

ed, providing very sensitive assays of substance P and related molecules and allowing precise localization of these peptides in nervous tissues. This Ciba Foundation symposium volume summarizes recent findings about substance P in the nervous system after a decade of intensive research effort and examines whether substance P is a sensory transmitter. Most of the papers are informative and interesting. Transcripts of informal discussions following each paper serve to clarify important issues and identify unresolved questions.

Is substance P a sensory transmitter? The answer is still unclear. Substance P is present in dorsal root ganglia. Through the use of immunohistochemistry it is found in a fraction of the small sensory neurons. It is released both centrally in the spinal cord and peripherally in the target tissues of sensory fibers, and it excites many neurons in the spinal cord. Since noxious stimuli are known to excite small sensory neurons, it was hypothesized that substance P is the transmitter that mediates the sensation of pain. This hypothesis was encouraged by an early finding that capsaicin, an active ingredient of red pepper, depletes substance P and decreases the sensation of pain. As this book reveals, there is a serious problem with this line of reasoning, for all of these characteristics are not unique to substance P but seem to be exhibited by certain other peptides (for example, somatostatin and vasoactive intestinal polypeptide). Moreover, quite likely there are different small sensory neurons that distinguish different sensations of pain (mechanical, thermal, chemical, and so on). Could it be that these different sensory neurons use different transmitters? Is substance P one of the transmitters used? Here we encounter difficulties intrinsic to studies of the central nervous system; with the complex anatomy and relative inaccessibility of the spinal cord, there is yet no detailed comparison of the direct action of a particular type of sensory neuron on the membrane properties of its target neurons in the spinal cord and the direct action of substance P on the same neurons. More definitive results have been obtained from studying the action of sensory neurons on their peripheral targets. It has been known for over a century that stimulating sensory nerve fibers causes dilation of blood vessels in the skin, which is probably the basis for the slowly spreading inflammatory response around an injured area of skin (the axon reflex). This response was mimicked by substance P and could be blocked by an antagonist of substance P, suggesting a

peripheral function of substance P in sensory neurons (Lembeck and Gamse in this book; similar findings on inflammatory responses in the eye have been reported by Homdahl *et al.*). Rosell and Folkers and their co-workers have recently been successful in synthesizing substance P analogs that function as antagonists. These antagonists are used in several preliminary studies reported in the book; these and future studies using antagonists should clarify the picture significantly.

Two observations discussed in the book are highly relevant to the functional roles of substance P and neuropeptides in general. Hökfelt and others have reported in the last few years numerous cases in which more than one putative transmitter substance was found in the same neuron, suggesting that a neuron may use more than one type of transmitter molecule, perhaps with each serving a somewhat different function, to communicate with its target cells. Further, substance P causes slow membrane potential changes in a neuron lasting for seconds to minutes rather than milliseconds. This is true both for cultured neurons from the spinal cord and for neurons in autonomic ganglia, which are located outside the central nervous system and are much more accessible to experimentation. In fact, neurons in the inferior mesenteric ganglion of the guinea pig appear to receive input from sensory nerve fibers that release substance P. This nerve-evoked response is also slow and long-lasting (Otsuka *et al.*, Cuello *et al.*). Could it be, as Henry suggests in the book, that some sensory neurons use substance P to generate long-lasting influences over other neurons and use some other, yet unidentified, transmitter molecule to mediate the fast responses induced by painful stimuli?

That the release of substance P and certain putative transmitters from sensory neurons is inhibited by enkephalins, which are small neuropeptides with pharmacological actions similar to morphine, led Jessell and Iversen to suggest in 1977 that enkephalin-containing neurons in the spinal cord may act on nerve terminals of those sensory neurons that detect painful stimuli and inhibit their transmitter release—an attractive hypothesis to account for the phenomenon of analgesia induced by the nervous system itself. Having learned much about excitation and presynaptic inhibition from classical studies of the neuromuscular junction, neurobiologists set forth to test this hypothesis by searching for close synaptic contacts between enkeph-

alin-containing neurons and substance-P-containing sensory nerve terminals in the spinal cord and found none. Does this disprove the hypothesis? If the action of enkephalins on neurons is also slow and long-lasting, as is shown in autonomic ganglia (Otsuka *et al.*), couldn't enkephalins be released from nerve terminals that form close synaptic contacts with other neurons and then diffuse for some micrometers and act upon sensory nerve terminals? Diffusion of a neurally released peptide over relatively long distances (tens of micrometers) to its ultimate target cell has been demonstrated in frog autonomic ganglia by Jan and Jan. However, one must be cautious in extrapolating from phenomena found in autonomic ganglia to those in the central nervous system. Thus an understanding of the functional relationship between enkephalin-containing neurons and sensory nerve terminals in the spinal cord awaits future studies that address directly whether peptides diffuse in the central nervous system.

The book provides ample examples of the wide distribution of substance P in the nervous system as well as of the many functions the peptide may have in addition to being a sensory transmitter. Perhaps the most important contribution of the book, however, is the formulation of important questions that warrant future study.

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**Superconductivity in Ternary Compounds I.** Structural, Electronic, and Lattice Properties. Ø. Fischer and M. B. Maple, Eds. Springer-Verlag, New York, 1982. xvi, 284 pp., illus. \$34. Topics in Current Physics, 32.

**Surface Water.** Robert Bowen. Wiley-Interscience, New York, 1982. viii, 290 pp., illus. \$49.95.

**Symbolic and Structural Archaeology.** Papers from a conference, Cambridge, England, Apr. 1980. Ian Hodder, Ed. Cambridge University Press, New York, 1982. viii, 188 pp., illus. \$39.50. New Directions in Archaeology.

**Symmetry of Polycentric Systems.** The Polycentric Tensor Algebra for Molecules. Gerhard Fieck. Springer-Verlag, New York, 1982. vi, 138 pp. Paper, \$7.50. Lecture Notes in Physics, vol. 167.

**Teaching the History of Medicine at a Medical Center.** Papers from a symposium, Baltimore, Oct. 1980. Jerome J. Bylebyl, Ed. Johns Hopkins University Press, Baltimore, 1982. x, 162 pp. \$15. The Henry E. Segerist Supplements to the *Bulletin of the History of Medicine*, New Series, No. 7.

**Techniques in Clinical Electrophysiology of Vision.** Proceedings of a symposium, Horgen-Zurich, June 1981. G. Niemeyer and Ch. Huber, Eds. Junk, The Hague, 1982 (U.S. distributor, Kluwer Boston, Hingham, Mass.). xii, 524 pp., illus. \$99. Documenta Ophthalmologica Proceedings Series, vol. 31.

**Techniques in Somatic Cell Genetics.** Jerry W. Shay, Ed. Plenum, New York, 1982. xxvi, 542 pp., illus. \$49.50.

**Village Ethnoarchaeology.** Rural Iran in Archaeological Perspective. Carol Kramer. Academic Press, New York, 1982. xxii, 306 pp., illus., + loose map. \$34.50. Studies in Archaeology.

**Wilderness and the American Mind.** Roderick Nash. Yale University Press, New Haven, Conn., ed. 3, 1982. xviii, 426 pp. Cloth, \$25; paper, \$7.95.

**Work, Organizations, and Technological Change.** Proceedings of a conference, Garmisch-Partenkirchen, Germany, June 1981. Gerhard Mensch and Richard J. Niehaus, Eds. Plenum, New York, 1982. xii, 412 pp., illus. \$49.50. NATO Conference Series II, vol. 11.

**Working Safely in Gamma Radiography.** A Training Manual for Industrial Radiographers. Stephen A. McGuire and Carol A. Peabody. U.S. Nuclear Regulatory Commission, Washington, D.C., 1982 (available from the Superintendent of Documents, Washington, D.C.). iv, 164 pp., illus. Paper, \$8. NUREG/BR-0024.

**Workshop on the Combined Effects of Xenobiotics.** Ottawa, Canada, June 1981. H. F. Stich, H. W. Leung, and J. R. Roberts, Eds. National Research Council of Canada, Ottawa, 1982. 254 pp., illus. Paper, C\$5. NRCC/CNRC No. 18978.

**Writing a Successful Grant Application.** Liane Reif-Lehrer. Science Books International, Boston, 1982. viii, 100 pp. Cloth, \$16; paper, \$9.50.

# Personnel Placement

SCIENCE publishes each Friday, except the last Friday of the year. Advertising is accepted only in writing; no abbreviations. Also, personnel advertising is accepted only with the understanding that the advertiser does not discriminate among applicants on the basis of race, sex, religion, age, color, national origin, handicap, or sexual preference.

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## POSITIONS WANTED

**Biologist.** M.A. Experience with freshwater fisheries, aquatic weed control, environmental impact, computer services, data management, reporting, and extensive fieldwork. Four years of experience. Seeking industry, government, consulting position. Box 83, SCIENCE. X

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**Microcomputer-oriented Neurophysiologist.** Ph.D. seeks position in laboratory automation group. Seven years of research experience in electrophysiology. Nine years of experience in project design, method development, and the implementation of microcomputers for data acquisition and graphic analysis. Will entertain industrial, academic, or consulting environments which require skills in problem solving and computer applications for the scientific community. Box 79, SCIENCE. X

**Soil Microbiologist.** Ph.D. 1981. Expertise in agricultural and environmental-toxicological applications. Successful entrepreneur, 1983. Am interested in work (employment, partnership, and so forth) that would combine utilization of both innate talent and acquired skills. Box 80, SCIENCE. X

**Summer Job.** Medical student; B.S. chemistry; research experience; AAAS member; needs money for school. Daniel Jacobson, 1303 D East Rock Springs Road, Atlanta, Georgia 30306. X

**Vertebrate Biologist.** Ph.D. (1980) in behavioral/physiological ecology and herpetology. Taught animal physiology, embryology, genetics, histology, introductory biology in a small college for 2 years. Desires position with opportunity to teach at least one course in area of specialization. Will also seriously consider postdoctoral or pure research. Box 78, SCIENCE. 4/1, 15

## POSITIONS OPEN

**ACADEMIC SENIOR STAFF POSITION** at assistant professor level available in the Nuclear Medicine Division of the Department of Internal Medicine at the University of Michigan, Ann Arbor. Certification (or Board-eligibility) in nuclear medicine and, preferably in internal medicine, radiology, or pathology desired, with a special interest in cardiology, gastroenterology, or neurology. Applicant should have interest and a performance record in clinical or basic nuclear medicine research. Please send curriculum vitae to: **William H. Belerwaltes, M.D., Physician-in-Charge, Division of Nuclear Medicine, Box 21, W5630, University Hospital, Ann Arbor, Michigan 48109.** A nondiscriminatory, Affirmative Action Employer. Code 08BO.

### APPLICATIONS SPECIALIST— NUCLEAR MAGNETIC RESONANCE IMAGING

Biochemist or biophysicist, Ph.D. level. Long Island-based firm seeks persons with background knowledge in NMR instrumentation. Research experience and publications required. Position will involve training of operators and supervision of clinical studies. Knowledge of anatomy and experience in medical research a plus. Travel required. Salary commensurate with experience. Interested persons should send résumé to: **Dr. Keeler, FONAR Corporation, 110 Marcus Drive, Melville, N.Y. 11747.** An Equal Opportunity Employer.

**AQUACULTURAL ENGINEER.** Doctorate in engineering, with experience or strong interest in aquaculture and strong background in fundamentals of water treatment processes, for teaching and advising at the graduate and undergraduate level and research in an ongoing program at the University of California, Davis. Responsibilities for teaching and research are in the broad area of aquaculture, the environmental aspects, and the control and analysis of intensive culture systems and water treatment processes. The position is open at the assistant or associate professor (11-month) range; salary level will be commensurate with qualifications. Applications, including curriculum vitae, summary of research experience, list of publications, transcripts of undergraduate and graduate work, and at least four letters of reference, should be sent to: **Michael O'Brien, Chairman, Search Committee, Department of Agricultural Engineering, University of California, Davis, California 95616.** Open until filled; applications must be received by 15 July 1983 to be assured of consideration. *The University of California is an Affirmative Action/Equal Opportunity Employer; women and minority candidates are encouraged to apply.*

### UNIVERSITY OF SOUTH FLORIDA

The **DEPARTMENT OF ANATOMY**, College of Medicine at the University of South Florida, Tampa, invites applications for a position as **ASSISTANT PROFESSOR** beginning 1 August 1983. Applicants should hold a Ph.D. in anatomy, or have an M.D. degree and be genuinely interested in the teaching of a progressive and clinically oriented course in gross anatomy for medical students. Preference will be given to applicants with ongoing grant supported research. Opportunities exist for collaborative research in neuroendocrinology, developmental biology, as well as in problems related to the cardiovascular and nervous systems.

