

Onagraceae by Raven and in the Gramineae by Connor speak not only of the diversity of these systems but of their lability in evolutionary and ecological time. Raven contends that in the Onagraceae self-pollination has evolved independently at least 150 times. Connor shows the great extent to which environmental variables may alter the balance between self- and cross-fertilization and sexual and asexual reproduction in grasses. Self-incompatibility not only is overcome naturally, it may also be circumvented by various laboratory procedures, the practice and application of which are discussed by Pandey and Cocking. The genetic and physiological bases of incompatibility are reviewed by Lewis and Heslop-Harrison respectively.

Scientists interested in reproduction within evolutionary or ecological frameworks will find the volume to be of great value.

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## The Behavior of Fishes

### Diversity and Adaptation in Fish Behaviour.

MILES H. A. KEENLEYSIDE. Springer-Verlag, New York, 1979. xiv, 210 pp., illus. \$37.80. Zoophysiology, vol. 11.

Students of ethology have long awaited a textbook on the behavior of fishes, not because the behavior of fishes is fundamentally different from that of other organisms but because their remarkable diversity makes them ideal for comparative testing of functional hypotheses. In many aspects of their biology the fishes are more variable than the notoriously diverse insects. Therefore it is not surprising that a book on the diversity of behavior in the fishes is more easily criticized for what it does not say than for what it does say, especially when the text occupies a mere 177 pages.

Keenleyside would seem to be an ideal author for a book on the subject. He has conducted laboratory and field research on many aspects of fish behavior including courtship, parental care, and schooling and has direct experience with freshwater and marine habitats in temperate and tropical climates. He wisely avoids simply recapitulating behavioral principles as they apply to the fishes, and instead emphasizes behavior as an adaptation to the diverse ecological situations faced by fishes. However, by his own admission

the work is highly selective. There is a chapter on locomotion in fishes, but none on sensory mechanisms, and orientation is not discussed. Arthur Hasler's classic series of field studies of orientation in migrating salmon are not cited or listed in the bibliography. Nor is this the only gap in the book's coverage. Because of the prevalence of distinct and specialized larval forms, behavioral ontogeny is an important aspect of fish behavior, yet it is hardly mentioned here. The pivotal role of quantitative and experimental studies of fish behavior in generating many of ethology's fundamental principles is not even hinted at.

Roughly half (85 pages) of the text is devoted to reproductive behavior. This is a subject with which Keenleyside is very familiar, and we see glimpses of the book he might have written. However, this section has an organizational flaw in that the subject is divided among three chapters—on spawning site selection, breeding, and parental care—and the same examples are discussed in each. Keenleyside's use of references is singularly spotty. He cites his own contribution to a recent symposium volume, yet ignores relevant papers by several other contributors to the symposium. These chapters also suffer from unfortunate timing, for several important reviews and discussions of parental care in fishes appeared while the book was in press, too late to be taken into account (the most recent references cited are from 1978). The discussion of schooling in the final chapter is similarly compromised.

The book is not synthetic or comprehensive enough to be a reference monograph for professional fish behaviorists, and because it assumes a familiarity with the basic features of anatomy and functional morphology of fishes it cannot serve as an introduction to the fishes for other behaviorists. It is best suited to the student who is familiar with the basic biology of fishes and now wishes to know something of their behavior. Though not the definitive work we had hoped would appear, however, it is important as the first serious attempt by a senior researcher to produce an overview of the discipline. Previous works have all been symposium volumes or collections of papers haphazardly assembled, and Keenleyside has produced a volume that is of substantially greater value than these. In clearly perceiving that the unique and valuable features of fish behavior are its diversity of form and circumstance, he has charted a course that future authors would be wise to follow.

The book is well produced, well written, and easy to read. The illustrations

are clear and straightforward, although there are occasional gaffes; a drawing of *Pantodon buchholzi* is so inaccurate in fin morphology that the species is scarcely recognizable.

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## Books Received

**Academic Turmoil.** The Reality and Promise of Open Education. Theodore L. Gross. Anchor/Doubleday, Garden City, N.Y., 1980. x, 250 pp., \$10.95.

**Acoustical Imaging.** Vol. 8, Ultrasonic Visualization and Characterization. Proceedings of a symposium, Key Biscayne, Fla., May 1978. A. F. Metherell, Ed. Plenum, New York, 1980. xii, 790 pp., illus. \$59.50.

**Advances in Applied Mechanics.** Vol. 19. Chia-Shun Yih, Ed. Academic Press, New York, 1979. viii, 324 pp., illus. \$39.50.

**British Coastal Shrimps and Prawns.** Keys and Notes for the Identification of the Species. G. Smaldon. Published for the Linnean Society of London and the Estuarine and Brackish-Water Sciences Association by Academic Press, New York, 1979. vi, 126 pp., illus. Paper, \$11.50. Synopses of the British Fauna, No. 15.

**Business Conditions in Michigan Metropolitan Areas.** Paul J. Kozlowski with assistance from Phyllis R. Buskirk. Upjohn Institute for Employment Research, Kalamazoo, Mich., 1979. viii, 184 pp., illus. Paper, \$4.50.

**Calcium Regulation in Sub-Mammalian Vertebrates.** Christopher G. Dacke. Academic Press, New York, 1979. xvi, 222 pp., illus. \$39.

**Cape Cod Environmental Atlas.** Arthur H. Brownlow, Ed. Boston University Department of Geology, Boston, 1979. xvi, 62 pp. + plates. Paper, \$5.

**Cardiology.** Proceedings of a congress, Tokyo, Sept. 1978. Shoji Hayase and Satoru Murao, Eds. Excerpta Medica, Amsterdam, 1979 (U.S. distributor, Elsevier/North-Holland, New York). xxiv, 1164 pp., illus. \$195.

**Chemical Equilibria in Soils.** Willard L. Lindsay. Wiley-Interscience, New York, 1979. xxii, 450 pp., illus. \$25.

**Chemistry Explained.** Robert L. Wolke. Prentice-Hall, Englewood Cliffs, N.J., 1980. xxiv, 552 pp., illus. \$17.95.

**Corporate Energy Management Manual.** Fairmont Press, Atlanta, Ga., 1979. iv, 124 pp., illus. Paper, \$24.50.

**Dossier Caribou.** Ecologie et Exploitation du Caribou au Québec-Labrador. François Trudel and Jean Huot, Eds. Recherches Amérindiennes au Québec, Montreal, 1979. 166 pp., illus. Paper, \$7.50. *Recherches Amérindiennes au Québec*, vol. 9, Nos. 1-2.

**Dynamos and Virgins Revisited.** Women and Technological Change in History. An Anthology. Martha Moore Trescott, Ed. Scarecrow Press, Metuchen, N.J., 1979. iv, 280 pp., illus. \$14.

**Ecological Processes in Coastal Environments.** Papers from a symposium, Norwich, England, Sept. 1977. R. L. Jefferies and A. J. Davy, Eds. Blackwell, Oxford, England, 1979

(Continued on page 214)



## PRODUCTS and MATERIALS

### Spectrophotometer

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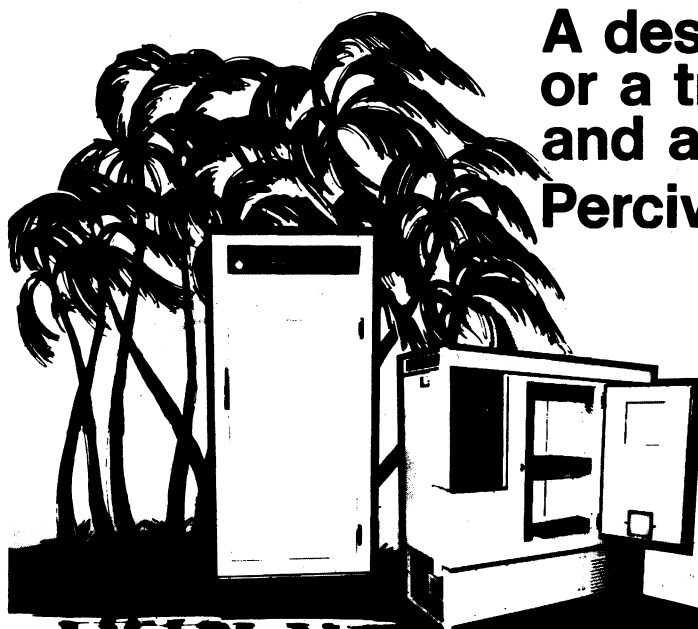


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## BOOKS RECEIVED

(Continued from page 182)

(U.S. distributor, Halsted [Wiley], New York). xviii, 684 pp., illus. \$79.95.

**Fundamentals of Biological Anthropology.** Kenneth A. Bennett. Brown, Dubuque, Iowa, 1979. x, 550 pp., illus. \$14.95.

**Genus *Medicago* (Leguminosae).** A Taxogenetic Study. Karlis Adolfs Lesins and Irma Lesins. Junk, The Hague, 1979 (U.S. distributor, Kluwer Boston, Hingham, Mass.). xii, 228 pp., illus. \$52.65.

**Geochemistry of Water in Relation to Cardiovascular Disease.** National Academy of Sciences, Washington, D.C., 1979. xiv, 98 pp., illus. Paper, \$10.75.

**Geometric Quantization and Quantum Mechanics.** Jędrzej Śniatycki, Springer-Verlag, New York, 1980. x, 230 pp. Paper, \$14. Applied Mathematical Sciences, 30.

**Handbook of the Hypothalamus.** Vol. 1, Anatomy of the Hypothalamus. Peter J. Morgane and Jaak Panksepp, Eds. Dekker, New York, 1979. xviii, 726 pp., illus. \$95.

**Knowing and Valuing.** The Search for Common Roots. H. Tristram Engelhardt, Jr., and Daniel Callahan, Eds. Hastings Center, Hastings-on-Hudson, N.Y., 1980. xii, 286 pp. Paper, \$9.95. The Foundations of Ethics and Its Relationship to Science, vol. 4.

**The Laboratory Rat.** Vol. 1, Biology and Diseases. Henry J. Baker, J. Russell Lindsey, and Steven H. Weisbroth, Eds. Academic Press, New York, 1979. xiv, 436 pp., illus. \$52.50. American College of Laboratory Animal Medicine Series.

**Lattice Path Counting and Applications.** Sri Gopal Mohanty. Academic Press, New York, 1979. xii, 188 pp. \$21. Probability and Mathematical Statistics.

