

personal or interorganizational—through which the innovation was diffused. Chapter 5, "Network form, network structure, and boundary management," examines specific structural characteristics of the network linkages. The title of chapter 6, "Variation across hospitals in network program participation," is self-explanatory. The factors that influenced participation by individual hospitals are explored. Chapter 7 examines the way multidisciplinary, state-of-the-art patient care was defined in each program and then reformulated for dissemination. The final chapter considers the question of outcomes and summarizes the results.

My overall evaluation is that although the book succeeds as a research monograph it fails to speak directly and clearly to broader policy concerns. Though the authors make no pretension in that direction, it is disappointing that a research team that worked so intensively on a set of issues of such obvious relevance to policy would leave the policy implications of their work largely unexplored.

What will those most likely to be interested in the book—organization theorists, medical sociologists, and innovation researchers—learn? In my judgment, the most interesting material is to be found in the two final chapters, particularly chapter 7, where the authors depart from classical diffusion research, in which one finds the implicit assumption that a given "innovation" is relatively concrete and is pretty much the same from one setting to the next. Coleman, Katz, and Menzel's classic study of the diffusion of the drug gammanym is an example of such research; the innovation Coleman *et al.* tracked, a drug, is the same in all of the settings in which it is adopted. Fennell and Warnecke, however, discuss how the innovation with which they are concerned had a large "software" component that needed to be adapted to particular circumstances in order to diffuse at all. They use the term "reinvention" to refer to the fact that in each of the seven settings they examined the innovation was defined somewhat differently. In fact, the differences were so great at the extremes as to cause one to wonder whether the innovations as defined were the same generic innovation or not. Parenthetically, this question raises the further question of how one might judge when there is a generic innovation or when the phenomena being analyzed are actually different. Although the concept of reinvention needs further development, a useful contribution of the study is to suggest that it is unlikely that the same dynamics would be involved in the diffusion of innovations with large and with small software components.

This discussion may seem somewhat dis-

tant from the main thrust of the authors' study, but my own view is that *The Diffusion of Medical Innovations* contributes most by illustrating, intentionally or not, the limitations of classical diffusion theory. The most interesting and stimulating observations are made when the authors break from the theoretical and linguistic shackles that bind them for the first six chapters. There is much to be learned about innovation and change and about outcomes and effectiveness from the final two chapters. And although recent changes in health policy in this country make the specifics of much of their work primarily of historical interest, Fennell and Warnecke do remind us once again of the profound inertia, born of divergent interests both within and without the medical community, that confronts those who would innovate. The results of their study are proof positive of the difficulties inherent in trying to determine the extent to which new medical discoveries are actually being incorporated into the practice of medicine, of the interplay of science and politics, of the multiplicity of agendas that form the context for new initiatives, and of the kaleidoscopic array of interests, levels, and layers that ultimately shape the end result.

JOHN R. KIMBERLY

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Books Received

Artificial Intelligence and Other Innovative Computer Applications in the Nuclear Industry. M. Catherine Majumdar, Debu Majumdar, and John I. Sackett, Eds. Plenum, New York, 1988. xviii, 910 pp., illus. \$135. From a meeting, Snowbird, UT, Aug.-Sept. 1987.

Asa Gray. American Botanist, Friend of Darwin. A. Hunter Dupree. Johns Hopkins University Press, Baltimore, 1988. xxiv, 503 pp. + plates. Paper, \$14.95. Reprint, 1959 ed.

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Atomic Nuclei and Their Particles. E. J. Burge. 2nd ed. Clarendon (Oxford University Press), New York, 1988. xii, 208 pp., illus. \$42.50; paper, \$19.95. Oxford Physics Series.

B Cell Development. Owen N. Witte, Norman R. Klinman, and Maureen C. Howard, Eds. Liss, New York, 1988. xviii, 304 pp., illus. \$60. UCLA Symposia on Molecular and Cellular Biology, vol. 85. From a symposium, Taos, NM, Jan.-Feb. 1988.

Balancing the Needs of Water Use. James W. Moore. Springer-Verlag, New York, 1988. xii, 267 pp., illus. \$69. Springer Series on Environmental Management.

Biological and Molecular Aspects of Atrial Factors. Philip Needleman, Ed. Liss, New York, 1988. xvi, 282 pp., illus. \$56. UCLA Symposia on Molecular and Cellular Biology, vol. 81. From a symposium, Steamboat Springs, CO, Jan. 1988.

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Cognitive Approaches to Neuropsychology. J. Michael Williams and Charles J. Long, Eds. Plenum, New York, 1988. xii, 361 pp., illus. \$75. Human Neuropsychology. From a conference, Memphis, TN, May 1987.

The Coleoptera of Greenland. Jens Böcher. Commission for Scientific Research in Greenland, Copenhagen, Denmark, 1988. 100 pp., illus. Paper, Dkr 134. *Meddelelser om Grønland, Bioscience* 26.

Compact Handbook of the Birds of India and Pakistan, Together with Those of Bangladesh, Nepal, Bhutan and Sri Lanka. Salim Ali and S. Dillon Ripley. 2nd ed. Oxford University Press, New York, 1987. xlv, 737 pp., illus., + plates. \$98.

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(Continued on page 1743)

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(Continued from page 1741)

Number Problems and Computers, with BASIC and PASCAL Program Solutions. Donald D. Spencer. Camelot, Ormond Beach, FL, 1988. 144 pp., illus. Paper, \$14.95.

The Numerical Solution of Ordinary and Partial Differential Equations. Granville Sewell. Academic Press, San Diego, CA, 1988. xii, 271 pp., illus. \$39.95.

Origin and Migration of Subsurface Sedimentary Brines. Jeffrey S. Hanor. Society of Economic Paleontologists and Mineralogists, Tulsa, OK, 1987. viii, 247 pp., illus. Paper, \$22; to SEPM members, \$17. SEPM Short Course no. 21.

Origins and Extinctions. Donald E. Osterbrock and Peter H. Raven, Eds. Yale University Press, New Haven, CT, 1988. xiv, 121 pp., illus. \$17.95. From a symposium, Washington, DC, April 1986. Essays by Alan Guth, George Wetherell, Lynn Margulis, and David Raup.

Other Healers. Unorthodox Medicine in America. Norman Gevitz, Ed. Johns Hopkins University Press, Baltimore, 1988. xii, 302 pp. \$37.50; paper, \$12.95.

Parallel Architectures and Computer Vision. Ian Page, Ed. Clarendon (Oxford University Press), New York, 1988. xviii, 329 pp., illus. \$55. From a workshop, Oxford, U.K., March 1987.

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The Phylogeny and Classification of the Tetrapods. M. J. Benton, Ed. Published for the Systematics Association by Clarendon (Oxford University Press), New York, 1988. 2 vols. Vol. 1, Amphibians, Reptiles, Birds. x, 377 pp., illus. \$98. Vol. 2, Mammals. x, 329 pp., illus. \$90. Systematics Association Special Volume, nos. 35A, 35B. From a symposium, London, U.K., March 1987.

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Prenatal Care. Reaching Mothers, Reaching Infants. Sarah S. Brown, Ed. National Academy Press, Washington, DC, 1988. x, 254 pp., illus. Paper, \$17.95.

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Social and Personality Development. An Evolutionary Synthesis. Kevin B. MacDonald. Plenum, New York, 1988. xiv, 349 pp. \$45. Perspectives in Developmental Psychology.

Societal Responses to Regional Climatic Change. Forecasting by Analogy. Michael H. Glantz, Ed. Westview, Boulder, CO, 1988. viii, 428 pp., illus. Paper, \$40. A Westview Special Study.

Solid-State Laser Engineering. Walter Koechner. 2nd ed. Springer-Verlag, New York, 1988. xii, 606 pp., illus. \$79. Springer Series in Optical Sciences, vol. 1.

Surveying and Mapping for Field Scientists. William Ritchie *et al.* Longman Scientific, Harlow, U.K., and Wiley, New York, 1988. x, 180 pp., illus. Paper, \$34.95. Revision of *Mapping for Field Scientists*.

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The Timetables of History. A Horizontal Linkage of People and Events. Bernard Grun. 3rd ed. Touchstone (Simon and Schuster, New York, 1988. x, 676 pp., illus. Paper, \$18.95.

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The Department of Biology at Queen's University invites applications for a tenure-track position in the area of **ANIMAL PHYSIOLOGY**. Preference will be given to vertebrate physiologists whose research work involves physiological approaches to environmental or ecological questions, but researchers in all areas are encouraged to apply.

Qualifications: The successful candidate should be an enthusiastic and competent teacher and will be expected to develop a vigorous research program. Qualifications include a Ph.D. degree and published evidence of excellent research ability.

Expected date of appointment: This appointment can be effective 1 July 1989 (or as negotiated) and is expected to be at the rank of **ASSISTANT PROFESSOR** with salary commensurate with qualifications.

Application deadline: The application deadline is 15 May 1989 or until a suitable candidate is selected. Applications should include curriculum vitae and a statement of future research interests. Arrangements should also be made to have three letters of reference sent to: **Dr. D. T. Dennis, Head, Department of Biology, Queen's University, Kingston, Ontario, Canada K7L 3N6.**

In accordance with Canadian Immigration Requirements, this advertisement is directed to Canadian citizens and permanent residents. Candidates of either sex are equally encouraged to apply. Queen's University is willing to help the spouse of a new appointee to seek employment.

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The Commission for the Conservation of Antarctic Marine Living Resources invites applications for the position of data manager. The data manager's responsibilities include the development and operation of the Commission's computing and data management facilities and data analysis (particularly fish stock assessment) in support of the Scientific Committee and its various expert groups. The appointment shall be for a term of 3 years with the possibility of renewal. Applicants should have a university degree in biology or fisheries science and experience in the operation of computers and their application to the handling of marine biological and fisheries data. Knowledge of population dynamics, stock assessment and relational data base systems would be an advantage. The successful applicant must be fluent in English. Applicants who are also fluent in French, Russian or Spanish will have an advantage. The salary will be in the range of US\$34,693 to US\$55,850 per annum net, depending on qualifications and experience. Allowances are based on the UN system and include removal, installation and repatriation allowances and a home leave allowance every 2 years. Applications should reach: **The Executive Secretary, CCAMLR, 25 Old Wharf, Hobart, Tasmania, Australia 7000**, by 14 April 1989.

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Please submit curriculum vitae, synopsis of research interests and career objectives to:

Thomas L. McCurley, M.D.
Director, Immunopathology Laboratory
Room 4605, The Vanderbilt Clinic
Vanderbilt University Medical Center
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ASSISTANT PROFESSOR. Full-time (9-month), tenure-track position, beginning fall 1989. General and applied microbiology, and general biology for department majors. Competence in immunology is desirable. Ph.D. required. Send curriculum vitae and names and addresses of references to: **I. Gepner, Chair, Department of Biology, Monmouth College, West Long Branch, NJ 07764.** *Equal Opportunity Employer; women and minorities are encouraged to apply.*

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The Department of Biochemistry, Duke University Medical Center, invites applications for the position of **ASSISTANT PROFESSOR** (tenure-track). The person will be expected to establish a strong independent research program and to teach both medical and graduate students. All applicants are welcome, although preference will be given to those with experience in physical biochemistry and structural biology. Send résumé, summary of research interest, and three letters of reference to: **Robert L. Hill, Duke University Medical Center, Durham, NC 27710.** *Duke University is an Equal Opportunity/Affirmative Action Employer.* The closing date for receipt of applications is 15 May 1989.

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Applications are invited for two positions, one at the level of **ASSISTANT PROFESSOR** and one at the level of **POSTDOCTORAL RESEARCH ASSOCIATE**. The appointments are not eligible for tenure. In every case, applicants should hold the Ph.D. degree with special emphasis in mathematical/statistical aspects of behavioral genetics or a related field, and must have research interests compatible with the Department needs. A record of publication, postdoctoral training and capability of developing an independent research program are essential for appointment at the level of assistant professor. Further particulars may be obtained from: **Dr. Lindon Eaves, Distinguished Professor of Human Genetics, Department of Human Genetics, Box 33 MCV Station, Richmond, VA 23298-0033**, to whom applications should also be addressed.

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Applications are invited for a tenure-track assistant professor position beginning August 1989 in the Department of Microbiology. Candidates will have a Ph.D. degree and at least 2 years of postdoctoral experience. The ideal candidate will be one working on molecular aspects of eukaryotic microbiology, though outstanding candidates with other interests in microbiology will be considered. Salary is commensurate with qualifications and experience. Review of applications will begin on 17 April 1989 and continue until a suitable candidate is found. Please send curriculum vitae, a letter stating present and future research efforts, and the names and addresses of three references to: **Dr. M. D. Socolofsky, Chairman, Department of Microbiology, Louisiana State University, Baton Rouge, LA 70803-1715.**

Louisiana State University is an Equal Opportunity/Affirmative Action Employer.

