

cells and fibrinogen and cell surface proteins such as fibronectin. Hawiger and Niewiarowski discuss impressive data that have emerged from their laboratories concerning the exact amino-acid sequence in the fibrinogen molecule, that is, the carboxy-terminal portion of the  $\gamma$  chain responsible for the binding of fibrinogen to activated platelets, an event that appears essential in normal platelet aggregation. The detailed studies pioneered by Mosher also tell us of the exact domains in fibrinogen and fibronectin that allow these two molecules to attach noncovalently and covalently.

Several years of work in Henschen's laboratory had by 1982 provided information on the discrete amino acid switches in ten cases of dysfibrinogenemia. (At this time, the number of abnormally functioning fibrinogens that have been characterized has doubled.) This information is beginning to pay off in an understanding of the function of normal fibrinogen.

Although much information is needed in the form of high-resolution x-ray diffraction patterns before we can completely comprehend the three-dimensional structure of fibrinogen and fibrin, comprehension is clearly within our reach. Although work on the genes of the fibrinogen chains has just begun, the impressive progress made so far makes it reasonable to expect that the next few years will provide much clarification concerning the regulation of the fibrinogen genes as well as the genotypical features of the major inherited fibrinogen disorders, the afibrinogenemias and the dysfibrinogenemias. The book provides strong reassurance that we will soon understand the conversion of fibrinogen to fibrin.

NILS U. BANG

*Lilly Laboratory for Clinical Research,  
William N. Wishard Memorial  
Hospital, Indianapolis, Indiana 46202*

## Invertebrate Lineages

**Crustacean Phylogeny.** FREDERICK R. SCHRAM, Ed. Balkema, Rotterdam, 1983 (U.S. distributors, MBS, Salem, N.H.). xii, 372 pp., illus. \$38. Crustacean Issues, 1. Based on a symposium, Dallas, Dec. 1981.

A revival of interest in the phylogeny of Crustacea has occurred in recent decades, stimulated by such developments as Manton's proposal that the Arthropoda are polyphyletic, the discovery of new classes of Crustacea apparently possessing ancestral characters (Cephalo-

carida and Remipedia), evidence from new fossils, and the availability of cladistic methods for constructing family trees. This revival has produced debate on a number of issues, some of which are considered in this volume. Three authors discuss the validity of Dahl's class Maxillopoda. Grygier argues that it is a natural taxon and enlarges it to include Hansen's Y-larvae and, on the basis of sperm morphology, the Pentostomida. Newman reconstructs the probable developmental stages of the ancestral malacostracan and suggests how the Maxillopoda evolved by pedomorphosis from the 11th of the proposed 14 stages. Boxshall rejects the Maxillopoda and finds within the group three independent lineages whose evolution has been guided by functional adaptations. The largest group of Maxillopoda, the Copepoda, and their diversity are the subject of a rather recondite essay by Marcotte, which includes an introduction to ancient Greek philosophy. The phylogeny of the Ostracoda, sometimes excluded from the Maxillopoda, is treated by McKenzie, Müller, and Gramm, with a good discussion and illustrations of the recently discovered Cambrian phosphatocopids with fully preserved appendages.

Other issues involve the caridoid facies and the carapace. Did the ancestral malacostracan conform to the caridoid facies, and did it have a carapace? Hessler answers yes to both questions in unequivocal terms. Dahl believes that eumalacostracan orders evolved from ancestors that lacked a carapace but had the caridoid escape reaction of suddenly flexing the abdomen and tail fan forward. In his view isopods and amphipods did not lose their carapaces during evolution but never had them.

The Peracarida and its components are considered by three authors. On the basis of the analysis of six characters, Watling abolishes the Peracarida, places the Spelaeogriffacea, Cumacea, Tanaidacea, and Thermosbaenacea in Schram's superorder Brachycarida, transfers the Mysidacea to the Eucarida, and raises the Amphipoda and Isopoda to superfamily rank. Useful papers on the Amphipoda and Tanaidacea are contributed by Bousfield and Sieg, respectively.

Kunze gives arguments for recognizing the Hoplocarida as a subclass of Malacostraca rather than a superorder within the subclass Eumalacostraca. In this she is supported by Dahl and Schram but opposed by Hessler.

Three papers deal with the Decapoda.

Felgenhauer and Abele find four independent evolutionary lines of shrimplike forms, Dendrobranchiata, Procarididea, Stenopodidea, and Caridea, but suggest that the last is heterogeneous. Rice reviews the evidence available from zoea larvae for the pathways of evolution in crabs but warns of pitfalls in basing phylogeny on larval characters. Burkenroad, long recognized for his pioneering work on peneid shrimp systematics, finally publishes his key to the taxa of peneids (Dendrobranchiata), a key that has been available in some circles for many years. It is good to finally have this key published, but unfortunately Burkenroad did not update it to include recent advances in peneid taxonomy, especially those of the distinguished peneid specialist Perez Farfante. Burkenroad's curt dismissal of Perez Farfante's important contributions in three footnotes is inexcusable, in my opinion.

This volume will not end debate on any issues of crustacean phylogeny, but Schram has done us a service by making available, conveniently, the pros and cons of many of the issues. I recommend this book to anyone interested in the evolution of Crustacea.

THOMAS E. BOWMAN

*Department of Invertebrate Zoology  
(Crustacea), Smithsonian Institution,  
Washington, D.C. 20560*

## Books Received

**Chemical Skills.** Edward I. Peters. 2nd ed. McGraw-Hill, New York, 1983. xvi, 472 pp. Paper, \$16.95.

**Chemistry and World Food Supplies.** The New Frontiers. CHEMRAWN II. L. W. Shemilt, Ed. Pergamon, New York, 1983. xvi, 664 pp., illus. \$135; paper, \$75. From a conference, Manila, Dec. 1982.

**The Computerization of Newspaper Organizations.** The Impact of Technology on Organizational Structuring. Nancy M. Carter and John B. Cullen. University Press of America, Lanham, Md., 1983. vi, 139 pp. \$21; paper, \$9.25.

**Contemporary Nephrology.** Vol. 2. Saulo Klahr and Shaul G. Massry, Eds. Plenum, New York, 1983. xxvi, 793 pp., illus. \$75.

**Equilibria, Nonequilibria, and Natural Waters.** Vol. 1. Ricardo M. Pytkowicz. Wiley-Interscience, New York, 1983. xvi, 351 pp., illus. \$49.95.

**Equilibrium in the Balance.** A Study of Psychological Explanation. Sophie Haroutunian. Springer-Verlag, New York, 1983. xviii, 157 pp., illus. \$23.50. Springer Series in Cognitive Development.

**Ionization Potentials.** Some Variations, Implications and Applications. L. H. Ahrens. Pergamon, New York, 1983. xii, 104 pp., illus. Paper, \$29.50.

**Is God a Creationist?** The Religious Case Against Creation-Science. Roland Mushat Frye, Ed. Scribner, New York, 1983. x, 205 pp. \$15.95.

**Microclimate.** The Biological Environment. Norman J. Rosenberg, Blaine L. Blad, and Shashi B. Verma. 2nd ed. Wiley-Interscience, New York, 1983. xxvi, 495 pp., illus. \$34.95.

**Mindsteps to the Cosmos.** Gerald S. Hawkins. Harper and Row, New York, 1983. x, 341 pp., illus. \$19.95.

**Teratocarcinoma Stem Cells.** Lee M. Silver, Gail R. Martin, and Sidney Strickland, Eds. Cold Spring Harbor Laboratory, Cold Spring Harbor, N.Y., 1983. xxii, 743 pp., illus. \$85. Cold Spring Harbor Conferences on Cell Proliferation, vol. 10. From a conference, Cold Spring Harbor, Sept. 1982.

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The President  
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1900 Bayview Avenue  
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Send résumé, transcripts, and names of three or more references with your letter of application to:

Dr. Reino Hakala  
Chairperson, Search Committee  
Division of Science  
Governors State University  
University Park, Ill. 60466-3199

Applications will be accepted until 30 April 1984, or until the position is filled. GSU is an upper division institution with junior, senior, and masters degree students and is located 30 miles south of the center of Chicago. *It is an Affirmative Action/Equal Opportunity University.*

## POSITIONS OPEN

### ANATOMY AND CELL BIOLOGY

Applicants are solicited for a tenure-stream faculty member to supervise the medical gross anatomy program. The person should also have a strong research program compatible with the activities of this developing department. For further information or consideration, please contact or send curriculum vitae and names of three references no later than 15 June 1984 to: Dr. Raymond D. Lund, Department of Anatomy and Cell Biology, University of Pittsburgh School of Medicine, 820 Scaife Hall, 3550 Terrace Street, Pittsburgh, Pa. 15261. Salaries are dependent on experience and qualifications. *The University is an Equal Opportunity/Affirmative Action Employer.*

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Dr. R. W. Davies, Head  
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The University of Calgary  
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#### ASSISTANT PROFESSOR

We are seeking applicants with primary research interest and training in molecular biology. Responsibilities include participation in departmental teaching of medical students in one of the anatomical disciplines. Send curriculum vitae and names of three references to: Dr. T. Barka, Chairman, Mount Sinai School of Medicine, Department of Anatomy, New York, New York 10029.

**ASSISTANT PROFESSORS.** Anticipated tenure-track positions. September 1984. **Molecular Biologist:** eukaryotic and/or prokaryotic. **Physiological Ecologist:** marine background preferred. Ph.D. and teaching experience required. Duties include the development of undergraduate and graduate courses in area of expertise and one nonmajor course. Commitment to quality teaching and demonstrated research ability required. Send curriculum vitae, all transcripts, statement of teaching and professional goals, and three reference letters before 25 April to: Dr. Phillip Elliott, Biology Department, Eastern Connecticut State University, Willimantic, Conn. 06226. *An Affirmative Action/Equal Opportunity Employer.*

**ASSISTANT PROFESSOR—MEDICAL MICROBIOLOGIST.** Ph.D. or equivalent degree. Will be expected to teach: microbiology course for nurses, clinical and pathogenic microbiology course for advanced undergraduates, graduate-level course in area of expertise. Development and maintenance of active research program in medical microbiology is required. Preference will be given to applicants whose research utilizes recombinant DNA and molecular biology methods and whose training facilitates effective teaching of modern clinical microbiology laboratory procedures. Send résumé, concise statement of research plans, and three letters of reference before 15 May 1984, to: Dr. Robert Eisenberg, Department of Biomedical Sciences, Western Michigan University, Kalamazoo, Mich. 49008. *The University is an Equal Opportunity/Affirmative Action Employer.*

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The Acting Chief  
CSIRO Division of Fisheries Research  
P.O. Box 21  
CRONULLA, NEW SOUTH WALES 2230  
AUSTRALIA

By 4 May 1984.

## POSITIONS OPEN

**ASSISTANT/ASSOCIATE PROFESSORS OF ANATOMY AND CELL BIOLOGY, UNIVERSITY OF CINCINNATI.** The Department of Anatomy and Cell Biology, University of Cincinnati, College of Medicine, invites applications for two positions at the assistant/associate professor level. Candidates are expected to establish productive research programs at the molecular or cellular level in neurobiology or metabolic biology (emphasis on muscle cell biology). The candidates should have 2 to 3 years of postdoctoral experience. Please respond to: **Dr. Robert R. Cardell, Professor and Chairman, Department of Anatomy and Cell Biology, University of Cincinnati Medical College, 231 Bethesda Avenue, Cincinnati, Ohio 45267-0521. An Equal Opportunity Employer.**

**THE DEPARTMENT OF MICROBIOLOGY, UNIVERSITY OF GUELPH,** invites applications for a tenure-track appointment as **ASSISTANT PROFESSOR.** Applicants should have a broad education in general microbiology, a Ph.D. degree, postdoctoral or industrial experience, and research interests in fermentation (or aspects of microbial physiology related to fermentation), ultrastructure, or fish diseases. Competence in teaching bacterial physiology, microbial ecology, and/or microfungi would be an asset. Salary commensurate with experience. The University of Guelph emphasizes the life sciences, has about 11,000 full-time students, and is located 100 kilometers west of Toronto in a city with 75,000 inhabitants. The department has 16 faculty members and offers an honors B.Sc. program, and M.Sc. and Ph.D. degrees. There are particular research emphases in molecular biology (including virology), microbial technology, ultrastructure, and physiology of fish pathogens. Applicants should send curriculum vitae and the names of three referees, by 1 July 1984, to: **Dr. K. F. Gregory, Chairman, Department of Microbiology, College of Biological Science, University of Guelph, Guelph, Ontario, Canada N1G 2W1.** Position subject to final budgetary approval.