Applicants are invited to submit curriculum vitae, names and addresses of three references, and a letter describing present research and plans for future work. Deadline for receipt of applications is 1 May 1983.

Send all correspondence to: **Johannes A. G. Rhodin, M.D., Ph.D., Department of Anatomy, College of Medicine, University of South Florida, 12901 North 30 Street, Tampa, Florida 33612.**

*The University of South Florida is an Affirmative Action/Equal Opportunity Employer.*

The University of Michigan Medical School, **DEPARTMENT OF INTERNAL MEDICINE**, has positions available to work in the Division of General Medicine. The individual will have patient care activities in both ambulatory care and inpatient settings. Candidates should be Board-eligible in internal medicine and have an interest in health services and research. Address inquiries, including curriculum vitae, to: **Jeffrey K. Stross, M.D., The University of Michigan Medical School, Department of Internal Medicine, D3211 SACB, Ann Arbor, Michigan 48109.** *The University of Michigan is a nondiscriminatory, Affirmative Action Employer. Code 319HO.*

## POSITIONS OPEN

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Directs and administers all activities of the National Weather Service, including: weather and flood warning system and forecasting service; timely and accurate observations; timely dissemination of weather forecasts and warnings to the public and other user groups; adequate maintenance and efficient operation of all electronic and mechanical systems and the required facilities; and efficient management of human and financial resources. **MINIMUM QUALIFICATIONS:** Education and experience qualifying for a bachelor's or higher degree in physical science, meteorology, engineering, or mathematics and related professional experience in the field of meteorology, plus demonstrated experience in scientific program planning and policy development, in-depth knowledge of or experience in the physical sciences related to the provision of weather services. Applicants must supply references attesting to administrative/managerial skills and abilities and achievements in Equal Opportunity and Affirmative Action. This is a general position in the Executive Service. Inquiries: **Fran Moore, telephone: 301-427-7924.** Applicants should file a Standard Form (SF-171), Personal Qualifications Statement: **National Oceanic and Atmospheric Administration, 8060 13th Street, Room 1225, Silver Spring, Maryland 20910. Reference: NWS 82-33(FM).** Closing date: 20 April 1983.

*An Equal Opportunity Employer*

### ASSISTANT, ASSOCIATE, OR FULL PROFESSOR—RECOMBINANT DNA STUDIES ON MOLECULAR MECHANISMS OF MICROBIAL PATHOGENESIS

A position at the assistant professor, associate professor, or professor level with teaching and research responsibilities is available in the Department of Bacteriology. Teaching would involve the responsibility for a graduate lecture-laboratory course in recombinant DNA methodology applied to prokaryotic systems, plus other teaching in bacteriology, including the development of an upper division course in the mechanisms of microbial pathogenesis. Candidates who are committed to developing or have already developed a research program involving the application of recombinant DNA technology to the molecular mechanisms of microbial pathogenesis are urged to apply. Research should involve the study of problems in the area of molecular mechanisms of viral or prokaryotic pathogenesis. Excellent molecular biological and biochemical facilities are available; however, animal facilities are quite limited. Send curriculum vitae, including a brief description of research experience, samples of refereed publications, a brief statement of proposed research, and names of three references, by 27 May 1983 to: **Chairman, Search Committee, Department of Bacteriology, University of California, Davis, California 95616.** *University of California is an Affirmative Action/Equal Opportunity Employer.*

University of Wisconsin (UW)—Parkside, an *Equal Opportunity/Affirmative Action Employer*, invites applications for a 9-month, nontenure-track **VISITING ASSISTANT PROFESSOR** for academic year 1983-1984, with strong possibility of 1-year renewal. Ph.D. to teach physical chemistry laboratory and chemical instrumentation. Collaborative research in any area of molecular graphics using an Evans and Sutherland PS300 Molecular Graphics Computer System is possible. Salary competitive. Send résumé and three letters of recommendation to: **Professor J. K. Cashion, Division of Science, UW-Parkside, P.O. Box 2000, Kenosha, Wis. 53141.**

The Department of Pharmacology, Baylor College of Medicine, invites applications for a tenure-track position at the level of **ASSISTANT PROFESSOR** in the **MOLECULAR BIOLOGY PROGRAM**. The candidates should have experience working with mRNA and genomic libraries. The successful candidate will be expected to develop an independent research program and to participate in the graduate teaching responsibilities of the department. Candidates should submit complete résumé or curriculum vitae, reprints of relevant publications, and a list of professional references. Applications should be submitted to: **Dr. Harris Busch, Chairman, Department of Pharmacology, Baylor College of Medicine, Houston, Texas 77030.**

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

## POSITIONS OPEN

**BOSTON UNIVERSITY SCHOOL OF MEDICINE.** The **Department of Anatomy** has a vacancy available 1 July 1983 for a faculty member at the **assistant professor** level. Applicants should be able to participate fully in teaching gross anatomy to medical, dental, and graduate students, and should have research interests in neuroanatomy or neurosciences. Applicants with active research programs will be considered for appointments at the level of associate professor. Interested individuals should submit copies of their curriculum vitae, a brief statement of research interests, copies of relevant publications, and the names of three references to: **Dr. Alan Peters, Chairman and Professor, Department of Anatomy, Boston University School of Medicine, 80 East Concord Street, Boston, Mass. 02118.** *Equal Opportunity Employer, M/F.*

**ASSISTANT PROFESSOR—EXPERIMENTAL PATHOLOGY.** The Department of Veterinary Science at the University of Wisconsin-Madison invites applications for a tenure-track faculty position as an assistant professor in experimental pathology. The candidate is expected to develop an independent research program, direct graduate student training, and teach a graduate course in domestic animal pathology. Candidates must possess a D.V.M. and Ph.D. Research interests should focus on pathological mechanisms of disease and could include biochemistry, immunology, microbiology, physiology, toxicology, or other relevant disciplines. Development of courses in areas of specialization is possible.

Submit curriculum vitae, copies of recent publications, description of research goals, and names of four references to: **Dr. R. F. Marsh, Professor, Department of Veterinary Science, 1655 Linden Drive, Madison, Wis. 53706.**

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### ASSISTANT PROFESSOR OF PHYSIOLOGY

The Physiology Department of the West Virginia School of Osteopathic Medicine (WVSOM) expects an opening in a tenure-track position for a neurophysiologist. The position will be available on or after 1 July 1983. The duties and responsibilities of the position include the teaching of neuro and muscular physiology, participation in the committee structure of the institution, and participation in a developing research program. Applicants should have a Ph.D. Applications, including a current résumé and the names of three references, should be sent to: **Elizabeth Blatt, Ph.D., Associate Dean for Academic Affairs/Basic Science, West Virginia School of Osteopathic Medicine, 400 North Lee Street, Lewisburg, West Virginia 24901.** Deadline for applications is 1 May 1983.

*WVSOM is an Affirmative Action/Equal Opportunity Employer.*

### ASSOCIATE PROFESSOR OF PHYSIOLOGY AND BIOPHYSICS

Applications are invited from qualified men and women for the position of associate professor in the Department of Physiology and Biophysics at Harvard Medical School. Three to 5 years of experience as an independent investigator is required. Responsibilities include basic research and the teaching of mammalian physiology. Of particular interest is research in the field of cellular physiology, including control of biosynthetic processes, hormones, hormonal regulation of cell functions, and related subjects. Send curriculum vitae to: **Search Committee, Department of Physiology and Biophysics, Harvard Medical School, 25 Shattuck Street, Boston, Mass. 02115.** *Affirmative Action/Equal Opportunity Employer.*

**BIOCHEMIST.** Career federal service. The Northern Regional Research Center of U.S. Department of Agriculture (USDA) has a position available for a Ph.D. or equivalent scientist interested in fundamental biochemical/chemical problems related to nutritional quality in foods of cereal origin. Applicants for this appointment must have a demonstrated ability to carry out basic research and are expected to develop a vigorous research program both independently and in conjunction with other Center scientists. Recent graduate and/or postdoctoral training and a knowledge of plant biochemistry are considered desirable. This Center is a major laboratory of the USDA that employs about 150 scientists in a wide variety of basic and applied programs. *The USDA is an Affirmative Action/Equal Opportunity Employer.* Salary, based on qualifications and experience, GS-11/12, \$24,508 to \$29,374. Applications may be accepted only from U.S. citizens. Send curriculum vitae to: **Dr. F. R. Dintzis, USDA-ARS, 1815 North University Street, Peoria, Ill. 61604.**

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INTERESTED INDIVIDUALS SHOULD  
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COURSE DIRECTOR  
DEPARTMENT OF PREVENTIVE  
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FACULTY POSITIONS OPEN  
COLLEGE OF AGRICULTURE  
KING FAISAL UNIVERSITY  
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The expanding College of Agricultural Sciences and  
Foods, King Faisal University has the following vacan-  
cies:

Soil Chemistry and Clay Mineralogy	Farm Power & Machinery
Plant Physiology	Range Management and Crop Ecology
Crop Production	Soil Microbiology and Fertility
Floriculture & Landscape Design	Physical Chemistry
Meat & Fish Technology	Poultry Nutrition
Dairy Technology	Agricultural Economics & Economic Theory
Marine Fisheries/Fishery Biology	Physical and Chemical Oceanography
Plant Taxonomy	Acarology
Agricultural Climatology	

**PREREQUISITES:** Ph.D. or equivalent degree for As-  
sistant and Associate Professor positions; M.S. degree  
for Lecturer positions. A minimum of three years prior  
teaching at the University level and published research in  
the field of specialization is required. The language of  
instruction is Arabic; therefore, bilingual ability (Arabic/  
English) is required.

**BENEFITS:** Furnished housing; air tickets to and from  
Saudi Arabia once per year for a family of four; a 60-day  
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and, educational allowance for children. No Saudi tax.

Salaries are highly competitive and negotiable. Contracts  
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Please send curriculum vitae with current telephone  
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numbers of three references to:

Dr. Yahia Makki, Dean, College of Agricultural  
Sciences and Foods

c/o King Faisal University  
U.S. Recruiting Office  
2425 West Loop South, Ste. 540  
Houston, Texas 77027  
U.S.A.

OR

c/o King Faisal University  
U.K. Recruiting Office  
29 Belgrave Square  
London, SW1X 8QB  
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## CIBA-GEIGY CORPORATION announces the opening of a New International Unit for Applied Research in Agricultural Biotechnology

North Carolina Location

Applications are now being accepted  
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### RESEARCH MANAGER

#### Plant Biology

Requires PhD in Botany, Plant Pathology, Plant Physiology,  
Molecular Biology or related discipline. Also requires a national  
reputation as a leading expert in one or more of the following  
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of gene expression in higher plants.

### RESEARCH MANAGER

#### Biochemistry

Requires PhD in Chemistry, Biochemistry, Molecular Biology  
or related discipline. Also requires a national reputation in one  
or more of the following fields: DNA sequence analysis, protein  
sequence analysis, oligonucleotide synthesis, site-specific muta-  
genesis, chimeric gene construction.

### RESEARCH MANAGER

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Requires PhD in Biology, Plant Physiology, Botany, Plant Pathology  
or related discipline. Also requires a national reputation as a leading  
expert in one or more of the following fields: regeneration of plants  
from plant cell cultures, introduction of macromolecules into  
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plant cells, tissue culture of monocots or legumes.

Additional requirements for consideration for the above positions  
include the following: 5-10 years experience in industrial research  
or academic research funded by competitive grants. Evidence  
of ability to direct research efforts of a group of PhD and MS level  
scientists. A strong record of refereed publications. Interest in  
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Submit resume and curriculum vitae indicating position desired  
to: Dr. Mary-Dell Chilton, Human Resources Department, CIBA-  
GEIGY Corporation, Agricultural Division, P.O. Box 18300,  
Greensboro, N.C. 27419. An equal opportunity employer m/f.