The Departments of Surgery and Microbiology and Immunology invite applications for a tenure-track position at the level of **ASSISTANT/ASSOCIATE/FULL PROFESSOR**. Candidates should have a strong background in tumor immunology, with a special interest in cellular or molecular immunology. Emphasis will be placed on those individuals with experience with tumor immunotherapy and cytokines. The applicant will join an active group of immunologists and clinicians associated with the Lucille Parker Markey Cancer Center. Applicants must hold M.D., Ph.D., or D.V.M. degree and have at least 2 years of postdoctoral experience. An attractive start-up package is available and the salary is competitive and commensurate with experience. Applicants should submit their curriculum vitae, a statement of research interests, and the names of three references to:

Dr. Alan M. Kaplan, Chairman
Department of Microbiology and Immunology
University of Kentucky
Chandler Medical Center
800 Rose Street
Lexington, KY 40536-0084

ASSISTANT/ASSOCIATE/FULL PROFESSOR ENTOMOLOGY: Apiologist/Social Hymenopterist, Department of Entomology, University of California, Riverside, California. Ph.D. required; 11-month, 90% research, 10% teaching. Research in apiology, emphasis on pollination in agricultural ecosystems, comparative biology and behavior of European and Africanized bees, and evaluation of pesticides. Applicants send curriculum vitae, transcripts (assistant professor), bibliography, reprints and manuscripts in press, names of five references and research interests by 15 May 1989, to: **J. D. Pinto, Department of Entomology, University of California, Riverside, CA 92521.** *The University of California is an Equal Opportunity/Affirmative Action Employer and encourages applications from women and minorities.*

ASSOCIATE DEAN ACADEMIC HEALTH SCIENCE CENTER DIVISION OF BIOLOGICAL AND BIOMEDICAL SCIENCES

Responsibilities: Under the supervision of the Associate Vice President, the Associate Dean has general responsibility to work creatively with the Associate Vice President in Undergraduate and Graduate Studies and Research and will facilitate seeking grant support through extramural resources. Also included are: overseeing academic advising of undergraduate majors, monitoring of students' completion of degree requirements, advertising of programs, development of new programs, teaching of at least one course/term.

Qualifications: An earned doctorate in biology, with administrative experience in higher education—preferably at the departmental chair level. Candidate should have evidence of achievement in research and scholarship appropriate for the rank of associate professor. Letters of Application should be received by 26 April 1989, and must include curriculum vitae, official transcript, three letters of reference. Please send to:

Sr. John Karen Frei, O.P., Ph.D.
Associate Vice President
Academic Health Science Center
Barry University
11300 Northeast Second Avenue
Miami Shores, FL 33161

CENTRE FOR POPULATION BIOLOGY IMPERIAL COLLEGE AT SILWOOD PARK, ENGLAND.

This major new initiative to develop fundamental understanding in the population biology of plants, animals and micro-organisms is being funded as an Interdisciplinary Research Centre by the British Government.

The Centre seeks applications for several post doctoral positions from suitably qualified candidates, with theoretical laboratory or field expertise in one or more of the following:

- Population dynamics of plants and animals;
- Structure and dynamics of communities;
- Population genetics;
- Microbial population biology.

In addition to developing the principles of population biology, the Centre will also be concerned with their application to such problems as pest control, harvesting, conservation and the release of genetically engineered organisms.

The Centre will be located at Imperial College, Silwood Park, where the Department of Pure & Applied Biology has an international reputation for environmental studies. Many of the existing staff at Silwood Park will be actively engaged in the work of the Centre, which will also serve as a focus for visiting scientists.

The work of the Centre will be directed by Professor John Lawton, with Professors Roy Anderson, Michael Hassell and Robert May as advisory directors.

All positions will be for periods of two years or more and applicants should submit a C.V. and names of three referees to:

Professor J H Lawton
Imperial College
Silwood Park
ASCOT
Berks. SL5 7PY

by May 12, 1989

IMMUNOLOGY Postdoctoral Scientist

The Upjohn Company, a leader in pharmaceutical research and development, has an opening for a postdoctoral scientist in the laboratory of Dr. Leo LeFrancois of our Cell Biology Group. The successful candidate will study molecular, biochemical and *in vivo* aspects of T cell differentiation and function. Ongoing projects include: 1) analysis of intraepithelial lymphocytes (IEL) in regard to T cell receptor structure and function (see *Nature* 333:855, 1988); 2) *in vivo* aspects of differentiation and lineage analysis of this unique class of lymphocytes; 3) studies of IEL in disease states and development of animal models of autoimmune intestinal disease; and 4) biochemical and functional studies of the leukocyte common antigen (T200). The applicant may also develop their own project within the general focus of the laboratory. This appointment will be for two years, with the possibility of renewal. A Ph.D. is required and previous experience in protein biochemistry, tissue culture, molecular biology and cellular immunology is desirable.

We are located in southwestern Michigan, midway between Chicago and Detroit, and our location offers varied cultural events, lakes and woodlands minutes away, abundant year-round sports and recreation. Upjohn offers a highly competitive salary and a comprehensive benefits program. The Upjohn research division is a large urban facility with a broad cross section of scientists with a wide range of research interests. For prompt, confidential consideration, send your CV/resume to: The Upjohn Company, Position 89286-HA, Corporate Recruiting, Kalamazoo, MI 49001. Please refer to advertisement number 89286-HA in your correspondence. We are an Equal Opportunity Employer M/F.

**Our Commitment to Scientific
Excellence Continues...**

Upjohn

Deputy Director

Health Effects
Research Laboratory
Research Triangle Park, NC



**U.S.
Environmental
Protection
Agency**

An Equal Opportunity Employer

The U.S. Environmental Protection Agency (EPA) is seeking candidates for the position of Deputy Director, Health Effects Research Laboratory (HERL). This position is located in Research Triangle Park, NC and is a permanent full-time position with a salary range of \$57,158 to \$74,303 per annum commensurate with qualifications.

HERL has a staff of about 300, over 100 of whom hold doctoral level degrees. The Laboratory has a diverse program which includes *in vitro* animal, human clinical, and epidemiological research designed to address issues related to the health effects of air and water chemical and biological pollutants.

The HERL is a multidisciplinary laboratory organized into six divisions: Neurotoxicology, Human Studies, Environmental Toxicology, Genetic Toxicology, Developmental Toxicology and Research and Regulatory Support. The Laboratory is staffed by health scientists with recognized expertise in a variety of disciplines—environmental medicine, physiology, epidemiology, statistics, biochemistry, neurotoxicology, reproductive toxicology, pulmonary toxicology, immunotoxicology, cardiovascular toxicology, genotoxicology, hepatotoxicology and other target organ toxicology, and microbiology—who formulate and implement a comprehensive research program to investigate human health effects resulting from exposure to environmental pollutants. The program includes both intramural investigations and extramural arrangements with universities, industry, private research institutions and other government agencies. The Deputy Director shares fully with the Director in the planning, programming, policy implementation, management, direction and control of the scientific and technical aspects of

the Laboratory. This includes assuring the development of a research strategy to meet the evolving needs of EPA, presenting the program, supervising four Associate Laboratory Directors who manage the Laboratory's media-based programs, directing the progress of these programs and ensuring the scientific quality and productivity of the Laboratory.

The preferred candidate for this position would possess the following qualifications:

1. Advanced degree in a biological, medical or environmental discipline with at least six years of professional experience in any of these areas. Applicable graduate coursework may be substituted for a portion of the required experience.
2. Experience as a supervisor of a scientific/professional staff.
3. Applicants must have recognized scientific expertise as evidenced by multiple publications in peer-reviewed literature and invitations to participate in national and international meetings/panels.
4. Proven ability to provide leadership in directing the development and progress of a creative and effective multidisciplinary human research program.
5. U.S. citizenship is required.

Forward curriculum vitae and names of three references prior to May 12, 1989 to: Dr. Lawrence W. Reiter, c/o Terri Burrell, HRMD (MD-29), U.S. Environmental Protection Agency, Research Triangle Park, NC 27711.

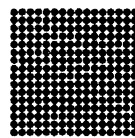
THE UNIVERSITY OF ADELAIDE
invites applications from both women and men for a

LECTURESHIP (Tenurable)

Available immediately in the
Department of Microbiology and
Immunology

The Department teaches Science and Medical undergraduate and postgraduate students and has a strong research record in studying infectious agents and the diseases they cause. Principal current research areas include the pathogenesis of a number of enteric infections and persistent virus infections, and mechanisms of immunity to these infections. The Department has particular strengths in molecular biology, monoclonal antibody technology, immunohistochemistry and cellular immunology. Opportunities also exist for collaboration with relevant research groups in the adjacent Institute of Medical and Veterinary Science. Applicants should hold a Ph.D. degree or equivalent with appropriate teaching ability and experience and should have achieved success in modern biological research within the field of Microbiology (including Virology). Duties of the appointee will include lecturing, primarily to undergraduate Science students, supervision of research work of postgraduates, and sole responsibility for some of the teaching programmes and administrative tasks of the Department. Preference will be given to applicants able to develop an active research group in an area of expertise that complements existing research interests of the Department. Further information may be obtained from the Chairman, Dr. I. Kotlarski, Department of Microbiology and Immunology. Annual salary: AUS\$30,737 \times 7 – AUS\$40,100 plus Para-Clinical loading of AUS\$7,460. It is University policy to encourage women to apply for consideration for appointment to tenurable academic appointments. Holders of full-time tenured or tenurable academic appointments have the opportunity to take leave without pay on a half-time basis for a specific period of up to ten years where this is necessary for the care of children.

APPLICATIONS IN DUPLICATE, quoting reference number 1725, giving personal particulars (including whether candidates hold Australian permanent residency status), resume and names and addresses of three referees should reach the Registrar, University of Adelaide, GPO Box 498, Adelaide, South Australia, 5001, Telex UNIVAD AA 89141 not later than 1 May 1989. THE UNIVERSITY IS AN EQUAL OPPORTUNITY EMPLOYER.



CHIRON
CORPORATION

POSTDOCTORAL POSITIONS Protein Chemistry

CHIRON CORPORATION, a recognized leader in the biotechnology industry has several openings for postdoctoral investigators in the following areas:

- Purification of growth factor receptors and of genetically engineered growth factor receptor domains. Analysis of their structure and of the nature of the growth factor-receptor interactions.
- Purification and screening of potential growth factor agonist and antagonist molecules.
- Studies on the biological activities of growth factors and growth factor analogs and their potential application in the development of new therapeutic agents.

Fellowships are tenable for a period of two years with possible renewal for a third year. We are especially interested in candidates with experience in protein purification and with a strong background in enzymology and protein structure/function relationships.

Qualified candidates should submit their curriculum vitae, and the names of two references to Chiron Postdoctoral Program in Protein Chemistry, Chiron Corporation 4560 Horton Street, Emeryville, CA 94608.

Senior Research Microbiologist/ Research Fellow

The Merck Sharp and Dohme Research Laboratories' Culture Collection has an immediate opening for a bacterial systematist or ecologist with an interest in developing methods of isolating different groups of bacteria from nature. This individual will also be responsible for identification of strains of interest to the Company and for maintaining the collection of bacterial strains. Experience in molecular taxonomy and/or taxonomy actinomycetes is desired. A Ph.D or equivalent is required. Candidates with post-doctoral experience and a publication record will be given preference.

Merck Sharp and Dohme Research Laboratories are located in Rahway, NJ, approximately 25 miles from New York City. Our salaries, benefits, and growth potential are excellent. Interested candidates should submit their curriculum vitae, three letters of reference, and salary requirements to **Ms. Dolores Barefield, Merck Sharp and Dohme Research Laboratories, P.O. Box 2000, WBD-362, Rahway, NJ 07065.** An Equal Opportunity Employer, M/F/V/H.



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Around the globe, Anheuser-Busch continues its lead as the world's largest brewer. A lead that's resulted from a firm commitment to quality—in all we do.

As a Fortune 50 company, we offer you a challenging environment. Plus the benefits of working for an established corporation that's setting new standards for excellence.

Work with the best in the business by considering the following opportunity:

Plant Tissue Culture Specialist

Anheuser-Busch has an opening in our Corporate Research and Development Department.

You will be responsible for establishing and operating an in-house Plant Tissue Culture Laboratory. You will research and develop new tissue culture techniques and their agricultural applications, oversee tissue culture projects in outside labs and develop proposals for new projects.