**Mycobacterial Infections of Zoo Animals.** Proceedings of a symposium, Front Royal, Va., Oct. 1976. Richard J. Montali, Ed. Smithsonian Institution Press, Washington, D.C., 1978. viii, 276 pp., illus. Cloth. Symposia of the National Zoological Park.

**Natural and Induced Cell-Mediated Cytotoxicity.** Effector and Regulatory Mechanisms. Proceedings of a symposium, Weitenberg bei Tübingen, Germany, Oct. 1977. Gert Riethmüller, Peter Wernet, and Gustavo Cudkovic, Eds. Academic Press, New York, 1979. xiv, 242 pp., illus. \$16. Perspectives in Immunology.

**Neurosciences Research Program Bulletin.** Vol. 16. MIT Press, Cambridge, Mass., 1980. vi, 662 pp., illus. \$30.

**Organic Reactions.** Vol. 26. Wiley, New York, 1979. viii, 488 pp., illus. \$32.

**The Origins of Civilization.** Wolfson College Lectures 1978. P. R. S. Moorey, Ed. Clarendon (Oxford University Press), New York, 1979. xvi, 166 pp., illus. + plates. \$18.95.

**The Origins of Logic.** Six to Twelve Months. Jonas Langer. Academic Press, New York, 1979. xiv, 438 pp., \$26.50. Developmental Psychology Series.

**Padé Approximation and Its Applications.** Proceedings of a conference, Antwerp, Belgium, Apr. 1979. L. Wuytack, Ed. Springer-Verlag, New York, 1979. vi, 392 pp. Paper, \$20. Lecture Notes in Mathematics, vol. 765.

**The Particle Play.** An Account of the Ultimate Constituents of Matter. J. C. Polkinghorne. Freeman, San Francisco, 1979. x, 138 pp., illus. \$12.75.

**Product Integration with Applications to Differential Equations.** John D. Dollard and

Charles N. Friedman. Addison-Wesley Advanced Book Program, Reading, Mass., 1979. xxiv, 254 pp. \$24.50. Encyclopedia of Mathematics and Its Applications, vol. 10.

**Programmed to Learn.** An Essay on the Evolution Culture. H. Ronald Pulliam and Christopher Dunford. Columbia University Press, New York, 1980. xiv, 138 pp. \$10.

**Progress in Inorganic Chemistry.** Vol. 26. Stephen J. Lippard, Ed. Interscience (Wiley), New York, 1979. x, 490 pp., illus. \$35.95.

**Progress in Neurological Research with Particular Reference to Motor Neurone Disease.** Peter O. Behan and F. Clifford Rose, Eds. Pitman, Tunbridge Wells, Kent, England, 1979 (U.S. distributor, University Park Press, Baltimore). viii, 232 pp., illus. \$39.50.

**Respiratory Physiology.** John A. Jacquez. Hemisphere, Washington, D.C., and McGraw-Hill, New York, 1979. xvi, 442 pp., illus. \$24.95.

**A Review of the EPA Red Book.** Quality Criteria for Water. Robert V. Thurston, Rosemarie C. Russo, Carlos M. Fetterolf, Jr., Thomas A. Edsall, and Yates M. Barber, Jr., Eds. Water Quality Section, American Fisheries Society, Bethesda, Md., 1979. x, 314 pp. Paper, \$14.

**Revolt against the Dead.** The Modernization of a Mayan Community in the Highlands of Guatemala. Douglas E. Brintnall. Gordon and Breach, New York, 1979. xxiv, 200 pp., illus. \$18. Library of Anthropology.

**The Search for Extraterrestrial Intelligence.** Prepared by National Aeronautics and Space Administration. Philip Morrison, John Billingham, and John Wolfe, Eds. Dover, New York, 1980. xiv, 176 pp., illus. Paper, \$3. Abridgement of 1977 edition.

**Stereodynamics of Molecular Systems.** Proceedings of a symposium. Albany, N.Y., Apr. 1979. Ramaswamy H. Sarma, Ed. Pergamon, New York, 1979. xii, 460 pp., illus. + plates. \$50.

**Structural Dynamics.** Theory and Computation. Mario Paz. Van Nostrand Reinhold, New York, 1980. xxiv, 446 pp., illus. \$29.95. Van Nostrand Reinhold Environmental Engineering Series.

**Structure and Bonding.** Vol. 39. J. D. Dunitz and seven others, Eds. Springer-Verlag, New York, 1980. vi, 122 pp., illus. \$35.20.

**Structured Microprocessor Programming.** Morris Krieger, Charles Popper, Robert Radcliffe, and David Rippes. Yourdon, New York, 1979. x, 230 pp., illus. Paper, \$18.

**Thermoluminescence Techniques in Archaeology.** Stuart Fleming. Clarendon (Oxford University Press), New York, 1979. viii, 234 pp., illus. \$39.50.

**Tomorrow Is Our Permanent Address.** The Search for an Ecological Science of Design as Embodied in the Bioshelter. John Todd and Nancy Jack Todd. Harper and Row, New York, 1980. 156 pp., illus. Cloth, \$14.95; paper, \$4.95. A Lindisfarne Book.

**Toxic Plants.** Papers from a symposium, Coral Gables, Fla., June 1977. A. Douglas Kinghorn, Ed. Columbia University Press, New York, 1979. xiv, 196 pp., illus. \$20.

**The Transfer of Molecular Energies by Collision.** Recent Quantum Treatments. Franco A. Gianturco. Springer-Verlag, New York, 1979. viii, 328 pp. Paper, \$19.80. Lecture Notes in Chemistry, vol. 11.

**WHO Expert Committee on Biological Standardization.** Thirtieth Report. World Health Organization, Geneva, 1979 (U.S. distributor, WHO Publications Centre USA, Albany, N.Y.). 200 pp. Paper, \$6.60. Technical Report Series 638.

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**BIGELOW LABORATORY FOR OCEAN SCIENCES** seeks **junior research scientist** to investigate benthic processes controlling nutrient regeneration in coastal waters. Applicants with strong background in microbiological processes and nutrient regeneration will be given priority. Ph.D. required. This position is funded by an NSF-sponsored program: 100 percent for the first and second years, and 50 percent for the third year. Subsequent funding dependent on investigator's efforts. Send curriculum vitae, three recommendations, and letter of interest by 1 December 1980 to: **Robert Kidd, West Boothbay Harbor, Maine 04575. Equal Opportunity/Affirmative Action Employer.**

## PHYSICAL OCEANOGRAPHER

**BIGELOW LABORATORY FOR OCEAN SCIENCES** seeks **research scientist** to develop a program on interaction between advection and turbulent diffusion, and biological production in the water column. Applicants with strong background in experimentation with current meters, drogues, and other tracers as well as in data analysis and interpretation will be given priority. Ph.D. required. This position is funded by an NSF-sponsored program: 100 percent for the first and second years, and 50 percent for the third year. Subsequent funding dependent on investigator's efforts. Send curriculum vitae, three recommendations, and letter of interest by 1 December 1980 to: **Robert Kidd, West Boothbay Harbor, Maine 04575. An Equal Opportunity/Affirmative Action Employer.**

## CSIRO

### POSTDOCTORAL RESEARCH FELLOW DIVISION OF PLANT INDUSTRY CANBERRA, ACT, AUSTRALIA

CSIRO has a broad charter for research into primary and secondary industry areas. The organization has approximately 7400 employees, 2500 of whom are research and professional scientists, located in divisions and sections throughout Australia.

#### FIELD: Weed ecology.

**GENERAL:** The division, which has its headquarters in Canberra, carries out research in a wide range of plant sciences on problems fundamental to agricultural production. Research programs include ecological studies in agricultural and natural plant communities.

**DUTIES:** To initiate research into the ecological dynamics of seeds in soil of crop and pasture lands, and in particular to investigate the influences of agricultural practices on populations and species composition of weedy communities. This project is expected to complete current research programs on biological and chemical aspects of control of several major weeds of Australian agriculture.

**QUALIFICATIONS:** A Ph.D. degree in an appropriate field or equivalent qualifications, supported by satisfactory evidence of research achievement.

**SALARY:** Research scientist or senior research scientist: \$A17,331 to \$A25,177.

**TENURE:** 3 years. Superannuation benefits available.

**APPLICATIONS:** In writing and stating full personal and professional details, the names of at least two referees, and quoting reference Number A4782, should reach:

The Chief  
Division of Plant Industry  
CSIRO

P.O. Box 1600  
Canberra City, ACT 2601, Australia

by 7 November 1980.

## POSTDOCTORAL RESEARCH AWARDS

Competitive awards for research—free of administrative duties—as visiting scientists in selected federal laboratories throughout the United States. Over 200 new awards offered by the National Research Council. Opportunity for specialized experience in experimental or theoretical research in fields of:

**ATMOSPHERIC & EARTH SCIENCES  
ENGINEERING • LIFE SCIENCES  
PHYSICS • CHEMISTRY  
ENVIRONMENTAL SCIENCES  
MATHEMATICS • SPACE SCIENCES**

Most of the 15 programs are open to non-U.S. nationals, and most are open to senior investigators as well as recent PhDs.

Application materials with details on research opportunities and laboratory locations are available from:

Associateship Office (JH 610-S2)  
**NATIONAL RESEARCH COUNCIL**  
2101 Constitution Avenue, N.W.  
Washington, D.C. 20418

Postmark deadline for applications:  
January 15.

*National  
Research Council*

National Academy of Sciences  
National Academy of Engineering Institute of Medicine

## THE NEW YORK ACADEMY OF SCIENCES

### Workshop on

### BRAIN TUMORS IN THE CHEMICAL INDUSTRY

The Barbizon-Plaza Hotel, New York City  
27 to 29 October 1980

This workshop will be chaired by Irving J. Selikoff and E. Cuyler Hammond, Mount Sinai School of Medicine of the City University of New York.

In November 1978, the Occupational Safety and Health Administration received a complaint from an employee who stated that he was suffering from a brain tumor and knew of others with the same problem. This spurred a series of epidemiological investigations to determine whether this was a random occurrence or whether these tumors might be related to worker exposure to toxic substances at the plant. At the one facility in question, 18 brain cancer deaths have occurred to date and 25 other cases have been identified at another plant; similar cases are being reported in petrochemical facilities in other parts of the world.

This workshop will bring together scientists from government, industry, academic institutions, and labor to review the current state of the knowledge concerning occupational and environmental etiology of brain tumors. The consideration of currently available data will allow dissemination of state-of-the-art information to researchers throughout the world. It will further serve to assist in evaluation of etiological factors, of particular significance now, as measures are considered for control of the problem.