# CIBA—GEIGY



**FACULTY POSITIONS OPEN  
COLLEGE OF AGRICULTURE  
KING FAISAL UNIVERSITY  
HOFUF, SAUDI ARABIA**



The expanding College of Agricultural Sciences and Foods, King Faisal University has the following vacancies:

Soil Chemistry and Clay Mineralogy	Farm Power & Machinery
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Crop Production	Soil Microbiology and Fertility
Floriculture & Landscape Design	Physical Chemistry
Meat & Fish Technology	Poultry Nutrition
Dairy Technology	Agricultural Economics & Economic Theory
Marine Fisheries/Fishery Biology	Physical and Chemical Oceanography
Plant Taxonomy	Acarology
Agricultural Climatology	

**PREREQUISITES:** Ph.D. or equivalent degree for Assistant and Associate Professor positions; M.S. degree for Lecturer positions. A minimum of three years prior teaching at the University level and published research in the field of specialization is required. The majority of these courses are taught in Arabic; therefore, bilingual candidates (Arabic/English) will be given preference.

**BENEFITS:** Furnished housing; air tickets to and from Saudi Arabia once per year for a family of four; a 60-day paid vacation; generous overweight baggage allowance; and, educational allowance for children. No Saudi tax.

Salaries are highly competitive and negotiable. Contracts are for one year and renewable.

Please send curriculum vitae with current telephone number and the names, addresses, and telephone numbers of three references to:

**Dr. Yahia Makki, Dean, College of Agricultural Sciences and Foods**

c/o King Faisal University U.S. Recruiting Office 2425 West Loop South, Ste. 540 Houston, Texas 77027 U.S.A.	OR	c/o King Faisal University U.K. Recruiting Office 29 Belgrave Square London, SW1X 8QB ENGLAND
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10. Peptic Ulcer Disease.
11. Streptococcal Infection in Childhood.
12. Reproductive Failure.

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Telex: 44595 ALRAZI  
Cable: ALRAZI.**

**POSITIONS OPEN**

**NATIONAL SCIENCE FOUNDATION (NSF)**

NSF, Division of Materials Research, is seeking a qualified candidate for a 1- or 2-year rotational assignment as **ASSOCIATE PROGRAM DIRECTOR** for the Metallurgy Program in the Metallurgy, Polymers, and Ceramics Section beginning late summer 1983. This position is excepted from the competitive civil service with a salary range of \$34,930 to \$53,661 per annum (equivalent to GS-13/14). Candidates should have a Ph.D. or equivalent experience and, in addition, 4 to 6 years of research experience beyond the Ph.D. in metallurgy/materials science or a related discipline. A substantial record of scientific/research publications and preferably some experience in directing/managing basic research in an academic, industrial, or governmental institution. Resumes indicating current salary should be sent to: **National Science Foundation, Personnel Administration Branch, 1800 G Street, NW, Room 212, Washington, D.C. 20550, attention: E. Paul Broglie, EX 83-33.** For further information, telephone: 202-357-7841. *NSF is an Equal Opportunity Employer.*

**BIOCHEMIST AND MOLECULAR BIOLOGIST—**

Two positions available for research on lens and cataract formation. Biochemist should have experience in membrane chemistry and transport systems; molecular biologist must have experience in cloning and gene structure. Send resumes and three letters of recommendation to: **Dr. Abraham Spector, Department of Ophthalmology, College of Physicians and Surgeons, Columbia University, New York, N.Y. 10032.** *An Equal Opportunity/Affirmative Action Employer.*

**BIOLOGY:** 9-month, nontenure-track position for an **instructor or assistant professor.** Ph.D. required for appointment at assistant rank and master's degree for instructor rank; with background and specialization in microbiology. Responsibilities include teaching an introductory microbiology course, general biology lectures, and a freshman cell biology course. These all include laboratory instruction. Salary is competitive with qualifications and experience. Starting date: August 1983. Send letter of application with resume, three letters of recommendation, and academic transcripts by 29 April 1983 to: **Don R. Boyer, Ph.D., Chairman, Department of Biology, Washburn University of Topeka, Topeka, Kans. 66621.** *Washburn University is an Equal Opportunity/Affirmative Action Employer.*

**CANCER EPIDEMIOLOGIST OR BIOMETRICIAN.** Position at associate or professor level in quantitative aspects of animal/human carcinogenesis. Primary responsibilities at Fred Hutchinson Cancer Research Center, to include research on the modeling of carcinogenic processes. University of Washington appointment in epidemiology, biostatistics, or both. Send curriculum vitae and three letters of recommendation to: **Head, Epidemiology Search Committee, Program in Epidemiology, Fred Hutchinson Cancer Research Center, 1124 Columbia Street, Seattle, Washington 98104.** Deadline for applications: 1 June 1983. *Affirmative Action/Equal Opportunity Employer.*

**CELL BIOLOGIST/RENAL PHYSIOLOGIST**

A Ph.D. research position is available in a newly developing Nephrology Division of a university-affiliated hospital located in a highly desirable area. A major research interest of this position is morphological correlates of epithelial transport. Expertise in the area of transmission electron microscopy and freeze fracture, as well as an interest in epithelial transport is highly desirable. This position is hospital based and not grant dependent. Competitive salary, comprehensive benefit package, and professional working environment. Send curriculum vitae and two letters of recommendation to: **Vincent A. DiScala, M.D., Professor of Medicine, Director, Division of Nephrology, Nassau Hospital, 259 First Street, Mineola, Long Island, New York 11501.**

**COGNITIVE PSYCHOLOGY  
NORTHWESTERN UNIVERSITY**

Applicants are invited for a tenure-track position in cognitive psychology. The position is open with respect to area of research specialization in the cognitive area and with respect to rank. Senior applicants with a record of excellence in both research and teaching are encouraged to apply. Send curriculum vitae and representative reprints to: **Cognitive Search Committee, Department of Psychology, Northwestern University, Evanston, Ill. 60201.**

**POSITIONS OPEN**

**CLINICAL PHARMACOLOGIST.** The Departments of Pharmacology and Therapeutics, and of Medicine, Schools of Medicine and Dentistry, State University of New York, invite applications for a full-time faculty position as **assistant professor** with joint appointment in both departments. Position offers opportunities for combined basic and clinical research, teaching, and patient care in an academic environment. Candidates must have M.D. degree, U.S. license to practice, appropriate clinical training in internal medicine, and Ph.D. in pharmacology or closely related discipline or fellowship training in pharmacology. Send curriculum vitae and also request that three letters of recommendation be sent to: **Dr. Edward A. Carr, Jr., 127 Farber Hall, State University of New York at Buffalo, Buffalo, N.Y. 14214.** *An Equal Opportunity/Affirmative Action Employer.*

**COORDINATOR OF CLINICAL RESEARCH  
IN DIAGNOSTIC RADIOLOGY**

Academic scientist position available in Department of Radiology at the assistant professor level. Requires a Ph.D. in epidemiology with experience in research related to diagnostic radiology.

Responsibilities include: (i) overseeing design and implementation of a computerized research data base; (ii) coordinating clinical research within the department; (iii) consulting for design and analysis of clinical investigations; (iv) liaison with cooperative studies involving several institutions; (v) liaison to Departments of Epidemiology and Statistics and other clinical departments for collaborative research; and (vi) designing and carrying out independent research.

Applications should be made to: **Dr. James H. Scatliff, Professor and Chairman, Department of Radiology, School of Medicine, University of North Carolina at Chapel Hill, Chapel Hill, N.C. 27514.**

*The University of North Carolina School of Medicine is an Equal Opportunity/Affirmative Action Employer. Women and minorities are encouraged to voluntarily identify themselves.*

**FACULTY POSITION—MICROBIOLOGY**

Applications are invited for the position of **ASSISTANT PROFESSOR** in the area of microbial physiology, starting 15 August 1983. The appointee will be required to teach introductory microbiology and courses in his/her specialty areas, and to develop active research programs. The Ph.D. in microbiology and postdoctoral experience are required. Submit curriculum vitae, description of professional goals, and three letters of recommendation to: **Dr. J. W. Lawson, Chairman, Search Committee, Department of Microbiology, Clemson University, Clemson, S.C. 29631.** Deadline for application is 1 May 1983. *An Affirmative Action/Equal Opportunity Employer.*

**FACULTY POSITION—MICROBIOLOGY**

Applications are invited for the position of **INSTRUCTOR**, starting 15 August 1983. The position is nontenurable and is for 1 year in the area of microbial genetics. The Ph.D. in microbiology is required and postdoctoral experience is desirable. Submit curriculum vitae, transcripts, and three letters of recommendation to: **Dr. J. W. Lawson, Chairman, Search Committee, Department of Microbiology, Clemson University, Clemson, S.C. 29631.** Deadline for applications is 1 May 1983. *An Affirmative Action/Equal Opportunity Employer.*

**FACULTY POSITION IN TOXICOLOGY**

Applications are invited for a tenure-track position at the **assistant professor** level in the Division of Toxicology, Department of Pharmacology, Medical School, and the Toxicology Center of the University of Texas Health Science Center at Houston. Applicants should have postdoctoral research training and a commitment to teaching and research in toxicology. Preference will be given to individuals with an active research interest in molecular mechanisms of injury by toxic chemicals. Candidate will be expected to develop an independent research program and to participate in the teaching of medical and graduate students. Send curriculum vitae, list of publications, a brief description of research and career interests, and names of three references by 30 April 1983 to: **Dr. Sheldon D. Murphy, Director, Division of Toxicology, Department of Pharmacology, University of Texas Medical School at Houston, P.O. Box 20708, Houston, Texas 77225.**

*An Equal Opportunity Employer; women and minorities are encouraged to apply.*



## International Symposium on CATECHOLAMINES AS HORMONE REGULATORS

September 12th-14th, 1983  
The Indianapolis Hilton  
Indianapolis, Indiana

### SCIENTIFIC COMMITTEE

J. M. Bahr (USA)  
N. Ben-Jonathan (USA)  
I. J. Kopin (USA)  
R. J. Lefkowitz (USA)  
R. I. Weiner (USA)

### MAIN TOPICS

—Catecholamines and Endocrine Functions of the Central Nervous System  
—Adrenergic and Dopaminergic Receptors  
—Control of Pituitary Secretion by Catecholamines  
—Catecholamines and Regulation of Gonadal Function  
—Adrenal Medullary Secretion and Circulating Catecholamines

### INVITED SPEAKERS

J. M. Bahr (USA)—N. Ben-Jonathan (USA)—P. F. Baker (GB)—H. W. Burden (USA)—M. G. Caron (USA)—W. F. Ganong (USA)—M. Kawakami (J)—J. Kebabian (USA)—I. J. Kopin (USA)—R. J. Lefkowitz (USA)—R. M. MacLeod (USA)—S. Meisel (USA)—K. E. Moore (USA)—S. R. Ojeda (USA)—R. L. Perlman (USA)—J. C. Porter (USA)—M. Schramm (IL)—G. Van Loon (USA)—R. I. Weiner (USA)—W. Wuttke (D)—R. Kuetnansky (CH)—U. Zor (IL)

### USEFUL INFORMATION

Registration fee: USD: 150.00.

A limited number of short communications will be accepted for poster presentation. Abstracts must be sent to N. BEN-JONATHAN before May 15th, 1983 (postmarked) and should not exceed 300 words. Please send one original and 3 photocopies.

The Indiana University School of Medicine designates this Continuing Medical Education Activity for 18 credit hours in Category I of the Physician's Recognition Award of the American Medical Association.

For further information about the Symposium, please contact:

#### SCIENTIFIC SECRETARY

Nira Ben-Jonathan, Ph.D.  
Department of Physiology  
Indiana University  
School of Medicine  
1100 W. Michigan St.  
Indianapolis, Indiana 46223  
Tel. (317) 264-8895

#### ORGANIZING SECRETARIAT

Serono Symposia  
Via Ravenna, 8  
00161 Rome, Italy  
Tel. (6) 429023 or 423328  
Telex 680835 Serym I



UNIVERSITY OF CAPE TOWN

## Chamber of Mines Chair in Geochemistry

Applications are invited for the above post for appointment on or as soon as possible after 1 January 1984.