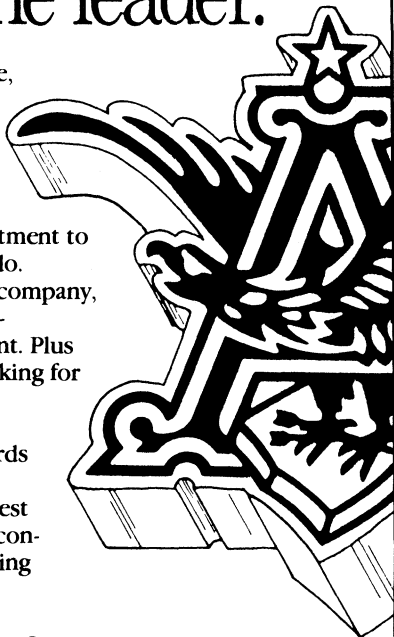
To qualify, you must have a Ph.D. in Plant Biology or a related area, or an MS with at least 2 years' experience. Previous work with cereal tissue culture and the ability to work in a team environment are required. In addition, experience in an industrial setting, a working knowledge of plant breeding and tissue culture experience with a variety of plant species would be pluses.

Join the leaders at Anheuser-Busch. Send your resume to: **ANHEUSER-BUSCH COMPANIES; Corporate Employment; Department A-61-JM-134; One Busch Place; St. Louis, MO 63118.** Equal Opportunity Employer M/F.



**ANHEUSER-BUSCH
COMPANIES**

Being the best begins with you.



The Research Division of W.R. Grace & Co., a Fortune 100 company and the world's largest specialty chemical company, has exceptional opportunities in its biotechnology research programs for Ph.D. and BS/MS degreed scientists in Microbiology and Molecular Biology.

MICROBIOLOGIST

This position requires an individual with exceptionally broad experience and skills in microbiology. Project assignments will be varied and could range from mutation, selection, characterization and manipulation of wild-type bacteria, yeasts and fungi isolated from a variety of sources through studies of microbial metabolism, fermentation optimization, and the development of recombinant micro-organisms for the production of target proteins. The successful candidate will also participate in technology transfer to development groups and collaborations with operating divisions within Grace to solve problems and assist in new technology development.

MOLECULAR BIOLOGISTS

Scientists will conduct research in the application of recombinant DNA, microbial genetics and biochemistry for the production of therapeutic, biocatalytic or functional proteins. These positions require a B.S. or M.S. degree in the Biological Sciences and experience in the construction of recombinant plasmids and the expression of cloned DNA sequences.

Projects will be multidisciplinary collaborative efforts which require scientists with a high degree of self-motivation, excellent communication skills and the ability to work as part of a large team.

Grace offers an attractive salary, an excellent benefits program and a rewarding, growth-oriented career. We actively encourage the publication of technical papers. We are located in the picturesque community of Columbia, Maryland, close to both Baltimore and Washington, DC.

Please send your resume, in confidence, including salary history to:

**Manager, Employment
Dept. Code BR
W.R. GRACE & CO.-Conn.
7379 Route 32
Columbia, MD 21044**

GRACE

An International specialty chemical company with selected interest in energy, manufacturing and service businesses.

An Equal Opportunity Employer M/F/H/V

POSITIONS OPEN

ASSISTANT PROFESSOR—PHYSIOLOGY

The Department of Physiology, School of Medicine, University of Ottawa, invites applications for a vacant tenure-track position. An opportunity also exists for a candidate to compete for a research scholarship to be held in this department (e.g. MRC). Candidates should have an M.D. and/or Ph.D. degree, with several years of postdoctoral experience. The development of an independent, funded research program and participation in graduate and undergraduate teaching are expected. For one of these positions, preference will be given to a candidate working in neurophysiology or a related area. Ability to teach in French would be an advantage. Submit by 1 June 1989, curriculum vitae, summary of research plan and names and addresses of three referees to: **Dr. K. C. Marshall, Chairman, Department of Physiology, Health Sciences Building, 451 Smyth Road, Ottawa, Ontario K1H 8M5.** Canadian immigration policy requires that priority be given to Canadian citizens and permanent residents.

ASSOCIATE PROFESSOR IN COGNITIVE NEUROSCIENCE. The Biological Psychology Ph.D. Program and the Oklahoma Center for Alcohol and Drug-Related Studies is seeking applicants for a tenure-track faculty position for a starting date as early as 1 September 1989. The successful candidate will be proficient both in cognitive psychology/human performance and in either CNS electrophysiology or human neuropsychology. Salary, fringe benefits, and research support will be commensurate with candidate's experience. Applications will be reviewed beginning 1 May 1989 and will be considered until the position is filled. Interested applicants should send a letter of interest, curriculum vitae, and the names and addresses of three references to: **Frank A. Holloway, Ph.D., Chair, Search Committee, University of Oklahoma Health Sciences Center, Research Building, Room 306-R, P.O. Box 26901, Oklahoma City, OK 73190. Telephone: 405-271-2011.** The University of Oklahoma is an Equal Opportunity/Affirmative Action Employer.

ASSOCIATE IN RESEARCH DEPARTMENT OF SURGERY HARVARD MEDICAL SCHOOL AND BRIGHAM AND WOMEN'S HOSPITAL BOSTON, MASSACHUSETTS

Division of Cardiac Surgery at Harvard Medical School and Brigham and Women's Hospital has an opening for a research associate in cardiac surgical research. Applicant should have experience with in vivo and in vitro experimentation, chronic animal preparations and basic cardiac research techniques including isotopic blood flow measurement, cardiac biochemistry and ultrasonic crystals. Candidate should have a Ph.D. or M.D./Ph.D. in cardiovascular physiology, pathology, or related field and capacity for interdisciplinary research and growth. Please send résumé and references to:

Lawrence H. Cohn, M.D.
Chief, Division of Cardiac Surgery
Brigham and Women's Hospital
75 Francis Street
Boston, MA 02115

BIOCHEMIST/BIOCHEMICAL TOXICOLOGIST. The U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Great Lakes Environmental Research Laboratory, Ann Arbor, Michigan seeks a biochemist with a strong background in aquatic toxicology for research on mechanisms of toxic action and connections between organisms physiology and toxic effects of contaminants on aquatic organisms. Candidates should have proven research experience in the biochemistry of aquatic organisms or biochemical toxicology. This research is part of a coordinated program on organic contaminant cycling and effects in the Great Lakes and coastal ecosystems. The position is a permanent Civil Service position (GS-12) with a starting salary of \$34,580. Successful candidates must have a Ph.D. and U.S. citizenship. Submit an SF-171 and a copy of transcripts by 28 April 1989 to: **Department of Commerce, Central Administrative Support Center, Attention: Mr. Andrew Hicks, Room 1749 CC22, 601 East 12th Street, Kansas City, MO 64105.** Technical information may be obtained from: **Dr. Peter Landrum; telephone: 313-668-2276.** U.S. Government is an Equal Opportunity Employer.

POSITIONS OPEN

ASSOCIATE IN CLINICAL RESEARCH DEPARTMENT OF SURGERY BRIGHAM AND WOMEN'S HOSPITAL BOSTON, MASSACHUSETTS

Division of Cardiac Surgery at Harvard Medical School and Brigham and Women's Hospital has an opening for a clinical research associate. Applicant should have experience with data entry, and basic programming skills to head up large data bank for coronary artery surgery. Excellent wages and benefits.

Send résumé to:

Lawrence H. Cohn, M.D.
Chief, Division of Cardiac Surgery
Brigham and Women's Hospital
75 Francis Street
Boston, MA 02115

BIOLOGIST to engage in research related to study of human immune system. Requirements include: Ph.D. in biology plus 3 years of experience in cloning of genes, performing of molecular assays, biochemistry of SIRS, cell culture of SIRS producing cell lines, isolations and purification of SIRS messenger RNA, translation of RNA in cell free translation systems, and analysis of the products by SDS-polyacrylamide gel electrophoresis. \$42,500 per year. Place of employment/job interview: Palo Alto, California. Send this ad with résumé to: **Job No. CMO844, P.O. Box 9560, Sacramento, CA 95823-0560** not later than 14 April 1989.

BIOLOGY: ASSISTANT PROFESSOR, TENURE-TRACK position. September 1989. Teach general biology, anatomy/physiology and embryology with emphasis on laboratory. Appreciation of the liberal arts philosophy is important. Interest in interdisciplinary activities, student advising, and faculty committee work is expected. Ph.D. preferred. Send curriculum vitae and three letters of reference by 15 April 1989, to: **Dr. L. N. Stauffer, Chairman, Department of Biology, Drury College, Springfield, MO 65802.**

BIOLOGY—WOMEN'S STUDIES. The Department of Biological Sciences and the Women's Studies Center at Florida International University will make a tenure-earning joint appointment in a field of biology relevant to women's studies. The position will begin in the fall semester, 1989. Candidates should have demonstrated ability in teaching and research and a record of scientific publications in areas of interest to women's studies. The successful candidate will teach courses for both areas and develop a strong research program. Candidates whose research enhances one or more areas of departmental strength (marine, molecular, human or tropical biology; ecology; microbiology) are strongly encouraged to apply, although promising individuals in other areas of biology will be seriously considered. Applicants should submit curriculum vitae, letter of application, and names and addresses of three references by 20 April 1989, to: **Marilyn Hoder-Salmon, Director, Women's Studies Center, Florida International University, University Park, Miami, FL 33199.** The State University System of Florida is an Affirmative Action/Equal Opportunity Employer.

CURATOR OF BOTANY

The Field Museum of Natural History seeks an outstanding scientist for a career-track position as Assistant Curator of Botany. Applicants should currently hold a Ph.D. in botany with an emphasis in angiosperm systematics. Duties will consist of an active program of original research, curatorial responsibilities, supervision of supporting staff and administration. Ability to obtain grant support for research programs and collection facilities is desirable. The botanical holdings of the Field Museum contain one of the richest collections of Neotropical plants in the world. Candidates whose research activities can add to, and make use of, our unique collection resources will be given special consideration. Technical facilities include SEM, computer center, library and biochemical systematics laboratory. Please send by 15 May 1989, curriculum vitae, copies of available publications, a statement of research objectives, and three letters of recommendation to: **Dr. Michael Dillon, Chairman, Search Committee, Department of Botany, Field Museum of Natural History, Roosevelt Road at Lake Shore Drive, Chicago, IL 60605-2496.** The Field Museum of Natural History is an Equal Opportunity Employer.

POSITIONS OPEN

BIOLOGICAL PHYSICS CORNELL UNIVERSITY

SENIOR RESEARCH ASSOCIATE for position as supervising scientist for the Developmental Resource for Biophysical Imaging and Opto-electronics. Will have operating responsibility for the resource laboratories and ample opportunities for research applying modern physical optics to the molecular biophysics of cellular dynamics. Current emphasis on electro-optical microscopic image acquisition, digital image analysis, non-linear optics, photolysis and fluorescence photochemistry, confocal imaging, picometer imaging interferometry. Ph.D. in experimental biophysics, optical or chemical physics or biophysical chemistry should be appropriate. This position carries laboratory management responsibility as well as research opportunity for interdisciplinary research with collaborating biophysicists and biologists. Some postdoctoral experience desirable.

A **POSTDOCTORAL RESEARCH ASSOCIATE** position is also available in the Developmental Resource for Biophysical Imaging and Opto-electronics for research, innovative biophysical instrumentation development and opportunities for interdisciplinary research in molecular and cellular biophysics.

Send résumé, statement of research interests, names of three referees or letters of recommendation to: **Professor Watt W. Webb, Cornell University, Applied and Engineering Physics, Clark Hall, Ithaca, NY 14853-2501.** Cornell University is an Equal Opportunity/Affirmative Action Employer.

BIOLOGY: One-year **SABBATICAL LEAVE REPLACEMENT** position available in a career-oriented, liberal arts college that emphasizes teaching. Teaching assignment includes a general biology course for majors and courses in genetics and evolution. Position available 20 August 1989. Send curriculum vitae and three letters of recommendation by 14 April 1989 to:

Dr. Donald Troike, Chair
Department of Biology
Wilmington College
Wilmington, OH 45177

TEMPLE UNIVERSITY SCHOOL OF MEDICINE CHAIRMAN, DEPARTMENT OF BIOCHEMISTRY

Applications or nominations are invited for the Chair of the Department of Biochemistry. Candidates should have proven leadership ability and must be nationally recognized for their scientific contributions to biochemistry or related fields. The successful candidate must have demonstrated interest and ability in effective teaching and the capability of providing the administrative leadership to continue and extend the department's established strengths in research, teaching and service. An excellent opportunity exists to expand an already strong department and to interact with the newly expanded Fels Research Institute for Molecular Biology and Cancer Research.