### ASSISTANT/ASSOCIATE PROFESSOR OF PHARMACEUTICAL CHEMISTRY (PHARMACEUTICS)

The Department of Pharmaceutical Chemistry, School of Pharmacy, The University of Kansas, has an opening for a tenure-track faculty position at the assistant or associate professor level. Background and experience in pharmaceutical analysis are required. Duties will include participation in the department's undergraduate course offerings, graduate teaching with an emphasis on pharmaceutical analysis, service at the local and national level, and development of a strong independent research program. Research interests and emphases should be in the areas of analysis of drugs and metabolites in biological fluids and analytical methodology development. The position requires an earned doctorate in pharmaceuticals, pharmaceutical chemistry, chemistry, or a closely related field. Postdoctoral, academic, or industrial experience is optionally preferred. Applications must be received by 7 May 1984. Please submit curriculum vitae, including names of at least three references, to: **Dr. Ronald T. Borchardt, Department of Pharmaceutical Chemistry, School of Pharmacy, The University of Kansas, Lawrence, Kans. 66045. The University of Kansas is an Equal Opportunity/Affirmative Action Employer.**

### ASSOCIATE PROFESSOR—RADIATION THERAPY

Requirements: M.D. and Board-certified in therapeutic radiology by the American Board of Radiology. Licensed in the state of Minnesota. At least 3 years of previous experience in departmental administration. At least 5 years of experience in pediatric radiation oncology and 5 years of experience in bone marrow transplantation.

Salary open to negotiation. Apply to: **Search Committee, Department of Therapeutic Radiology, Box 494 University Hospitals, 420 Delaware Street, SE, Minneapolis, Minnesota 55455, prior to 30 April 1984.**

*The University of Minnesota is an Equal Opportunity Educator and Employer, and specifically invites and encourages applications from women and minorities.*

**BIOCHEMISTRY:** Assistant or associate professor with Ph.D. Successful candidate must be qualified to effectively teach medical students and to initiate independent research. Teaching experience preferred. Starting August 1984 or later. Send résumé, statement of research plans, and three reference letters to: **Chairman, Biochemistry Department, Ponce School of Medicine, P.O. Box 7004, Ponce, Puerto Rico 00732. Equal Opportunity Employer.**

## POSITIONS OPEN

The Department of Biology at Georgia State University invites applications for an anticipated tenure-track position (**ASSISTANT PROFESSOR** level) with expertise in **PHYSIOLOGY** (effective September 1984). Preference will be given to candidates with postdoctoral experience who have demonstrated outstanding potential for independent research. Salary will be commensurate with qualifications. The successful candidate will be expected to teach introductory courses in human anatomy and physiology and graduate courses in area of specialization. Applications, including curriculum vitae, reprints, a statement of research plans, and three letters of reference should be sent to: **Chairman, Department of Biology, Georgia State University, Atlanta, Georgia 30303.** Deadline for receipt of applications is 15 May 1984. *Georgia State University, a unit of the University System of Georgia, is an Equal Educational Opportunity Institution and is an Equal Opportunity/Affirmative Action Employer in compliance with Title IX and other Civil Rights Laws.*

### ASSISTANT PROFESSOR IN SURGERY (GROSS ANATOMY) YALE MEDICAL SCHOOL

One-year appointment in Department of Surgery, Section of Gross Anatomy, to teach human anatomy and development course, including lecturing and supervising dissections. The candidate also will have primary responsibility for a flow cytometry/cell sort core laboratory and should have experience in this technology. *Yale University is an Equal Opportunity Employer and welcomes applications from all women and minority groups.* Send curriculum vitae to:

**Search Committee, Room LH 122  
Department of Surgery  
P.O. Box 3333  
Yale School of Medicine  
New Haven, Conn. 06510**

Application deadline: 15 May 1984.

**ASSISTANT/ASSOCIATE RESEARCH SCIENTIST POSITION AVAILABLE WITHIN THE DIVISION OF GENETICS, DEPARTMENT OF PEDIATRICS.** Ph.D. degree in genetics required. Duties of this position include supervision of Cytogenetics Laboratory and active participation in research and teaching of medical students, residents and fellows. Application recruiting deadline: 1 May 1984; anticipated start date: 1 July 1984. Applications should be sent to: **J. L. Frias, M.D., Search Committee Chairman, Department of Pediatrics, Box J-296 JHMC, Gainesville, Fla. 32610. Equal Opportunity/Affirmative Action Employer.**

**BIOMEDICAL INVESTIGATOR** positions—Medical research institute affiliated with a large prestigious medical center hospital in suburban Philadelphia, Pennsylvania, is seeking new or established Ph.D. or M.D. researchers. Well-equipped laboratories and excellent ancillary support services including use of new animal care facility are provided. Areas of research emphasis include cardiovascular diseases and atherosclerosis, carbohydrate and lipid metabolism, and hematology-oncology. Pleasant working environment in an attractive setting, competitive salary and fringe benefits, and medical school appointments are available. Applicants must have a track record of journal publications based on peer-reviewed manuscripts of their own research. Send résumé including history of grant support to: **Box 70, SCIENCE. An Equal Opportunity Employer.**

### COMPUTER CONSULTANT

Part-time position to consult with small group of neurobiologists using PDP 11/23, IBM PC, and Apple computers in the following areas: A/D conversion, 3D graphics, interfacing electrophysiology and other laboratory devices to computer. Salary negotiable depending upon experience (maximum: \$19,000 for half-time). Contact: **Dr. S. Roper, Rocky Mountain Taste and Smell Center B-111, University of Colorado Medical School, 4200 East 9 Avenue, Denver, Colo. 80262. An Affirmative Action/Equal Opportunity Employer.**

A tenure-track faculty position for an experienced **CYTOGENETICS LABORATORY DIRECTOR**, Ph.D. or M.D., in a medical school medical genetics unit is available. Candidates with American Board of Medical Genetics certification or eligibility will be given preference. Applicants should submit curriculum vitae to: **Theodore Kushnick, M.D., Professor of Pediatrics and Director of Medical Genetics, East Carolina University School of Medicine, Greenville, North Carolina 27834. East Carolina University is an Equal Opportunity/Affirmative Action Employer.**

## POSITIONS OPEN

### POSITION

#### CANCER RESEARCH LABORATORY

Applications are invited for an opening at the level of Assistant Research Biochemist I (step 1, \$25,100) (pending final budgetary approval) to work on grant project. Major responsibility for conducting research on glycosaminoglycans and other extracellular matrix components in spontaneous and transplanted murine mammary tumors. Collaborate in the design and conduct of new experiments as needed, and in preparation of results for publication. Requires Ph.D., with postdoctoral experience in biochemistry and histochemistry of glycosaminoglycan, handling experimental animals, and cell culture. Starting date: 1 July 1984. Send curriculum vitae, bibliography, summary of research experience and names of three references to: **Dr. Dorothy R. Pitelka, Cancer Research Laboratory, 230 Warren Hall, University of California, Berkeley, Calif. 94720.** Closing date for receiving applications is 1 May 1984. *The University of California is an Equal Opportunity/Affirmative Action Employer.*

**CELL BIOLOGIST**, research faculty position, University of Nebraska Medical Center. Ph.D. cell biologist or biochemist with at least 2 years of postdoctoral experience. Individual will play a major role in an ongoing, broad research program in membrane biogenesis and the role of the cytoskeleton in the liver. Salary competitive and flexible depending on qualifications. Curriculum vitae to: **Dean J. Tuma, Ph.D., Liver Study Unit, VA Medical Center, 4101 Woolworth Avenue, Omaha Neb. 68105. An Equal Opportunity/Affirmative Action Employer.**

### DIRECTOR, DIVISION OF INFORMATION SCIENCE AND TECHNOLOGY

The National Science Foundation is seeking qualified applicants to manage division responsible for funding basic and applied research in areas of information science, information technology, and information impact. Appointment to this Senior Executive Service position, which has a salary range of ES-2 (\$51,292) to ES-4 (\$66,000), will be on a 2-year rotational basis. Candidates should have Ph.D. or equivalent professional experience in relevant field, substantial research contributions or innovative leadership in research administration in field related to information science, experience coordinating with scientific and academic communities, and substantial supervisory/managerial experience. Applicants should contact: **Margaret Cademartori (telephone: 202-357-7857)** to request announcement EPS 84-8S which contains complete qualification requirements and application procedures. Applications must be received by 15 June 1984. *An Equal Opportunity Employer.*

### FACULTY POSITION VACANCY

**PHYSICS AND ASTRONOMY**—A tenure-track faculty position in the Department of Physics and Astronomy is available for fall 1984 with rank of assistant or associate professor, depending on qualifications. We are seeking someone with a strong commitment to excellence in undergraduate teaching and evidence of skills in that area. Ph.D. required. Industrial experience is desired, though not required, to provide additional strength for our engineering physics program. Some preference will be given to applicants with experience in applied physics. Primary responsibilities include teaching introductory and advanced physics courses at the undergraduate level together with developing undergraduate laboratory experiences and doing research. Application deadline is 15 May 1984. Send résumé and the names, addresses, and telephone numbers of three references to: **Office of Academic Affairs, Physics and Astronomy Search, Western Kentucky University, Bowling Green, Ky. 42101. An Affirmative Action/Equal Opportunity Employer.**

### MICROBIOLOGIST/BOTANIST

Assistant professor, microbiology/non-vascular botany—Ph.D., tenure-track position available August 1984, pending funding. Teaching responsibilities include courses in general microbiology, general botany, non-vascular botany, plant morphology, and general biology. Salary range: \$18,000 to \$21,000. Send curriculum vitae, statement of teaching experience and philosophy, transcripts, and three letters of reference by 1 May 1984 to: **Dr. Jerry H. Carpenter, Chairman, Department of Biological Sciences, Northern Kentucky University, Highland Heights, Ky. 41076. Northern Kentucky University is an Affirmative Action/Equal Opportunity Employer and actively seeks the candidacy of minorities and women.**



## POSITIONS OPEN

**ENVIRONMENTAL HEALTH PROGRAM DIRECTOR.** Teach environmental health, coordinate with government programs, develop community information. Ph.D. preferred. A full-time, temporary position, assistant professor equivalent. Up to a 3-year appointment with possible conversion to tenure track. Inquiries and complete applications by 30 April to: **Dr. William Tidwell, Department of Biology, San Jose State University, One Washington Square, San Jose, Calif. 95192.**

A tenure-track position is available as early as 1 September 1984 for a **FACULTY MEMBER** in eukaryotic molecular genetics and gene expression. The applicant should have two or more years of postdoctoral experience and have a record of research productivity. The candidate will be expected to establish a rigorous research program and teach at the undergraduate and graduate levels. Qualified applicants should send their curriculum vitae, a description of their research goals, and three letters of reference by 1 May 1984 to:

**Dr. Jeff MacCabe  
Department of Zoology  
University of Tennessee  
Knoxville, Tenn. 37996**

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

**NEUROPHYSIOLOGIST.** Washington State University offers a regular faculty appointment, effective 16 August 1984, jointly between WAMI, part of the academic program of the University of Washington School of Medicine, and the Department of Veterinary and Comparative Anatomy, Pharmacology and Physiology in the College of Veterinary Medicine. Duties include an interdisciplinary course for first-year medical students; preference will be given to research interests in neural control of circulation or central aminergic systems; academic rank, assistant or associate, depends on the candidate's qualifications. Send curriculum vitae and names of three references to: **R. J. Adkins, 108 Morrill Hall, Washington State University, Pullman, Wash. 99164-3510**, by 18 May, when formal review will begin. *Washington State University is an Equal Opportunity/Affirmative Action Employer.*

## MANAGEMENT OPPORTUNITY

The Applied Science Division seeks a Division Administrator at the Management I level. The Administrator reports to the Division Head and is responsible for management of all administrative functions in the Division including: preparation, coordination, and monitoring of budgets; personnel administration; and property management. The Administrator also supervises the Division Office administrative staff, provides managerial assistance to the Division's scientific and administrative leadership, and frequently represents the Division within the Laboratory and in contacts with external organizations such as the Department of Energy.