The University wishes to appoint an outstanding geochemist of international stature in succession to Professor L. H. Ahrens, the previous incumbent of the Chamber of Mines Chair in Geochemistry. Applications are invited from geochemists with research experience and interests in any field of geochemistry. An exceptional research record and the proven ability to provide scientific leadership of the highest calibre will be the most important criteria by which candidates will be evaluated.

The post is for permanent appointment subject to a three-year probationary period. Appointment will be made according to qualifications and experience on the salary range R23 109 to R30 225 per annum.

Applicants should submit a full resumé and the names and addresses of three referees, whom the University may approach.

Further information may be obtained from the Registrar (Attention: Appointments Office), University of Cape Town, Private Bag, Rondebosch, 7700, South Africa, by whom applications (quoting ref. no. AQ/311) must be received not later than 30 June 1983.

UCT is an equal opportunity employer.



## FACULTY POSITIONS OPEN IN CARDIOVASCULAR PHYSIOLOGY RESPIRATORY PHYSIOLOGY

The Physiology Department, College of Medicine and Medical Sciences, King Faisal University, Dammam, Saudi Arabia invites applications from qualified men and women for the 1983/84 academic year.

Prerequisites include a Ph.D. degree and minimum of two years teaching experience at the University level. Instruction is in English. Salaries are competitive and negotiable. Contracts are for one year and renewable.

Benefits include free furnished housing, air tickets for a family of four to and from Saudi Arabia annually, 60-days paid vacation, generous overweight baggage allowance, and educational allowance for children. No Saudi income taxes.

Please send your curriculum vitae and contact address and telephone numbers along with the names and addresses of three references to:

Dr. Tawfik Tamimi, Dean  
College of Medicine and Medical Sciences  
c/o U.S. Recruiting Office  
2425 West Loop South, Suite 540  
Houston, Texas 77027

or

c/o U.K. Recruiting Office  
29 Belgrave Square  
London SW1 8QB, ENGLAND

## Mikrobiologe

Die BASF Aktiengesellschaft, gegründet 1865, ist die Muttergesellschaft der weltweit tätigen BASF Gruppe, die heute als eines der führenden Chemieunternehmen Produkte in über 100 Ländern vertreibt. In unserer zentralen Forschung arbeitet eine biotechnologische Forschungsgruppe an der Entwicklung neuer mikrobieller und enzymatischer Prozesse. Dieses Team besteht aus fähigen Spezialisten aus verschiedenen Disziplinen. Infolge unserer rasch wachsenden Aktivitäten benötigen wir einen talentierten Mikrobiologen, der seine Forschungsanstrengungen hauptsächlich auf das Screening und die Verbesserung von Mikroorganismen für neue katalytische Anwendungen und biologisch aktive Substanzen konzentrieren soll.

Der Bewerber sollte über einen ausgezeichneten Erfahrungsschatz in allgemeiner Mikrobiologie verfügen, in den klassischen und modernen Techniken der Stammverbesserung für alle Arten von Mikroorganismen bewandert sein und seine Doktorarbeit auf einem dementsprechenden Gebiet angefertigt haben. Er muss über gut fundierte Kenntnisse der organischen Chemie und analytischer Methoden verfügen. Die Fähigkeit zum kooperativen Arbeiten und der Wille zur Entwicklung neuer Projekte sollten vorhanden sein.

Der Arbeitsplatz für diese anspruchsvolle Tätigkeit ist in Ludwigshafen am Rhein. Bewerber müssen Deutsch fließend sprechen und schreiben. Bewerbung, Beschreibung bisheriger mikrobiologischer Erfahrung und Lebenslauf werden vertraulich erbeten an

**BASF**

### BASF Aktiengesellschaft

Personalwesen AT/ALA  
D 6700 Ludwigshafen  
West Germany

**DEAN  
COLLEGE OF SCIENCE  
UTAH STATE UNIVERSITY**

Nominations and applications are invited for the position of Dean of the College of Science at Utah State University (USU) in Logan, Utah. The Departments of Applied Statistics, Biology, Chemistry and Biochemistry, Computer Science, Geology, Mathematics and Physics, and an internationally recognized research center in the space sciences constitute the college, one of eight in the University. Qualifications for the position shall include: an earned doctorate in one of the disciplines above; previous leadership experience with demonstrated administrative effectiveness; record of commitment to teaching excellence; recognition as an eminent scientist with a steady record of publications and current activity in research; ability to articulate and communicate well; knowledge of extramural funding procedures; familiarity with national and international research programs and facilities; and an ability to interpret modern science and establish priorities for advancement therein. Interested persons should submit a letter of application, a detailed résumé and five references prior to 1 May 1983 to: **Dr. V. Gordon Lind, Search Committee Chairman, Physics Department, Utah State University, Logan, Utah 84322. Telephone: 801-750-2857.**

*USU is An Equal Opportunity/Affirmative Action Employer.*

**AUSTRALIAN INSTITUTE  
OF MARINE SCIENCE  
POSTDOCTORAL AWARDS**

The Australian Institute of Marine Science is a Statutory Authority established in 1972. Its functions are to carry out research in marine science, to assist other persons and institutions engaged in research in this field, and to disseminate information relating to marine science.

The Institute is located in modern facilities at Cape Ferguson, 50 kilometres from Townsville in the central section of the coast adjacent to the Great Barrier Reef.

A number of postdoctoral awards are granted each year by the Council of the Institute for research by young scientists of exceptional promise and proven capacity for original work in the area of marine science. The awards are tenable at the Institute for periods of up to 2 years. Tenure of an award is expected to commence within 3 months of the award being made.

The Institute is especially interested in researchers attracted to collaborative studies of mangrove and reefal environments and communities within its established programs although awards are not limited to these fields. Background information on the Institute and its program interests will be supplied on request.

In general, awards are restricted to applicants who are not more than 30 years of age on the date when applications close, or who, in any case, are in the early stages of their postdoctoral career.

**Stipend:** \$19,162 per annum.

**Allowance:** A district allowance of \$700 per annum for awardees with dependants and \$360 per annum for awardees without dependants is payable.

**Applications:** Persons wishing to apply for these awards should submit complete curriculum vitae, the outline of a projected investigation, support requirements, and the names of three professional referees to: **Secretary, Australian Institute of Marine Science, P.M.B. No. 3, Townsville M.S.O., Queensland 4810 Australia.** Applications should be submitted no later than 27 May 1983.

**POSITIONS OPEN**

**DEAN  
COLLEGE OF ARTS AND SCIENCES**

Applications are invited for the deanship of Columbian College, the undergraduate liberal arts component of George Washington University. Applicants must possess an earned Ph.D. or highest appropriate terminal degree, significant administrative experience, and qualification for senior faculty appointment. Send letter of application, résumé, and a brief statement of personal educational goals and philosophy to: **Professor Robert Kenny, Chairman, Columbian College Search Committee, c/o History Department, George Washington University, Washington, D.C. 20052.** Application deadline: 20 July 1983.

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

**DIRECTOR, FAMILY PRACTICE RESIDENCY PROGRAM.** Opportunity for family physician at a newly established School of Medicine mandated to emphasize family medicine. Residency program has 36 residents with facilities that include a modern Family Practice Center. Responsibilities include residency program curriculum development, evaluation, clinical teaching, and administration. ABFP certification required. Experience in practice, teaching, administration, and research is preferred. Address inquiries and curriculum vitae to: **James G. Jones, M.D., Professor and Chairman, Department of Family Medicine, East Carolina University School of Medicine, P.O. Box 1846, Greenville, N.C. 27834.** An Equal Opportunity/Affirmative Action Employer.

**FAMILY MEDICINE FACULTY POSITIONS**

Opportunities for family physicians and community/preventive medicine physicians to significantly influence the design and implementation of an integrated 4-year undergraduate family medicine curriculum in a School of Medicine mandated to emphasize family medicine. Positions involve medical student teaching, patient care, and research in a well-established Department of Family Medicine. Send inquiries/curriculum vitae to: **James G. Jones, M.D., Professor and Chairman, Department of Family Medicine, School of Medicine, East Carolina University, P.O. Box 1846, Greenville, N.C. 27834.** An Equal Opportunity/Affirmative Action Employer.

**FACULTY POSITION IN MOLECULAR GENETICS.** Applications are invited for a tenure-track position in molecular genetics. While primarily looking at the level of assistant professor, the department would also welcome applications at the level of associate and full professor. Applicants should have demonstrated research capabilities in molecular genetics and a serious commitment to establishing an independent research program. Please send curriculum vitae, including the names of three references and a statement of research interests and goals, to: **David B. Kaback, Ph.D., Chairman of the Search Committee, Department of Microbiology, UNIVERSITY OF MEDICINE AND DENTISTRY OF NEW JERSEY—New Jersey Medical School, 100 Bergen Street, Newark, N.J. 07103.** Equal Opportunity/Affirmative Action Employer, M/F.

The University of Michigan Medical School, **DEPARTMENT OF INTERNAL MEDICINE**, has positions available to work in the Division of General Medicine. The individual will have patient care activities in both ambulatory care and inpatient settings. Candidates should be Board-eligible in internal medicine and have an interest in health services and research. Address inquiries, including curriculum vitae, to: **Jeffrey K. Stross, M.D., The University of Michigan Medical School, Department of Internal Medicine, D3211 SACB, Ann Arbor, Michigan 48109.** The University of Michigan is a nondiscriminatory, Affirmative Action Employer. Codes 203HO, 251FO, 318HO.

**INVERTEBRATE PALEONTOLOGIST.** Applications are invited for anticipated tenure-track position at assistant professor level beginning August 1983. Principal teaching responsibilities involve several large introductory geology courses and courses in paleontology. Research area open but preference given to coral specialist with strong background in numerical taxonomy and other statistical methods. Applicants should have Ph.D. Send résumé, statement of research interests, and names of three references: **Search Committee, Department of Geology, The University of Iowa, Iowa City, Iowa 52242.** Screening date for applications is 30 May 1983. The University is an Affirmative Action/Equal Opportunity Employer.

**POSITIONS OPEN**

**FACULTY POSITION—RESEARCH ASSISTANT PROFESSOR, DIVISION OF PULMONARY DISEASES.** Minimum of 1 year of postdoctoral research in pulmonary endothelial toxicology required, with ability to be an independent investigator. Must possess strong background in pharmacology and chemistry with a Ph.D. in pharmacology or chemistry. Must have proven experience in cell culture techniques, reverse-phase high-pressure, liquid chromatography, and protein purification. Duties include studying the effects of oxidant pollutants on endothelial cell function using in vitro tissue culture preparations and in vivo animal preparations. The effects to be investigated include changes in arachidonate metabolism,  $\text{Na}^+$ -dependent transport mechanisms, and cyclic nucleotide metabolism. *We are keenly interested in attracting outstanding women and/or minority faculty members to this department. The University of North Carolina is an Equal Opportunity/Affirmative Action Employer.* Please send your curriculum vitae and a covering letter in which you state your field of research interest and references to: **Dr. Mitchell Friedman, Chairman, Search Committee, Department of Medicine, Division of Pulmonary Diseases, University of North Carolina School of Medicine, 724 Burnett-Womack Building, Chapel Hill, North Carolina 27514.**

**FACULTY POSITIONS IN MICROBIOLOGY  
AND MOLECULAR GENETICS**

The Department of Microbiology and Molecular Genetics at the University of Cincinnati College of Medicine is undergoing a major expansion, and invites applications for tenure-track positions at any level. Candidates should be involved in a vigorous and creative research program and should have demonstrated independence as an investigator. Preference will be given to individuals in the areas of molecular or cellular immunology, yeast genetics, and molecular mechanisms of pathogenesis. Applicants should submit curriculum vitae and a short statement of research accomplishments and direction for future research, along with the names of three scientists willing to write letters of recommendation. These should be forwarded to: **Dr. Jerry B. Lingrel, Chairman, Department of Microbiology and Molecular Genetics (524), University of Cincinnati College of Medicine, Cincinnati, Ohio 45267.** The University of Cincinnati is an Equal Opportunity/Affirmative Action Employer.