Applications will be accepted until 1 May 1989 and should include curriculum vitae, a summary of current research, copies of representative publications, a description of teaching and administrative experience and the names, addresses, and telephone numbers of three or more references. Mail applications to:

Dr. John O'Neal
Chair of the Search Committee
Department of Pharmacology
Temple University School of Medicine
3400 North Broad Street
Philadelphia, PA 19140

Affirmative Action/Equal Opportunity Employer.

National Park Service, Indiana Dunes National Lakeshore, Porter, Indiana, invites applications for **CHIEF SCIENTIST.** Incumbent is responsible for all park research activities in the fields of geology, soil science, hydrology, air quality, zoology, botany, and fire ecology as well as personnel and administrative matters of the division. Also, conducts studies in own area of expertise. Must be a U.S. citizen. Ph.D. or equivalent combination of professional experience and graduate education required in the major areas of ecological inquiry. Salary commensurate with experience. Further details from: **Glen Alexander, Indiana Dunes. Telephone: 219-926-7561, extension 411.** The National Park Service is an Equal Opportunity/Affirmative Action Employer.

ST. JOHN'S UNIVERSITY NEW YORK

Faculty Position Toxicology/Pharmacology

ASSISTANT/ASSOCIATE PROFESSOR. Candidate should have Ph.D. and post-doctoral experience in Toxicology, Pharmacology, or a related field. Responsibilities will include undergraduate and graduate teaching, training graduate students, and the development of a strong research program capable of attracting extramural funds. Current faculty interests encompass neurotoxicology, pulmonary toxicology, renal toxicology, carcinogenesis, drug metabolism, and clinical and forensic toxicology.

We are located on a 100-acre campus in a residential area of Queens, with access to Manhattan (20 min.) by subway or train. Application letters with curriculum vitae, statement of research interests, and names of three references should be sent to:

**Dr. Amrit Kapoor, Professor and Chairman
Dept. Pharmaceutical Sciences
St. John's University, Jamaica, NY 11439**

*St. John's is an equal opportunity employer
M/F*

SENIOR RESEARCH SCIENTIST BIOCHEMISTRY/IMMUNOLOGY ImmunoTherapeutics

is seeking a Ph.D. level individual with experience in biochemistry/immunology and cell biology. The individual must have a strong background in biochemistry. The ideal candidate would have experience in one or more of the following areas: *in vitro* lymphocyte and macrophage function studies, lymphocyte receptor/membrane biochemistry, or tumor immunology (*in vitro* or *in vivo*). The individual will be responsible for biological and immunological evaluations of biological response modifiers, and for immunological monitoring of programs related to clinical studies. Previous experience in clinical studies or FDA related matters would be extremely useful.

ITI is a public biotechnology company involved in the research and development of human pharmaceuticals for cancer therapy. Please send curriculum vitae and name of three references to Gerald Vosika, M.D., chairman and president, ImmunoTherapeutics Inc., 509 - 25th Avenue North, Fargo, ND 58102. ITI is an equal opportunity employer.



IMMUNOTHERAPEUTICS INC.™

PROJECT MANAGER

■ Land and Water Quality Studies

EPRI, on the San Francisco Peninsula, an R&D firm chartered to provide research and development for all segments of the U.S. electric utility industry, seeks a senior-level professional to initiate and manage technical, financial and administrative aspects of research contracts to ensure delivery of quality R&D products in a timely manner. You will develop concepts and ideas, prioritize industry needs and implement research projects, as well as participate in technology transfer efforts and interact with utilities, government agencies, universities and other R&D organizations.

Qualified candidates will have a PhD in Earth Sciences (soil science, geology, environmental science, hydrology, water resources) or the equivalent, at least 5 years' related experience, excellent communication/marketing skills and the ability to work independently.

EPRI offers a stimulating environment, competitive salaries and comprehensive benefits. For immediate consideration, please send your resume, including salary requirements, to D. Staten, Human Resources Division, Dept. SCI, EPRI, 3412 Hillview Ave., P.O. Box 10412, Palo Alto, CA 94303. An equal opportunity employer.

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RESEARCH INSTITUTE

Plant Cell Biologist Research Scientist

Du Pont's Agricultural Products Department is seeking an accomplished Plant Cell Biologist to be part of a maize cell culture and transformation group in its Biotechnology Division.

The individual will join a multidisciplinary team engaged in innovative research focused on crop improvement through biotechnology. The ideal candidate will have a strong background in maize tissue culture and considerable experience with transformation techniques. Additional skills in molecular analysis of transgenic plants are desirable but not essential. A minimum of a Ph.D. with post-doctoral training or an M.S. with equivalent experience is desired.

At Du Pont you'll find a stimulating scientific environment in a modern research facility located near Wilmington, DE. Our Mid-Atlantic location offers a wide range of academic, cultural and recreational activities. Please send a curriculum vitae to **Professional Staffing, Employee Relations Department, Du Pont Company, Room X-51645, Wilmington, DE 19898.**



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U.S. Citizenship or Permanent Visa Required*

FACULTY POSITION IN PHYSIOLOGY

The Department of Physiology at Temple University School of Medicine invites applications for a tenure-track appointment at the ASSISTANT PROFESSOR level. Qualifications for the position include an M.D. or a Ph.D. degree with postdoctoral experience.

The applicant will be expected to develop an active independent research program supported by extramural funding and to contribute to the teaching programs of the department. All areas of research interest will be considered. Salary is commensurate with experience. Applicants should send curriculum vitae, description of research activities and the names and addresses of

three references to: **Dr. James P. Ryan, Chairman of Search Committee, Dept. of Physiology, TEMPLE UNIVERSITY SCHOOL OF MEDICINE, 3401 N. Broad Street, Philadelphia, PA 19140.**



**TEMPLE
UNIVERSITY**

Temple is an affirmative action, equal opportunity employer.

Board of the Swiss Federal
Institutes of Technology

Paul-Scherrer-Institute,
Villigen/Würenlingen, Switzerland

DIRECTOR

Applications are invited for the position of Director of the Paul-Scherrer-Institute (PSI) in Würenlingen/Villigen, Switzerland.

The PSI is a federal multidisciplinary research organization (1000 employees) that conducts research in elementary-particle and nuclear physics, solid-state physics, life science, and energy engineering, both nuclear and non-nuclear. It develops and operates advanced research facilities in support of Swiss universities and international research organizations.

The Director is responsible for the scientific, technical and administrative management of the PSI, and normally assumes auxiliary duties on the faculty of the Swiss Federal Institute of Technology in Zürich or the Swiss Federal Institute of Technology in Lausanne.

Candidates for the position of Director should have a strong record of leadership in either a university or an industrial environment. They should also hold an advanced degree, have demonstrated competence in physical, chemical, biological or engineering research, and be reasonably fluent in German, French and English.

The new Director is expected to assume his or her duties in spring, 1990. Applications should be submitted by May 31, 1989, to the President of the Board of the Swiss Federal Institutes of Technology, ETH-Zentrum, CH-8092 Zürich, Switzerland.



Aquatic Ecotoxicologist

The Agricultural Division of CIBA-GEIGY is a world leader in the development, manufacture and marketing of a wide variety of crop protection and animal health products. We have an immediate opening for a qualified Aquatic Ecotoxicologist in our Greensboro, NC headquarters.

As a member of our Toxicology Department you will be contracting and managing laboratory and field aquatic toxicology studies for EPA pesticide registration. To qualify, you should have a PhD in aquatic ecology or related discipline and 3 years of experience, or an MS and 6 years experience.

The position provides an exceptional opportunity for deep involvement in state-of-the-art research with a responsible company, fully committed to the high priority of ecological protection.

CIBA-GEIGY offers a competitive salary, a generous benefit program, plus career support and advancement opportunity in a challenging professional environment. Please send resume, in confidence, with salary requirement to: **Site Personnel, CIBA-GEIGY Corporation, P.O. Box 18300, Greensboro, North Carolina 27419-8300.** We Are An Equal Opportunity Employer M/F/H/V.

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NEUROSCIENTISTS

Committed To
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Excellence

The Sterling Research Group, the worldwide pharmaceutical research and development organization of Sterling Drug Inc., announces two openings for Sr. Research Scientists in the Pharmacology Department of its Rensselaer, New York facility.

The neurobiology program of Sterling Research Group offers excellent opportunities to participate in challenging, interdisciplinary drug discovery and basic research approaches aimed at identifying novel therapy for psychosis, neurodegenerative diseases, and pain.

ELECTROPHYSIOLOGISTS

An opportunity exists for neuroscientists to employ electrophysiologic techniques to study potential therapeutic and disease mechanisms in CNS disorders. Requirements include a Ph.D. in Neurophysiology, Neuropharmacology, or a related discipline and two or more years of relevant postdoctoral experience. Expertise in both *in vitro* and *in vivo* electrophysiologic techniques is highly desirable.

NEUROBIOLOGISTS

An opportunity also exists for neurobiologists interested in the regulation and modulation of neuronal gene expression as it relates to CNS disorders and potential therapy. Candidates should have a doctoral degree in Neurobiology, Cell Biology, Biochemical Pharmacology, or a related discipline and two or more years of relevant postdoctoral experience.

The Rensselaer facility is located near Albany, New York, which is a center for summer and winter recreational activities. We offer attractive salary and benefit programs and an exciting work environment based on a team approach to research and development.

Please send resume in confidence to: **Jo Ann Fitzgerald, Employee Relations Administrator, STERLING RESEARCH GROUP, A Division of Sterling Drug Inc., 81 Columbia Turnpike, Rensselaer, NY 12144, a subsidiary of the EASTMAN KODAK COMPANY. Equal Opportunity Employer M/F/H/V**



**STERLING
RESEARCH
GROUP**

DIRECTOR, CHEMISTRY DIVISION

The **OFFICE OF NAVAL RESEARCH (ONR)** is seeking an outstanding individual to serve in this Civil Service position in the Senior Executive Service. Salary range is **\$68,700 to \$80,700**, depending on qualifications. In addition to salary, career SES appointees are eligible to compete for performance awards and bonuses.

The Director, Chemistry Division supervises senior Scientific Officers plus support personnel, and is responsible for providing leadership, coordination and direction for the Contract Research Program in chemical sciences. The Division Director is the scientific administrator of ONR R&D activity in the field with full responsibility for staffing his/her program, establishing overall priorities and procedures, and recommending changes in program objectives and policies to the Director, Mathematical and Physical Sciences. The Division Director serves as the principal consultant to the Navy on developing naval applications in chemical science.

Candidates should possess a Ph.D. or equivalent in chemistry or related discipline and significant research experience in at least two of the following areas: physical chemistry, electrochemistry, surface chemistry, solid state chemistry (especially that related to electronics and optics), synthesis, and chemical materials (with emphasis on polymers for structural and electronics application). In addition to an active career in the conduct of research in the relevant areas, direct experience in the management and coordination of large scale research projects is highly desirable.

Interested persons should submit a resume, including a list of publications, and a Standard Form 171, Application for Federal Employment (available at Federal Job Information Centers or from the address below), to:

**Office of the Chief of Naval Research
Civilian Personnel Division, Code 01242P
Attn: Announcement #89-14 (S)
800 North Quincy Street
Arlington, VA 22217-5000**

Applications will be accepted through **June 2, 1989** and must be received by that date. Applicants are requested to complete the appropriate supplemental forms. For further information and supplemental forms, please call **(202) 696-4705**.