The Applied Science Division has approximately 120 research staff, 50 technical support persons, 70 graduate students, 30 University of California faculty, and 50 administrative and clerical staff. Research areas include: electrochemical energy storage, fossil energy, energy conservation in buildings, solar energy, environmental research, and energy policy.

A technical background in one of the Division's areas of research, in addition to a strong business education and background, is preferred. For additional information on, and the detailed requirements for the position, please contact: Janet Smith, Building 90, Room 3026, Lawrence Berkeley Laboratory, Berkeley, CA 94720, (415) 486-5270. An Equal Opportunity Employer M/F/H.

## POSITIONS OPEN

### UNIVERSITY OF GUAM BIOLOGY DEPARTMENT

**FACULTY POSITION FOR A MICROBIOLOGIST.** Tenure-track, 9-month position at the assistant professor level; Ph.D. and research experience essential. Position available beginning August 1984. Responsibilities include establishing an active research program, thesis supervision on the M.S. level, and teaching 12 contact hours per week. The teaching responsibilities will be microbiology for nurses and related courses in biology. Excellent facilities available for marine biological research. Initial appointment for 3 years. Benefits include round-trip transportation and moving expenses for the selected applicant and family. Applicants send curriculum vitae, names and addresses of three references, and copies of selected publications to: **Chairman, Biology Department, UOG Station, Mangilao, Guam 96913.**

*An Equal Opportunity/Affirmative Action Employer*

### MARINE SCIENTIST III

A professional research staff position. Responsibilities include: planning, directing, coordinating, and controlling research in the field of wave dynamics, air/sea interaction, sediment transport, and near-shore processes; participating and interfacing with investigators at other institutions involved in similar projects; initiating, designing, preparing, and presenting grant proposals; preparing progress and final reports and technical papers; and counseling and advising faculty, staff, and graduate student investigators in similar related research. Must be capable of performing in both theoretical and experimental studies on wave dynamics, near-shore processes, sediment transport, and air/sea interaction. Extensive experience with computer data, acquisition systems, numerical simulations, and instruments such as laser-doppler anemometer, hot film anemometer, and temperature and humidity probe is required. A doctoral degree with 1 or 2 years of experience is necessary. Salary: \$18,540 with substantial fringe benefits. Send résumés to: **R. J. Shields, Department of Labor, P.O. Box 9029, Newark, Del. 19714. Telephone: 302-368-6827.** Office identification number 0002.

### NATIONAL SCIENCE FOUNDATION (NSF)

NSF, Division of Atmospheric Sciences, is seeking high-quality professional applicants as **ASSISTANT/ASSOCIATE PROGRAM DIRECTOR AND PROGRAM DIRECTOR** for positions which periodically become available. These positions are excepted from the competitive civil service and are filled on a 1- or 2-year rotational basis under the provisions of NSF's Rotator Program. Typical duties will involve proposal review, advising applicants, budget development, site visits, program development, and other administrative duties.

Vacancies to be filled in the division are in the following areas of interest:

CLIMATE  
FLUID DYNAMICS  
METEOROLOGY  
AERONOMY  
ATMOSPHERIC CHEMISTRY  
MAGNETOSPHERIC/  
IONOSPHERIC PHYSICS  
PALEOCLIMATOLOGY  
SOLAR PHYSICS  
SOLAR-TERRESTRIAL PHYSICS

Applicants should have a Ph.D. or equivalent experience in the appropriate discipline and, for the assistant program director, 3 to 4 years of successful scientific research experience beyond the Ph.D.; associate program director, 4 to 6 years of successful scientific research experience beyond the Ph.D.; and, for the program director, 6 to 8 years of successful scientific research experience beyond the Ph.D. is desirable. The per annum salary ranges as follows: Assistant Program Director: \$30,000 to \$45,000, Associate Program Director: \$35,000 to \$55,000, and Program Director: \$45,000 to \$65,000. Applicants should refer to Announcement SCI/ATM when submitting résumés (including current salary) to: **The National Science Foundation, Personnel Administration Branch, Room 212, 1800 G Street, NW, Washington, D.C. 20550; attention: Catherine Handle.** For further information, telephone: 202-357-7840. Hearing-impaired individuals should telephone: TDD 202-357-7492. *NSF is an Equal Opportunity Employer.*

## POSITIONS OPEN

**FACULTY POSITION:** The Department of Pharmacology, East Carolina University, School of Medicine, invites applications for tenure-track position at the assistant professor level. Responsibilities include the teaching of medical and graduate students and maintaining an independent research program. Preference will be given to applications from individuals interested in the central nervous control of cardiovascular function, neuropharmacology, or cardiovascular pharmacology. Interested individuals should submit curriculum vitae, the names of three individuals who may be contacted as references, and an outline of future research goals. Please submit to: **Dr. W. R. Wooles, Department of Pharmacology, School of Medicine, East Carolina University, Greenville, North Carolina 27834.** The deadline for receipt of applications is 30 June 1984. *An Affirmative Action/Equal Opportunity Employer.*

**IMMUNOLOGIST** faculty position. A full-time, tenure-track assistant/associate professorship in medical microbiology (immunology). Ph.D. or M.D., 2 years of postdoctoral experience. Expect establishment of independent research program and participation in teaching medical and graduate students. Position available 1 September 1984. Submit letter outlining research and teaching interests, curriculum vitae, and bibliography, and arrange for three reference letters to: **Dr. Duard L. Walker, Department of Medical Microbiology, University of Wisconsin, Medical School, 1300 University Avenue, Madison, Wis. 53706.** *The University of Wisconsin is an Equal Opportunity/Affirmative Action Employer.*

**IMMUNOLOGIST.** Ph.D., at least 2 years of postdoctoral experience, demonstrated research achievement in modern immunology. Duties: teach immunology to undergraduate, graduate, and medical professional students; mount a research program competitive for external funding. Rank commensurate with experience, assistant or associate professor. Salary negotiable. Send curriculum vitae and three recommendation letters to: **Chair, Immunology Search Committee, Department of Microbiology, Michigan State University, East Lansing, Mich. 48824-1101.** *An Affirmative Action/Equal Opportunity Institution.*

## Research Professor in Sensory Physiology

Applications are invited for a position as **A.H.F.M. RESEARCH PROFESSOR IN SENSORY PHYSIOLOGY** at The University of Calgary. Candidates must hold a Ph.D. or equivalent in Psychology or Physiology, and have several years of post-doctoral experience, as well as a strong record of publication. Applications will be considered from outstanding researchers specializing in any sensory system. Excellent support is available for laboratory development, although there must be clear evidence of the ability to establish an independent externally-funded program of research. Appointments can be made at any rank. In accordance with Canadian Immigration regulations, this advertisement is directed to Canadian citizens and permanent residents. Applications including curriculum vitae, outline of research plans and at least three letters of reference should be sent by April 30, 1984, to:



**Department of Psychology  
Dr. Donald G. Jamieson, Head  
The University of Calgary  
2500 University Drive N.W.  
Calgary, Alberta T2N 1N4  
Canada**

## POSITIONS OPEN

### FACULTY POSITION AVAILABLE TOXICOLOGY

Applications are invited from individuals with an earned Ph.D. degree and expertise in the area of toxicology. The successful candidate will participate in teaching at the graduate and undergraduate level, direct dissertations and theses of graduate students, and conduct independent and collaborative research. There is considerable latitude relative to the area of research interest. A baccalaureate program in toxicology is offered. Salary and academic rank associated with this 12-month, tenure-track position will be commensurate with experience and qualifications. Interested individuals should submit a letter of application, a complete résumé, and the names of four references to: **Dr. William M. Bourn, Head, Division of Pharmacology and Toxicology, School of Pharmacy, Northeast Louisiana University, Monroe, Louisiana 71209.** *Northeast Louisiana University is an Equal Opportunity Employer. Applications are encouraged from women and members of minority groups.*

### UNIVERSITY OF FLORIDA FACULTY POSITION

Applicants are invited for a tenure-track position (assistant or associate professor) in the Department of Pharmacology and Therapeutics of the College of Medicine, available 1 September 1984. Applicant must have an M.D. or Ph.D. and demonstrate the ability to develop an independent research program. Area of research is unrestricted, but preference will be given to individuals with interests in cellular and molecular biology as they relate to drug action. Rank and salary will be commensurate with level of experience and accomplishment. Applicants should send curriculum vitae, representative reprints, brief summary of research interests, and the names of three references to: **Warren Ross, M.D., Box J-267, J. Hillis Miller Health Center, Gainesville, Fla. 32610.** Application deadline: 15 June 1984. *An Equal Opportunity/Affirmative Action Employer.*

### VIRGINIA INSTITUTE OF MARINE SCIENCE FISHERIES MOLLUSCAN BIOLOGIST

Applications are invited for a tenure-track faculty position in fisheries molluscan biology. The position is at the assistant or associate professor level in the Department of Fisheries Science, School of Marine Science/Virginia Institute of Marine Science (VIMS), College of William and Mary at Gloucester Point, Virginia. Candidates must have a Ph.D. in marine ecology, oceanography, or fisheries science. Experience is required in molluscan biology, statistics, and marine field ecology.

The incumbent will be expected to develop and supervise a research program on molluscan biology with initial emphasis on causes for declines and interannual fluctuation in recruitment in the Chesapeake Bay and Virginian tributaries. The incumbent will supervise the ongoing 30-year monitoring program of oyster recruitment, condition indices, and mortality.

VIMS serves as the mandated scientific advisory institution to state and regional fisheries management agencies, and as such the incumbent would be called upon periodically to serve on committees or advise such agencies.

The position, in the School of Marine Science, includes contributing to the academic program in the conduct of formal course offerings and direction of graduate student programs and research.