**THE UNIVERSITY OF CALGARY  
HEAD, DEPARTMENT OF  
MEDICAL BIOCHEMISTRY**

The University of Calgary invites applications for the position of **professor and head** of the Department of Medical Biochemistry in the Faculty of Medicine. Candidates should have the M.D. and/or Ph.D. degree with strong research and administrative skills. The head of the department is responsible for the academic leadership and general administration of the department. The salary will be negotiated and the position will be filled as soon as possible. *In accordance with Canadian immigration requirements, this advertisement is directed to Canadian citizens and permanent residents.* Applications should be sent prior to 30 April 1983 to: **Dr. M. Watanabe, Dean, Faculty of Medicine, The University of Calgary, 2500 University Drive, NW, Calgary, Alberta, Canada T2N 1N4.**

**HISTOLOGIST (Ph.D. or M.D.); LIGHT AND ELECTRON MICROSCOPY,** broad background in structural organization or organ systems, for example, skin and endocrine glands. Capable of evaluating grafts using paraffin, cryostat, and thin sections of biopsies. Immunocytochemical, immunocell-selection techniques important; tissue culture, karyotyping valuable. Research centered on development of living organ equivalents. Salary: about \$25,000, but negotiable. Starting date: September 1983. Boston area. **Box 74, SCIENCE.**

**IMMUNOHEMATOLOGIST/BLOOD BANK.** The Dartmouth-Hitchcock Medical Center is seeking to fill a position at the **assistant professor** level in **clinical pathology.** M.D. applicants should be Board-eligible or -certified and should have an active interest in teaching and research. Individuals with expertise in immunohematology, immunology, coagulation, and/or molecular biology are encouraged to apply. Please send curriculum vitae, names of three references, and salary requirements by 15 May 1983 to: **Daniel S. Longnecker, M.D., Department of Pathology, Dartmouth-Hitchcock Medical Center, Hanover, N.H. 03756.**

*Equal Opportunity/Affirmative Action Employer*



## REPRODUCTIVE BIOLOGIST

Century City Hospital Reproductive Institute has positions available in a new division of Reproductive Biology.

Applicants qualified and experienced with animal or human embryo development and handling should send their curriculum vitae to Dr. Charles Sims:



**CENTURY CITY  
HOSPITAL**

2070 Century Park East  
Los Angeles, CA 90067

A Subsidiary of  
National Medical Enterprises

Equal Opportunity Employer M/F

## KING ABDULAZIZ UNIVERSITY JEDDAH, SAUDI ARABIA FACULTY OF MARINE SCIENCES

Applications for academic positions are now being accepted for the academic year 1983/84. If you are interested send the following requirements:

1. Complete resume.
2. Copies of degrees and letter of experience.
3. List of research and publications.

All the listed requirements should be sent to:

King Abdulaziz University Recruitment Office  
c/o Saudi Arabian Educational Mission  
2425 West Loop South, Suite 654  
Houston, Texas 77027  
Telephone: (713) 629-5170

Deadline for all applications will be April 24, 1983.

## Division of Cancer Treatment National Cancer Institute National Institutes of Health Public Health Service Department of Health and Human Services

### ASSOCIATE DIRECTOR, DEVELOPMENTAL THERAPEUTICS PROGRAM

The National Cancer Institute (NCI) develops the overall national strategy against cancer, coordinates federal government and non-federal government cancer programs, and supports international programs of cancer research.

The Division of Cancer Treatment directs the NCI's major research effort related to the treatment of cancer. The Developmental Therapeutics Program plans, directs, and conducts a basic and applied research program in the preclinical development of chemotherapeutic agents. This Program is comprised of in-house laboratories as well as several branches which administer a 75 million dollar a year grant and contract program through a staff of 275.

This is a Civil Service position in the Senior Executive Service (SES) with a salary range from \$56,945 to \$63,800 per annum. Candidates may be eligible for Physicians' Comparability Allowance up to \$10,000 per year. (Alternately, candidates may be eligible for appointment in the Commissioned Corps of the U.S. Public Health Service.) The individual selected, if not presently in SES, must serve a one year probationary period.

Candidates must meet established mandatory professional/technical and managerial/executive requirements. Candidates will be further evaluated on the extent they exceed the minimum requirements and on additional factors including scientific reputation/peer recognition, training and education and honors and awards. A copy of the requirements may be obtained by contacting Mrs. Sara Benesch, Personnel Management Branch, NCI (301) 496-6862.

Applications (Personal Qualifications Statement SF-171) are to be sent to the above individual at: The National Cancer Institute, Building 31, Room 3A34, Bethesda, Maryland 20205. A current curriculum vitae and bibliography must accompany all applications. Applications from women and/or minority group members are especially solicited.

*The National Institutes of Health is an EQUAL  
OPPORTUNITY EMPLOYER.*

Applications must be postmarked no later than April 30, 1983.

## POSITIONS OPEN

### TRUDEAU INSTITUTE

A position exists for an IMMUNOBIOLOGIST at the ASSISTANT PROFESSOR level to develop an independent research program related to immunity to cancer or infectious diseases. Applicants should have at least 3 years of postdoctoral experience and provide visible evidence that they already have been scientifically productive. Funds are available to support the successful applicant for a minimum of 3 years. The Trudeau Institute is a not-for-profit pure research institute situated on the shore of Saranac Lake, 10 miles from Lake Placid, N.Y. Send résumé and names of three references to:

Dr. Robert J. North, Director  
Trudeau Institute, Inc.  
P.O. Box 59  
Saranac Lake, N.Y. 12983  
*An Equal Opportunity Employer*

### UNIVERSITY OF QUEENSLAND NH AND MRC SENIOR RESEARCH OFFICER IMMUNOLOGIST

Scientific (Ph.D. or M.D.) with several years of postdoctoral experience in immunology required to work on a collaborative project involving immunological mechanisms in chronic liver disease. Location: Royal Brisbane Hospital.

**SALARY:** A\$22,430 to A\$29,466 per annum.

For further information, contact: Professor L. W. Powell, Department of Medicine, University of Queensland, Royal Brisbane Hospital, Herston, Queensland 4006, Australia; telephone: 07-253-5137. Quote Reference Number 07783; 30 April 1983.

Applications should be forwarded to: The Staff Officer, University of Queensland, St. Lucia, Queensland 4067, Australia.

**MICROBIOLOGIST**—Assistant or associate professor; tenure-earning; salary competitive. Responsibilities will include teaching at the undergraduate (general microbiology and bacterial physiology) and graduate levels and development of an independent research program. The position is for 1 September 1983 and applications will be accepted until 30 June 1983 or until the position is filled. Interested persons holding the Ph.D. degree by 1 September should submit (i) résumé, (ii) statement of research interests, (iii) copies of all postsecondary transcripts, and (iv) names, addresses, and telephone numbers of at least three references to: Microbiology Search Committee, Department of Biological Sciences, The University of Alabama in Huntsville, Huntsville, Alabama 35899. *The University of Alabama in Huntsville is an Equal Opportunity/Affirmative Action Institution.*

**NEUROANATOMY POSTDOCTORAL RESEARCH POSITION** in histochemical and anatomical investigations of the limbic system in monkeys. A strong background in neuroscience and some experience with light or electron microscopic anatomical techniques is essential. This is an NIH-funded fellowship, available 1 July. Send curriculum vitae, description of research interest, and names of three references to: Dr. D. L. Rosene, Department of Anatomy, Boston University School of Medicine, 80 East Concord Street, Boston, Mass. 02118. *Equal Opportunity Employer, M/F.*

A POSTDOCTORAL POSITION will be available soon for suitably qualified applicants interested in studying immunity to cancer. The research program of the Trudeau Institute involves the use of animal models of infectious diseases and cancer to analyze mechanisms of protective immunity at the physiological and cellular levels. Applicants should have some training in immunobiology. The starting salary is \$14,500 plus a liberal fringe-benefit package. Subsidized housing is available.

The Trudeau Institute is a not-for-profit pure research institute located on the shore of Saranac Lake, 10 miles from Lake Placid, N.Y. Send résumé and names of three references to:

Dr. Robert J. North, Director  
Trudeau Institute  
P.O. Box 59  
Saranac Lake, N.Y. 12983  
*An Equal Opportunity Employer*

## POSITIONS OPEN

### The University of Calgary JUNIOR RESEARCH POSITIONS IN THE ONCOLOGY RESEARCH GROUP

Applications are invited for junior research positions in the Oncology Research Group, Faculty of Medicine, The University of Calgary. Successful applicants will be expected to apply to the Alberta Heritage Foundation for Medical Research or the National Cancer Institute for support.

Present areas of research emphasis include tumor progression and metastasis, clinical and experimental chemotherapy, cancer immunobiology, ion physiology and cellular biophysics, tumor molecular and developmental biology, membrane biochemistry, and cell growth regulation. We are seeking individuals who can develop independent research programs in an exciting multidisciplinary research setting. *In accordance with Canadian immigration requirements, this advertisement is directed to Canadian citizens and permanent residents.*

Letters of application, curriculum vitae, names of three referees, and copies of recent publications should be sent to: Dr. Susan Friedman, Chairman, Oncology Research Group, Faculty of Medicine, The University of Calgary, 3330 Hospital Drive, NW, Calgary, Alberta, Canada T2N 1N4.

**MARINE BIOLOGIST.** The Bamfield Marine Station invites applications for a 1- or 2-year (non-renewable) sabbatical faculty, research associate, or postdoctoral position as assistant director. Salary commensurate with experience. The successful applicant will be expected to commit about 25 percent F.T.E. to administration and/or teaching duties and pursue an active research program of own choosing at the station. The station is operated by five western Canadian universities and is located on the outer coast of British Columbia. The position is available starting on or after 1 May 1983. Curriculum vitae, statement of research interests and objectives, and names of three references should be sent by 15 April to: Dr. R. E. Foreman, Director, Bamfield Marine Station, Bamfield, British Columbia, Canada V0R 1B0. Telephone: 604-728-3301. *Canadian citizens and permanent residents will be given preference, per Canadian regulations.*

**MICROBIOLOGY:** The West Virginia School of Osteopathic Medicine (WVSOM) invites applications for two tenure-track positions available 1 July 1983. Though preference will be given to those applicants whose background is in virology and/or immunology, successful candidates will be expected to teach in the general microbiology course (including parasitology), participate in the committee structure of the School, and take part in a developing research program. Rank and salary will be commensurate with experience. Applications, including current curriculum vitae and the names of three references, should be sent to: Elizabeth Blatt, Ph.D., Associate Dean for Academic Affairs/Basic Science, West Virginia School of Osteopathic Medicine, Lewisburg, West Virginia 24901. Deadline for applications is 1 May 1983.

*WVSOM is an Affirmative Action/Equal Opportunity Employer.*

### MOLECULAR BIOLOGISTS/ISRAEL

International Genetic Sciences Partnership, a new scientific company being established in Jerusalem, is seeking molecular biologists with experience in either recombinant DNA technology or monoclonal antibodies technology. Please send curriculum vitae, list of publications, and recommendations to:

International Genetic Sciences Partnership  
155-25 Styler Road  
Jamaica, New York 11433

### PHARMACOLOGIST

Northeastern University, College of Pharmacy and Allied Health Professions, is seeking applicants for a full-time, tenure-track position at the level of assistant professor of pharmacology. Candidates will be expected to establish a research program in their area of interest as well as teach pharmacology to graduate and undergraduate pharmacy students. Interest in neuropharmacology, biochemical pharmacology, or cardiovascular pharmacology is desirable but not essential. Applicants should send curriculum vitae, including relevant reprints and names of three references, to the following address by 30 April 1983: Dr. Robert A. Schatz, Search Committee Chairman, Section of Pharmacology, Mugar Hall, Northeastern University, 360 Huntington Avenue, Boston, Mass. 02115.