For details of the program and registration contact:

Conference Director  
The New York Academy of Sciences  
2 East 63 Street  
New York, New York 10021  
Telephone: 212-838-0230



## POSITIONS OPEN

**ASSISTANT OR ASSOCIATE PROFESSOR BACTERIOLOGIST/PROKARYOTE PLANT PATHOLOGIST.** Department of Plant Pathology, University of California, Riverside. Responsibilities include developing a contemporary research program in an area of microbiology and on bacterial or other prokaryote diseases of plants and teaching (15 to 20 percent) of similar subjects. A Ph.D. with a distinguished background and/or experience in microbiology and/or plant pathology is desirable. Send résumé, three confidential letters of recommendation, and complete transcripts to: **Dr. D. E. Munneke, Chairman, Search Committee, Department of Plant Pathology, University of California, Riverside, California 92521.** Application deadline is 15 December 1980 or later if suitable applicant has not been selected. *The University of California is an Equal Opportunity/Affirmative Action Employer.*

### ASSISTANT/ASSOCIATE PROFESSOR OF GEOPHYSICS

Applications are invited for a 12-month, tenure-track position as assistant or associate professor of geophysics in the School of Oceanography, Oregon State University. The applicant must have demonstrated ability to conduct independent research and to obtain research funding in theoretical geophysics with emphasis in inversion theory, potential fields, thermal processes, physics of geothermal systems, elastomechanics, long period seismology, modern data processing, inversion theory, or electrical methods. Applicant must have a Ph.D. in geophysics.

The appointee will be expected to teach advanced graduate courses in geophysics, supervise graduate students, and develop a program of grant-funded research. Applicants who meet all requirements, but have less experience than is normally required for associate professor rank will be considered for appointment at rank of assistant professor. Salary: \$23,000 to \$32,000 commensurate with experience. Send résumé, a brief statement of research plans, and names of three references by 31 December 1980 to: **G. Ross Heath, Dean, School of Oceanography, Oregon State University, Corvallis, Oregon 97331.**

*Oregon State University, an Affirmative Action/Equal Opportunity Employer, complies with Section 504 of the Rehabilitation Act of 1973.*

### ASSISTANT PROFESSOR—MICROBIOLOGY

The Cellular Biology Section of the Department of Biological Sciences of the University of Southern California (USC) invites applications for a tenure-track faculty position at the assistant professor level available September 1981.

Candidate research interest in the broadly defined areas of microbial physiological/ecology including viral, bacterial, or protozoan or in the function of microbial membrane systems, including recycling, membrane biogenesis, or cell surface chemistry will be favored, although outstanding candidates with interests in other areas of microbiology will be considered. Evidence of strong research activity and productivity is essential as is a strong potential for obtaining research funding.

The assistant professor will be expected to design and teach a general microbiology course with laboratory for undergraduate biology majors and to teach a graduate level course in his/her special area of interest.

Those interested should send applications to: **Dr. Cornelius W. Sullivan, Section of Cellular Biology, Department of Biological Sciences, University of Southern California, Los Angeles, California 90007** before 15 November 1980.

Curriculum vitae, a list of publications, a summary of current research interests, and the names of three references should accompany the application. Letters of recommendation should not be included; they will be requested from references by the faculty when needed.

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

### ASSISTANT/ASSOCIATE PROFESSOR OF NUCLEAR MEDICINE DEPARTMENT OF RADIATION MEDICINE

M.D. or M.D./Ph.D. clinical, teaching, and research in academic nuclear medicine for Board-eligible or -certified person. Joint VAH/UK position in tenure-track. Research interests and experiences in tumor localization desirable. Active research program ongoing. Send curriculum vitae, bibliography, and names of three references to: **Chairman, Department of Radiation Medicine, University of Kentucky Medical Center, Lexington, Kentucky 40536.** *An Equal Opportunity Employer.*

## POSITIONS OPEN

The Department of Plant Pathology and Crop Physiology, Louisiana State University, is seeking applicants for the position of **ASSISTANT PROFESSOR** to do basic and applied research (approximately 85 percent time) in sugarcane physiology and to teach (approximately 15 percent time) in the area of plant physiology. Ph.D. with emphasis in plant physiology required. Available 15 December 1980. Application deadline: 15 December 1980 or until suitable applicant is identified. Send résumé, transcripts, and letters of recommendations to: **W. J. Martin, Head, Department of Plant Pathology and Crop Physiology, Louisiana State University, Baton Rouge, La. 70803.** *An Equal Opportunity/Affirmative Action Employer.*

### BIOCHEMIST OR TOXICOLOGIST POSTDOCTORAL

Nonprotein amino acid metabolism and toxicology. Emphasis either on insects, higher plants, or preferably their biochemical and toxicological interactions; \$15,000 per year. Send three letters, curriculum vitae, and statement of current research interests to: **Dr. Gerald A. Rosenthal, T. H. Morgan School of Biological Sciences, University of Kentucky, Lexington, Ky. 40506.** Telephone: 606-258-2652. Starting: summer 1981. *An Equal Opportunity Employer.*

### THE UNIVERSITY OF CHICAGO BIOLOGIST

Applications are solicited for a position in the Anatomy Department, which is now completing a shift in research emphasis and role within the university community. Current interests focus on adaptation at the tissue and whole organism level, in both vertebrates and invertebrates, and include study of morphology from developmental, functional, and evolutionary perspectives. We are seeking an additional colleague whose research interests lie in such areas as the **MECHANICAL PROPERTIES OF BIOLOGICAL MATERIALS, MORPHOMETRICS, THE FUNCTIONAL MORPHOLOGY OF ANIMAL ADAPTATIONS, OR RELATED AREAS.** Applicants should have demonstrated skill with experimental approaches; research organisms may be invertebrates or vertebrates. Academic rank is open. Applications, including curriculum vitae, statement of research interest, and three letters of recommendation, should be sent to: **R. Eric Lombard, Anatomy Department, The University of Chicago, 1025 East 57 Street, Chicago, Illinois 60637,** by 30 November 1980.

*The University of Chicago is an Equal Opportunity Employer; women and members of minority groups are specifically encouraged to apply.*

**EMORY UNIVERSITY SCHOOL OF MEDICINE** invites applications for **DIRECTOR OF CLINICAL PHARMACOLOGY.** Academic rank and salary negotiable with joint appointment in Departments of Medicine and Pharmacology. Applicants must have M.D. degree (or equivalent) and experience in internal medicine and pharmacology. Responsibilities include research (basic and clinical), teaching, and patient care. Send curriculum vitae, bibliography, names of three or more references, and statement of goals to: **Emory University School of Medicine, Atlanta, Ga. 30322,** by 31 December 1980. *An Affirmative Action/Equal Opportunity Employer.*

### TWO FACULTY POSITIONS IN VEGETABLE CROPS

**First position:** assistant rank (tenure-track): Ph.D. in plant physiology, horticulture, agronomy, ecology, soils, plant nutrition, or other related disciplines; 80 percent research, 20 percent teaching with research responsibilities for seed physiology, production, and storage.

**Second position:** rank and salary open to all levels commensurate with experience (tenure-track). Degree requirement same as first position plus teaching and research experience; 85 percent research, 15 percent teaching with research responsibility on stress physiology or ecophysiology of vegetable crops.

Submit curriculum vitae, including transcript of university courses, complete list of publications, reprints, teaching experience, statement of career goals, and the names of three referees, to: **Dr. L. Rappaport, Chair, Department of Vegetable Crops, University of California, Davis, Calif. 95616.** Deadline for receipt of these materials is 15 November 1980.

*The University of California is an Equal Opportunity/Affirmative Action Employer and invites applications from all qualified individuals.*

## POSITIONS OPEN

Ecological consulting firm apprenticeship: **BUSINESS MANAGER.** Multifaceted responsibilities include management, organizing conferences, typing, bookkeeping, scientific paper and report preparation, data analysis, and purchasing in two-person office. Start: \$200; 9- or 20-month position. **Applied Marine Ecological Services, Inc., Suite 4EN, 600 Grapetree Drive, Miami, Florida 33149.** Telephone: 305-361-3340. *Equal Opportunity Employer.*

**CANCER INSTITUTE** invites applications for National Research Service Awards for individual postdoctoral fellows, for research in chemical carcinogenesis and training in toxicology. Opportunities for chemists, biochemists, biologists, pathologists to enter Institute System. Write: **Dr. S. Mirvish, Eppley Institute for Research in Cancer, University of Nebraska Medical Center, Omaha, Neb. 68105.** *The University of Nebraska is an Affirmative Action/Equal Opportunity Employer.*

**CANCER INSTITUTE** invites scientists with own grant support in chemical carcinogenesis or related areas to join staff. Facilities include animal house for chronic animal bioassays, microbial and cell culture laboratories, mass spectrometry, NMR and scanning and transmission EM. Write: **Dr. N. Cromwell, Acting Director, Eppley Institute for Research in Cancer, University of Nebraska Medical Center, Omaha, Neb. 68105.** *The University of Nebraska is an Affirmative Action/Equal Opportunity Employer.*

### CARDIOVASCULAR PHYSIOLOGIST

The Department of Physiology of Thomas Jefferson University is seeking a cardiovascular physiologist at the rank of assistant professor for a tenure-track faculty position. Applicants must have a Ph.D., M.D., or related degree and a minimum of 2 to 3 years of postdoctoral research experience. The appointee will be expected to develop an independent research program within the general area of cardiovascular physiology and to participate in the teaching of medical and graduate students. Several cardiovascular research programs exist within the Ischemia-Shock Research Center based in the Department of Physiology as support facilities. Applicants should send recent curriculum vitae, three letters of recommendation, and a statement of their research plans by 1 December 1980 to: **Dr. Allan M. Lefer, Chairman, Department of Physiology, Jefferson Medical College, 1020 Locust Street, Philadelphia, Pa. 19107.** *An Equal Opportunity/Affirmative Action Employer*

### CELL OR MOLECULAR BIOLOGY

A temporary appointment at the **ASSISTANT PROFESSOR** level is immediately available. Applicants must have a Ph.D. and substantial training in cell or molecular biology. The position calls for participation in teaching a course in cell biology to undergraduate students and aiding in another graduate or undergraduate course. An opportunity will be available to conduct research in membrane biology, developmental biology, or tumor biology. The initial appointment will be for 1 year with the possibility of reappointment in subsequent years. Candidates should apply by 31 October 1980 and submit curriculum vitae and three letters of reference.