Prior to 1 May 1984, applicants should submit curriculum vitae, statement of research interests, and the names and addresses of three references to: **Herbert M. Austin, Chairman, Search Committee, VIMS, Gloucester Point, Virginia 23062.**

*An Equal Opportunity/Affirmative Action Employer. Minorities and women are encouraged to apply.*

### Ph.D.—GEOCHEMIST/HYDROGEOLOGIST

Research Planning Institute, Inc., a growing scientific consulting company, will hire a geochemist/hydrogeologist to work on terrestrial and marine pollution projects starting 15 May 1984. Necessary skills include strong field experience as well as knowledge of organic and metallic pollutants. Experience in pollutant transport modeling highly desirable. Good communication skills imperative. Send résumé and examples of previous work, published papers, and so forth, to:

**Jacqueline Michel, Ph.D.  
Research Planning Institute, Inc.  
925 Gervais Street  
Columbia, S.C. 29201**

## POSITIONS OPEN

**HEAD, DEPARTMENT OF BIOCHEMISTRY AND MOLECULAR BIOLOGY.** The Department of Biochemistry and Molecular Biology, Louisiana State University (LSU) Medical Center-Shreveport, is seeking highly qualified candidates for the position of department head. It is hoped that this position can be filled in the academic year 1984-1985. Candidates should have demonstrated leadership in research and teaching. Applicants should submit curriculum vitae and the names of three references by 15 May 1984. Forward to: **Dr. John T. Wilson, Chairperson, Biochemistry Search Committee, LSU School of Medicine in Shreveport, P.O. Box 33932, Shreveport, La. 71130.** *Louisiana State University is an Affirmative Action/Equal Opportunity Employer.*

**INSECT POPULATION ECOLOGIST;** 12-month appointment, assistant professor, tenure-track, 75 percent research, 25 percent teaching. Conduct research in agricultural ecosystems, including participation in the regional European corn borer project; advise graduate students; teach insect ecology and a second course in the applicant's specialized area. A Ph.D. in entomology or equivalent with training in quantitative insect ecology and dissertation research or postdoctoral work in quantitative insect ecology and agroecosystems is required. Send résumé and have official transcripts and three letters of reference sent to: **Dr. Richard L. Jones, Department of Entomology, University of Minnesota, St. Paul, Minn. 55108,** by 15 May 1984. Position available 1 August 1984. *The University of Minnesota is an Equal Opportunity Educator and Employer and specifically invites and encourages applications from women and minorities.*

The Department of Comparative Medicine, Bowman Gray School of Medicine, Wake Forest University, has a new faculty position available at the rank of **INSTRUCTOR OR ASSISTANT PROFESSOR.** The applicant must possess the D.V.M. degree with experience in medical primatology and/or comparative pathology. The position will involve research on the comparative aspects of atherosclerosis in nonhuman primates and responsibilities for the operation and coordination of a national nonhuman primate resource for atherosclerosis research. Qualified individuals should send a statement of interest in the position accompanied by curriculum vitae to: **Dr. Thomas B. Clarkson, Chairman, Department of Comparative Medicine, Bowman Gray School of Medicine, Wake Forest University, Winston-Salem, North Carolina 27103.**

*Affirmative Action/Equal Opportunity Employer*

### NEUROBIOLOGIST

Postdoctoral position available to study chemosensory transduction in vertebrate taste cells. Research involves intracellular recording and dye-filling, patch-clamping, structure/function correlations with electron microscopist. Experience in electrophysiology, particularly intracellular microelectrodes, desirable. Contact: **Dr. S. Roper, Rocky Mountain Taste and Smell Center B-111, University of Colorado Medical School, 4200 East 9 Avenue, Denver, Colo. 80262.** *An Affirmative Action/Equal Opportunity Employer.*

**PHARMACOLOGIST**—The Department of Physiology and Pharmacology at The University of South Dakota invites applications for a tenure-track position as assistant or associate professor. A Ph.D. or M.D. degree and postdoctoral experience are required. Preference will be given to candidates with experience in autonomic-cardiovascular pharmacology. Selection will be based on scientific credentials and the potential to establish an outstanding independent research program. Excellence in teaching is expected. Applicants should arrange to have curriculum vitae, three letters of recommendation, and a statement of research interests sent to: **Dr. A. Ainsworth Hagen, Department of Physiology and Pharmacology, The University of South Dakota School of Medicine, Vermillion, S.D. 57069.** *Affirmative Action/Equal Opportunity Employer.* Closing date for applications is 18 May 1984.

**PHYSIOLOGY/ANATOMY POSITION** in Department of Physical Education to teach anatomy in undergraduate program and teach and conduct research in graduate programs of exercise physiology and/or motor control. Preference will be given to applicants with research expertise in neuromuscular plasticity and an evidence of ability to obtain extramural funding to support an active research program. Send curriculum vitae to: **Dr. Spirduso, Bellmont Hall 222, University of Texas, Austin, Texas 78712.** Application deadline is 30 April 1984.

## POSITIONS OPEN

**CELL, MOLECULAR, or DEVELOPMENTAL BIOLOGIST** to teach multi-sectioned introductory non-majors biology and a core course for majors. Additional responsibility to develop a research program in area of specialty involving undergraduates and to seek external funding. Assistant professor, tenure-track position requiring Ph.D., to begin September 1984 pending budgetary approval. Salary competitive. Submit curriculum vitae, academic transcripts, and three letters of reference by 4 May to: **W. Hubert Keen, Chairman, Department of Biological Sciences, State University of New York, College at Cortland, P.O. Box 2000, Cortland, N.Y. 13045.** *Affirmative Action/Equal Opportunity Employer.*

**FACULTY POSITION.** The Department of Pharmacology, University of South Alabama, College of Medicine, invites applications for a tenure-track position at the level of assistant or associate professor. Primary responsibilities are performance of research, and teaching medical and graduate students. Applications are encouraged from individuals interested in the regulation of biological processes at the molecular and/or cellular level, but other areas of pharmacology will also be considered. Interested individuals should send an outline of future research plans, curriculum vitae, including a bibliography, and the names of three individuals who may be contacted as references to: **Dr. Samuel J. Strada, Search Committee, Department of Pharmacology, University of South Alabama, College of Medicine, 3130 Medical Sciences Building, Mobile, Alabama 36688.** The deadline for the receipt of applications is 15 May 1984.

**MARINE GEOCHEMIST** (coastal processes and radionuclides), Marine Sciences Department, University of Connecticut. Nine-month, tenure-track position as an assistant or associate professor in the Department of Marine Sciences, College of Liberal Arts and Sciences. Ph.D. in earth science (geochemistry), marine geology, or oceanography and a strong potential or demonstrated ability to conduct grant-funded research required. The appointee will be expected to teach undergraduate courses in oceanography and advanced courses in his or her specialty, supervise graduate students, and conduct a strong research program in marine geochemistry focusing on the coastal zone with emphasis on radionuclides techniques. Send résumé, pertinent publications, and names of three references by 7 May 1984 to: **W. F. Fitzgerald, Chairman, Search Committee, Marine Sciences Department, College of Liberal Arts and Sciences, THE UNIVERSITY OF CONNECTICUT, Groton, Conn. 06340.** *An Equal Opportunity/Affirmative Action Employer.* Search Number 4A58.

**PLANT PHYSIOLOGIST/SOIL SCIENTIST.** A position of research assistant professor, University of Vermont, Botany Department, is available immediately. Candidates must have a Ph.D. degree in soil science or plant physiology with experience in rhizosphere research. The research project includes investigations of plant response to acidic depositions. Funding will be for 3 years. Send curriculum vitae and names of three references to: **Dr. Richard M. Klein, Botany Department, University of Vermont, Burlington, Vermont 05405.** *Affirmative Action/Equal Opportunity Employer.*

### POPULATION AND COMMUNITY ECOLOGIST

The Department of Biology of Princeton University seeks applicants for a position at the senior professorial level. Candidates should work at the interface between population biology and community ecology, and should have a firmly established program of research involving both conceptual advances and field and/or laboratory work. Their interests should overlap and complement those of existing members of Princeton's population biology group: Gould, Hoogland, Horn, May, Rubenstein, and Terborgh. Applicants should send curriculum vitae to: **Dr. John Terborgh, Department of Biology, Princeton University, Princeton, New Jersey 08540.**

*Princeton University is an Equal Employment Affirmative Action Employer.*

**POSTDOCTORAL FELLOW** position available immediately to study and develop techniques assaying short-term effects of ultraviolet radiation in skin of human and experimental animals. Previous experience in photobiology or photochemistry desirable, but not necessary. Send curriculum vitae with names of three references to: **Dr. Vincent A. DeLeo, Department of Dermatology, Columbia University, 630 West 168 Street, New York, N.Y. 10032.** *An Affirmative Action/Equal Opportunity Employer*

## POSITIONS OPEN

### NEUROBIOLOGY RESEARCH ASSOCIATES

Openings for two postdoctoral research associates are immediately available in the laboratory of Dr. Robert J. O'Connell to study **olfactory physiology** in vertebrates and invertebrates. The planned research involves a multidisciplinary approach to the anatomical, behavioral, chemical, electrophysiological, and hormonal substrates of olfactory communication in several species. Experience in one or more of these areas is a requisite. Send résumé, statement of research interests, and names of three references to: **Dr. Robert J. O'Connell, c/o Personnel Office, Worcester Foundation for Experimental Biology, 222 Maple Avenue, Shrewsbury, Mass. 01545.**

*An Equal Opportunity/Affirmative  
Action Employer, M/F/H*

**NMR SPECTROSCOPIST.** The University of California at Davis (UCD) is seeking a full-time (11-month) nuclear magnetic resonance spectroscopist at the assistant research spectroscopist level to be a member of the UCD NMR Facility. Applicants must be knowledgeable in Fourier transform NMR, and have a Ph.D. degree in an applicable science or the equivalent in experience. The ability to interact well with researchers in the biological and physical sciences is essential, and participation in collaborative research with members of the UCD faculty is expected. The opportunity for independent research exists as well. The successful applicant will be expected to operate and perform maintenance duties on the Facility's superconducting NMR spectrometers, and to assist users in spectrometer operation and in interpretation of data. Electronics expertise would be helpful, but is not required. Instrumentation at the UCD NMR Facility includes NMR spectrometers operating at proton frequencies at 500, 360, and 200 MHz, and a Topical Magnetic Resonance spectrometer. This is a non-tenure-track research position with a salary range of \$25,100 to \$33,100, commensurate with experience. Send a résumé and three letters of reference to: **Dr. Gerald B. Matson, Operations Manager, UCD NMR Facility, University of California, Davis, Calif. 95616.** Closing date: 15 May 1984 *The University of California is an Equal Opportunity/Affirmative Action Employer.*

### PLANT GENETICIST

The Department of Pomology, University of California, Davis, seeks a plant geneticist with an interest in molecular or cellular genetics to fill an 11-month, tenure-track position as assistant professor and assistant geneticist in the Agricultural Experiment Station (83 percent research/17 percent teaching). The individual will be expected to utilize techniques such as gene transfer, restriction fragment polymorphism, in vitro selection, analysis of somaclonal variants, or screening with monoclonal antibodies in developing a research program which contributes to the genetic understanding and improvement of California tree fruit and nut crops. A well-equipped laboratory is available. The individual is also expected to participate in advising students and in teaching the genetic components of departmental courses and to develop courses related to his/her genetic training. A Ph.D. degree in genetics or a related field is required. Submit curriculum vitae, official undergraduate and graduate transcripts, list of publications (and reprints of appropriate papers), a statement of research and teaching interests, and names and addresses of three references to: **Dr. John Labavitch, Search Committee Chairman, Department of Pomology, University of California, Davis, Calif. 95616; telephone: 916-752-0920.** Applications must be received by 1 June 1984. *The University of California is an Affirmative Action/Equal Opportunity Employer.*

The Ocean Research Division of Scripps Institution of Oceanography (SIO) announces an opening at the **POSTDOCTORAL OR CAREER-ENTRY LEVEL** (Ph.D. or equivalent degree required) for a **physical oceanographer** with experience and interest in coastal oceanography. Applicants with theoretical or observational backgrounds are invited. Salary will be provided for 2 years during which time the successful candidate will be expected to work in cooperation with SIO staff investigating coastal dynamics in conjunction with the CODE, OPUS and/or Cal-COFFI programs. After 2 years a career employee will be expected to raise his/her own salary. Level of appointment and salary range of \$19,392 to \$26,100 commensurate with qualifications. Send résumé and references to: **Russ Davis, Ocean Research Division A030, Scripps Institution of Oceanography, La Jolla, Calif. 92093,** by 30 April 1984. *University of California, San Diego, is an Equal Opportunity/Affirmative Action Employer.*

## Scientists

Cetus Corporation, a leader in the field of biotechnology, is currently seeking qualified Ph.D.'s for our Pharmacology Department. The candidates should have a minimum of 3 years' postdoctoral experience in the field of pharmacology with animal experimentation.