U.S. CITIZENSHIP REQUIRED

AN EQUAL OPPORTUNITY EMPLOYER

POSITIONS OPEN

DEPARTMENT HEAD. The Department of Nutritional Sciences at the University of Connecticut, Storrs, invites applications for an anticipated position of Professor and Head. Candidate should have distinguished teaching and research record as the Department has a strong teaching and well-funded interdisciplinary research program. Responsibilities include providing initiative and vision to departmental development and administering teaching, research, and extension programs. Evaluation of the candidates begins 1 May 1989. Please send résumé to: **Lindsay Allen, Ph.D., Chair, Search Committee, Department of Nutritional Sciences, University of Connecticut, Storrs, CT 06269-4017. Telephone: 203-486-3632/3634.** *The University of Connecticut is an Affirmative Action/Equal Opportunity Employer. (Search #9A206).*

HOWARD UNIVERSITY DIRECTOR OF UNIVERSITY LIBRARIES

Applications are now being accepted for this position. Appointment will begin 1 July 1989. Applicants should have: an MLS degree or equivalent from an ALA-accredited institution and a second Master's degree or higher; a doctorate in an academic discipline is desirable; a minimum of 10 years of professional experience, including at least 5 years of administrative experience in a major academic library. Salary will be commensurate with qualifications and experience. Preliminary screening will begin 1 April 1989. Applications and nominations should be sent to: **Dr. William A. Sadler, Chairman, Review and Advisory Committee, Graduate School of Arts and Sciences, Office of the Dean, Howard University, Washington, DC 20059.** Applications must include a current résumé and names, addresses, and telephone numbers of at least three references. To expedite application, three recommendation letters are to be sent directly to the above address. *Howard University is an Affirmative Action/Equal Opportunity Employer.*

ECOTOXICOLOGIST

Exxon Biomedical Sciences, Inc. has an immediate opening for a qualified individual specializing in ecotoxicology and environmental hazard assessment. The successful candidate will have a Ph.D. in ecotoxicology or in an environmentally related field with 0 to 2 years of postdoctoral experience. Experience in or a knowledge of the application of both effects and fate data to real world concerns as well as knowledge of regulatory requirements (TSCA/PMN) would be desired.

Exxon Biomedical Sciences, Inc. performs both consulting and laboratory toxicology for affiliates around the world. Its resources include state-of-the-art aquatic toxicology, environmental chemistry and mammalian toxicology laboratories. The candidate will perform as a study monitor and internal consulting toxicologist. Client interactions are an important aspect of our work, and thus, we are also seeking an individual who has excellent communication skills. Please forward résumé to: **Human Resources:**

Exxon Biomedical Sciences, Inc.
CN 2350, Mettlers Road
East Millstone, NJ 08875-2350
Equal Opportunity Employer M/F/H/V

INSTRUCTOR, nuclear medicine and tumor biologist for a multidisciplinary group to study the case of nonclonal antibodies as carriers of radionuclides for diagnosis and therapy of human cancer and to teach residents. Candidate must demonstrate a commitment to basic research and academic medicine. Must be able to supervise personnel and develop and execute protocols independently. Must have experience in (i) monoclonal antibody production and technology, and tissue culture technique; (ii) use of radioactive materials and radiolabeling procedures; (iii) animal tumor models, animal surgical procedures, and biodistribution techniques including pharmacological and pharmacokinetic studies; (iv) equipment used in the nuclear medicine field; (v) human research protocols and applications. Minimal educational requirements: M.D. degree with 5 years of postdoctoral experience in clinical and basic science research. Salary: \$30,000 per year. Send résumés to: **Massachusetts Department of Employment and Training, Special Program Department, 19 Staniford Street, Boston, MA 02144,** and refer to case number 9609.

POSITIONS OPEN

FACULTY POSITIONS IN PHARMACOLOGY

Applications are invited for two tenure-track positions beginning 1 September 1989. These can be at level of assistant, associate or full professor, depending upon background and experience. Candidates should document experience in the broad area of molecular pharmacology. The positions require Ph.D. degrees, preferably in pharmacology, with proven accomplishments in modern areas of molecular pharmacology. Areas of special interest are receptor structure and function, nucleic acid metabolism, signal transduction, and toxicology.

A clear capability for generating extramural research support and for working as an independent investigator are critical factors in the selection process. Start-up funds are available and salaries are competitive. The successful applicants will participate in the teaching of pharmacology to graduate and medical students.

Please send curriculum vitae, three representative reprints, and the names and addresses of three references to: **Dr. Elliot S. Vesell, Department of Pharmacology, Pennsylvania State University College of Medicine, Hershey, PA 17033.** Deadline for receipt of applications is 15 June 1989.

*An Affirmative Action/Equal Opportunity Employer.
Woman and minorities encouraged to apply.*

FOUNDING FACULTY, SAN MARCOS THE CALIFORNIA STATE UNIVERSITY (CSU)

The Board of Trustees of The CSU invites applications from senior, tenured faculty for tenured appointments, to begin 1 July 1989, as founding faculty for its new campus at San Marcos. The faculty, working with a President to be appointed in 1989, will prepare for accreditation; advise on appointment of Deans, Academic Vice President, and needs for future faculty; design curriculum, organization, and collegial governance; effect transition from off-campus center to full university status; and advance relationships with the community. Candidates will have a record of achievement in teaching and in research, scholarship, or creative activity. *Affirmative Action candidates are especially encouraged.* Positions: Social and behavioral sciences (two from economics, political science, public administration, psychology or sociology); biological sciences (one); physical sciences (one); mathematics (one). Send a letter of application with a statement of interest and qualifications for the position and the scope of work described; curriculum vitae; names, addresses, and telephone numbers of at least three references; and other supporting materials by 14 April 1989 to: **Chair, Search Committee, San Marcos Campus, 800 West Los Vallecitos, San Marcos, CA 92069.** *Equal Opportunity/Affirmative Action, 503/504 Employer.*

IMMUNOLOGIST—The Center for Vaccine Development (CVD), University of Maryland School of Medicine, in conjunction with the Department of Pediatrics and the Medical Biotechnology Center of the Maryland Biotechnology Institute, seeks a cellular immunologist to conduct research on cell-mediated immune responses in pediatric and adult subjects participating in vaccine evaluation studies. The CVD is a large, multidisciplinary research group which includes expertise in microbiology, immunology, molecular biology, epidemiology, parasitology, entomology and clinical vaccinology. Vaccines are currently being developed and evaluated against a variety of diseases including cholera, *E. coli* diarrhea, typhoid, shigellosis, malaria, and AIDS. The Medical Biotechnology Center offers a creative and challenging scientific environment with considerable opportunity for interaction and collaboration with cellular and molecular biologists representing a diversity of interests.

Applicants must possess M.D., M.D./Ph.D. or Ph.D. degrees with demonstrated experience in cellular immunology techniques. Preference will be given to M.D. applicants with training in pediatrics but qualified individuals with a Ph.D. will also be considered. The position will carry the assistant or associate professor academic rank in the Department of Pediatrics and an appointment in the Medical Biotechnology Center of the Maryland Biotechnology Institute.

Applicants should send curriculum vitae, names of at least three referees, and a description of past research accomplishments and future plans to: **Dr. Robert Edelman, Center for Vaccine Development, University of Maryland School of Medicine, Baltimore, MD 21201.** *An Affirmative Action/Equal Opportunity Employer.*

POSITIONS OPEN

GENETICS APPLICATIONS COMPUTER PROGRAMMER

Opportunity to become involved in Human Genome Initiative and help develop systems for data analysis and integration of data sets at the Center for Genetics in Medicine. Major responsibility will be construction of genetic linkage maps of human chromosomes. Will work directly with laboratory head and other laboratory members and interact on a collaborative basis with members of Genetics Department, Biomedical Computer Laboratory and Computer Science Department.

Qualifications: Masters or equivalent experience in either computer science/mathematics with some genetics background or major strength in biology/genetics with exceptional skills in mathematics and programming. Experience in developing programs in C language required. Familiarity with SUN360 and SYBASE desirable. Course work in statistics and basic probability theory as well as intermediate calculus and biology required. Salary: Commensurate with experience. Send curriculum vitae to:

Dr. Helen Donis-Keller
Professor, Genetics Department
Washington University Medical School
Box 8031,
St. Louis, MO 63110

*Washington University is an Equal Opportunity/
Affirmative Action Employer.*

IMAGING FACULTY POSITION UNIVERSITY OF MARYLAND AT BALTIMORE SCHOOL OF MEDICINE AND MEDICAL BIOTECHNOLOGY CENTER

A new faculty position is available for individuals with research interest in fluorescence microscopy, video enhanced microscopy, and/or bioimaging. Individuals with other imaging expertise are also welcome to apply. The faculty appointment can be at any level from tenure-track assistant professor to tenured full professor. The research emphasis can range from cell biology to technological development. Applicants must have a Ph.D. or M.D. Individuals seeking the position at the assistant professor level must have at least 2 years of postdoctoral experience and the potential to establish a strong and independent research program. Please send curriculum vitae, statement of research interests, reprints of key publications and names of three references by 29 April 1989. Please send applications or letters of interest or inquiry to:

W. J. Lederer, M.D., Ph.D., Chair
Imaging Search Committee
Department of Physiology
University of Maryland School of Medicine
655 West Baltimore Street
Baltimore, MD 21201

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

UNIVERSITY OF ZURICH, SWITZERLAND POSTDOCTORAL FELLOWSHIP IN MOLECULAR BIOLOGY

An enthusiastic postdoctoral scientist preferably with experience in the areas of cloning, gene transfer or site-directed mutagenesis, is required to join a multi-disciplinary team actively involved in research on chemically gated ion channels in the central nervous system [see *Proc. Natl. Acad. Sci.* **85**, 7815 (1988)]. The current project aims to study the role of the GABA-receptor in regulating anxiety, vigilance and epileptic seizures. Investigation will focus on the structural heterogeneity, functional divergence and regulation of gene expression of this receptor family in normal and diseased brain. Applicants for the 3-year post, now available, should send curriculum vitae, list of publications, and the names of three referees to: **Professor H. Mohler, Neuroscience Department, Gloriast. 32, CH 8006 Zurich, Switzerland.**

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Rated for the third consecutive year by Fortune Magazine as the "most admired" corporation in the US, Merck & Co., Inc offers an outstanding environment for growth. Our Research Laboratories in Rahway, New Jersey have exciting opportunities immediately available to qualified individuals.

SENIOR BIOCHEMIST

Applicants will have a Ph.D. in molecular genetics or an appropriate area of biochemistry, with at least 2 years of postdoctoral experience in molecular biology/genetics. Candidates must be able to perform all fundamental molecular genetic techniques such as DNA isolation and cloning, restriction mapping, plasmid and phage library construction, the use of radioactive probes in nucleic acid blotting and library screening, and the design and construction of prokaryotic and eukaryotic expression vectors. In addition, special attention will be given to those candidates with experience in receptor cloning and expression. The position is in the newly formed Biophysical Chemistry Department and offers close association with x-ray crystallographers and protein nmr spectroscopists with goals toward structural understanding of receptor antagonism and enzyme inhibition. The long term objectives of this department are focused on rational drug design.

JUNIOR BIOCHEMIST

The research scientist we seek will possess a BS/MS in molecular genetics or an appropriate area of biochemistry and several years experience in at least three of the following: cDNA cloning and library construction, DNA sequencing, plasmid vector construction, mRNA analysis, mammalian cell culture, expression cloning and protein purification. Experience in yeast or E. coli fermentation would be considered a valuable asset.

Merck Sharp & Dohme Research Laboratories are located in Rahway, New Jersey approximately 25 miles from New York City. Our salaries, benefits and growth potential are excellent. Interested candidates should submit their curriculum vitae with names of three references and salary requirements to: **Ms. Lonnie Deetz, R80M-TL1, Merck & Co., Inc., P.O. Box 2000, Rahway, NJ 07065.**

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Merck & Co., Inc.

POSTDOCTORAL POSITIONS IN IMMUNOPHARMACOLOGY

H

offmann-La Roche, a research-intensive pharmaceutical company located in suburban New Jersey, 12 miles from New York City, is seeking four Research Associates (Postdoctoral Fellows) to pursue research related to immune regulation in its Immunopharmacology Program.

CELLULAR IMMUNOLOGISTS (2 positions)

1) Research will focus on establishing a chimeric human-mouse model immune system by the reconstitution of human immune cells in immunodeficient mice. Emphasis will be on characterizing B and T cell functions; evaluating antigenicity and efficacy of various lymphokines and monoclonal antibodies; and developing human monoclonal antibodies in the chimeric model. A PhD in Immunology or a related discipline and some experience with *in vitro* and *in vivo* immunological assays are required. **Please refer to Position JH on resume.**

2) Research will focus in the area of autoimmunity, and will involve studies of a novel lymphocyte, the CD5+ B cell. Murine models of autoimmunity, such as the NZB strain which has elevated numbers of CD5+ B cells (Ly1+B), as well as human CD5+ B cells will be analyzed. The purpose of these studies will be to determine the role of these unique lymphocytes in both the development and regulation of autoimmunity; experiments will be at both the cellular and the molecular levels. A PhD in Immunology or a related discipline is required. **Please refer to Position ER on resume.**

CELLULAR/MOLECULAR BIOLOGIST OR BIOCHEMIST

You will participate in a multi-disciplinary program involved with the role of interleukin-1 and interleukin-1 receptor interactions in inflammation and immune regulation. You will conduct independent, basic research, and should have good training in membrane and receptor biochemistry, signal transduction, protein chemistry or molecular biology. A PhD is required; experience in immunology is desirable. **Please refer to Position PK on resume.**

MOLECULAR IMMUNOLOGIST

Joining a multi-disciplinary team of Immunologists, Protein Chemists and Molecular Biologists, you will perform research on the identification, cloning and characterization of a novel cytokine which synergizes with IL-2 to facilitate cytolytic lymphocyte responses *in vitro*. A PhD in Immunology or a related discipline, and some experience in molecular biological techniques are required. **Please refer to Position MG on resume.**

These immediate positions offer the opportunity to conduct basic research while interacting with colleagues skilled in translating the results of research into therapeutic approaches. Publication of results is encouraged.