**Dr. Terry C. Johnson, Director  
Division of Biology  
Kansas State University  
Manhattan, Kans. 66506**

*Kansas State University is an Equal Opportunity/Affirmative Action Employer.*

### DIRECTOR INSTITUTE OF OCCUPATIONAL HEALTH AND SAFETY MCGILL UNIVERSITY

Applications are invited for the post of director, Institute of Occupational Health and Safety, McGill University, Quebec. Applicants should have advanced qualifications and/or substantial experience in the field of occupational health and/or hygiene; a commitment to advanced research; and an interest in developing academic programs in occupational health and safety.

Terms of appointment, including salary, open to discussion.

Applications should be sent to:

**Dr. G. MacLachlan  
Vice Principal (Research)  
Faculty of Graduate Studies and Research  
McGill University  
Dawson Hall  
853 Sherbrooke Street West  
Montreal, Quebec, Canada H3A 2T6**

## POSITIONS OPEN

**BIOMEDICAL ENGINEERS.** Two faculty positions available at the level of professor and assistant professor. Requires a Ph.D. in either biomedical engineering and/or electrical engineering plus extensive research experience in biomedical microelectronics applications. The senior level academic position will have the responsibility for the development of both research and graduate study programs within biomedical engineering related to hybrid integrated circuit technology. Applicants should send their curriculum vitae, the names of three individuals who can provide letters of reference, a summary of current academic activities, and any other supporting information to:

**Dr. Richard N. Johnson, Sc.D.**  
Professor and Director  
**A. F. Fortune Biomedical Computer Center**  
School of Medicine  
**The University of North Carolina at Chapel Hill**  
152 MacNider Hall 202H  
Chapel Hill, North Carolina 27514

*The University of North Carolina is an Affirmative Action/Equal Opportunity Employer. Women and minority candidates are particularly encouraged to apply.*

**CELL OR MOLECULAR BIOLOGIST.** Applications are invited for a tenure-track teaching position in biology to begin 1 March or 1 July 1981. The candidate should have expertise in one or more of the following areas: cell biology, genetics, molecular biology. Send letter of application, curriculum vitae, transcripts, and three letters of reference by 15 November 1980 to: **Dr. Elizabeth Sherman, Biology Search Committee, Bennington College, Bennington, Vt. 05201.** An Equal Opportunity/Affirmative Action Employer.

Sacramento—University of California, Davis, Department of Pediatrics, has an opening for **CHAIR** of the department. Setting in University Medical Center with inpatient and outpatient pediatric care. Medical duties to include supervision, consultation, and direct service. Administrative duties for various training programs and participation in planning and implementation of teaching of residents, fellows, medical students, and other intramural students. Research, professional activities, university, and public service participation expected. Applications will be accepted through 15 November 1980. Level and salary dependent upon qualifications. Write: **Joe P. Tupin, M.D., Chair, Search Committee, Department of Psychiatry, University of California, Davis Medical Center, 2315 Stockton Boulevard, Sacramento, California 95817.** Equal Opportunity/Affirmative Action Employer.

### UNIVERSITY OF OTTAWA CHAIRMAN—DEPARTMENT OF MICROBIOLOGY AND IMMUNOLOGY

Applications are invited, before 15 December 1980, from qualified persons who may wish to be considered for this position. The department consists of ten professors and is responsible for the teaching of medical microbiology in the School of Medicine and a course in bacteriology in the School of Nursing. The department benefits from the close proximity to the laboratories of various teaching hospitals of the university, the National Research Council, and numerous federal departments. Candidates should have strong leadership ability and preferably should be able to function in both English and French. Interested persons should apply to:

**Dr. G. Hetenyi, M.D., Ph.D., Vice Dean**  
Chairman of Search Committee  
University of Ottawa  
Faculty of Health Sciences  
275 Nicholas Street, Room 125  
Ottawa, Ontario, Canada K1N 9A9

**FACULTY POSITION**—The Department of Chemistry of Texas Tech University has a tenure-track opening for an assistant professor beginning September 1981 and seeks an individual possessing the background and determination necessary to excel both as a productive research scientist and as a teacher. Applicants having a Ph.D., and preferably postdoctoral experience in any area of biochemistry or molecular biology that complements those of the existing faculty, will be considered. Applicants should submit a résumé and a brief description of their future research plans, and arrange to have three letters of recommendation sent to: **Professor David B. Knaff, Search Committee Chairman, Department of Chemistry, Texas Tech University, Lubbock, Texas 79409.** An Equal Opportunity/Affirmative Action Employer.

## LABORATORY SUPERVISOR Biochemistry

Rush-Presbyterian-St. Luke's, a large, nationally known medical facility and teaching institution is presently seeking a Laboratory Supervisor. Primary responsibility will involve the supervision of approximately 10-14 individuals in a large, fully automated lab that employs 80 people. Qualified candidate will be MT/ASCP registered with a minimum of 4 years clinical chemistry laboratory experience. Prior supervisory experience is desirable.

Rush offers a fine salary and excellent benefits which include 3-weeks paid vacation, tuition reimbursement and full insurance coverage, all within an atmosphere of personal and professional growth. Join a team where good work is well rewarded! Please forward your resume to:



**Ed Getz**  
Rush-Presbyterian-St. Luke's  
Medical Center  
1725 West Harrison Street  
Chicago, Illinois 60612  
An Affirmative Action,  
Equal Opportunity Employer

## SMITHSONIAN TROPICAL RESEARCH INSTITUTE (PANAMA)

### POSITION AVAILABLE (READVERTISEMENT)

#### RESEARCH MARINE BIOLOGIST

The Smithsonian Tropical Research Institute announces a vacancy for a research scientist interested in the evolutionary aspects of the physiology, behavior, or ecology of marine organisms. Candidates with an established publication record in nonmarine biology who are interested in pursuing marine research will be considered. The successful candidate will be expected to spend part of his/her time in the coordination of the activities of staff, visiting scientists and students at the Institute's Pacific Marine Laboratory (Panama City). Preference may be given to a candidate with a research program designed to take advantage of the unique opportunities for two ocean comparative studies offered by the Isthmus of Panama, although candidates with other interests should also apply. A candidate must have a Ph.D. degree. A knowledge of, or willingness to learn, Spanish is desirable. *The Smithsonian Tropical Research Institute is an Equal Opportunity Employer and a candidate will be selected on scientific merit, without consideration of nationality, sex, race, or religion.*

This is a full-time, permanent, excepted authority federal position (GS 11-13) with starting salary in the range \$20,611 to \$29,375, plus benefits. Candidates should send their curriculum vitae, the names, addresses, and telephone numbers of three referees familiar with their work, copies of publications and papers in press, and a brief outline of the research they would like to pursue in Panama.

Closing date for application: 30 November 1980.  
Address applications to:

**Chairman, Marine Search Committee**  
Smithsonian Tropical Research Institute  
APO Miami 34002 U.S.A.  
Cable: STRI Panama



Natural Sciences and Engineering Research Council Canada  
Conseil de recherches en sciences naturelles et en génie Canada

## RESEARCH FELLOWSHIPS CANADA 1981

The Natural Sciences and Engineering Research Council announces a program of research fellowships tenable in universities and industries in Canada.

**Eligibility:** Canadian citizens or landed immigrants holding a doctorate in science or engineering, preferably with less than 5 years postdoctoral research experience.

**Nature of Appointment:** Fellows will be employees of the university or industrial firm and will be engaged in research, development or innovation activities.

**Duration of Appointment:** Up to five years subject to satisfactory performance.

**Remuneration:** a) University Research Fellowships: NSERC will contribute up to \$23,500 per annum towards the cost of each fellow's salary and fringe benefits; fellows will also receive an annual research grant for an initial establishment period terminating March 31, 1984.

b) Industrial Research Fellowships: NSERC will contribute up to \$20,000 per annum towards the fellow's salary and fringe benefits for the first three years and \$10,000 per annum for the final two years.

**Portability:** Provided all parties concerned are in agreement, research fellowships are portable from the university sector to the industrial sector and vice-versa.

**Application Procedures:** Contact the Canadian university or industrial firm of your choice to carry out the appropriate negotiations concerning research plans, term of appointment, salary, etc. Nominations are submitted to NSERC by universities or industrial firms, as the case may be.

**Deadlines:** a) 1 November 1980 for University Research Fellowships b) no deadline for Industrial Research Fellowships

**For more information contact:**

Information Officer  
Natural Sciences and Engineering Research Council of Canada  
Ottawa, CANADA  
K1A 0R6  
Telephone: (613) 993-3659

## POSITIONS OPEN

### CHAIRMAN AND ASSISTANT PROFESSOR OF CHEMICAL ENGINEERING

The Chemical Engineering Department of Tufts University has two faculty openings: (i) a position at the full or associate professor level beginning September 1981 for an active researcher who may also assume the department chairmanship; and (ii) a tenure-track position as assistant professor beginning as early as January 1981. Particular consideration will be given to those involved in process control, process design, applied mathematics and computer applications, biochemical and biomedical engineering; however, all candidates from academia or industry with a Ph.D. and a strong commitment to teaching and research are encouraged to apply. Opportunities exist for collaboration with Tufts New England Medical Center and Enzyme Center. Send complete résumés and names of references by 15 November 1980 to: **Dr. J. H. Meldon, Search Committee Head, Chemical Engineering Department, Tufts University, Medford, Mass. 02155. Affirmative Action Employer.**

**ELECTRON MICROSCOPIST—CELL BIOLOGIST RESEARCH ASSOCIATE.** Candidate with proven research capabilities to collaborate in ongoing project on aqueous humor production in the mammalian eye. Salary: \$13,000 to \$15,000. Contact: **Dr. G. Raviola, M.D., Ph.D., Department of Anatomy, Boston University School of Medicine, Boston, Mass. 02118.**

### FACULTY POSITION: ECOLOGIST

**BIOLOGIST/ECOLOGIST WANTED TO FORMULATE AND TEACH A SUMMER FIELD COURSE IN HUMAN ECOLOGY IN BRITAIN TO AMERICAN UNDERGRADUATES.**

Applications are invited from outstanding scholars with a gift for teaching and the experience of field work abroad. (Ph.D. required.)

Appointment runs 9 weeks in July and August 1981. May be renewed for summer 1982. Salary: \$4,000 to \$5,000 depending on qualifications and experience. Housing and administrative expenses provided.

Also available: similar position teaching human ecology in Italy for 4 weeks in May 1981.

Please send letter of application, curriculum vitae, and names of referees immediately. NO TELEPHONE INQUIRIES.