Protein chemistry, immunology, cancer or monoclonal antibody expertise preferred. Industrial experience helpful.

This position will report to the Director of Pharmacology, will set up a laboratory in Emeryville, CA, will have the support of two technicians, and will interact with other scientists at Cetus. Duties will include work on immunotoxin pharmacology (including efficacy, metabolism and distribution, and toxicology).

Please send resume in confidence to:

**Dr. Art Frankel  
Cetus Immune Corporation  
3400 West Bayshore Road  
Palo Alto, CA 94303**



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m f handicapped

## Social Scientist Nuclear Energy

The Department of Nuclear Energy at Brookhaven National Laboratory invites applications from Ph.D. level scientists trained in a social science discipline to join a research program involved in the analysis of human error in nuclear power plant environments. Candidates must be able to demonstrate the experience and ability to perform analysis of psychological, sociological, and organizational factors which contribute to human behavior and performance.

Candidates should apply by sending a resume, with the names of three references, to:

**Robert A. Bari  
Associate Chairman  
Department of Nuclear Energy,  
Bldg 130  
Brookhaven National Laboratory  
Associated Universities, Inc.  
Upton, L.I., New York 11973  
Equal Opportunity Employer m/f**



**Brookhaven National Laboratory  
Associated Universities Inc.**

## ELECTRICAL ENGINEER/ RESEARCH PHYSICIST

(\$30,402 - \$39,519)

**THE NAVAL SURFACE WEAPONS CENTER** is seeking applicants for the position of Electrical Engineer/Research Physicist in our Materials Evaluation Branch.

Primary responsibilities include developing and evaluating new concepts for technologies, such as x-ray tomography, real-time radiography, digitization of data acquisition, x-ray residual stress measurements, and spectral analysis. Other duties may include conducting experiments in the application of radiation gaging, signal processing and imaging; and non-destructive testing of materials and structures. Publication of research and other professional activities is strongly encouraged. Salary is dependent on qualifications.

Applicants with technical questions should call Dr. James F. Goff, (202) 394-1546. To apply, send a resume or SF 171 (if current or reinstatable federal government employee) by April 30, 1984 to:



## NAVAL SURFACE WEAPONS CENTER

ATTN: Code P40 (E.K. Man)

Rm. 1-179

White Oak, Silver Spring, MD 20910

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## POSITIONS OPEN

### PHYSIOLOGICAL PLANT ECOLOGIST

A full-time position at the assistant professor level is offered for the academic year 1984-1985 (appointee may be considered for a new tenure-track position beginning 1985). Duties include (fall semester) teaching a plant physiology course and (spring) leading a seminar in physiological plant anatomy or related field plus participating in a team-taught introductory biology course (organisms: structure and function). Application should include curriculum vitae. Letters from three referees must be sent to the address below. All materials must be received no later than 4 May 1984.

Search Committee  
Department of Biology  
Pomona College  
Claremont, California 91711

**POSTDOCTORAL FELLOWS/GRADUATE STUDENTS—BIOCHEMISTRY.** To study organization, structure, and expression of ferritin genes in normal and malignant human cells. Applicants should send curriculum vitae and names of three referees to:

Dr. James W. Drysdale  
Department of Biochemistry and Pharmacology  
Tufts University School of Medicine  
136 Harrison Avenue  
Boston, Mass. 02111

**POSTDOCTORAL FELLOW/RESEARCH ASSOCIATE.** Ph.D. in biochemistry or pharmacology required. Experience in physiological protein phosphorylation, phosphopeptide analysis by HPLC and/or electrophoretic methods, monoclonal antibodies, and tissue culture techniques preferred. To join multidisciplinary laboratory studying the regulation of catecholamine biosynthesis at the cellular level. Send curriculum vitae and names of three references to: Dr. P. R. Vulliet, Department of Veterinary Physiology and Pharmacology, Texas A&M University, College Station, Texas 77843. *An Equal Opportunity/Affirmative Action Employer.*

**POSTDOCTORAL POSITION:** Structure and regulation of expression of genes involved in lipid metabolism. Send curriculum vitae and three letters of recommendation by 15 May 1984 to: Dr. P. E. Kolattukudy, Institute of Biological Chemistry, Washington State University, Pullman, Wash. 99164-6340. *An Affirmative Action/Equal Opportunity Employer.*

**POSTDOCTORAL POSITION IN BIOCHEMISTRY/BIOPHYSICS** available immediately for individual with background in molecular cloning and an interest in enzyme mechanisms. Research will involve application of recombinant DNA techniques to elucidating structure/function relations in metalloenzymes [see *J. Biol. Chem.* 259, 112, 124 (1984)]. Full-time; salary negotiable. Send résumé and names of two or three references to: J. A. Fee, Biophysics Research Division, The University of Michigan, 2200 Bonisteel Boulevard, Ann Arbor, Mich. 48109. *An Equal Opportunity/Affirmative Action Employer.*

**POSTDOCTORAL POSITION—**Biophysical studies on model and biological membranes and their interactions with alcohol, drugs and anesthetics, using steady-state and time-resolved fluorescence spectroscopy, isolation and characterization of cell membranes and lipids involved. Send curriculum vitae and names of three references to: Dr. Christopher Stubbs, c/o Personnel Department, HAHNEMANN UNIVERSITY, Broad and Vine, Philadelphia, Pa. 19102. *Affirmative Action Employer.*

**POSTDOCTORAL POSITIONS** available immediately to study the molecular mechanism of electron transport in heart mitochondrial cytochrome bc<sub>1</sub> and cytochrome oxidase and in adrenal mitochondrial adrenodoxin and cytochrome P-450. Studies will focus on the effect of site-specific modifications on protein-protein interactions. Send curriculum vitae and names of references to: Dr. Frank Millett, Department of Chemistry, University of Arkansas, Fayetteville, Ark. 72701. *Equal Opportunity Employer.*

**POSTDOCTORAL POSITION** available immediately to study the molecular biology of herpesviruses, particularly the Epstein-Barr virus. Candidate should have a strong background in recombinant DNA technology and experience in virology. Please send curriculum vitae and three letters of reference to: Ronald Glaser, Ph.D., Department of Medical Microbiology and Immunology, The Ohio State University, 333 West 10 Avenue, Columbus, Ohio 43210. *Ohio State University is an Equal Opportunity/Affirmative Action Employer.*

## POSITIONS OPEN

### POSTDOCTORAL POSITION IN DEPARTMENT OF PATHOLOGY

The Uniformed Services University of the Health Sciences (USUHS) invites applicants for a postdoctoral position in the Department of Pathology to work with Dr. Esther H. Chang and Dr. Robert M. Friedman on the modulation of human oncogene expression by interferons. Candidates should have a Ph.D. or related professional degree with training and experience in molecular biology and recombinant DNA technology. Level of salary will be commensurate with training and experience. Interested candidates should submit curriculum vitae, bibliography, and names of three professional references by 27 April 1984 to: Dr. Robert M. Friedman, Chairman, Department of Pathology, c/o Personnel Division, USUHS, 4301 Jones Bridge Road, Bethesda, Md. 20814. *The Uniformed Services University of the Health Sciences is an Equal Opportunity/Affirmative Action Employer.*

**POSTDOCTORAL POSITION** available July 1984 to study release and metabolism of two new GI peptide hormone/paracrine agents. Work includes chromatographic characterization of metabolites, in vitro and in vivo microsampling, and use of cell cultures. Applicants training may be in biochemistry, physiology, pharmacology, or cell biology. Competitive salary. Send curriculum vitae and references to: Robert A. Hammer, M.D., Gastroenterology Section, Northwestern University Medical School, 1526 Wesley Pavilion, Chicago, Ill. 60611.

### POSTDOCTORAL POSITION/RESEARCH ASSOCIATE

Available July 1984 for either of two ongoing projects. One concerns ion transport mechanisms mediating intracellular pH regulation of large single cells. The other involves isolation of the membrane protein responsible for anion transport/intracellular pH regulation.

Minimum salary: \$19,296 per annum.  
Send curriculum vitae, statement of research interest, and two references to:

John M. Russell, Ph.D.  
Department of Physiology and Biophysics  
University of Texas Medical Branch  
Galveston, Texas 77550

*University of Texas Medical Branch is an Affirmative Action/Equal Opportunity Employer.*

### POSTDOCTORAL POSITION PLANT MOLECULAR GENETICS

Position is available to work on transposable elements and transformation in maize. Research experience in molecular biology required. Salary starts at \$15,000; support funded for 2 to 3 years. Send curriculum vitae and names of three references to: Dr. Jeff Bennetzen, Department of Biological Sciences, Purdue University, West Lafayette, Ind. 47907. *An Equal Opportunity/Affirmative Action Employer.*

**POSTDOCTORAL POSITION** available May 1984 to develop and investigate the use of monoclonal antibodies in studying neuropeptide synthesis and/or receptor interaction. Excellent opportunities for research in neuroendocrine regulation in this new, well-equipped Endocrine Research Laboratory. Please send curriculum vitae and two references to: Ivor Jackson, M.D., Director, Division of Endocrinology, Brown University, Rhode Island Hospital, 593 Eddy Street, Providence, Rhode Island 02902. *Equal Opportunity/Affirmative Action Employer.*

**POSTDOCTORAL POSITION** available for 1 to 3 years for research in catecholamine-angiotensin interaction in the brain. Candidates should have a strong background in neurochemistry or biochemical pharmacology. Experience in radioreceptor assays, cell culture, or HPLC analysis of catecholamines preferred but not required. Send résumé and names of three references to: Dr. Mohan K. Raizada (telephone: 904-392-3791) or Dr. Colin Summers (telephone: 904-392-3791), Department of Physiology, College of Medicine, University of Florida, Box J274, Gainesville, Florida 32610. *An Equal Opportunity/Affirmative Action Employer.*

Full **POSTDOCTORAL POSITION** available spring 1984 for possible 3 years to study red cell membrane, cytoplasmic interactions. Candidate should have extensive experience in isolating membrane proteins and in modern analytical techniques including gel chromatography and lipid analysis. Send résumé and three letters of recommendation to: L. M. Snyder, M.D., Hematology, St. Vincent Hospital, 25 Winthrop Street, Worcester, Mass. 01604.

## POSITIONS OPEN

**POSTDOCTORAL POSITION** available immediately to isolate and characterize neural peptides from vertebrate brain tissue in this NSF grant-supported research. Candidates should have a strong background in chemistry with experience in most of the following techniques: RIA, column chromatography, HPLC, gel electrophoresis, isoelectric focusing, and amino acid analysis. Excellent opportunities for research in comparative neuroendocrine regulation in this new, well-equipped Endocrine Research Laboratory. Please send curriculum vitae and two references to: Ivor Jackson, M.D., Director, Division of Endocrinology, Brown University, Rhode Island Hospital, 593 Eddy Street, Providence, Rhode Island 02902. *Equal Opportunity/Affirmative Action Employer.*

### POSTDOCTORAL POSITION IN PHYSICAL OCEANOGRAPHY OR METEOROLOGY

Available for research on the oceanic or atmospheric aspects of climate in collaboration with CIMAS fellows and using the facilities of the Rosenstiel School of Marine and Atmospheric Science (RSMAS) and NOAA's Atlantic Oceanographic and Meteorological Laboratory. One-year appointment, extendable to 2 years. Salary to \$27,300, based on experience. Applicants should submit a résumé, a statement of research interest, and the names of three references to:

Dr. William W. Fox, Jr., Director  
Cooperative Institute for Marine and  
Atmospheric Studies  
RSMAS/University of Miami  
4600 Rickenbacker Causeway  
Miami, Florida 33149  
Telephone: 305-361-4185

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**POSTDOCTORAL POSITIONS IN MOLECULAR NEUROBIOLOGY** available immediately. Research projects involve the analysis of gene expression in brain and cells of neuroectodermal origin using recombinant DNA technology. Applicants should have a strong background in molecular biology or biochemistry. Experience in cell culture would be helpful. Send curriculum vitae and three references to: Dr. B. B. Kaplan, Program Director, WESTERN PSYCHIATRIC INSTITUTE AND CLINIC, 3811 O'Hara Street, Pittsburgh, Pa. 15213. *The University of Pittsburgh is an Equal Opportunity/Affirmative Action Employer.*

**TWO POSTDOCTORAL POSITIONS** available immediately. One position involves preparation of photoaffinity labelled derivatives of various drugs and studying their interaction with cellular targets. Experience with organic synthesis and HPLC essential. The second position is to work on the structure and function or microtubule structural components in mammalian cells. Experience in gene cloning and molecular biological techniques desirable. Salaries: \$17,000 to \$21,000 per annum, depending upon experience. Send résumé with names of three references to: Dr. R. S. Gupta, Department of Biochemistry, McMaster University, Hamilton, Ontario, Canada L8N 3Z5.