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

## POSITIONS OPEN

**MOLECULAR GENETICIST,** Ph.D. or M.S. degree, with expertise in recombinant DNA technology, to join mammalian cytogenetics/somatic cell genetics laboratory to work on the development and mapping of DNA markers for human genetic diseases. Stimulating academic environment. Level of appointment will depend on experience and qualifications. Send applications to: Dr. Uta Francke, Department of Human Genetics, Yale University School of Medicine, P.O. Box 3333, New Haven, Conn. 06510.

*Yale University is an Equal Opportunity Employer.*

**TWO PHYSICS FACULTY** starting September 1983. Tenure-track at assistant or associate level and nontenure-track 1-year lecturer. Both require a Ph.D. in physics or electrical engineering. Background in digital electronics and microprocessors preferred. Primary responsibility is teaching undergraduate physics. The applicant must submit a letter of application indicating his/her preference of the two positions, along with a résumé, and have three letters of recommendation sent to: Dr. H. Keith Lee, Chair, Department of Physics, California State University at Dominguez Hills, Carson, Calif. 90747. Complete application materials due in the Physics office by 9 May. *Equal Opportunity/Affirmative Action/Section 504/Title IX Employer.*

**POSTDOCTORAL POSITION** available 1 September 1983 for 2 years to work on the membrane biology of intestinal lipid absorption. Experience with either isolated brush border vesicles, mucus glycoproteins, or fatty acid binding proteins is desirable. Salary: \$17,500 per calendar year. Send curriculum vitae and names and telephone numbers of three references by 15 May to: Dr. John Patton, Microbiology Department, University of Georgia, Athens, Ga. 30602. *An Equal Opportunity/Affirmative Action Employer.*

**POSTDOCTORAL POSITION** available immediately to continue work on the mechanism of hormone (TRH)-regulated protein phosphorylation in pituitary cells [for example, *J. Biol. Chem.* 257, 7566 (1982)]. This project will utilize enzyme purification, cell fractionation, gel electrophoretic, immunological, and cell-fusion techniques. Background in one or more of these areas is desirable. Send résumé with three reference letters to: Dr. T. F. J. Martin, Zoology Department, University of Wisconsin, 1117 West Johnson Street, Madison, Wisconsin 53706. *The University of Wisconsin is an Affirmative Action/Equal Opportunity Employer.*

### THEORETICAL STUDIES OF STRUCTURE, ENERGETICS AND DYNAMICS OF PROTEIN SYSTEMS AND PEPTIDE HORMONES—POSTDOCTORAL POSITION.

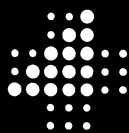
Background in theoretical chemistry, biophysical chemistry, and experience with computers desirable. Salary commensurate with experience. Please send curriculum vitae and three reference letters to: Dr. A. Hagler, The Agouron Institute, 505 Coast Boulevard South, La Jolla, California 92037.

**TWO POSTDOCTORAL POSITIONS IN MICROTUBULE RESEARCH** are immediately available for investigating the control of microtubule self-assembly and the chemistry of the tubulin GTPase reaction. Backgrounds in microtubule research or mechanistic enzymology are preferred. Initial appointment at \$15,500 to \$16,500 may be renewable for an additional year. Send curriculum vitae and three letters of recommendation before 15 April 1983 to: Professor Daniel L. Purich, Department of Chemistry, University of California, Santa Barbara, Calif. 93106. *An Equal Opportunity/Affirmative Action Employer.*

**RESEARCH SCIENTIST.** Challenging position in San Francisco-based biotechnology firm for individual with expertise in hybridoma technology. Requirements include Ph.D. in a related field plus three or more years of experience in research involving hybridoma production, analysis, and screening. Desirable expertise includes the following areas: producing monoclonal antibodies to tumor-associated antigens, in vivo and in vitro sensitization systems, large-scale screening procedures, FACS analysis, experimental design and analysis, and management. An excellent work atmosphere with academically oriented colleagues, excellent salary, and benefits are offered to the individual with appropriate training. Expertise, and capability to direct a team whose goal is developing and testing new monoclonal antibodies.

Please send curriculum vitae and three letters of recommendation to: Box 75, SCIENCE.

# Senior Research Investigator



## Toxicology

American Critical Care, a pharmaceutical division of American Hospital Supply Corporation, specializing in cardiovascular drugs, has an excellent opportunity for a qualified individual in our toxicology group.

Responsibilities include planning, implementation, and evaluation of pre-clinical toxicity studies on prospective drugs using in-house and contract facilities, and preparation of final reports for IND/NDA submissions. The successful candidate will have a Ph.D. in Toxicology, Pharmacology, or related areas as well as 1-3 years experience in the pharmaceutical industry. Knowledge of GLP's is required; experience with techniques in cardiac and ocular toxicity a plus.

Our R&D facility is located in a beautiful park setting in the far north suburbs of Chicago. The work environment is progressive and fast-paced and the compensation package is outstanding. For confidential consideration, forward resume, including salary history to:

Personnel Manager - Dept. TO

## American Critical Care

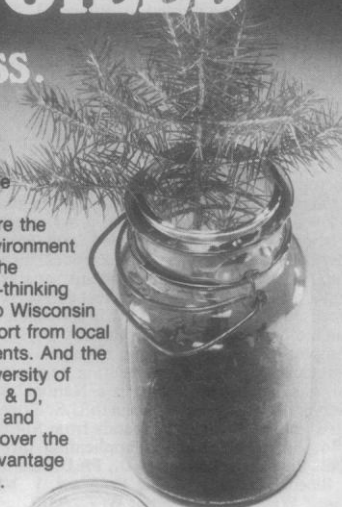


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## KING FAHD RESEARCH INSTITUTE JEDDAH, SAUDI ARABIA

NEEDED ARE RESEARCHERS AND RESEARCH TECHNICIANS

As a result of continuing expansion of research activities, we can offer challenging opportunities at both Research Fellows and medical technology levels in the areas of:

**Haematology** — haemoglobinopathies, leukemia

**Cancer** — Epidemiology

**Immunoassay methodology**

**Chemical Analysis**

**Physiology** — respiratory and determination of normal physiological parameters in Saudis

**Pharmacology** — isolation and characterization of certain plant extracts.

Primary consideration will be given to applicants with research experience in the specified fields.

Salary will depend upon experience and qualifications. There is no income tax in the Kingdom and no restrictions on transfer of exchange.

Forty-five days paid annual leave with airline tickets for appointee and up to three dependants, furnished housing also free medical care will be provided.

Applicants are to include detailed curriculum vitae, credentials and two references with addresses.

Applications should be sent to:

Director  
King Fahd Medical Research Center  
King Abdulaziz University  
P.O. Box 6615  
Jeddah, Saudi Arabia

## NONHUMAN PRIMATES AVAILABLE FOR RESEARCH

*Cercopithecus aethiops*  
African green monkey

Approximately 70 M/F  
6 months-6 years  
domestic-born

Approximately 65 M/F  
6 months-6 years  
wild-caught

*Macaca arctoides\**  
Stump-tailed macaque

Approximately 85 M/F  
6 months-7 years  
domestic-born

Approximately 35 M/F  
6 months-7 years  
wild-caught

These animals have been a part of a resource colony of the National Heart, Lung and Blood Institute of NIH and are now available for sale. Approximately 2/3 have been fed an atherogenic diet since age 6 months of age or importation—1/3 are controls. Price is negotiable.

Contact either Dr. Elizabeth A. Gard or Dr. David P. Martin (301-881-5600) for further information.

\*threatened species

## POSITIONS OPEN

### TWO POSITIONS AVAILABLE

General surgeon for faculty position (instructor/assistant professor) at Wayne County General Hospital. Board-certification, research experience, clinical experience, and instructor experience required. Duties include patient care, teaching, and research. All inquiries should be directed to: **Robert H. Bartlett, M.D., Professor and Head, Section of General Surgery, Department of Surgery, University of Michigan Hospitals, D2255 S.A.C.B., Box 46, Ann Arbor, Mich. 48109.** The University of Michigan is a nondiscriminatory, Affirmative Action Employer. PCN 140HO and 41HO.

### POSTDOCTORAL POSITIONS

Postdoctoral training in cardiovascular studies for medical scientists and clinical investigators is available for 2-year periods. The training programs emphasize laboratory research, coupled with course work where desired, in the physical sciences, instrumentation, computer science, systems analysis, physiology, and so forth. The investigative programs, focused around the Center for Bioengineering, are in biological sciences (particularly physiology and biophysics, bioengineering, biological structure, and cardiology) and engineering (chemical, electrical, and mechanical). This is a National Research Service Award Program open to U.S. citizens and landed immigrants, with stipends from \$14,040 to \$19,716. For information or application forms, write: **J. B. Bassingthwaite, M.D., Ph.D., Cardiovascular Bioengineering Training Program, WD-12, University of Washington, Seattle, Wash. 98195.**

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

### POSTDOCTORAL POSITIONS

- CRYSTALLOGRAPHER** to do single-crystal diffraction on co-crystals of the transmembrane channel gramicidin and lipid both with and without ions present.
- LOW-ANGLE X-RAY AND NEUTRON DIFFRACTION** to do studies on oriented phospholipid multilayers and two-dimensional crystals of NaK/ATPase in membranes.

Experience in protein or small molecule crystallography or low-angle scattering required for both positions, which are available starting 1 March 1983, for 1 year with possible extension of up to 3 years. Send curriculum vitae and three letters of reference to:

**Dr. B. A. Wallace, Department of Biochemistry, Columbia University, 630 West 168 Street, New York, N.Y. 10032.**

Columbia University is an Equal Opportunity/Affirmative Action Employer.

**POSTDOCTORAL POSITION** in the field of neurochemistry available immediately for a recent Ph.D. Research involves the study of the mechanism of action of presynaptic neurotoxins. A strong background in protein chemistry, membrane biochemistry, neurochemistry, or cell biology is essential. Send application, curriculum vitae, and three references to: **T. B. Rogers, Department of Biological Chemistry, University of Maryland School of Medicine, 660 West Redwood Street, Baltimore, Md. 21201.**

### POSTDOCTORAL/RESEARCH ASSOCIATE POSITIONS

Openings for two persons to work in ongoing studies in tumor immunology. A background in cellular immunology, somatic cell genetics, and/or biochemistry is desirable. Salary range: \$15,000 to \$18,000 annually.

Send curriculum vitae and names of three individuals for reference before 15 May 1983 to:

**Edward P. Cohen, M.D.  
Department of Microbiology/Immunology  
University of Illinois at Chicago  
P.O. Box 6998  
Chicago, Illinois 60680**

Positions available 1 September 1983 or before.

The University of Illinois is an Equal Opportunity Employer.

Department of Pathology, Harbor-UCLA Medical Center, **RESEARCH ASSISTANT/POSTDOCTORAL FELLOW POSITION** available for an investigator to participate in studies on fetal gonadal development in primates. Minimum requirements are M.D. and/or Ph.D. degree, solid morphologic background, and academic interests. Applications and curriculum vitae should be sent to: **Luciano Zamboni, M.D., Professor and Chairman, Department of Pathology, Harbor-UCLA Medical Center, 1000 West Carson Street, Torrance, California 90509.**

## POSITIONS OPEN

**POSTDOCTORAL POSITION** available 1 June 1983 for studies of monoamine and neuropeptide dynamics in retina and brain. Individuals seeking this position should have biochemistry or pharmacology training, and experience using contemporary biochemical techniques (for example, HPLC, electrophoresis, radioimmunoassay). Send curriculum vitae and names and addresses of three references to: **Dr. John D. Fernstrom, WESTERN PSYCHIATRIC INSTITUTE & CLINIC, University of Pittsburgh School of Medicine, 3811 O'Hara Street, Pittsburgh, Pa. 15213.** An Equal Opportunity Employer.