The School of Arts & Sciences  
P.O. Box 5545

Berkeley, California 94705

An Equal Opportunity Institution

**FIELD BIOLOGY—SUMMER FACULTY.** The University of Virginia Mountain Lake Biological Station seeks applications for faculty openings for summer 1981 to offer 5-week graduate courses. Disciplines open are: animal behavior, animal and plant ecology, invertebrate zoology, vertebrate field biology, and plant systematics. Other areas will be considered.

Preference will be given to assistant professors with interests in field biology research in the Appalachians. Deadline: 31 October 1980. Write or call: **J. J. Murray, Director, Mountain Lake Biological Station, University of Virginia, Charlottesville, Va. 22901, telephone: 804-924-7868. Equal Opportunity/Affirmative Action Employer.**

**HEALTH SCIENCES FACULTY MEMBER.** graduate and undergraduate programs. Successful candidate should have doctoral degree, specialization in hematology, nuclear medicine and/or radiation biology, minimum of five years of experience at four-year college level or higher. Chair available for individual with proven administrative record. Rank and salary commensurate with credentials. Send résumé by 14 November 1980 to: **Director of Personnel, Long Island University—C. W. Post Center, Greenvale, Long Island, N.Y. 11548. Affirmative Action/Equal Opportunity Employer.**

### NEUROANATOMIST

Developing medical school, problem-based learning, primary care physician, self-directed learning, small group tutorials, learning facilitator, multimedia learning resources, rural medical practice. Do you possess the personal qualities necessary to become involved in the development and implementation of an innovative program in medical education which combines these unique features? Are you a top-quality teacher/scholar with an earned doctorate in neuroanatomy? If answers are yes, send your curriculum vitae to: **Office of the Dean, Mercer University, School of Medicine, Macon, Georgia 31207.**

## POSITIONS OPEN

### FACULTY POSITION AVAILABLE

University of California, Santa Barbara. A tenure-track faculty position is available in the Department of Mechanical and Environmental Engineering. Qualified applicants with research and teaching experience in modern areas of digital controls or mechanics are sought. The level of appointment will be determined by the qualifications of the applicant; however, preference will be given to those at the assistant professor level. Address applications to: **Professor R. S. Hickman, Chairman, Department of Mechanical and Environmental Engineering, University of California, Santa Barbara, California 93106.** Applications accepted through 31 December 1980.

*The University of California in compliance with Titles VI and VII of the Civil Rights Acts of 1964, Title IX of the Educational Amendments of 1972, and Section 504 of the Rehabilitation Act of 1973, does not discriminate on the basis of race, color, national origin, religion, sex, or handicap in any of its policies, procedures, or practices. This nondiscrimination policy covers admission and access to, and treatment and employment in, university programs and activities, including, but not limited to, academic admissions, financial aid, educational services, and employment.*

*The University of California, in compliance with the Age Discrimination in Employment Act of 1967, does not discriminate in employment on the basis of age; nor does the university discriminate against any employees or applicants for employment because they are disabled veterans or veterans of the Vietnam era. Inquiries regarding the university's Equal Opportunity policies may be directed to: **Ray Huerta, Affirmative Action Coordinator, telephone: 805-961-2080.***

### FACULTY POSITIONS

Department of Physics  
State University of New York at Buffalo

The Department of Physics and Astronomy of the State University of New York (SUNY) at Buffalo expects openings in experimental condensed matter physics. The department has facilities for Mossbauer spectroscopy, NMR, SQUID susceptibility, superfluidity, and superconductivity, and so forth. Electron microscope and  $^{13}\text{C}$  equipment are also available. Current ongoing research in condensed matter physics includes phase transitions, light scattering, liquid  $^3\text{He}$  and  $^4\text{He}$ , magnetic resonance, and superconductivity. Candidates for the position of assistant professor should have postdoctoral experience. Suitable candidates will be considered for senior positions. Applicants should send a résumé along with three recommendation letters to: **Chairman, Department of Physics, SUNY at Buffalo, Buffalo, New York 14260. The State University of New York is an Equal Opportunity/Affirmative Action Employer.**

**SANTA BARBARA, CALIFORNIA.** University of California, Santa Barbara. **GEOGRAPHY-OCEANOGRAPHY FACULTY POSITION.** Fall 1981. Salary and rank dependent upon qualifications; however, preference will be given to those at the assistant professor level. Must have Ph.D. and strong commitment to research and teaching. Current curriculum vitae and three to five letters of reference are requested from applicants. The Geography Department particularly seeks applicants with backgrounds in marine and coastal zone resources evaluation, with special emphasis in dynamic physical processes, including air/sea interactions, or in resource economics. Faculty in some mix of remote sensing, computer cartography, and information systems is also important. Applicants must have substantial qualifications in quantitative methods, computer usage, and mathematics. Closing date for applications: 15 January 1981. *Equal Opportunity/Affirmative Action Employer.* Apply to: **Dr. Reginald Golledge, Chairman, University of Geography, University of California, Santa Barbara, Calif. 93106.**

### IMMUNOBIOLOGY FACULTY POSITION

Biological Sciences Group  
The University of Connecticut at Storrs

Assistant/associate professor. Salary competitive and negotiable. Teach undergraduate and graduate courses in immunobiology; develop and maintain active, funded research program in cellular/molecular immunology. Ph.D. is required; 2 years of postdoctoral research experience desired. Send curriculum vitae and description of research interests, and arrange for three evaluation letters to be sent by 24 October to: **E. R. Leadbetter, Executive Officer, Box U-42, The University of Connecticut, Storrs, Conn. 06268.**

## POSITIONS OPEN

### THE UNIVERSITY OF NEBRASKA-LINCOLN DEPARTMENT OF GEOLOGY

Seek two tenure-track faculty: (i) **clastic sedimentologist** and (ii) **sedimentologist/stratigrapher**, effective late August 1981. Curricular reorganization in sedimentology and lithostratigraphy will partially reflect the specialties of the successful applicants, emphasizing clastic sedimentology and integrating the teaching of general sedimentology (clastic and non-clastic) with lithostratigraphic principles at both undergraduate and graduate levels. Teaching duties will include introductory geology and oceanography. Teaching load per semester is about two courses.

Requires Ph.D. and strong commitment to continuing excellence in both teaching and research/publication. Salary and rank are open and dependent upon experience; minimum salary for assistant professor is \$16,000, and \$19,000 for associate professor. Apply by January 1981 with application letter, curriculum vitae, and names of three references to: **Chairman, Geology Department, The University of Nebraska-Lincoln, Lincoln, Nebraska 68588. Affirmative Action/Equal Opportunity Employer.**

**IMMUNOLOGIST.** Second semester position 15 January 1981 to 27 May 1981 at assistant professor level. Qualified to teach immunology at advanced undergraduate level and microbiology at intermediate undergraduate level; both courses include lectures and laboratory. Ph.D. required. Submit curriculum vitae and summary of research interests and have three letters of reference sent to: **Dr. Elbert Tokay, Chairman, Biology Department, Vassar College, Box 251, Poughkeepsie, N.Y. 12601.** Application deadline: 3 November 1980. *An Equal Opportunity/Affirmative Action Employer.*

**INSECTICIDE TOXICOLOGIST.** Tenure-track position for a toxicologist with specialization in the effects of insecticides on mammals and mammalian systems. Available after 1 January 1981, A Ph.D. or equivalent degree, with research training in toxicology, is required. Appointment commensurate with experience; 11-month position, approximately 90 percent research, 10 percent teaching. Activities include development of research program on effects and hazards of insecticides on/to mammals and mammalian systems, supervision of graduate students, and course instruction. Submit curriculum vitae, graduate transcript (for the assistant professorship only), recent reprints, a statement of research interests, and names and addresses of four referees to: **T. Roy Fukuto, Search Committee Chairman, Division of Toxicology and Physiology, Department of Entomology, University of California, Riverside, Calif. 92521.** Applications accepted until 1 December 1980 or until a suitable candidate is selected. *The University of California is an Equal Opportunity/Affirmative Action Employer.*

**LABORATORY DIRECTOR.** The University of Florida invites applications for the position of professor and director, Florida Medical Entomology Laboratory. Candidates should have an earned Ph.D. or equivalent in entomology or a closely related discipline. Administrative experience desirable. Demonstrated leadership and research ability is required. The individual filling this position at Vero Beach, Florida, will hold a tenure-accruing appointment in an appropriate academic department on our main campus. Applications accepted through 30 November 1980. Send a complete biographical résumé and three letters of recommendation to: **Dr. G. F. O'Meara, Florida Medical Entomology Laboratory, P.O. Box 520, Vero Beach, Fla. 32960.**

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

**POSTDOCTORAL POSITION** available immediately to study the metabolism of the regulatory nucleotide guanosine 5'-diphosphate, 3'-diphosphate. Send curriculum vitae and names of three references to:

Dr. Jose Sy  
The Rockefeller University  
New York, N.Y. 10021

### POSTDOCTORAL POSITION IN FETAL AND NEONATAL BIOLOGY

Fields of investigation include the physiology, biochemistry, and pharmacology of the cardiovascular, respiratory, renal, and central nervous systems. Emphasis is on theoretical (mathematical modeling) and experimental studies. The fellowship commences 1 January 1981, and is available for 2 years. Please send curriculum vitae and bibliography to: **Dr. Lawrence D. Longo, Division of Perinatal Biology, School of Medicine, Loma Linda University, Loma Linda, Calif. 92350.**



Announcing a Symposium on  
**TRENDS IN THE BIOLOGY OF FERMENTATIONS**  
for Fuels and Chemicals

to be held at the  
**Brookhaven National Laboratory**  
Upton, Long Island, New York

This symposium is designed to focus on basic biochemical, physiological, and genetic aspects of research associated with the use of microorganisms in the conversion of renewable organic resources into fuels and chemicals. The key emphases of this symposium will be the status of knowledge, promising research advances and the types of fundamental studies required for establishing an adequate information base for future biotechnologies.

Support anticipated from the  
**DEPARTMENT OF ENERGY**  
with the cooperation of the  
**NATIONAL SCIENCE FOUNDATION.**

**ORGANIZING COMMITTEE:**

Robert Detroy, U.S. Department of Agriculture; Alexander Hollaender (chairman), Associated Universities, Inc.; Harry Peck, University of Georgia; Robert Rabson, Department of Energy; Elijah Romanoff, National Science Foundation; Anthony San Pietro, Indiana University; Raymond Valentine, University of California, Davis; and Ralph Wolfe, University of Illinois.

Registration/accommodation fee: \$125.