**TWO POSTDOCTORAL POSITIONS** available immediately for biochemist and molecular biologist to study: (i) glial-specific antigens, and (ii) gene expression in developing retina. U.S. citizenship or permanent residency required. Send curriculum vitae and references to: P. Vijay Sarthy, Ph.D., Department of Ophthalmology, RJ-10, University of Washington, Seattle, Wash. 98195. *An Affirmative Action/Equal Opportunity Employer.*

**POSTDOCTORAL RESEARCH ASSOCIATE** to study the biosynthesis of photosynthetic pigments and related molecules. Recent Ph.D. in biochemistry, plant physiology, or related field is required. Experience with enzyme characterization and/or tetracycline biochemistry is desirable. Send curriculum vitae and names of three references to: Samuel I. Beale, Division of Biology and Medicine, Brown University, Providence, R.I. 02912. *Brown University is an Equal Opportunity/Affirmative Action Employer.*

### POSTDOCTORAL RESEARCH ASSOCIATES

Two positions available to study: (i) role of protein binding in the hepatic disposition of chemical carcinogens, and (ii) structure and expression of ligand genes. Some background in protein biochemistry/xenobiotic metabolism/DNA recombinant technology desirable. Please send curriculum vitae and names of three referees to: Dr. Madhu Bhargava, Liver Research Center, Albert Einstein College of Medicine, Bronx, N.Y. 10461. *An Equal Opportunity/Affirmative Action Employer.*

## Faculty Openings

Massachusetts Institute of Technology (MIT), Whitaker College of Health Sciences, Technology and Management, announces openings for junior faculty in systems neuroscience. Successful candidates will be engaged in research related to sensory and/or motor neurosciences to complement a broad program in neurobiology.

Candidates are expected to hold a Ph.D. or an equivalent doctoral degree with substantive research accomplishment and a solid, rigorous background in physics, mathematics or engineering. Ability to teach undergraduate and graduate level courses and to develop a strong research program.

New faculty will receive a joint appointment within the Whitaker College and within another appropriate MIT department such as Aeronautics and Astronautics, Electrical Engineering and Computer Science, Mechanical Engineering, or Psychology.

**Interested applicants should send curriculum vitae, a short statement of proposed research, and the names of three references by June 1, 1984 to:**

**Dr. Emilio Bizzi,  
Chair, Systems Neuroscience Search Committee,  
Bldg. E25-526, Massachusetts Institute of Technology,  
77 Massachusetts Avenue, Cambridge, MA 02139.**

MIT is an affirmative action/equal opportunity employer. Qualified minorities and women are encouraged to apply.

# MIT

## EPIDEMIOLOGIST

Battelle, Pacific Northwest Laboratories in Richland, Washington, has a position open immediately for a person with interests and experience in occupational and environmental epidemiology and risk assessment. Position has the potential for a wide range of research activities in a multidisciplinary, not-for-profit contract research organization.

Requirements include a doctoral degree in epidemiology or related discipline and strong statistical skills. Applicants should have two to five years' independent research experience, preferably in occupational or environmental epidemiology. Experience in contract research and demonstrated ability to secure research funding helpful.

Salary is highly competitive. Send letter of application with statement of research interests and description of course work plus resume and references by May 1 to: **Loren P. Henderson, Manager-Employment, Battelle-Northwest, P.O. Box 999, Richland, WA 99352.**

U.S. citizenship required.



## INTEGRATED GENETICS

*Integrated Genetics of Framingham, Massachusetts is a leading biotechnology firm specializing in the health care field with emphasis on DNA probe diagnostic technology and production of complex therapeutic proteins.*

*We are seeking qualified scientists with post-doctoral experience in*

*Bacterial Genetics  
Protein Chemistry  
Molecular Biology  
Molecular Virology*

**Send C.V. and names of three references to:**

Charlotte Gregory, Personnel Manager  
Integrated Genetics, Inc.  
51 New York Avenue  
Framingham, Massachusetts 01701

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## POSITIONS OPEN

**POSTDOCTORAL RESEARCH ASSOCIATE** available this spring, to collaborate in studies of membrane transport processes. The project involves the study of cation transport in single cells, especially red cells, red cell ghosts and granulocytes, and related biochemical events in membrane preparations. We are particularly interested in the mechanism and regulation of the Na, K pump. Applicants should send curriculum vitae and two references to: **Dr. John R. Sachs, Division of Hematology, HSC T15-040, State University of New York (SUNY) Stony Brook, Stony Brook, N.Y. 11794-8151. SUNY Stony Brook is an Equal Opportunity/Affirmative Action Employer. AK Number 22-84.**

### POSTDOCTORAL RESEARCH ASSOCIATE

Postdoctoral position available immediately for individual with training in molecular cloning of genes to participate in a program on microbial insecticides, particularly *Bacillus thuringiensis*. Send curriculum vitae and names of three references to: **Dr. L. A. Bulla, Jr., Department of Bacteriology and Biochemistry, University of Idaho, Moscow, Idaho 83843. Applications will be accepted until 18 May 1984.**

### PRE- AND POSTDOCTORAL OPPORTUNITIES IN HUMAN CANCER BIOLOGY UNIVERSITY OF WISCONSIN

The Department of Human Oncology has openings for graduate and postdoctoral study. Predoctoral students will enroll in the new graduate program leading to M.S. and Ph.D. degrees in human cancer biology. The program is designed to educate students for teaching and research careers in the laboratory sciences immediately related to the etiology, diagnosis, treatment, and prevention of human cancer. Research areas include pharmacology and experimental therapeutics, cell biology, radiobiology, immunology, and carcinogenesis as applied to human cancer. For more information, contact:

**Human Cancer Biology Program  
K4/310 Clinical Sciences Center  
University of Wisconsin  
Madison, Wisconsin 53792**

### UNIVERSITY OF CALIFORNIA, IRVINE DEPARTMENT OF PSYCHOBIOLOGY

Two tenure-track faculty positions are available for persons using modern techniques to study synaptic transmission. Successful applicants will be expected to interact with and contribute to a developing group on molecular mechanisms of transmission. Applications, including curriculum vitae, reprints of pertinent publications, and the names of three referees should be sent to: **Chair, Department of Psychobiology, University of California, Irvine, Calif. 92717, by 1 May 1984.**

*An Equal Opportunity/Affirmative Action Employer*

**RESEARCH ASSOCIATE.** Research on molecular mechanism of calcium regulation of smooth muscle contraction; relationship between actomyosin ATPase activity and myosin. Background in enzyme kinetics, ATPase activity, and protein phosphorylation. Proven ability to use radioisotope, analytic centrifuge, electromicroscope, fluorescence spectrophotometer with stopped flow apparatus. Ph.D. in biochemistry; 2 years of biochemical research experience; 40-hour week; \$19,500 per year. Send résumé to: **Arizona Department of Economic Security Job Service, Attention: 732-A Re:0801286, P.O. Box 6123, Phoenix, Ariz. 85005 (job location: Tucson; employer-paid ad; proof of authorization to work in U.S. required; list in résumé).**

**RESEARCH ASSOCIATE/POSTDOCTORAL POSITION.** Available 1 July 1984 to study the mechanism of skin carcinogenesis by environmental chemicals and ultraviolet light. Recent Ph.D. with training in metabolism of chemical carcinogens and/or environmental chemicals is desirable. Salary commensurate with experience. Send curriculum vitae with three letters of recommendation to: **Dr. Hasan Mukhtar, Department of Dermatology, Case Western Reserve University, Cleveland, Ohio 44106.**

**RESEARCH ASSOCIATE.** Immediate opening for a Ph.D.-level biochemist to participate in ongoing project dealing with the regulation of coagulation and fibrinolysis by vitamin K-dependent proteins. This position, which is available for up to 3 years, will allow the individual to collaborate or establish independent projects. The salary will be commensurate with experience. Applicants should send curriculum vitae and the names of three references to: **Dr. F. J. Walker, Terre Haute Center for Medical Education, 135 Holmstedt Hall, Terre Haute, Ind. 47809.**

## POSITIONS OPEN

### RESEARCH ASSOCIATE POSITION

The Hypertension Research Center, Indiana University School of Medicine, is seeking a Ph.D. with a degree in clinical psychology, psychophysiology, or exercise physiology. Experience is required with psychophysiological techniques, for a newly funded 3-year research project that compares cardiovascular responses to psychological stress among white and black subjects. This individual will be involved in finalizing the study design and equipment operation as well as day-to-day management of stress testing facility. Should have practical experience in psychological (stress) testing, polygraph recording equipment, and ability to work with a multi-disciplinary team of investigators. The position must be filled by April 1984. Contact: **Clarence E. Grim, M.D., Hypertension Research Center, CL 477, 541 Clinical Drive, Indiana University Hospitals, Indianapolis, Ind. 46223, or telephone: 317-264-8153.**

**RESEARCH PHYSICIST—NATIONAL BUREAU OF STANDARDS.** The Reactor Radiation Division at the National Bureau of Standards (NBS) in Gaithersburg, Maryland, has an opening for a research physicist in the area of condensed matter research using cold neutrons. Candidates must demonstrate broad experience in the design, construction, and use of neutron scattering instrumentation using cold neutrons and neutron guide tubes, with special emphasis on time-of-flight and back-reflection spectrometers. This position will be at the GS-14 level, with a starting salary of approximately \$42,722 per year. Interested persons should send Personal Qualifications Statement (SF-171) or résumé to: **U.S. Department of Commerce, National Bureau of Standards, Personnel Division, Washington, D.C. 20234; attention: John Hanson. NBS is an Equal Employment/Affirmative Action Employer. U.S. citizenship required.**

### The University of Calgary RESEARCH SCIENTIST Departments of Medical Physiology, Obstetrics and Gynaecology

The Departments of Medical Physiology and Obstetrics and Gynaecology (Endocrine/Infertility Service) are seeking an active research scientist to join a rapidly expanding research group. Applicants should have postdoctoral experience in reproductive tract physiology and/or tubal transport. *In accordance with Canadian immigration requirements, this advertisement is directed to Canadian citizens and permanent residents.* The successful candidate will be invited to apply to the Alberta Heritage Foundation for Medical Research for financial support. Appointment, rank, and salary will be at the faculty level appropriate to the candidate's experience.