**TWO POSTDOCTORAL POSITIONS** available in 1983 to study (i) cAMP-dependent protein kinases from neural and non-neural sources and (ii) regulation of tyrosine hydroxylase activity. Previous experience in enzymology, enzyme purification, and protein chemistry desirable but not necessary. Salary is \$18,000 or more, depending on experience. Send curriculum vitae and names and telephone numbers of three references to the following: **Robert Roskoski, Jr., Department of Biochemistry, Louisiana State University Medical Center, New Orleans, La. 80119.**

An Affirmative Action/Equal Opportunity Employer

### POSTDOCTORAL RESEARCH ASSOCIATE

To study the molecular biology of Sindbis virus, especially as it relates to: (i) persistent infections of invertebrate cells, (ii) virulence in experimental animals, or (iii) the influence of cell cycle on virus infection. Experience in protein biochemistry or recombinant DNA technology desirable. Available 1 September 1983; salary commensurate with experience. Send curriculum vitae and the names of three references to: **Dr. Robert Johnston, Department of Microbiology, North Carolina State University, Raleigh, N.C. 27650.** North Carolina State University is an Affirmative Action/Equal Opportunity Employer.

**POSTDOCTORAL RESEARCH ASSOCIATE** (two positions): (i) Available about 1 July 1983, to study the status and regulation of glutathione with isolated organ cells as related to chemical intoxication effects. (ii) Available about 1 July 1983 to study (a) chemical toxicity mechanisms, (b) protein chemical modifications, or (c) cellular protective mechanisms against 1,2-dihaloethanes and other carcinogens. Application and three letters of recommendation to: **Dr. Donald J. Reed, Department of Biochemistry and Biophysics, Oregon State University, Corvallis, Oregon 97331.** Oregon State University is an Affirmative Action/Equal Opportunity Employer and complies with Section 504 of the Rehabilitation Act of 1973. Closing date for applications: 15 April 1983.

**PSYCHOLOGY DEPARTMENT**, University of Massachusetts/Boston, nonprobationary, 2-year renewable appointment in psychology as assistant professor to teach introductory and advanced courses in comparative and physiological psychology and research methods. Ph.D., evidence of excellent teaching, and active research program required. Salary competitive, commensurate with experience. Review of applications begins immediately. Statement of interest, curriculum vitae, and three letters of reference to: **C. L. Moore, Chair, Psychology, University of Massachusetts/Boston, Boston, Mass. 02125,** by 15 April 1983. Position subject to funding. Affirmative Action/Equal Opportunity Employer.

### RESEARCH ASSOCIATE

Postdoctoral position available this fall to study regulation of gene expression during spermatogenesis. Successful candidate will join a group using recombinant DNA techniques to study the transcriptional and translational regulation of testicular proteins that are temporally regulated during male germ cell development. Experience in nucleic acid chemistry and/or recombinant DNA techniques useful. Salary commensurate with experience. Send curriculum vitae and names of three references to: **Norman B. Hecht, Ph.D., Department of Biology, Tufts University, Medford, Mass. 02155.**

**SENIOR POSTDOCTORAL ASSOCIATE.** Direct the trace analysis effort at the Midwest Center for Mass Spectrometry. Requires Ph.D. in organic or analytical chemistry with extensive experience in chromatography, mass spectrometry, sample extraction and preparation schemes, and the handling of picogram quantities of toxic substances (for example, dioxins, PCB's, and so forth). Minimum salary: \$20,000 per annum. Send résumé and three letters of reference by 1 May to: **Professor M. L. Gross, Director, Midwest Center for Mass Spectrometry, Department of Chemistry, University of Nebraska-Lincoln, Lincoln, Nebraska 68588-0304.** Affirmative Action/Equal Opportunity Employer.

## POSITIONS OPEN

### WOUND HEALING

**POSTDOCTORAL POSITION.** Research opportunities studying an in vitro model of wound healing using biochemical and microscopic techniques. Available: June 1983. Salary: \$16,000 to \$18,000. Send curriculum vitae and three letters of reference to: **Dr. Fred Grinnell, Cell Biology, University of Texas Health Science Center, Dallas, Texas 75235.** Affirmative Action/Equal Opportunity Employer.

**POSTDOCTORAL RESEARCH ASSOCIATE** position available in summer 1983. Laboratory is involved in studies of the neural mechanisms of vision in developing and adult animals. Research employs single cell electrophysiological, behavioral, anatomical, and immunological techniques. Send curriculum vitae (including short statement of research interests) and names of three references to: **Peter D. Spear, Department of Psychology, University of Wisconsin, Madison, Wis. 53706.** Equal Opportunity/Affirmative Action Employer.

**RESEARCH ASSOCIATE:** The Linus Pauling Institute invites applications from Ph.D.'s or researchers with equivalent expertise who wish to conduct research on the mechanism of neoplastic transformation of human cells. Applicants must have experience in at least one of the following areas: (i) recombinant DNA techniques for cloning of human actin genes; (ii) high resolution 2-D gel electrophoresis of polypeptides; and/or (iii) hybridoma preparation and monoclonal antibody characterization. For area of interest see *Cell* 28, 259 (1982) and *Carcinogenesis* 3, 61 (1982). Candidates should send curriculum vitae to: **John Leavitt, Ph.D., Laboratory of Molecular Carcinogenesis, Linus Pauling Institute of Science and Medicine, 440 Page Mill Road, Palo Alto, Calif. 94306.**

**RESEARCH ASSOCIATES.** Two positions available immediately. (i) Research on lysosomal enzyme targeting. Background in enzymology is desired. Knowledge of glycoproteins and glycolipids will be helpful. (ii) Synthesis of sialyloligosaccharides. Background in synthetic carbohydrate chemistry is desired. Experience in HPLC helpful. Send curriculum vitae and two references to: **Dr. Khushi L. Matta, Roswell Park Memorial Institute, 666 Elm Street, Buffalo, N.Y. 14263.**

**RESEARCH ASSOCIATE.** Job order number 468795. Postdoctoral position available in the area of physiology and pathophysiology of lipoprotein metabolism with specific emphasis on the role of hepatic lipase. Must have training in hybridoma research (monoclonal antibodies), protein chemistry, and lipoprotein metabolism. No postdoctoral experience required. Ph.D. in physiology required; 40 hours, \$13,380 per year. Contact: **Louisiana Department of Employment Security, 617 St. Charles Avenue, New Orleans, La. 70130.**

### RESEARCH OPHTHALMOLOGIST

Clinically relevant research. Animal modeling and experiments. Focus on posterior and anterior ocular trauma. No patient care. Requirements: M.D. degree; 5 years of experience in clinical ophthalmology; knowledge of ocular trauma; retinal, vitreoretinal, and corneal diseases; ability to design clinically relevant animal models; \$34,679.84 per year; 8:30 to 5:00. Job site: Los Angeles. If offered employment, must show legal right to work. Send copy of this ad and your résumé to: **Job Number 8291, P.O. Box 865, Sacramento, Calif. 95804,** no later than 16 April 1983.

**VECTOR/VIROLOGIST.** Full-time, 11-month, tenure-track appointment at assistant professor level beginning 1 September 1983, or thereafter. Research to emphasize molecular and cellular characteristics of circulative and propagative arthropod-borne plant viruses (*rhodoviridae*), within the context of comparative virology. Teaching responsibilities at both the undergraduate and graduate levels in vectored viruses and their biological and ecological characteristics. Qualifications include a Ph.D. degree and evidence of outstanding potential for teaching and research in comparative vector/virology. Applications should include (i) curriculum vitae, academic transcripts, and evidence of teaching skills and experience, (ii) bibliography and reprints of significant publications or manuscripts, (iii) a statement outlining research areas and approaches used, and (iv) names and addresses of at least three people who can provide recommendations. All material should be submitted by 1 June 1983 to: **E. S. Sylvester, Chair, Department of Entomological Sciences, 201 Wellman Hall, University of California, Berkeley, Calif. 94720.** The University of California is an Equal Opportunity/Affirmative Action Employer.

## NEUROPHARMACOLOGY Ph.D. Level

Continued expansion at the Warner-Lambert/Parke-Davis Pharmaceutical Research Division has generated an immediate opportunity for an experienced motor systems pharmacologist/physiologist. This position is located in the Neurological Diseases Group, which is involved with drug discovery in spasticity.

The successful applicant will have:

- Ph.D. or equivalent in pharmacology or physiology and up to 5 years post-doctoral experience.
- Expertise in spinal cord pharmacology/physiology related to sensorimotor processing, spinal reflex systems, or spinal interneuronal circuitry is desired.
- Excellent communication skills.

Our research facilities adjacent to the University of Michigan campus in Ann Arbor, Michigan are among the finest and best equipped in the world and are devoted exclusively to the discovery and development of new drugs. We offer excellent compensation, benefits and work environment. Send resume with salary requirements and references in confidence to: Ms. D. Love, Human Resources Supervisor, Dept. #121-83, WARNER-LAMBERT/PARKE-DAVIS, PHARMACEUTICAL RESEARCH DIVISION, 2800 Plymouth Road, Ann Arbor, Michigan 48105. Alternatively, contact our representative at the April 1983 FASEB meeting. An Equal Opportunity Employer M/F/H.

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## Regional Medical Associate

### Pharmaceutical Marketing Atlanta Region

Smith Kline & French Laboratories, a dynamic multinational leader in the pharmaceutical industry, has created a unique growth opportunity paying in the 30's - (plus performance bonus) for an individual to combine scientific expertise and marketing skills. Responsibilities are to establish effective relationships within key medical institutions, providing scientific liaison and indepth information essential to appropriate use of S K & F's products. Will also have training responsibility at the Representative, Medical Staff and Pharmacy levels. Travel 30 to 40%.

Qualifications include PhD in Pharmacology, Biochemistry, Microbiology or other life sciences required. Must possess initiative, strong communication skills and interest in marketing.

In addition to an independent work environment where personal and professional growth are a way of life, we offer an outstanding Compensation/Benefits package and a relocation program geared to today's market. Please send resume + current earnings to:

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For further information, telephone Dick Charles at **SCIENCE: 212-730-1050**, or write: **1515 Broadway, New York, N.Y. 10036**.

\*At a 15% premium.

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  - ☐ \$90 USA ☐ \$114 Canada ☐ \$117 Foreign
  - ☐ \$155 air-surface delivery via Holland

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## POSITIONS OPEN

### SPACE SCIENCE EXECUTIVE SECRETARY

The Space Science Board of the National Research Council is seeking applicants for the position of **Executive Secretary**. The Board is responsible for developing long-range space science strategies and policies and for assessing and advising on major new initiatives in the national space program. The incumbent will provide staff support, with others, to the Space Science Board and will be responsible for management of and planning for several of the Board's standing committees. Responsibilities will include, in consultation with committee chairmen and the Board staff director, identifying major issues for committee consideration, developing and maintaining communication with sponsoring agency, fiscal management, and report preparation. Candidates should have a Ph.D. or equivalent, preferably in related physical or geophysical sciences, approximately 5 to 8 years of experience in space science and policy development, and demonstrated effective communication and administrative skills. Please send résumé to: **Dean P. Kastel, Executive Secretary, Space Science Board, National Academy of Sciences, 2101 Constitution Avenue, NW, Washington, D.C. 20418.**

*An Equal Opportunity Employer*

### SYSTEMATIC ENTOMOLOGIST POSITION ANNOUNCEMENT

The Department of Entomology, Smithsonian Institution, has a professional opening for a curator in the specialty area of soil arthropods. The candidate will have responsibilities for the curation, growth, and maintenance for the Smithsonian's arachnid and myriapod collections. The candidate should have an established research program in collection-based evolutionary systematics, with a demonstrated interest in its theory. Knowledge of computer applications is required, specifically in the areas of collection management and data analysis. The candidate will be expected to participate in the exhibits program and develop a relationship of his/her research with the public. Preference will be given to an applicant with a Ph.D. This is a term position not to exceed 3 years, with salary range (GS-11/12; \$24,508 to \$29,374) depending on experience and qualifications. Smithsonian entomology offers opportunities for development of field programs, interdisciplinary collaboration, and use of a worldwide collection and an excellent library. Special facilities include SEM, TEM, Smithsonian publication series, computer services, and potential for teaching courses and advising graduate students. Interested applicants should send a statement of current and future goals, curatorial interests, curriculum vitae, Standard Form 171 (Personal Qualifications Statement), the names of three references, and a set of reprints to: **Dr. Wayne N. Mathis, Chairman, Department of Entomology, NHB 105, Smithsonian Institution, Washington, D.C. 20560.** *The Smithsonian Institution is an Equal Opportunity Employer.* Closing date: 15 May 1983.