For details, contact:

Claire M. Wilson  
Associated Universities, Inc.  
Council for Research Planning  
in Biological Sciences  
1717 Massachusetts Avenue, NW  
Suite 603  
Washington, D.C. 20036  
Telephone: 202-462-4475

# DEAN Medical School

## The University of Texas Health Science Center at Houston

Distinguished academicians with demonstrated administrative record sought to take this 10-year-old school to maturity.

Correspondence should be directed to:

**Medical School Dean's Search Committee**  
**Office of the President**  
**The University of Texas**  
**Health Science Center at Houston**  
**Box 20036**  
**Houston, Texas 77025**

Telephone inquiries should be directed to:  
**Gwen Clopton at 713-792-4975.**

# DIAGNOSTIC INSTRUMENTATION

## Research & Development

We are a "Fortune 500" company with laboratories in North Carolina seeking persons experienced in the research and development of instruments and reagents for clinical diagnostic testing. We require "hands-on" professionals who are well versed in scientific principles and laboratory practices.

**RESEARCH PHYSICIST/ENGINEER** The successful candidate will have a PhD or equivalent in a Physical Science or Engineering discipline with knowledge in several of the following areas:

- Instrumentation Optics Design
- Instrumentation Electronics Design
- Fluorescence Instrumentation
- Flow Cytometer Design
- Microprocessor Applications (Hardware and Software)
- Mathematical Modeling and Scientific Computer Programming

Persons with previous experience in applied research and development of clinical, medical or analytical instrumentation will be given preference.

**IMMUNOASSAY DEVELOPMENT SCIENTIST** The successful candidate will have a MS in a Physical Science or Life Science discipline and 3 or more years' experience in:

- Nonisotopic Immunoassay Development
- Radioimmunoassay Development
- Biological Chemistry

We offer an excellent benefits package including dental. Please send your resume, including salary history, in confidence, to: F. R. Wilson,

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## POSITIONS OPEN

**LIPID BIOCHEMIST.** Career federal service. Develop independent research program to study synthesis and/or degradation of lipid at the cellular level in meat animals. Position located at Roman L. Hruska U.S. Meat Animal Research Center, Clay Center, Neb. GS-11/12/13; salary based on qualifications and experience. For application, contact: **J. Brooks, USDA-SEA-AR-B6, 2000 West Pioneer Parkway, Peoria, Illinois 61615. Telephone: 309-671-7813. An Equal Opportunity Employer.**

## MOLECULAR BIOLOGY

The Department of Microbiology, University of Connecticut Health Center, invites applications for a tenure-track position at the level of assistant or associate professor. Candidates must demonstrate potential for outstanding independent research in prokaryotic or eukaryotic molecular biology. Areas of particular interest include, but are not limited to: chromosome organization, replication and recombination; protein-nucleic acid interactions; regulation of development; membrane biogenesis, protein-membrane interactions. Expertise in modern protein technology is especially desirable. Interested persons should submit complete curriculum vitae, list of publications, brief outline of previous and proposed research directions, and letters of reference from three individuals who are familiar with the research background and research potential of the candidate to:

**Dr. M. J. Osborn**  
Department of Microbiology L-2034  
University of Connecticut School of Medicine  
Farmington, Conn. 06032

*An Equal Opportunity/Affirmative Action Employer*

## NEUROBIOLOGIST

The Department of Biological Sciences at Stanford University seeks a cellular neurobiologist for a faculty appointment at the assistant professor level. The appointee will be expected to develop an active and distinctive research program and participate in both graduate and undergraduate teaching. Interested persons should send curriculum vitae and the names of three references to: **Dr. Corey S. Goodman, Department of Biological Sciences, Stanford University, Stanford, California 94305** by 15 November 1980.

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

## NEUROBIOLOGIST EMORY UNIVERSITY SCHOOL OF MEDICINE DEPARTMENT OF ANATOMY

Applications are invited for an anticipated position as assistant professor of anatomy. Applicants should have at least 2 years of postdoctoral neurobiology research training and suitable background for teaching gross anatomy to professional students. Candidates must have an active research program that can be broadly categorized as cell biology of brain, neuroendocrinology, or developmental neurobiology. Salary commensurate with qualifications. Deadline for receipt of applications is 1 December 1980. Send curriculum vitae, names of four references, and description of current research interests to: **Dr. Jerome Sutin, Chairman, Department of Anatomy, Emory University School of Medicine, Atlanta, Georgia 30322. Emory University is an Equal Opportunity/Affirmative Action Employer.**

**PHYSIOLOGIST/GROWTH ENDOCRINOLOGIST.** Career federal service. To develop independent research program studying the effects of various metabolic hormones on protein and lipid metabolism in beef cattle, sheep, and swine. Position located at Roman L. Hruska U.S. Meat Animal Research Center, Clay Center, Neb. GS-11/12/13; salary based on qualifications and experience. Applications: **J. Brooks, USDA-SEA-AR-B9, 2000 West Pioneer Parkway, Peoria, Illinois 61615. Telephone: 309-671-7813. An Equal Opportunity Employer.**

## POSTDOCTORAL POSITION IN PRIMATE REPRODUCTIVE ENDOCRINOLOGY

Available immediately to Ph.D. to study steroid production by fetoplacental unit in vivo during baboon pregnancy and by human placenta in vitro. Experience with primates not necessary, but background in reproductive endocrinology essential. Send curriculum vitae to:

**Eugene D. Albrecht, Ph.D.**  
Department of Obstetrics and Gynecology and  
Physiology  
The University of Maryland School of Medicine  
Baltimore, Maryland 21201

## POSITIONS OPEN

### PHYSICAL GEOGRAPHY/GEOMORPHOLOGY POSITION University of Massachusetts, Amherst

Faculty position, fall 1981. Most likely at assistant professor level (tenure-track) to fill central position in combined Geology/Geography Department. Ph.D. required. Teaching duties include an elementary course in physical geography, an advanced undergraduate course in geomorphology, and other undergraduate and graduate courses depending on the interests of the candidate. Applications should include statement of research and teaching interests, curriculum vitae, and names of three referees. Position previously advertised, but opening delayed by state-wide job freeze. Closing date: 15 January 1981. Apply to: **George E. McGill, Head, Department of Geology and Geography, University of Massachusetts, Amherst, Mass. 01003.**

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

## PHYSIOLOGIST

The Geriatric Research, Education, and Clinical Center (GRECC) of the Minneapolis Veterans Administration (VA) Medical Center invites applications for the position of physiologist. We are seeking a highly qualified individual with a strong commitment to aging research. The position is available immediately.

Preference will be given to candidates with records of research accomplishment. The appointee will be expected to carry on an independent research program and/or collaborate in interdisciplinary, neurogerontologic research projects with members of the GRECC research team. Applicants should submit curriculum vitae and a summary of research goals to: **Dr. Francis J. Prozzolo, GRECC-127F, VA Medical Center, 54th Street and 48th Avenue South, Minneapolis, Minn. 55417.**

**PLANT PHYSIOLOGIST.** Career federal service. Incumbent will develop independent research program to study biochemical and ecological factors that affect or control yield and quality of forages utilized by high-producing dairy cattle. Position located at Iowa State University Campus, Ames, Iowa. GS-12/13/14; salary based on qualifications and experience. For applications: **J. Brooks, USDA-SEA-AR-B11, 2000 West Pioneer Parkway, Peoria, Ill. 61615. Telephone: 309-671-7319. An Equal Opportunity Employer.**

**POSTDOCTORAL FELLOW OR RESEARCH ASSOCIATE**—A position as a postdoctoral fellow or research associate is available immediately in a grant supported project on the fetal alcohol syndrome in subhuman primates. A Ph.D. in pharmacology, reproductive biology, or developmental biology or equivalent is required. Experience with subhuman primates is desirable but not required. This position offers a qualified and motivated individual the opportunity to participate in a broadly based research program dealing with alcoholism and drug abuse in the environment of the Texas Medical Center. Send curriculum vitae and three letters of recommendation to: **Dr. H. L. Altshuler, Chief, Neuropsychopharmacology, Texas Research Institute of Mental Sciences, Texas Medical Center, 1300 Moursund Avenue, Houston, Texas 77030. Telephone: 713-797-1976, extension 384. Equal Opportunity Employer.**

**A POSTDOCTORAL POSITION** is available to study extracellular control of growth, synthesis, and secretion of prostatic binding protein, and polyamine metabolism in normal and tumorigenic prostatic epithelial cells in vitro. Emphasis will be on the role of androgens, nutrients, other hormones, growth factors, and reconstituted extracellular matrices on epithelial cell growth and the above functions.

Candidates must have a Ph.D. or M.D. degree in an area of life sciences and interest in a career in cell biology. Prior training in techniques of cell culture, immunocytochemistry, and biochemistry is desirable. Interested candidates should contact: **Dr. Wallace L. McKeen, W. Alton Jones Cell Science Center, Old Barn Road, Lake Placid, New York 12946. An Affirmative Action/Equal Opportunity Employer**

**POSTDOCTORAL POSITIONS.** Immunologist, biochemist, to study mechanism of host-parasite (trypanosomes) interactions in vivo and in vitro. Send curriculum vitae and names of three references to: **Dr. F. Kierszenbaum, Department of Microbiology and Public Health, Michigan State University, East Lansing, Mich. 48824.**

*Michigan State University is an Affirmative Action/Equal Opportunity Institution.*

## POSITIONS OPEN

**PLANT GENETICIST.** Career federal service. Develop research program involving genetic and breeding studies pertaining to introduction, classification evaluation, use, selection of corn germplasm, and development of underlying theory to enhance practical objectives. Located at Iowa State University Campus, Ames, Iowa. GS-11/12/13; salary based on qualifications and experience. For applications: **J. Brooks, USDA-SEA-AR-B14, 2000 West Pioneer Parkway, Peoria, Ill. 61615. Telephone: 309-671-7319. Equal Opportunity Employer.**

**POSTDOCTORAL POSITION** in cardiovascular pharmacology available immediately for a recent Ph.D. in pharmacology, physiology, or biochemistry who is interested in the metabolic aspects of blood flow regulation. The project is related to the study of purine receptors in isolated vascular preparations and binding studies. Salary: \$14,000. Experience in cardiovascular sciences preferred. Write to: **Dr. S. Jamal Mustafa, Department of Pharmacology, East Carolina University, Greenville, North Carolina 27834. An Equal Opportunity/Affirmative Action Employer.**

**POSTDOCTORAL POSITIONS** in chemical carcinogenesis and DNA repair: positions available for recent Ph.D.'s in cell biology, biochemistry, or molecular biology to study the regulation of DNA repair in normal and repair deficient human cells. Salary negotiable. Send application with curriculum vitae and names of two references to:

**Dr. Michael A. Sirover**  
Fels Research Institute  
Temple University School of Medicine  
Philadelphia, Pa. 19140

**POSTDOCTORAL POSITION IN PHARMACOLOGY.** Ph.D. or M.D. experienced in working with anesthetics. Involves research with anesthetic combinations and drug interactions. Available immediately; salary: \$15,000. Send curriculum vitae and three references to: **Dr. Frieda Rudo, Department of Pharmacology, University of Maryland School of Dentistry, 666 West Baltimore Street, Baltimore, Maryland 21201. An Equal Opportunity/Affirmative Action Employer.**

**POSTDOCTORAL POSITION** available immediately for studies on the molecular basis of genetic variants that control the tissue/stage specificity of gene expression in *Drosophila*. Experience with recombinant DNA and/or physical mapping and sequencing is desirable. Send résumé to: **Dr. W. J. Dickinson, Department of Biology, University of Utah, Salt Lake City, Utah 84112. An Equal Opportunity/Affirmative Action Employer.**

**POSTDOCTORAL POSITIONS** (two) available for work on soil-plant relationships in an ecological project on reclamation of surface mined lands in semiarid environments. Experience of related work at the graduate level highly desirable. Send curriculum vitae and three references to: **Professor Mohan K. Wali, Box 8122, University of North Dakota, Grand Forks, N.D. 58202. An Affirmative Action/Equal Opportunity Employer.**

**POSTDOCTORAL POSITION** in molecular endocrinology available immediately to study pituitary hormone gene expression. Background in molecular biology, particularly recombinant DNA techniques, nucleotide sequencing, and of nucleic acid hybridization preferred. Send curriculum vitae and two letters of recommendation to: **Dr. Ione A. Kourides, Memorial Sloan-Kettering Cancer Center, 1275 York Avenue, New York, New York 10021.**

**POSTDOCTORAL POSITION** for person with background or interests in biochemistry and pharmacology or medicinal organic chemistry to study alcohol metabolism and alcohol dehydrogenase with the goal of increasing or decreasing the rate of alcohol metabolism. Salary commensurate with qualifications. Send résumé and two letters of recommendation to: **Professor Bryce V. Plapp, Department of Biochemistry, University of Iowa, Iowa City, Iowa 52242. The University of Iowa is an Equal Opportunity/Affirmative Action Employer.**

## RESEARCH/DIAGNOSTICS TECHNOLOGIST

To meet the growing demand of our company the following positions are available: **parasitologist, immuno/microbiologist, and diagnostics immunologist.** Applicant should have demonstrated skills or experience in one of the above categories. Send your résumé, including salary history and professional references, to: **J. Jimenez, M.D., Immunotec, Inc., 4904 West Cypress Street, Tampa, Florida 33607. We are an Equal Opportunity Employer.**

## PHYSICIAN MANAGER MEDICAL EDUCATION

The American Medical Association is conducting a search for an individual to manage and direct the process which determines standards for residency programs and evaluates and accredits these programs, and to conduct the AMA program responsible for the analysis and dissemination of information about graduate medical education.

Responsibilities include: serving as the Secretary of the Liaison Committee on Graduate Medical Education; directing the staffing of various national review committees; and developing subordinate staff to accomplish organization goals.

Qualifications include: demonstrated leadership in the field of graduate medical education or medical education program accreditation; proven effectiveness as a manager who can conceptualize, articulate and make sound decisions; and an MD degree.

Please direct inquiries in strictest confidence to:



Robert L. Bonin  
**American Medical  
Association**  
535 N. Dearborn St.  
Chicago, IL 60610

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## Engineers/ Scientists

### SIGNAL PROCESSING

The Bendix Corporation wishes to announce to the nation's engineering and scientific community the formation of the Bendix Advanced Technology Center. The Center's activities include basic and applied research and exploratory development.

If you are seeking a fulfilling technical career with a diversified high-technology company, contact us to learn more about our exceptional research opportunities.

To qualify, you must be an appropriately experienced professional with an advanced degree in Physics or Electrical Engineering.

Prefer individual with a strong theoretical background, experimental intuition and experience or significant interest in developing new signal processing techniques. We will also consider a person who has worked in acoustics, sonar, radar or optics research. You will evaluate, modify and develop signal processing techniques such as homomorphic deconvolution and null processing in concert with mathematical analysis and programming. You will also collaborate in research involving human auditory and biological experiments.

For confidential consideration, send resume and salary history to: George A. Giza, Manager, Professional Placement, The Bendix Corporation, 20800 Civic Center Drive, Southfield, Michigan 48037.



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### SENIOR RESEARCH SCIENTIST – SPRUCE BUDWORM MODELLING

Salary: \$17,660 – \$42,283 depending on qualifications  
Ref. No.: 80-NCRSO-DOE-1 (S)

**Environment Canada  
Canadian Forestry Services  
Fredericton, New Brunswick**

#### Duties

This position requires a scientist with experience in modelling of biological systems to lead and participate in a major program of modelling the eastern spruce budworm and its impact. The incumbent will head a group of scientists working on the construction of computer models that describe and predict spruce budworm population dynamics, impact on trees, stands and forests, the concept of susceptibility and vulnerability, and policies and strategies to manage the budworm/forest system. The incumbent will initiate construction of these various models, to coordinate their development and testing, to ensure their compatibility with one another, and to assist in their transfer to other Canadian Forestry Services establishments and provincial agencies.

#### Qualifications

The position requires a senior scientist with an established reputation in modelling of biological systems. A Ph.D in forestry, biology, computer science or a related field is essential together with considerable experience in developing state-dependent and time-dependent computer models of complex biological systems.

#### Language requirements

Knowledge of English is essential.

Clearance No.: 120 - 177 - 017

Additional job information is available by writing to the address below:

Toute information relative à ce concours est disponible en français et peut être obtenue en écrivant à l'adresse suivante.

#### How to apply

Send your application form and/or résumé to:

**Joyce Bleakney,  
Staffing Officer,  
Public Service Commission of Canada,  
L'Esplanade Laurier, West Tower, 16th Floor,  
Ottawa, Ontario. K1A 0M7  
Closing date: December 31, 1980**

Please quote the applicable reference number at all times.

## POSITIONS OPEN

**TWO POSTDOCTORAL POSITIONS** available 1 December 1980 (1 year, renewable) for recent chemistry Ph.D.'s with a strong interest in biological molecules. Position I, synthesis of MEMBRANE ACTIVE PEPTIDES, requires experience and efficiency in preparative organic chemistry. Position II, isolation and CHEMICAL MODIFICATION OF PROTEINS, requires experience in chromatographic and spectroscopic techniques and the talent to work with small quantities of labile compounds. For both positions familiarity with physico-chemical experimentation is highly desirable. Send curriculum vitae and names of two references to: Dr. Balthasar F. Gisin, Department of Biological Chemistry, University of Maryland School of Medicine, 660 West Redwood Street, Baltimore, Md. 21201.

**CLINICAL CHEMISTRY POSTDOCTORAL TRAINING PROGRAM.** The Department of Laboratory Medicine and Pathology, University of Minnesota, has a **POSTDOCTORAL POSITION** available to begin July 1981. It will involve training in all aspects of clinical chemistry service and research, leading to American Board of Clinical Chemistry certification. Applicants should submit curriculum vitae, transcripts, three letters of recommendation, and a short statement of career goals to: Dr. Larry D. Bowers, Department of Laboratory Medicine and Pathology, University of Minnesota, 420 Delaware Street, SE, Minneapolis, Minn. 55455. Applications should be received prior to 31 December 1980. *The University of Minnesota is an Equal Opportunity Educator and Employer.*

**POSTDOCTORAL POSITION.** Study of synaptic mechanisms at a giant synapse in a vertebrate central nervous system. Experience with microelectrode techniques essential. Computer experience helpful but not required. Available immediately. Salary competitive. Please contact: Dr. G. L. Ringham, College of Pharmacy, University of Kentucky, Lexington, Kentucky 40506.

*An Equal Opportunity University*

**POSTDOCTORAL RESEARCH ASSOCIATE.** A postdoctoral position is available to study the biochemistry and pharmacology of a series of new dimercapto chelating agents of therapeutic importance. Persons with backgrounds in chemistry, pharmacology, or biochemistry are preferred. Salary commensurate with experience. Position available immediately. Send curriculum vitae and names of three references to: H. V. Aposhian, Department of Cellular and Developmental Biology, University of Arizona, Tucson, Ariz. 85721. *Equal Opportunity Employer.*

### POSTDOCTORAL RESEARCH POSITION IN MAMMALIAN CELL GENETICS

A position is available for training in mammalian cell genetics with particular emphasis on biochemistry of DNA replication. Persons with graduate training in mammalian cell genetics, biochemistry, or enzymology should write to: Dr. N. C. Mishra, Department of Biology, University of South Carolina, Columbia, South Carolina 29208. Please send your curriculum vitae along with three reference letters immediately.

An additional postdoctoral position in molecular biology of *Neurospora crassa* will soon be available. Interested persons should write or telephone: Dr. Mishra at 803-777-5938 or 803-777-4141.

### POSTDOCTORAL ASSOCIATE POSITIONS DEPARTMENT OF PHARMACOLOGY UNIVERSITY OF IOWA IOWA CITY, IOWA 52242

Openings available in all areas of pharmacology and toxicology. Contact: Dr. J. P. Long, Chairman and Head.