For immediate consideration, please send your curriculum vitae, the names of three references, and the code for the position of interest, to: **Dr. William Benjamin, Research Leader of Immunopharmacology, Roche Research Center, Hoffmann-La Roche Inc., Nutley, New Jersey 07110.** We are an equal opportunity employer.

ROCHE

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POSITIONS OPEN

MOLECULAR BIOLOGIST

Two postdoctoral positions—nucleic acids experience required. (i) Work with gene transfer, regulated expression, CIS and trans-acting factors regulating genes for steroidogenic enzymes. (ii) Work with bacterial and yeast expression systems, maximizing expression, purifying and characterizing expressed products. Send curriculum vitae and letters of reference to: **Dr. Walter L. Miller, Laboratory of Molecular Biology, Room 677-S, University of California, San Francisco, CA 94143-0434.**

MOLECULAR GENETICIST to establish a new laboratory in our Department of Genetics. The successful candidate will be expected to develop a strong independent research program and will have opportunities to collaborate in ongoing research involving human subjects and our unique pedigreed colonies of 3,000 baboons and 1,200 marsupials. Major projects involve comparative gene mapping, genetic/dietary interactions in relation to lipoproteins and atherosclerosis, gene regulation in relation to hypertension-induced cardiac hypertrophy, genetics and gene regulation in relation to alcohol metabolism, X-chromosome inactivation, and primate evolution and speciation. This is an excellent opportunity for a creative scientist in a young expanding department. Salary and rank will be commensurate with experience. Please mail résumé, statement of research interests and names, addresses, and telephone numbers of three references to: **Personnel Director (15), Southwest Foundation for Biomedical Research, P.O. Box 28147, San Antonio, TX 78284. Equal Opportunity Employer M/F.**

POSTDOCTORAL POSITIONS available to conduct research on RFLP analysis of corn and other cereal crops. Applicants should have experience with standard molecular biology techniques. Candidates with a Ph.D. in molecular biology, genetics or plant breeding are encouraged to apply. Please send résumé and transcripts to: **Sybil Paul, Department of Agronomy, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061. Telephone: 703-231-6300. VPI&SU is an Equal Opportunity/Affirmative Action Employer.**

POSITIONS OPEN

NEUROCHEMIST—Study neuroendocrine homeostasis of neuropeptides and classical neurotransmitters in multiple transmitter systems. Evaluate biological model systems including chromaffin cells in primary culture and the electromotor system of "Narcine brasiliensis". Ph.D. in biochemistry or biochemical pharmacology and 2 years of experience in neuropeptide research required. Prior research in biogenic amines and neuropeptides in cotransmitter systems. \$32,800 per year. Submit curriculum vitae to: **Philadelphia Job Bank, 444 North 3rd Street, 3rd Floor, Philadelphia, PA 19123. Refer to #4237122.**

PHARMACOLOGIST (RESEARCH SCIENTIST)—High-level research to optimize stability and quality of products. Study bioavailability problem for new drugs based upon application of physical pharmacy concepts and pharmacokinetic principles, utilizing HPLC, x-ray diffractometer, IR, DSC, and knowledge of in vitro irritation evaluation techniques. Formulate and characterize various new drug delivery systems. Ph.D. in pharmaceuticals with 1 year of experience in job offered or 1 year of experience in research in transepidermal water loss and skin responses to ultraviolet radiation. Must have coursework in chemical kinetics and mechanisms, drug delivery and principles of chemical thermodynamics. Forty hours per week. \$47,600 per year. Send résumé to: **J.O. #0100178, NYS Job Service, 68 West Huron Street, Buffalo, NY 14202.**

POSTDOCTORAL POSITION: Dana-Farber Cancer Institute and Harvard Medical School. A position is available in the summer/fall of 1989 for a Ph.D. to participate in studies of the regulation of gene expression during the differentiation of embryonic teratocarcinoma stem cells induced by retinoic acid. Experience in molecular biology and/or biochemistry is required. The fellow will also have an appointment in the Department of Biological Chemistry and Molecular Pharmacology at Harvard Medical School. Please send curriculum vitae and the names of three references to: **Dr. Lorraine Gudas, Associate Professor, Dana-Farber Cancer Institute, 830D, 44 Binney Street, Boston, MA 02115. An Equal Opportunity Employer.**

POSITIONS OPEN

POSTDOCTORAL FELLOW positions available in the area of molecular structure-function correlations in pancreatic enzymes. Candidates should have a Ph.D. degree and experience in genetic engineering, site-directed mutagenesis, DNA sequencing, expression systems, and kinetic measurements of enzyme actions. Applications including curriculum vitae, bibliography, two letters of recommendation, and names of two additional references should be sent to: **Dr. George Scheele, Laboratory of Cell and Molecular Biology, Beth Israel Hospital and Harvard Medical School, 333 Brookline Avenue, Boston, MA 02215.**

POSTDOCTORAL FELLOW—Two positions available immediately to study the role of human breast epithelial stem cells in carcinogenesis, and the molecular/biochemical mechanisms of gap junctional intercellular communication in chemical toxicology/carcinogenesis. Experience in in vitro cell biology, biochemistry and/or molecular biology required. Salary initially \$20,000. Position available for 2 to 3 years. Send résumé and names of three references to: **Dr. James Trosko or Dr. Chia-cheng Chang, Department of Pediatrics/Human Development, B 240 Life Sciences, Michigan State University, East Lansing, MI 48824-1317. MSU is an Affirmative Action/Equal Opportunity Institution.**

POSTDOCTORAL MOLECULAR BIOLOGIST with the USDA, Agricultural Research Service, to study the genetics of honey bees, including developing DNA fingerprinting and studying differential expression of genes by cDNA library screening. Training in molecular biology is required. Skill in electrophoresis, Southern blots, and cDNA library screening is desirable. GS11/12 (\$28,852 to \$34,580 per year); a 2-year assignment with a possible extension. *Qualified minority applicants are particularly encouraged to apply.* For information and forms contact: **Dr. H. A. Sylvester, USDA, ARS, Honey-Bee Breeding, Genetics and Physiology Laboratory, 1157 Ben Hur Road, Baton Rouge, LA 70820. Telephone: 504-766-6064. USDA, ARS is an Equal Opportunity Employer. Applications should refer to Announcement #S-9-005 and be received by 21 April 1989.**

MOLECULAR MODELING SCIENTIST

Welcome to a world of outstanding opportunities

RHÔNE-POULENC SANTE, one of the top three European pharmaceutical groups, is seeking for its research center CAMD Department a Molecular Graphics Scientist who will be responsible for chemical research topics in medicinal chemistry.

The applicant must hold a Ph.D and have a significant accomplishment including theoretical chemistry and molecular modeling in small organic compounds with 2 or 3 years' experience.

Familiar with computers will be a great advantage. Excellent knowledge of spoken and written English is required.

The post is located near by Paris (France).

Please, send your full resume under ref. 49760 to Media System, 6/8 Impasse des 2 Cousins, 75649 Paris Cedex 17, France.



UNIVERSITY OF GUELPH

DEAN, ONTARIO AGRICULTURAL COLLEGE

The University of Guelph invites applications and nominations for the position of Dean of the Ontario Agricultural College. The appointment will commence on July 1, 1990.

The University of Guelph has a special responsibility within the Ontario University system to serve agriculture in the broadest sense. The University is committed to a leadership position in education, research and extension related to the use of the components of the agriculture and food system, whether these be physical, financial or human. We have a major concern regarding the impact of resource use on our environment and on society in general.

One of seven Colleges in the University, the Ontario Agricultural College offers a wide range of undergraduate, graduate and research programs in support of agriculture and has a major commitment to international activities. The College has approximately 180 faculty members in nine academic departments: Agricultural Economics and Business, Animal and Poultry Science, Crop Science, Environmental Biology, Food Science, Horticultural Science, Land Resource Science, Rural Extension Studies, and Landscape Architecture. The College currently enrolls approximately 1,300 students in its undergraduate and diploma programs and 460 students in its M.Sc., M.Agr., M.L.A. and Ph.D. graduate programs. The total annual research budget is in excess of \$22 million.

Applicants should have a proven record of leadership and achievement in education and research and a broad understanding of agriculture as it relates to universities, industry, government and society at large. The appointment as Dean will be for a five year term, renewable for an additional five years, and will include a tenured faculty appointment in an appropriate department. Applications and nominations should be submitted by May 15, 1989 to Dr. J. R. MacDonald, Vice-President, Academic, University of Guelph, Guelph, Ontario, N1G 2W1.

In accordance with Canadian Immigration requirements, priority will be given to Canadian citizens and permanent residents.

The University of Guelph is committed to Employment Equity.

UNIVERSITY of GUELPH

DEPARTMENT OF VETERINARY MICROBIOLOGY AND IMMUNOLOGY

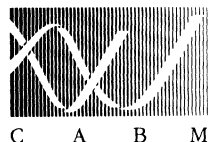
Applications are invited for a tenure track position as assistant professor in veterinary immunology. Responsibilities include supervision of the Clinical Immunology Laboratory of the Veterinary Teaching Hospital, research, and teaching. Research opportunities exist in the fields of immunological diseases and diagnostics with the possibility of collaboration and consultation in production and application of conventional and genetically engineered monoclonal antibodies.

Applicants should have a Ph.D. and preferably a DVM degree with experience in laboratory diagnostics and in monoclonal antibody production. A central interest in diagnostic immunology including both applications and development, is essential.

In accordance with Canadian immigration requirements, priority will be given to Canadian citizens and permanent residents.

Please address enquiries to **Dr. Bruce Wilkie, Chairperson, Department of Veterinary Microbiology and Immunology, Ontario Veterinary College, University of Guelph, Guelph, Ontario, Canada, N1G 2W1**. Applications will be accepted until **May 31, 1989** or until the position is filled. Subject to final budgetary approval.

The University of Guelph is committed to Employment Equity.



C A B M

Postdoctoral positions are now available at the Center for Advanced Biotechnology and Medicine, a newly established molecular biology research program jointly administered by Rutgers University and the University of Medicine and Dentistry of New Jersey

and funded by the N.J. Commission on Science and Technology. Competitive stipends and benefits are provided.

Structural Biology: Three positions examining the molecular basis of cancer. NMR Spectroscopist: to develop 2D- and 3D-heteronuclear experiments to characterize the structure and dynamics of proteins in solution. Theoretical Protein Chemist: to implement and develop methods for determining protein structures from NMR data using distance geometry and conformational energy calculations and to aid in molecular modeling and design of transforming growth factors. Experimental Protein Chemist: to perform NMR structural studies, isotope enrichment, and purification of transforming growth factors and mutant analogs. Send CV, summary of research interests, and names of three references to Dr. Gaetano Montellione.

Molecular Genetics: Two positions in experimental protein design. Mutagenesis approaches will be used to study problems in molecular recognition, especially ligand:receptor and enzyme:substrate interactions. Applicants should have a strong grounding in chemistry, biochemistry, or biophysics and a desire to apply the techniques of molecular genetics to problems in structural biology. Send CV, a short summary of research interests, and names of three references to Dr. Stephen Anderson.

CABM, 875 Hoes Lane, Piscataway, NJ 08854-5635.

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Neuroscientist Pharmaceutical Research

Parke-Davis Pharmaceutical Research Division of Warner-Lambert has an immediate opening for a Neuroscientist in the Pharmacology Department at their Pharmaceutical Research Facility in Ann Arbor, Michigan.

The successful applicant will join an experienced multidisciplinary team of dedicated scientists working on discovery of novel treatments for human cognitive dysfunction including Alzheimer's Disease.

The qualified candidate will have:

- Ph.D. in neuroscience or closely related field with 2-4 years' postdoctoral experience
- Experience with one or more of the following: functional neuroanatomy, generation and use of antibodies for neural targets, assessment of trophic influences on recovery of neural tissue from trauma, cholinergic pharmacology, tissue culture
- Excellent written and oral communication skills
- Ability to work as part of a team

Preference will be given to candidates experienced in the pharmacological assessment of drug action in the central nervous system.