### UNIVERSITY OF HAWAII AT MANOA VICE CHANCELLOR FOR RESEARCH AND GRADUATE EDUCATION

The University of Hawaii at Manoa invites nominations, and explicitly solicits direct applications, for the new position of **Vice Chancellor for Research and Graduate Education**.

The vice chancellor will report to the chancellor and will be responsible for the support, coordination, and further strengthening of all research and graduate education within the University's Manoa campus. The appointee will be the primary source of advice to the chancellor on the status, needs, and recommended development of research and graduate education. The position offers excellent opportunities for leadership into new avenues of research while stimulating and strengthening existing programs at the primary research campus of the University of Hawaii System. Candidates should have an outstanding record of achievement in research, a thorough understanding of and commitment to the needs of graduate education, and demonstrated administrative achievement. Extensive experience in sponsored research with federal agencies is necessary.

Applications with supporting material, including the names of at least three references, should be received by 1 June 1983, and should be forwarded to: **Dr. John T. Jefferies, Chairman, Vice Chancellor Advisory Committee, University of Hawaii at Manoa, Institute for Astronomy, 2680 Woodlawn Drive, Honolulu, Hawaii 96822.** Telephone: 808-948-8566.

*An Equal Opportunity Employer*

## POSITIONS OPEN

**TERRESTRIAL ECOLOGIST:** Ph.D. For a core staff position in a long-term study of rain-forest nutrient cycling. Preference will be given to candidates whose research focuses on (i) nutrient release and transfer from litter to soil and plants, (ii) atmospheric fluxes of biologically important elements, or (iii) productivity and dynamics of tropical forest ecosystems.

The successful candidate will center activities at the El Verde Field Station, 20 miles east of San Juan. Expertise in statistics and experimental design, tropical experience, and fluency in Spanish desirable. Send résumé to:

**Dr. Laurence J. Tilly, Ph.D.**

**Center for Energy and Environment  
Research (CEER)**

**University of Puerto Rico, College Station  
Mayaguez, Puerto Rico 00708**

Closing date: 15 May 1983.

*CEER is an Equal Opportunity Employer.*

## TRAVEL GRANTS

The National Institute on Drug Abuse has awarded a **GRANT** to the International Narcotics Research Conference to support travel of participants to its 26 June to 1 July 1983 meeting in Garmisch, West Germany. Applicants must fulfill the following criteria as per grant award: (i) Graduate or postdoctoral student, or investigator with ten or fewer years of postdoctoral experience, and (ii) U.S. citizen or permanent resident. Awards will be limited to cost of airfare and U.S. carriers must be used. Submit application and curriculum vitae, including name of laboratory and its director, by 21 April 1983 to: **Dr. Eric J. Simon or Dr. Jacob M. Hiller, Department of Psychiatry, New York University Medical Center, 550 First Avenue, New York, N.Y. 10016.**

## GRADUATE STUDY

**GRADUATE STUDY IN PATHOBIOLOGY**—Applications are invited for graduate study in pathobiology leading to the degree of Ph.D. This program offers training in cellular and molecular aspects of human disease. Students may specialize in a variety of disciplines including, for example, cell biology, biochemistry, immunology, cancer biology, genetics, and microbiology. Emphasis is placed upon preparing graduates to work and carry out research in the biomedical sciences. Graduate students with degrees in the sciences, as well as those presently holding M.D. degrees, are encouraged to apply. Some stipends are available. Deadline for application is 1 June 1983. Contact: **B. A. Logas, Department of Laboratory Medicine and Pathology, Box 198 Mayo, University of Minnesota, Minneapolis, Minn. 55455.** Telephone: 612-376-3083.

## TRAINING PROGRAM

### PREDOCTORAL TRAINING PROGRAM IN BIOCHEMISTRY AND MOLECULAR BIOLOGY

The Department of Biochemistry of the University of Kentucky invites applications for its Ph.D. training program. Major research areas in the department can be divided into the broad categories of (i) **nucleic acids and molecular biology:** protein synthesis, DNA enzymes, messenger RNA, DNA-drug interactions, yeast genetics, recombinant DNA, plant viruses, physical chemistry of DNA, somatic cell genetics, purine metabolism, and transformation of plant cells; (ii) **cell surfaces:** inositol-containing phospholipids, glycolipids, glycoprotein biosynthesis, cell surfaces of parasites; and (iii) **enzymes and proteins:** transition state enzyme inhibitors, enzyme kinetics, emphysema-related proteins. Collaborative projects with other departments provide additional research opportunities in clinical medicine, smoking and health, plant pathology, agronomy, chemistry, cell biology, and aging. All students admitted to the program receive out-of-state tuition waivers and fellowships ranging from \$6,000 to \$8,000 per year. In addition, one special fellowship of \$12,000 per year is available for an outstanding student whose research area involves recombinant DNA techniques. For application materials, write: **Director of Graduate Studies, Department of Biochemistry, University of Kentucky College of Medicine, Lexington, Kentucky 40536.** *An Equal Opportunity/Affirmative Action Employer.*

## SYMPOSIUM

### THE NEUROSCIENCE PROGRAM OF WAYNE STATE UNIVERSITY PRESENTS A COLLOQUIUM MODULATORS OF NEURONAL AND GLIAL FUNCTIONS

25 MAY 1983

**WAYNE STATE UNIVERSITY  
SCHOOL OF MEDICINE  
Scott Hall, 9:00 a.m. to 5:00 p.m.  
Detroit, Michigan**

The speakers are Drs. D. Bigner, R. Bunge, M. Hatten, N. Nathanson, and G. Somjen. Topics include control of functions of myelin-forming cells, monoclonal antibodies against neoplastic brain tissue, glial-neuronal interactions, consequences of virus infections on neural function, and influences of ions on neural cells. Contact: **H. Rauch, Department of Immunology and Microbiology or Robert P. Skoff, Department of Anatomy, Wayne State University School of Medicine, Detroit, Mich. 48201.** Five CME credits.

## FELLOWSHIPS

**POSTDOCTORAL FELLOWSHIP.** Position open to work in electrophysiology of epithelial tissues and its correlation with molecular membrane phenomena such as receptor function and physicochemistry. Good background in microelectrode recording, ion-sensitive electrodes, and physicochemistry preferred. Chemistry background welcomed. Write to (include curriculum vitae): **Dr. J. A. Zadunaisky, New York University Medical Center, 550 First Avenue, New York, N.Y. 10016.**

### POSTDOCTORAL RESEARCH TRAINING FELLOWSHIPS

Fellowships available to residents of North America with Ph.D. or M.D. and less than 1 year of postdoctoral laboratory experience for beginning training in basic biomedical research. Three-year award includes annual stipend of \$15,000, \$1,000 per annum research allowance, travel to fellowship location, and annual meeting. Application deadline: 15 August; fellowships activate following July. For application forms, write: **The Helen Hay Whitney Foundation, 450 East 63 Street, New York, N.Y. 10021.**

### RESEARCH FELLOWSHIP

Immediate position available for M.D. or Ph.D. to investigate the immunological effects of antiviral therapy in chronic hepatitis B in an established clinical trial. Previous experience in cellular immunology required. Salary commensurate with level of experience. Send curriculum vitae to: **Dr. Donald Jensen, Department of Medicine, Rush-Presbyterian-St. Luke's Medical Center, 1753 West Congress Parkway, Chicago, Illinois 60612.** *An Equal Opportunity Employer.*

### TEACHING FELLOWSHIPS DEPARTMENT OF BIOLOGY UNIVERSITY OF NEVADA AT RENO

Applications are invited for the award of teaching fellowships to students pursuing an M.D. or Ph.D. degree. The department has active graduate programs in areas such as field ecology, genetics, and developmental biology. The successful applicants must be admitted to a graduate program in biology under the supervision of one of the 14 faculty members and shall teach laboratory courses in such areas as general biology, genetics, ecology, embryology, microbiology, human anatomy, and physiology. The stipend for an academic year is about \$5000, plus tuition and fee waivers. Apply to: **Chairman, Department of Biology, University of Nevada, Reno, Nevada 89557,** before 2 May 1983.

*University of Nevada is an Equal Opportunity/Affirmative Action Employer.*

### POSTDOCTORAL FELLOWSHIPS

Postdoctoral fellowship positions in neuroscience available in July 1983 for individuals with the Ph.D. or M.D. degree interested in training in neurochemistry, neurophysiology, neuroendocrinology, or neuropharmacology. Clinical research may be included in the PET/Cyclotron Center, which is currently dedicated to investigation of metabolic processes of the brain. Contact: **Sid Gilman, M.D., Department of Neurology, The University of Michigan Medical School, 1405 East Ann Street, Ann Arbor, Mich. 48109.** *The University of Michigan is a nondiscriminatory, Equal Opportunity Employer.*



## Research Professorships in Biochemistry

### THE UNIVERSITY OF CALGARY

Applications are invited from researchers at any stage of their career with a record of creativity in biochemistry or related fields. Selected applicants will be nominated for appointment as Research Scholars or Career Scientists of the Alberta Heritage Foundation for Medical Research, an independent Alberta foundation. Remuneration will be based upon salary scales at the University and will depend upon the academic rank to which successful candidates are appointed. An Establishment Grant for equipment and operating costs is provided by the Foundation. Appointees will be expected to devote at least 75% of their time to research and the supervision of graduate students. Limited teaching duties and participation in the affairs of the Division will be required.

In accordance with Canadian immigration requirements priority will be given to Canadian citizens and permanent residents. However, others are encouraged to apply.

Qualified individuals should send their curriculum vitae, the names of three referees, and a description of their research objectives before May 1, 1983 to:

**Dr. R.S. Roche**  
Division of Biochemistry  
Department of Chemistry  
University Biochemistry Group  
The University of Calgary  
Calgary, Alberta Canada T2N 1N4

## STAFF FELLOW, PSYCHOLOGIST:

The Stress and Coping Section in the Laboratory of Behavioral Sciences of the Gerontology Research Center is seeking a Ph.D. psychologist with experience in the measurement of evoked potentials and EEG's in humans for a renewable two-year position as Staff Fellow. The Section conducts research in personality, aging, and stress and coping. Candidate is expected to have a strong background in research and interests in personality and individual differences. The position is located at the Gerontology Research Center, National Institute on Aging, National Institutes of Health, Public Health Service on the grounds of the Baltimore City Hospitals, Baltimore, Maryland. Yearly salary range is \$17,000 to \$34,269 depending on background and experience. **Send letter of interest, reprints and vita to: Paul T. Costa, Jr., Chief, Section on Stress and Coping, Gerontology Research Center, Baltimore City Hospitals, Baltimore, MD 21224. Phone: (301) 396-8100.**

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# PHYSICIST

The Office of Naval Research is seeking a highly qualified individual to plan and manage a contract research program in physics. This is a Civil Service position at the GM-13 (\$34,930-\$45,406), GM-14 (\$41,277-\$53,661) or GM-15 (\$48,553-\$63,115) level, depending on qualifications.

The incumbent is responsible for planning, coordinating and directing a research program involving the theories, concepts and experimental techniques in classical and quantum physics with emphasis on non-linear dynamics, non-equilibrium processes, and computational physics.

Candidates are required to have a Ph.D. or equivalent in physics and a minimum of three years of progressively responsible professional experience. At least one year of experience must be comparable in difficulty and responsibility to the next lower level in the federal service. It is desirable that applicants have demonstrated research in non-linear dynamics, non-equilibrium processes, and computational physics.

Interested persons should submit a resume or Standard Form 171, Personal Qualifications Statement (available at Federal Job Information Centers or from the address below), to:

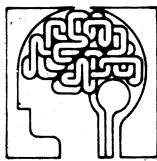
## OFFICE OF NAVAL RESEARCH

Personnel Office, Code 791SC

ATTN: Announcement #83-12 (S)  
800 North Quincy Street • Arlington, VA 22217

**Applications will be accepted through 23 May 1983 and must be received by that date.**

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## **Fidia Research Series Frontiers in Neuroscience**

6-10 June, 1983 - Capo Boi Hotel  
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### **The Cell Biology of Neuronal Plasticity**

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When you receive announcements such as the above be aware that the initiative has been accepted in the series "Frontiers in Neuroscience."

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