Applications will be accepted until 30 April 1984. Correspondence should be addressed to:

**Dr. W. Veale, Head  
Department of Medical Physiology  
Faculty of Medicine  
Health Sciences Centre  
3330 Hospital Drive, NW  
Calgary, Alberta, Canada T2N 4N1**

**TOXICOLOGY.** A faculty position is available in the Division of Interdisciplinary Toxicology at the academic rank of assistant or associate professor. This is a tenure-track position. A strong demonstrated research and teaching record in the field of toxicology is required. Candidates should submit curriculum vitae along with names of three references to:

**Dr. Raymond D. Harbison  
Professor and Director  
Division of Interdisciplinary Toxicology  
University of Arkansas for Medical Sciences  
4301 West Markham, Number 638  
Little Rock, Arkansas 72205**

*The University of Arkansas for Medical Sciences is an Affirmative Action/Equal Opportunity Employer.*

### TRACE ELEMENT BIOGEOCHEMIST

The Academy of Natural Sciences, Benedict Estuarine Research Laboratory, has an immediate opening for a postdoctoral scientist interested in trace metal interactions with biota and transport through estuarine ecosystems. Initial appointment is for 1 year, with possible extension to 2 years. Please call for information or submit curriculum vitae, summary of research interests, and names, addresses, and telephone numbers of three references to: **James G. Sanders, Benedict Estuarine Research Laboratory, Benedict, Md. 20612; telephone 301-274-3134.**

## POSITIONS OPEN

### POSTDOCTORAL RESEARCH ASSOCIATES

Interdisciplinary program supported by NIH Training Grant offers research in liver carbohydrate metabolism (J. B. Blair, Ph.D., Biochemistry); adrenal/hepatic monooxygenases (H. D. Colby, Ph.D., Physiology); reproductive neuroendocrinology (R. L. Goodman, Ph.D., Physiology); thyroid/adrenal neuroendocrinology (G. A. Hedge, Ph.D., Physiology); gene expression/recombinant DNA (R. F. Kletzein, Ph.D., Biochemistry); and androgen/estrogen action (M. G. Mawhinney, Ph.D., Pharmacology and Toxicology). Positions filled as available, depending on candidate qualifications and needs of laboratories involved. Application information and more detailed descriptions of these research programs are available on request from:

**Dr. George A. Hedge, Professor and Chairman  
DEPARTMENT OF PHYSIOLOGY  
WEST VIRGINIA UNIVERSITY  
MEDICAL CENTER  
Morgantown, West Virginia 26506-6302**

*Equal Opportunity/Affirmative Action Employer*

### PROTEIN BIOCHEMIST, MICROBIOLOGIST MOLECULAR IMMUNOLOGIST

Carver Genetic Physics Corporation, a Seattle-based biotechnology firm, is seeking to fill three senior research positions and three research technologist positions.

#### SCIENTISTS

The three successful candidates should have a Ph.D. and 2-plus years of experience in one of the above disciplines.

#### TECHNOLOGISTS

The three successful candidates should have a B.S. or M.S. and 2 to 5 years of experience in one or more of the above disciplines.

**CARVER GENETIC PHYSICS** is located in Seattle near the University of Washington and offers a competitive salary and benefit package for these professionally challenging positions. For confidential consideration, please send résumé and salary history to:

**Personnel Manager  
CARVER GENETIC PHYSICS  
4526 11th Avenue, NE  
Seattle, Wash. 98105**

*Equal Opportunity/Affirmative Action Employer*

**Wanted: RESEARCH PHYSIOLOGIST IN GASTROENTEROLOGY.** The candidate should have a Ph.D. degree in physiology, pharmacology, or biochemistry and be familiar with intestinal transport studies, HPLC, tight junctions, and preferably familiar with prostaglandins and lipid chemistry. Send curriculum vitae to: **D. Hollander, M.D., Room C340 Med Sci I, University of California, Irvine, Calif. 92717.**

**YALE UNIVERSITY: VERTEBRATE PALEONTOLOGY.** The Department of Geology and Geophysics is soliciting applications for a senior professional appointment in the field of vertebrate paleontology. Letters of application should be accompanied by curriculum vitae and publication list and the names of three referees. *Yale University is an Equal Opportunity Employer and solicits applications from all qualified scientists, including women and members of minority groups.* Send all materials to: **Karl K. Turekian, Chairman, Department of Geology and Geophysics, Yale University, Box 6666, New Haven, Conn. 06511.**

### VISION RESEARCH

Systems Research Laboratories, Inc., is seeking vision research scientists to conduct research on the ocular effects of laser radiation on subhuman primates for a DOD customer in San Antonio, Texas. Preference will be given to scientists who have had 2 or more years of experience in primate vision research using behavioral, physiological, or electrophysiological measures, and who have a significant publications history. A Ph.D. degree and major concentration in one of the following areas is required: (i) visual physiology, (ii) visual psychophysics, (iii) visual electrophysiology, and (iv) experimental psychology. We are also looking for research assistants and technicians with experience in primate research. If you would like to be a member of this research program, send your résumé in confidence to:

**T. P. Ryan  
Scientific and Engineering Recruiting  
Department SC17  
Systems Research Laboratories, Inc.  
2800 Indian Ripple Road  
Dayton, Ohio 45440**

## BIOSTATISTICIAN

The Upjohn Company, a worldwide based manufacturer and marketer of pharmaceuticals, health services, chemicals, and agricultural products seeks qualified candidates for a Biostatistician opening.

This position is to provide support for our Pathology and Toxicology Research efforts, with particular emphasis on statistical issues related to survival analyses and the time-to-event problems arriving from chronic toxicology studies. Development of analytical procedures, design and analysis of laboratory experiments, and providing interpretations of the experimental results constitute the bulk of the responsibilities for this position. Other responsibilities are to develop statistical components for the design and analysis of experiments to test acute, subacute and chronic effects of drug treatment.

Requirements for this position include a Ph.D. in Statistics, Biostatistics, or a Biology-Statistics combination, plus a minimum of 2 years' related experience. An in-depth knowledge of statistical methods in survival analysis is required. A strong background in biological science and a thorough knowledge of the pathology and toxicology area are highly desirable.

The Upjohn Company offers highly competitive salaries, as well as a comprehensive benefit package. For confidential consideration, please call from outside of Michigan, toll free, 1-800-253-8600 and ask for extension 3-6767; or call from Michigan collect (616) 323-6767 to request an employment application be sent to you immediately. Please refer to ad number 15872-C when calling.

An Equal Employment Opportunity Employer M/F

**Upjohn**

A Century of Caring

## MACROMOLECULAR CRYSTALLOGRAPHER

The Upjohn Company, Kalamazoo, Michigan, is setting up a macromolecular crystallography laboratory with the facilities to accurately determine, by X-ray crystallographic methods, the three-dimensional structures of biologically important macromolecules and to aid in the application of these data to new compounds in support of drug development efforts. As a beginning to the staffing of this laboratory, Upjohn is seeking a macromolecular crystallographer, who will participate in establishing the facility and in the selection of additional staff.

The successful candidate will be expected to work independently, and in collaboration with other scientists, to obtain accurate three-dimensional structural data on important macromolecules by X-ray crystallographic techniques. This will include investigating native macromolecules and complexes of macromolecules with smaller molecules, and assisting scientists throughout Upjohn in the use of these data for the design of new compounds. This scientist will update, modify and develop macromolecular crystallographic techniques as needed, including computer programs to carry out these functions. Scientists from the macromolecular crystallography laboratory are expected to work closely with colleagues in the small molecule crystallography and the computer graphics laboratories, as well as other Upjohn scientists, to support Upjohn's drug discovery and development efforts.

Applicants should have a Ph.D. with training and experience in the techniques of macromolecular crystallography, including: crystal preparation; preparation of heavy atom derivatives; data collection; data interpretation; computer graphics as applied to macromolecular structure determination; macromolecular phasing techniques; and refinement of structures. Candidates should also have a working knowledge of the relationships between the structure, function and mechanisms of action of macromolecules. The ability to develop computer programs as needed is essential, as is the ability to work independently and as a part of an interdisciplinary research team.

For confidential consideration send a resume (including bibliography), the name and address of three references, and transcripts (if appropriate) to Gerald L. Potratz, Department 16149, The Upjohn Company, 7000 Portage Road, Kalamazoo, MI 49001.

**Upjohn**

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## IMMUNOLOGY

### Program Director National Cancer Institute

The National Cancer Institute is seeking candidates for the position of Program Director (Health Scientist Administrator) in the Immunology program of the Cancer Biology Branch, Division of Cancer Biology and Diagnosis. The incumbent will be responsible for the scientific administration of research grants and contracts. Duties will include overseeing active and competing research grants and contracts in the Molecular Immunology Section, evaluating and integrating knowledge in the area of immunology, developing and recommending plans for funding of research grants and contracts, initiating actions for support of targeted research including the development of workshops, and projecting the scientific and budgetary needs of this program area.

Applicants must have a Ph.D., M.D. degree or equivalent; minimum of three years of independent research experience as either a principal investigator or co-principal investigator on a grant or contract or equivalent experience in the management of a research laboratory at the advanced post-doctoral level; and knowledge of molecular immunology. Experience in one or more of the following areas is preferable: immunogenetics; transplantation genetics; molecular aspects of the synthesis, structure and function of lymphokines, antibodies and other soluble immune factors; molecular mechanisms of cytotoxicity, including mechanisms of cell-mediated and antibody-mediated lysis, and characterization of cell-surface target structures.

This is a Career Civil Service position starting at GS-13 (\$36,152-\$46,997) with potential for advancement to GS-14 (\$42,722-\$55,538). Letters of Interest, Personal Qualifications Statement (Form SF-171), curriculum vitae and bibliography should be sent by May 4, 1984 to: Dr. Faye C. Austin, National Cancer Institute, National Institutes of Health, Westwood Building, Room 10A07, Bethesda, Maryland 20205. (For additional information, call 301-496-7815.) An Equal Opportunity Employer.

National Institutes of Health



## BioTechnica International

85 Bolton Street, Cambridge, Massachusetts 02140  
(617) 864-0040

## SCIENTISTS

BioTechnica International, Inc., an innovative biotechnology company located in Cambridge, Massachusetts, has openings in the Plant Molecular Genetics Program directed by Dr. Frank Cannon. We are seeking highly motivated scientists at the Ph.D. level in the areas of:

- Molecular Genetics: to work on the manipulation of gene expression in plants.
- Microbiology/Fermentation: to work on the optimization of growth conditions, fermentation, viability, and genetic stability of soil bacteria.

BTI offers excellent compensation, a full benefits program, and opportunities for professional growth. Please send a letter of application, curriculum vitae, and names of three references by May 1, 1984, to:

Director of Administrative Services  
BioTechnica International, Inc.  
85 Bolton Street, Cambridge, MA 02140

## SYMPOSIUM

**Molecular Biology of Aging:  
Gene Stability and Gene Expression**  
19 October 1984  
Roosevelt Hotel, 45th and Madison Avenue  
New York, N.Y.

The annual symposium, which is the highlight of the meeting of the American Aging Association (AGE) to be held 18 to 20 October 1984, will focus on age-related changes in the replication and repair of DNA, and on RNA transcription and translation. The symposium is organized by Drs. R. Sohal, L. S. Birnbaum, and R. G. Cutler. Speakers will include Drs. B. Ames, P. Hartman, S. K. Kim, C. Marotta, G. Martin, L. Mays-Hoopers, H. Niedermuller, A. Richardson, R. Schmookler-Reiss, H. Sies, G. C. Webster, and J. Williams. A poster session will be held with the symposium. The proceedings will be published by the Raven Press in its *Biology of Aging* series. For further information and abstract forms for poster submission (the mailing deadline for abstracts is 29 June), write or call: Dr. D. Harman, Executive Director, AGE, University of Nebraska Medical Center, 42nd and Dewey Avenue, Omaha, Nebraska 68105; telephone: 402-559-4416.