Interested, qualified applicants should send their resume and salary requirements in confidence to: Ms. S. Hultquist, Human Resources Representative, PARKE-DAVIS, 2800 Plymouth Road, Ann Arbor, MI 48105.

PARKE-DAVIS

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GILEAD SCIENCES

Gilead Sciences, a pioneer in the field of genetic targeting, is designing novel compounds that selectively inhibit gene expression for use in human therapeutics. Talented, highly motivated individuals should apply.

Research Scientists - Chemistry

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Ph.D. Molecular and Cellular Biologists with strong nucleic acid-related research experience are sought to study the regulation of cellular and viral gene expression using compounds that interact directly with DNA and RNA. The cellular recognition, uptake and transport of exogenous compounds is also an area of concentration.

Gilead Sciences offers a challenging research environment with excellent salary, benefits and location in the San Francisco Bay Area. Strict confidentiality is assured. Please send C.V. and reference information to: Jeffrey Bird, Ph.D., Gilead Sciences, Inc., 344 Lakeside Drive, Foster City, CA 94404. Please refer to this ad in your correspondence.

POSITIONS OPEN

PLANT NUTRITIONAL/ECOLOGY UNIVERSITY OF CALIFORNIA, DAVIS

The Department of Land, Air, and Water Resources seeks applicants for an 11-month tenure-track teaching and research position in plant nutritional/ecology at the ASSISTANT PROFESSOR level. The appointee will develop an active research program in nutrition of plants in natural or managed ecosystems, emphasizing factor interactions, integration at level of plant-soil system or ecosystem, and stressful soil environments. The appointee is expected to teach an undergraduate course in plant nutrition or soil fertility and a graduate course in plant-soil nutrient relationships. A Ph.D. in plant physiology, plant ecology, soil science or a closely-related field is required. Background in plant nutrition and soil fertility, ecophysiology and/or systems ecology is expected. Modeling skills and knowledge of soil chemistry advantageous. The position commences 1 January 1990. Applicants should submit: a résumé, transcripts, research and teaching statements with background in each, copies of publications and manuscripts and the names and addresses of at least four references to: **Professor D. N. Munns, Plant Nutrition, Search Committee Chair, Department of Land, Air and Water Resources, University of California, Davis, CA 95616.** Applications should be postmarked by 30 June 1989.

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

POSTDOCTORAL POSITION available immediately. Join a multi-University/Pharmaceutical Company Drug Development Group studying substrate and inhibitor specificity of oncogene protein tyrosine kinases. An interest in enzyme regulation, protein biochemistry: (sequencing, purification and characterization) or recombinant DNA techniques is desirable. Starting salary depends on experience. Send curriculum vitae and names of three references to: **Dr. Victor A. Levin, Department of Neuro-Oncology, M. D. Anderson Cancer Center, 1515 Holcombe Boulevard, Houston, TX 77030.** *Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL POSITION IN GENETIC EPIDEMIOLOGY. Immediate opening for an individual with a strong background in quantitative genetics or human population genetics and an interest in genetic mediation of disease susceptibility, to collaborate with investigators in our Population Genetics Laboratory (**Drs. Jean MacCluer, Candace Kammerer, and Bennett Dyke**). Ongoing projects include investigations of genetic factors in atherosclerosis and heart disease (using data from human families and from our pedigreed baboon and marsupial populations), comparative gene mapping, and evaluations of methods of genetic analysis. Please send résumé, statement of research interests, and names, addresses, and telephone numbers of three references to: **Personnel Director (21), Southwest Foundation for Biomedical Research, P.O. Box 28147, San Antonio, TX 78284.** *Equal Opportunity Employer M/F.*

CARDIOVASCULAR POSTDOCTORAL TRAINING IN OPTICAL RESEARCH AT THE UNIVERSITY OF PENNSYLVANIA

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Applicants should be U.S. citizens or permanent residents. Please send curriculum vitae plus three letters of recommendation to:

**Dr. Joseph W. Sanger, Program Director
Department of Anatomy
School of Medicine
University of Pennsylvania
Philadelphia, PA 19104-6058**
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POSITIONS OPEN

POSTDOCTORAL POSITION available immediately for pharmacologist/biochemist to study signal transduction in tumor promotion and progression. Interested candidates should send their curriculum vitae and names of three references to: **Dr. Barbour S. Warren, University of Texas M. D. Anderson Cancer Center, Science Park, P.O. Box 389, Smithville, TX 78957.** *An Equal Opportunity/Affirmative Action Employer. UTMD Anderson Cancer Center is a smoke-free workplace.*

POSTDOCTORAL POSITION IN INSECT PHYSIOLOGY/BIOCHEMISTRY available immediately to study insect proteins during adult development. Research includes isolation and characterization of proteolytic enzymes and evaluation of protease inhibitors. Experience in protein purification and electrophoretic techniques required. The Department offers a stimulating environment for molecular insect research. Send curriculum vitae, names, addresses, and telephone numbers of three references to: **Professor W. S. Bowers, Department of Entomology, The University of Arizona, Tucson, AZ 85721.** Closing: 30 June 1989 or until position filled. *An Equal Opportunity Employer/Affirmative Action Employer. Women and minorities are especially encouraged to apply.*

POSTDOCTORAL/RESEARCH ASSOCIATE position available to study RNA Processing in animal cells and viruses. Background either in biochemistry, microbiology or molecular biology needed. Experience in recombinant DNA technology desirable. Salary negotiable. Send résumé with two names for references to: **Dr. Mary Edmonds, Department of Biological Sciences, University of Pittsburgh, Pittsburgh, PA 15260.** *Equal Opportunity/Affirmative Action Employer.*

RESEARCH ASSOCIATE in astronomical instrumentation needed. Will have major role in the design and completion of a high resolution broadband astronomical CCD spectrometer. Requires optical design, supervision of optical fabrication, acquisition, assembly and testing of the image detector and computer control systems. Will supervise development of computer control programs, installation and commissioning of the spectrometer. Responsible for spectrometer maintenance and the preparation of user manuals. Will train observational astronomers and provide long-term support. Will develop new astronomical instrumentation and publish instrumental concepts and performance. Is expected to carry out independent research and publish results, for which an appropriate fraction of time will be available. Expertise in related astronomical instrument design must be demonstrated by at least one publication. Ph.D. required in astronomy, or in physics with specialization in astronomy. Two years of experience in related astronomical instrument design is required. Forty hours weekly, \$27,000 yearly. Apply at: **The Texas Employment Commission, Austin, Texas** or send résumé to: **The Texas Employment Commission, TEC Building, Austin, TX 78778, J.O. #5190772.** *Ad paid by an Equal Employment Opportunity Employer.*

RESEARCH ASSOCIATE to conduct research on functional analysis of herpes simplex virus DNA-binding protein. The work will require background in large DNA viruses, recombinant DNA and in vitro mutagenesis technology, DNA sequencing, construction of viral mutants and assay of DNA-binding proteins.

At least 2 to 3 years of postdoctoral experience with high quality publications required. Annual salary: \$26,000 plus benefits. Reply to: **Massachusetts Department of Employment and Training, Special Program Department, 19 Staniford Street, Boston, MA 02114,** and refer to case number 9608. *An Equal Opportunity Employer.*

RESEARCH IMMUNOLOGIST

Research associate position is available for an individual possessing an M.D. or Ph.D. and experience in the field of the immunobiology of thermal injury. Studies are in progress investigating potential mechanisms responsible for the acquired defects in neutrophil and lymphocyte function documented after thermal injury. Position is funded by NIH grants. Salary range is \$18,000 to \$24,000.

Please send curriculum vitae, statement of research interests, and three letters of reference to: **Edwin A. Deitch, M.D., Professor of Surgery, P.O. Box 33932, Louisiana State University Medical Center, Shreveport, LA 71130.**

POSITIONS OPEN

RESEARCH MEDICAL OFFICER FOOD AND DRUG ADMINISTRATION PUBLIC HEALTH SERVICE HEALTH AND HUMAN SERVICES CENTER FOR BIOLOGICS EVALUATION AND RESEARCH

The Laboratory of Cell Biology seeks a Medical Officer, GS-602-13 to implement and direct a research program; review Investigational New Drug and licensing applications in areas related to monoclonal antibodies, immunomodulators, growth factors, tissue culture reagents and biotechnology; and develop scientific guidelines for regulating products. Salary range from \$50,137 to \$62,233 per annum, excellent benefit package, flexible work schedule, and Physician's Comparability Allowance of \$2,000 to \$10,000 per year is also available. Qualifications include M.D. degree; 3 years of postdoctoral experience/training in immunology/immunobiology with emphasis on tissue culture skills and biochemical techniques related to signal transduction; knowledge of TLC and HPLC chromatographic techniques and related instrumentation; and detailed knowledge of computer based data handling/processing. The ability to direct/lead technical and research personnel is desired. *U.S. citizenship required.* Please send curriculum vitae or Standard Form 171 to:

**Fara Guest
Parklawn Building, Room 4B-26
5600 Fishers Lane
Rockville, MD 20857
Telephone: 301-443-4003**

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California Institute of Biological Research RESEARCH PROGRAM DIRECTORS

California Institute of Biological Research (CIBR), a non-profit institute, has recently been established with financial support from Stratagene in La Jolla, California. The institute is in a beautiful coastal location in close proximity to the Salk Institute, Research Institute of Scripps Clinic, Medical Biology Institute, La Jolla Cancer Research Center, and the University of California, San Diego. CIBR will consist of laboratories with research interests in eukaryotic gene regulation, oncogenes, cellular and molecular transformation, control of immune responses, molecular biology of differentiation, and mammalian development. CIBR Research Program Directors should demonstrate the ability to obtain funding from extramural granting agencies. Research Program Directors also will be aided by significant core supplementation and may serve as consultants to Stratagene with the opportunity to engage in collaborative projects. Investigators with appropriate research interests are encouraged to apply.

Send curriculum vitae to: **Personnel, California Institute of Biological Research, 11099 North Torrey Pines Road, La Jolla, CA 92037.**

SCIENCE ENDOWED CHAIR

Incarnate Word College (IWC) invites nominations and applications for the newly endowed chair in science. Earned doctorate, proven record of excellence in teaching in biology or a related field and research experience required. Review of applications begins 15 March 1989. Send applications and all supporting materials to: **Search Committee, Chair in Science, Incarnate Word College, 4301 Broadway, San Antonio, TX 78209.** *Applications from women and minorities are encouraged. IWC is an Equal Opportunity/Affirmative Action Employer.*

University of California, Los Angeles (UCLA) Urology Division seeks Board-certified **UROLOGIST** with expertise in renal transplantation for faculty position. Requirements: proven ability to organize clinical training; ability to collaborate in immunology research; experience in reconstructive and pediatric urology; excellent surgical skills. Applicants should contact: **The UCLA Division of Urology, Los Angeles, CA 90024-1738.** *UCLA is an Equal Opportunity/Affirmative Action Employer.*

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Soils/Plant Research Biologist

As an important member of our Plant Science Discovery Department, you will serve as a resident authority on soil-plant-environment-herbicide interactions. We will look to you to set up bioassay systems and to determine the primary factors influencing plant responses to soil residue levels of herbicides as well as analyzing the interaction of these responses with environmental changes.

In our multi-disciplinary environment, you will have the opportunity to not only work closely with Chemists, but also with Development Project Managers and Discovery Researchers throughout the organization. In addition to a PhD in Soil Science, Plant Nutrition, Plant Physiology or Weed Science, your expertise in soil chemistry, soil-ion and soil-plant interactions should be complemented by solid laboratory experience in soil analysis, plant growth and physiology. Experience with radioisotopes as well as HPLC, GC and associated analytical techniques also required.

