Biology, Neuropharmacology, Neurochemistry, and Neurophysiology. Qualified Undergraduate Students are also invited to apply for summer research internships. For further information and application forms, contact: Dr. Frank Jordan, Director, Program in Cellular and Molecular Biodynamics, Department of Chemistry, University of Delaware, Newark, NJ 07102. Phone: 201-684-1264; Email: fjd@jordan@andromeda.rutgers.edu. Rutgers is an Equal Opportunity Affirmative Action Employer and our Program specifically invites and encourages applications from women, minorities and the physically challenged.

BIOETHICS

A faculty development institute at the University of Illinois at Urbana-Champaign May 14-19, 1995. Applications invited from life scientists interested in integrating bioethics into their classes. Deadline: March 15, 1995. For applications contact: Dr. James Farlow, Cor nell at 217-356-7465; FAX: 217-333-9617; Email: jfarlow@uc1.x.cso.uiuc.edu.

INTERNATIONAL SYMPOSIUM

Evaluation of Butadiene and Isopropene Health Risks. 27-29 June 1995—Ann Arbor, Michigan. A three-day symposium preceding ICT-VII on Butadiene and Isoprene Issues: Metabolism and Pharmacokinetics, Biological Effects, Epidemiology, and Assessment Perspectives and Methods. Jointly organized by: AIHA; API; CEFC; CIIT; CMA; ECETOC; EPA; HEI; IARC; ISRP; IPCS; NIEHS; and SOT. Inquiries: J. Ludwig, Symposium Coordinator, International Institute Of Synthetic Rubber Producers, 2077 South Ginger Street, Suite 133, Houston, TX 77063. Telephone: 713-783-7511, ext. 255; FAX: 713-783-7253.

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