## COURSES

### SUMMER COURSES IN GROSS ANATOMY, HISTOLOGY, EMBRYOLOGY AND NEUROANATOMY

Will be offered to medical, dental, health science and medical illustration students by the Department of Anatomy, Georgetown University, starting 25 June 1984. For further information, contact:

Dr. Martin Dym, Chairman  
Department of Anatomy  
Georgetown University  
School of Medicine—School of Dentistry  
3900 Reservoir Road, NW  
Washington, D.C. 20007  
Telephone: 202-625-7521

### 10th INTERNATIONAL CONGRESS OF THE TRANSPLANTATION SOCIETY

26 to 31 August 1984  
Minneapolis, Minnesota

Direct inquiries to:  
Congress Office, Continuing Medical Education  
University of Minnesota  
Box 293, 420 Delaware Street, SE  
Minneapolis, Minnesota 55455  
Telephone: 612-373-8012

## TRAINEESHIP

### POSTDOCTORAL TRAINEESHIP

The Department of Epidemiology, Graduate School of Public Health, University of Pittsburgh, has a postdoctoral traineeship available in diabetes epidemiology. The diabetes-related research involves the epidemiology and etiology of insulin dependent diabetes as well as the complications associated with diabetes. Applicants should have some research background preferably in immunology, immunogenetics, or genetics. Send curriculum vitae and names of three references to: Dr. Ronald E. LaPorte, Department of Epidemiology, Graduate School of Public Health, University of Pittsburgh, Pittsburgh, Pa. 15261. *The University of Pittsburgh is an Affirmative Action/Equal Opportunity Educational Institution.*

## PROGRAMS

### POSTDOCTORAL TRAINING PROGRAM IN CANCER RESEARCH

University of California, San Diego (UCSD), announces positions available in a multidisciplinary NIH research training program in cancer research. Applications are sought from Ph.D. candidates, recent Ph.D.'s, and physicians who have completed residency. The program includes studies in molecular and cellular biology, immunology, cancer therapy, and radiation biology with 22 faculty sponsors. American citizenship or immigration visa is required. Contact: Carol MacLeod, Ph.D., or Ajit Varki, M.D., Associate Directors, Postdoctoral Training Program, UCSD Cancer Center, T-011, La Jolla, Calif. 92093.

## PROGRAMS

**NEUROBIOLOGY OF AGING TRAINING** for M.D.'s and Ph.D.'s. Several fellowships, supported by the National Institute on Aging, are now available for Ph.D.'s and post-residency M.D.'s who are interested in research training in the neurobiology of aging. We particularly encourage applicants with diverse backgrounds who wish to apply their past training to problems of the aging CNS. Such backgrounds include: molecular biology, biochemistry, pharmacology, neurology, psychiatry, medicine, gerontology, neural sciences, and others. The training program offers an intense research apprenticeship, brief circulation through a variety of laboratories, seminars, and clinical correlations. Twenty potential preceptors are in the Departments of Anatomy, Brain Research, Medicine, Neurology, and Psychology. Apply to: Dr. Paul D. Coleman, Department of Anatomy, University of Rochester, Medical Center, Rochester, N.Y. 14642.

## WORKSHOP

### WORKSHOP IN BIOLOGICAL HVEM

A workshop in biological HVEM will be held 29 May to 4 June 1984 at the Laboratory for High-Voltage Electron Microscopy in Boulder, a national facility supported by the NIH Division of Research Resources, and will include lectures on basic theory and various applications of the instrument, practical instruction in specimen preparation and image analysis, hands-on experience in using the microscope, and discussions of special problems.

There will be no tuition charge and no academic credit. This workshop will be most meaningful to active researchers in ultrastructure, and will be limited to about 25 participants.

Applications outlining research interests and their relevance to HVEM should be sent by 1 May to: Professor Mircea Fotino, Department of MCD Biology, Campus Box 347, University of Colorado, Boulder, Colo. 80309. Telephone: 303-492-8593.

## ASSISTANTSHIPS

### RESEARCH ASSISTANTSHIPS IN BIOLOGY

Research assistantships are available to Ph.D. candidates in the following areas: cell and developmental biology, ecology, genetics, microbiology, parasitology, and physiology. Stipend is \$7000 annually, plus full waiver of tuition (\$3600). Write or call: Dr. Elliot Tramer, Director of Graduate Studies, Department of Biology, University of Toledo, Toledo, Ohio 43606; telephone: 419-537-2451.

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## FELLOWSHIPS

**POSTDOCTORAL FELLOWSHIP** available to study the genetic and biochemical basis of cell differentiation of skeletal muscle tissue. Experience in recombinant DNA techniques preferred. Send letter of application, résumé, and names of references to:

Dr. Frank E. Stockdale  
Stanford School of Medicine, S-025  
Stanford, California 94305

**PLANT EVOLUTION/SYSTEMATICS.** Postdoctoral fellowship available for year beginning fall 1984. Preference will be given to projects relating to the American Southwest. Application and supporting materials must include curriculum vitae, names of three referees, and a project proposal. Deadline: 15 May. Send materials to: Director, Rancho Santa Ana Botanic Garden, Claremont, Calif. 91711.

**FOUR POSTDOCTORAL FELLOWSHIPS IN DEVELOPMENTAL BIOLOGY**, available 1 July 1984. Broadly based NIH training program with multidisciplinary faculty. Deadline for receipt of applications: 15 May 1984. For list of training mentors, their research and application procedures, write to: Dr. Bruce M. Carlson, Division of Biological Sciences, University of Michigan, Ann Arbor, Michigan 48109. *An Equal Opportunity/Affirmative Action Employer*

## FELLOWSHIPS

### POSTDOCTORAL AND GRADUATE FELLOWSHIPS IN BIOCHEMISTRY

In any one of the following areas:

- 1) Neurochemistry of glutamine synthetase and Mn(II) ions.
- 2) Thermostability of proteins, studied by denaturation kinetics and H-T exchange, and
- 3) Equilibrium isotope exchange kinetics of key regulatory enzymes.

Closing date for receiving applications is 1 June 1984, or until a suitable applicant is identified. Send curriculum vitae to:

Dr. F. C. Wedler  
Biochemistry Program  
The Pennsylvania State University  
Althouse Laboratory  
University Park, Pa. 16802

*An Equal Opportunity/Affirmative Action Employer*

**POSTDOCTORAL FELLOWSHIP.** Position available immediately for Ph.D. neuroendocrinologist or neuropharmacologist to join a group of scientists investigating the neuroendocrinology of brain aging and neuropharmacology of brain-targeted drugs in the evaluation of the aging process. Experience with the evaluation of catecholamine metabolism would be helpful. Salary assured for 2 years on NIH scale. Send curriculum vitae and names of three references to: Dr. James W. Simpkins, Box J-4, J. Hillis Miller Health Center, University of Florida, Gainesville, Fla. 32610. *An Equal Opportunity Employer.*

**A POSTDOCTORAL FELLOWSHIP IN BIOORGANIC CHEMISTRY** is available 1 June 1984 to study mechanisms and the design of mechanism based enzyme inhibitors for ADP-ribosyl transferases and NAD glycohydrolases. Experience in synthetic organic chemistry and/or enzymology highly desirable. Interested candidates should send a résumé, as well as the names of three references, to: Dr. James Slama, Department of Biochemistry, The University of Texas Health Science Center, San Antonio, Texas 78284. *An Equal Opportunity/Affirmative Action Employer.*

### POSTDOCTORAL FELLOWSHIPS IN IMMUNOLOGY AND MICROBIOLOGY

Applications are invited from qualified individuals interested in postdoctoral training in mechanisms of inflammation, with emphasis upon the biology and chemistry of the acute phase proteins and the complement system. Special research and training opportunities in clinical immunology, and in the teaching programs of the Medical and Graduate Colleges of Rush University, also are available. Please direct inquiries and curriculum vitae by 30 June 1984 to:

Henry Gewurz, M.D.  
Chairman  
Department of Immunology/Microbiology  
Rush Medical College  
1753 West Congress Parkway  
Chicago, Ill. 60612

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

### TRUDEAU INSTITUTE

**POSTDOCTORAL FELLOWSHIP IN INFECTIOUS DISEASE.** A position is currently available to study the effects of immunosuppression on defense of the lung against opportunistic bacterial pathogens in a mouse model of acquired immune deficiency. Studies will be concerned with the expression and modulation of delayed hypersensitivity and cell-mediated immunity in chronically infected mice. Current research is directed towards understanding the role played by T cells in the modulation of antituberculous immunity in infected and immunosuppressed animals. Candidates should have a strong background in infection-immunity and cellular immunology.

The Trudeau Institute is a private, not-for-profit basic medical research institution situated on the shores of Lower Saranac Lake, about a mile from the village of Saranac Lake and 10 miles from Lake Placid, N.Y. On-campus housing is available. Salary is at appropriate NIH levels.

Send curriculum vitae and names of three references to: Dr. Frank M. Collins, Trudeau Institute, P.O. Box 59, Saranac Lake, N.Y. 12983. *An Equal Opportunity Employer.*



# MOLECULAR BIOLOGY ENZYMOLOGIST

Pharmacia P-L Biochemicals, a division of Pharmacia, Inc. has an immediate position available for a PhD Enzymologist with 1-2 years of post doctoral experience including purification, characterization and application of nucleic acids modifying enzymes. This position involves the development of new products for our growing line of molecular biology enzymes.

This is a permanent position with an international biotechnology company offering a competitive starting salary and a complete benefits program.

Send your letter, resume and a list of 3 references with phone numbers to: **Dr. James Willis, Pharmacia P-L Biochemicals Inc., 2202 North Bartlett Avenue, Milwaukee, Wisconsin 53202.** We are an equal opportunity employer, m/f.



**Pharmacia**

# NUCLEIC ACID CHEMIST

Pharmacia P-L Biochemicals, a division of Pharmacia Inc. has an immediate opening for a PhD Bio-organic Chemist in the Biochemicals Research and Development Department. Post doctoral experience is required. The position involves the development of new products in the areas of modified nucleotides, nucleic acid chromatography, oligonucleotide and polynucleotide applications as well as improvement of current nucleotide production process.

The successful candidate will have a strong background in nucleic acid bio-organic chemistry. This is a permanent position with an international biotechnology company offering a competitive starting salary and a complete benefits program.

Send your letter, resume and a list of 3 references with phone numbers to: **Dr. Robert Naylor, Pharmacia P-L Biochemicals Inc., 2202 North Bartlett Avenue, Milwaukee, Wisconsin 53202.** We are an equal opportunity employer, m/f.



**Pharmacia**

## KING SAUD UNIVERSITY RIYADH, SAUDI ARABIA

### COLLEGE OF PHARMACY

King Saud University, College of Pharmacy has vacant faculty positions (Professors, Associate Professors, Assistant Professors) for Ph.D. holders and/or holders of academic titles earned at accredited universities who would be employed on contract basis as of the beginning of the academic year 1984/85 which starts on August 11, 1984. The language of instruction at the college is ENGLISH.

The college has the following departments:  
PHARMACEUTICAL CHEMISTRY  
PHARMACOGNOSY

PHARMACOLOGY

PHARMACEUTICS  
CLINICAL PHARMACY

#### BENEFITS:

Free round trip annually for faculty member and family (airline tickets)  
Furnished accommodation or housing and furnishing allowances  
Monthly transport allowance  
Relocation allowance  
End-of-service gratuity  
Free medical and dental care covering family  
Contribution by the University to cover tuition fees of non-Arabic-speaking children

Interested academicians are kindly requested to send their application letters together with their resumes, photocopies of their academic diplomas (non-returnable), copies of their specialized experience certificates (including lists of their publications and references), and to indicate the position applied for and the subjects the applicants are qualified to teach to:

KING SAUD UNIVERSITY  
ATTENTION TO THE DEAN  
P. O. BOX 2457  
RIYADH, SAUDI ARABIA

A second copy of the above information should also be mailed to:

KING SAUD UNIVERSITY OFFICE  
2425 WEST LOOP SOUTH  
HOUSTON, TEXAS 77027  
ATTENTION: MS. NIKKY AMIN



Qualified candidates should furnish their correct addresses and telephone numbers where they can be reached for notification of place and date of scheduled interviews. Applications will be held in strict confidence.

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Washington, DC 20005  
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