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Manager of Personnel
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Gaithersburg, MD 20877
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POSITIONS OPEN

OPENINGS FOR SCIENTISTS AT NATIONAL INSTITUTE FOR BIOTECHNOLOGY AND GENETIC ENGINEERING (NIBGE) FAISALABAD, PAKISTAN

Applications are invited from senior Pakistani Scientists residing abroad and possessing postgraduate qualifications and relevant experience in the fields of biology, microbiology, biochemistry, genetics, molecular biology, bioprocessing, industrial microbiology, plant biotechnology, etc. for immediate appointments in NIBGE Faisalabad sponsored by the Government of Pakistan. Enquiries and Biodata may be sent to: **The Director, Nuclear Institute for Agriculture and Biology (NIAB), P.O. Box No. 128, Faisalabad, Pakistan, Cable: NIAB, Telex: 43356 NIAB PK.**

TENURED OR TENURE-TRACK FACULTY POSITIONS

Tenured or tenure-track faculty positions are available in a newly established Program in Molecular Medicine. This interdisciplinary program currently includes nine faculty research programs in complementary fields of biomedical science and occupies 40,000 square feet of research space in a newly constructed building. The Medical Center is committed to recruiting and supporting scientists of the highest quality, in an outstanding research environment. Research areas currently being expanded include:

1. Molecular virology/retroviruses
2. Molecular immunology
3. Tumor biology/oncogenes
4. Macromolecular structure/x-ray crystallography/NMR
5. Cellular physiology/signal transduction

There is particular interest in candidates using contemporary methodologies, e.g. transgenic animals. Applicants must have a Ph.D. or M.D. degree with demonstrated research productivity. A strong motivation toward creative research and ability to attract independent funding is essential. Faculty rank and salary are negotiable. Applicants must submit curriculum vitae, summary of research interests and names of three references to: **Dr. Michael P. Czech, Director or Dr. John L. Sullivan, Search Committee Chairman, Program in Molecular Medicine, University of Massachusetts Medical School, 55 Lake Avenue North, Worcester, MA 01655.**

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JPL/NASA VISITING SENIOR SCIENTIST SPACE BIOMEDICAL RESEARCH

The Jet Propulsion Laboratory invites applications to the Visiting Senior Scientist Program in the area of Space Biomedical Research. The position requires a Ph.D. or equivalent degree along with research experience and a record of research publications. Although any qualified person may apply, tenured faculty members with experience in NASA's Biomedical Research Program are the preferred choice. Responsibilities include aiding in the planning and implementation of the Biomedical Research Program within the Life Sciences Division at NASA Headquarters. Duties include extensive contacts with the research community, conducting peer reviews of research proposals, recommending selection of investigations as well as assisting in the maintenance of a balanced and productive program within budgetary resources. The appointee is expected to work closely with managers at several NASA centers and to advise potential investigators from the university community how their plans relate to the NASA Biomedical Program. Frequent travel and residence near NASA Headquarters (in the Washington, D.C., area) will be required. Appointees must be U.S. citizens or permanent residents, and are expected to return to their home institution following their NASA assignment. Please provide curriculum vitae, bibliography and the names of four references to:

**Dr. Harry Ashkenas, 180-900
Department V5
Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, CA 91109
Telephone: 818-354-8251**

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POSITIONS OPEN

University of Illinois at Urbana-Champaign, Department of Kinesiology. A **TENURE-TRACK POSITION** in Human Motor Control: Neuromuscular Physiology. Rank open, emphasis is at assistant professor. Position involves development of an independent line of research, generating grant support, graduate student advising, and teaching at both graduate and undergraduate levels. An interest in the application of basic neuromuscular processes to physical therapy is desirable. To assure full consideration, applications must be received by 3 May 1989. Résumé, statement of research goals, letter of application, and at least three letters of reference should be sent to: **Dr. Les G. Carlton, Chair of Search Committee, Department of Kinesiology, University of Illinois, 906 South Goodwin, Urbana, IL 61801. Telephone: 217-244-3986.** *The University of Illinois is an Affirmative Action/Equal Opportunity Employer.*

CONFERENCES

ANNOUNCING AN NIH CONFERENCE Modeling in Biomedical Research: An Assessment of Current and Potential Approaches Applications to Studies in Cardiovascular/Pulmonary Functions and Diabetes

To be held 1 to 3 May 1989, in Masur Auditorium, The Warren Grant Magnuson Clinical Center, National Institutes of Health, Bethesda, Maryland.

Sponsored by the Division of Research Resources, the Division of Research Services, and the Office of Medical Applications of Research of NIH.

Continued innovation and refinement of model systems is crucial to rapid progress in biomedical research. This conference continues NIH's evaluation of modeling, from the use of non-human primates and invertebrate species to cell cultures and mathematical and physical approaches. To emphasize the use of many types of models to solve basic biomedical questions, the conference will focus on two areas of great importance to the nation's health: cardiovascular/pulmonary function (1 May 1989) and diabetes (2 May 1989).

Scheduled presenters on 1 May include: **J. I. E. Hoffman, M. Gimbrone and F. Dewey, N. Staub, S. Factor and R. S. Chadwick, C. Peskin, S. Wickline, R. Ruffolo, and K. Brown and R. Robertson.** Those on 2 May include: **J. Roth, G. Grodsky, O. M. Rosen, D. Greene, A. Rossini, P. Lacy, R. Bergman, and J. Fain.**

A panel of scientists chaired by **Dr. Gordon H. Sato, Director of W. Alton Jones Cell Science Center**, will question the presenters, prepare a summary statement of the material presented, and evaluate the strengths and limitations of the various model systems. On 3 May 1989, the panel will present its draft statement and invite comments from the audience.

To register for the conference or obtain further details, contact: **Susan Wallace, Prospect Associates, Suite 500, 1801 Rockville Pike, Rockville, MD 20852; telephone: 301-468-6555.**

COURSES

ANNUAL INSTITUTES IN RISK MANAGEMENT IN ENVIRONMENTAL HEALTH AND PROTECTION

Short courses on risk management and quantitative risk assessment for chemical risks (releases, hazardous waste disposal, water supply contamination). Legal, liability, insurance and political issues; toxicology, risk perception and risk communication; quantitative risk assessment procedures. Bachelor's degree or equivalent required. Offered for graduate credit/non-credit certificate. For health, safety and environmental professionals in industry and government. For information on all courses, write: **Professor R. Zimmerman, Summer Institute in Risk Management in Environmental Health and Protection, Graduate School of Public Administration, New York University, 4 Washington Square North, New York, NY 10003. Telephone: 212-998-7432, 7400.** Schedule:

- 30 May to 2 June 1989 at New York University, GPA (New York City)—7th Summer Institute
- 19 to 22 September 1989 at the University of Southern California, ISSM (Los Angeles)—2nd Annual Institute
- 4 to 6 October 1989 at the University of Alabama, EIWMS (Tuscaloosa)—1st Annual Institute

PROGRAM

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This unique program offers the candidate with an earned doctorate in the sciences the opportunity to obtain the Doctor of Optometry (O.D.) degree in two calendar years. Employment opportunities exist in private practice, industry, education and research. Contact: **Dr. D. Chauncey, Program Director, Accelerated Program, The New England College of Optometry, Room S, 424 Beacon Street, Boston, MA 02115.**

TRAINING PROGRAM

POSTDOCTORAL TRAINING PROGRAM IN THE PHYSIOLOGY OF REPRODUCTION

The Center for Reproductive Physiology at the University of Pittsburgh School of Medicine has positions available for postdoctoral fellows (Ph.D. and/or M.D.) to obtain 2 years of advanced training in the study of the molecular and physiological basis of reproduction in higher primates and other mammals. The training faculty and their research interests include: **J. A. Amico:** posterior pituitary peptides; **B. J. Attardi:** gonadotropin mRNA regulation; **S. L. Berga:** pineal and melatonin; **J. L. Cameron:** metabolism and LH secretion; **G. E. Hoffman:** neuroanatomy of hypothalamic RF systems; **H. S. Keeping:** inhibin gene expression; **G. R. Marshall:** spermatogenesis; **T. M. Plant:** hypothalamic control of puberty; **C. R. Pohl:** regulation of GnRH secretion; **S. M. Pomerantz:** endocrine control of behavior; **K. D. Ryan:** female puberty; **M. S. Smith:** neuroendocrine control of LH and PRL; **P. Troen:** human testicular function; **S. J. Winters:** neuroendocrine control of testis; **A. J. Zeleznik:** cellular actions of gonadotropins.

Applicants must meet NRSA U.S. citizenship and residency requirements. Address application, curriculum vitae, and names of three referees to: **Tony M. Plant, Ph.D., Director, Center for Reproductive Physiology, Department of Physiology, University of Pittsburgh School of Medicine, 616 Scaife Hall, Pittsburgh, PA 15261.** *The University of Pittsburgh is an Equal Opportunity Employer.*

WORKSHOP

PENN STATE BIOTECHNOLOGY INSTITUTE WORKSHOP HYBRIDOMA AND MONOCLONAL ANTIBODIES

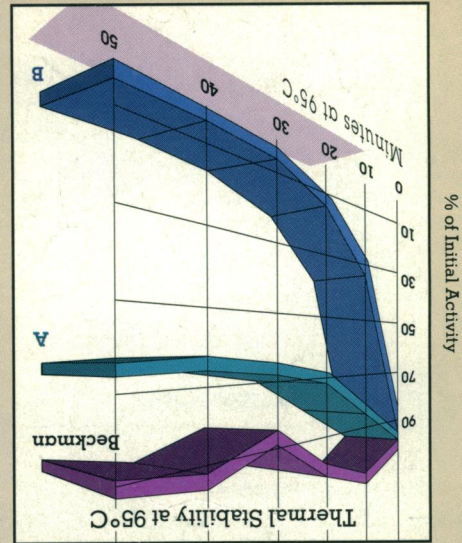
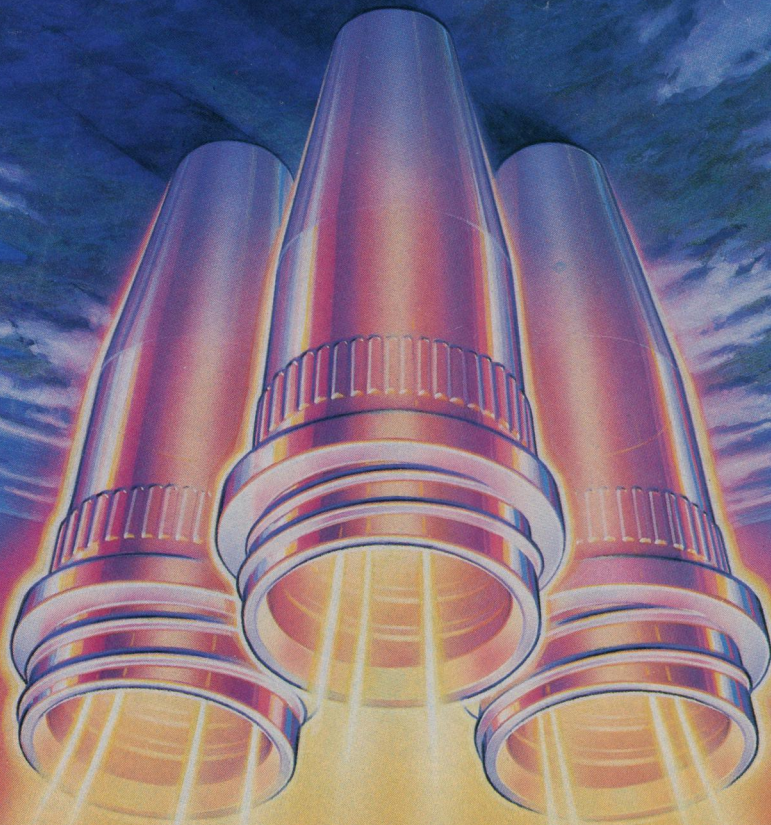
A 3½-day workshop will provide researchers with both practical and theoretical background on hybridoma and monoclonal antibody production. The course will emphasize laboratory experience starting with immunization and covering all aspects through ascites production. 16 to 19 May 1989. Limited to 18 participants. Cost: \$750. Contact: **Jeannette Bachman, 333 Wartik Laboratory, University Park, PA 16802. Telephone: 814-865-0921.**

FELLOWSHIPS

TRAUMA RESEARCH TRAINING FELLOWSHIPS AVAILABLE

Two postdoctoral research fellowships, supported by an NIH Training Grant, are available in the area of pathophysiologic responses to injury, for the 2-year period beginning 1 July 1989 and ending 30 June 1991. Research foci include investigation of the central neural, autonomic and pituitary-adrenal responses to injury; studies of local wound metabolism and whole body metabolism in response to injury; and investigations into the control of cerebral spinal fluid flow and the mechanisms underlying brain edema following injury. This interdisciplinary training program is supervised by faculty from the Departments of Surgery, Neurosurgery, and Neurobiology. First-year stipends are \$25,000. Applicants must be citizens or permanent residents of the United States, possess either a Ph.D. or an M.D. degree, and have 2 years of experience following their doctoral program. Please send curriculum vitae and the names of three references to: **Michael D. Caldwell, M.D., Ph.D., Rhode Island Hospital, 593 Eddy Street, APC-137, Providence, RI 02903.** Applications must be received no later than 15 April 1989. *Women and minorities are encouraged to apply. The Rhode Island Hospital is an Equal Opportunity/Affirmative Action Employer.*

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