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

**POSTDOCTORAL RESEARCH/THEORETICAL ECOLOGIST.** Position available 1 January 1981 for individual with solid mathematical background, particularly in the area of stochastic processes and stochastic differential equations. Computer experience is desirable. The work involves modeling of the population growth processes in random environments with applications to problems of environmental assessment. Send curriculum vitae and three letters of reference to: Dr. Lev R. Ginzburg, Department of Ecology and Evolution, State University of New York at Stony Brook, Long Island, N.Y. 11794. Telephone: 516-246-8249. *An Equal Opportunity/Affirmative Action Employer.*

## POSITIONS OPEN

**PROFESSORSHIP IN MICROBIOLOGY AND BASIC MEDICAL SCIENCES.** Tenurable position beginning August 1981; rank open; salary dependent upon training and experience. Ph.D. and/or M.D. and a minimum of 2 years of postgraduate research experience required. Appointee will be expected to participate in a program of instruction in microbiology for medical students, direct graduate student research, and develop a vigorous program of research at the molecular level. Send résumé and names of three referees to: Dwayne C. Savage, Department of Microbiology, 131 Burrill Hall, University of Illinois, Urbana, Illinois 61801, by 15 January 1981. *The University of Illinois is an Affirmative Action/Equal Opportunity Employer.*

**RADIOIMMUNOASSAY EXPERT.** The National Center for Toxicological Research (NCTR), Food and Drug Administration (FDA), Public Health Service, Department of Health and Human Services, is recruiting for a RIA expert, well grounded in organic and immunochemistry, qualified to conduct research and development towards the development of new assays, and with the experience to validate, implement, quality control, and supervise routine RIA procedures. The incumbent will be in an already well-equipped RIA facility and will collaborate with and support research and testing concerned with the immunotoxicity, carcinogenicity, and teratologic effects of compounds of regulatory concern. This position is a 1-year FDA staff fellowship, with possibility for extension. Salary commensurate with experience and credentials, ranging from \$20,611 to \$31,333. The NCTR is a multidisciplinary toxicology research facility with ongoing programs of scientific excellence in carcinogenesis, mutagenesis, molecular biology, teratogenesis, immunology and chemistry, as well as excellent research support facilities in animal husbandry, diet preparation, pathology, biometry, microbiology, and so forth. The Center is located in a rural wooded area between Little Rock and Pine Bluff, Arkansas. *The FDA is an Equal Opportunity Employer.* Send curriculum vitae and reprints of three papers to: FDA-NCTR, Personnel Office, Jefferson, Arkansas 72079. For further information, telephone: Mr. King at 501-541-4475.

**RESEARCH ASSOCIATE.** A research associate position is available immediately for a Ph.D. to study intestinal electrolyte transport in isolated and reconstituted intestinal brush border and basolateral membranes. Experience in membrane isolation techniques is necessary. Knowledge of membrane transport is desirable. Salary: \$14,100 per annum. Send curriculum vitae, two references, and supporting material to: Don W. Powell, Department of Medicine, University of North Carolina School of Medicine, Chapel Hill, N.C. 27514. This position will be filled by 15 November 1980. *Affirmative Action/Equal Opportunity Employer.*

**RESEARCH ASSOCIATE, Ph.D.** in biochemistry with a background in methods of enzymatic analyses applicable to studies of the central nervous system. Person must be capable of independent research efforts and interested in CNS responses to trauma. Contact: Ronald L. Hayes, Ph.D., Director, Basic Science Laboratories, Division of Neurosurgery, Virginia Commonwealth University, Medical College of Virginia, Box 508, Richmond, Virginia 23298. *An Equal Opportunity/Affirmative Action Employer.*

**RESEARCH ASSOCIATE/RESEARCHER—**Minimum qualifications: doctorate for research associate or master's degree for researcher in microbiology or immunology or related field. Position involves study of the mechanisms of acquired immunity to experimental histoplasmosis including roles of lymphocytes, macrophages, and their products. Position is funded from a NIH grant which has been approved through August 1982. Salary depends on qualifications. Please send curriculum vitae by 1 November 1980 to: Ram P. Tewari, Department of Medical Microbiology and Immunology, Southern Illinois University School of Medicine, P.O. Box 3926, Springfield, Illinois 62708. *An Equal Opportunity/Affirmative Action Employer.*

### VERTEBRATE PHYSIOLOGIST

A faculty position is available with the possibility of a starting date as early as January 1981. The successful candidate will teach courses in physiology and develop a vigorous research program of his/her own interest. Rank and salary are open. Send curriculum vitae, copies of relevant publications, and names of three references to: Dr. Hiroshi Mizukami, Department of Biological Sciences, Wayne State University, Detroit, Michigan 48202. *An Equal Opportunity/Affirmative Action Employer.*

## POSITIONS OPEN

### RECOMBINANT DNA, NUCLEIC ACID CHEMISTRY and MONOCLONAL ANTIBODIES in New York City

Enzo Biochem, Inc., a rapidly growing company with a firm commitment to research and development in many areas of biotechnology, is currently seeking individuals with Ph.D. degrees to join our highly qualified scientific staff. Applications are invited from professionals with several years of successful experience in the following fields:

#### Recombinant DNA Technology Nucleic Acid Chemistry Hybridoma Production and Isolation

We are located in large, attractive offices in Manhattan, and offer competitive salaries as well as a comprehensive benefits package. Candidates who meet the requirements for these positions should apply by sending a résumé.

Enzo Biochem  
Personnel Department  
300 Park Avenue South  
New York, N.Y. 10010

### RESEARCH PROTEIN CHEMIST

The Plum Island Animal Disease Center, U.S. Department of Agriculture, is accepting applications for a **RESEARCH PROTEIN CHEMIST**. The position is open for a Ph.D. chemist for the purification and sequencing of proteins and the synthesis of short peptides in a group studying viral immunogens. Prior experience is necessary at postdoctoral or more advanced levels. This is a permanent position subject to Office of Personnel Management requirements. The salary is allocated at GS-13 (\$29,375 to \$38,186 per annum). Send transcripts, curriculum vitae, and résumé to: Salvatore Citino, Personnel Officer, SC-1, Plum Island Animal Disease Center, P.O. Box 848, Greenport, New York 11944. *An Equal Opportunity/Affirmative Action Employer.*

**RESEARCH SCIENTIST/ENGINEER** with the following: broad training in electrical/mechanical engineering, Ph.D. in biomedical or related engineering/neurophysiology, full-time research experience, interest in electromechanical properties of muscle and stretch and long-loop reflexes, familiarity with computer technology. To participate in clinical and basic research studies of contractile properties of skeletal muscle as they relate to neuromuscular disease and motor control. Send curriculum vitae and names of three references to: Dr. Richard F. Mayer, Department of Neurology, University of Maryland Hospital, Baltimore, Md. 21201. *An Equal Opportunity/Affirmative Action Employer.*

### SENIOR BIOLOGIST

A research position is available immediately for an immunologist with experience in cell culture and related techniques. Current research involves the immunologic characterization of tumor antigens on chemically induced tumors in mice and includes the cloning and characterization of cytotoxic killer lymphocytes raised against these tumors. Minimum requirements are a M.S. degree plus 2 years of experience, Ph.D., or equivalent degree. A strong background in tumor and/or cellular immunology is desirable. Send complete résumé to: Central Employment Center, Third Floor Stadium, University of Florida, Gainesville, Fla. 32611 by 25 October 1980. Requests must refer to position identification number 40687 in order to guarantee consideration.

*Equal Opportunity/Affirmative Action Employer*

Alaska Trollers Association, a nonprofit commercial fisherman's organization seeks a **STAFF FISHERIES BIOLOGIST**. Person will be project leader of logbook data collection program and will serve as biological adviser to the organization. Logbook Program duties include data management and analysis, program management, and application of results to specific management problems. Position requires advanced degree in a fisheries-related field and computer programming ability in BASIC and FORTRAN. Position open November 1980. Salary: \$22,000-\$25,000 depending on experience. Send letter, résumé, references, writing samples, and transcripts to: Alaska Trollers Association, 205 North Franklin Street, Juneau, Alaska 99801. Telephone: 907-586-9400.

# Microbiologist Assay Laboratory

Microbiologist or Biologist with strong microbiological assay and statistical background; knowledge of computers and programming would be very desirable. A Ph.D. or M.S. (or equivalent training) with several years of antibiotic assay experience is essential. This position is in a highly specialized area utilizing sophisticated equipment. The person chosen will direct two professionals and be required to design or modify existing assay procedures and interpret computer generated data. The additional ability to program and/or direct programming of data output from a variety of related equipment would be preferred.

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## NATIONAL SCIENCE FOUNDATION

### DIVISION OF PHYSIOLOGY, CELLULAR, AND MOLECULAR BIOLOGY

The Directorate for Biological, Behavioral and Social Sciences of the National Science Foundation is seeking qualified applicants for the positions of **DIRECTOR, DIVISION OF PHYSIOLOGY, CELLULAR AND MOLECULAR BIOLOGY; SECTION HEAD, MOLECULAR AND GENETIC BIOSCIENCES; AND SECTION HEAD, CELLULAR AND PHYSIOLOGICAL BIOSCIENCES**. The MGB Section includes programs in biophysics, biochemistry, genetics, and metabolic biology. The CPB Section includes programs in cellular, developmental, and regulatory biology and anticipates initiating a new program in the cellular area in the future. In addition to these programs, there is also a divisional program for biological instrumentation.

Applicants must have a Ph.D. or equivalent in the biological sciences or a closely related field, have established a national and international reputation for high quality research in one of the appropriate program areas and demonstrated successful leadership in administration. These positions are part of the Senior Executive Service with salaries limited by law to \$50,112 per annum. Entrance on duty date for these positions is late summer or early fall 1981. Interested applicants should telephone: **Margaret Cademartori (202-357-7857)** for information regarding application procedures. Send applications to: **National Science Foundation, DPM, 1800 G Street, NW, Washington, D.C. 20550**. The deadline for application for these positions has been extended from 30 September to 31 October 1981.

## NATIONAL SCIENCE FOUNDATION

### SEEKING DIRECTOR FOR DIVISION OF ENVIRONMENTAL BIOLOGY

The Directorate for Biological, Behavioral, and Social Sciences is seeking qualified applicants for the position of **DIRECTOR, DIVISION OF ENVIRONMENTAL BIOLOGY**. The director manages a division responsible for the support of research in systematics, population biology and physiological ecology, ecology, and ecosystem studies as well as support for biological research resources.

Applicants must have a Ph.D. or equivalent in the biological sciences or a closely related field, have established a national and international reputation for high quality research in one of the appropriate program areas and demonstrated successful leadership in administration. These positions are part of the Senior Executive Service with salaries limited by law to \$50,112 per annum. Appointment may be permanent or on a rotational basis. Entrance on duty date for this position is late summer or early fall 1981. Send SF-171 and supplemental narrative to: **National Science Foundation, 1800 G Street, NW, Washington, D.C. 20550**. For information on application procedures, telephone: **Margaret Cademartori (202-357-7857)**. The deadline for applications for this position has been extended from 30 September to 31 October 1981.

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Applications from Ph.D.'s are invited for **TEACHING POSITIONS** in the following courses:

**Assistant Professor of Histology**  
**Assistant Professor of Biochemistry**  
**Assistant Professor of Pathology**

The University is located in the West Indies. Please send curriculum vitae to:

**St. George's University**  
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**POSTDOCTORAL TRAINEESHIPS** in basic virology, molecular and cellular biology are available in NCI-supported program. Research interests of participating faculty include: viral and cellular gene regulation; transformation and productive infection by DNA viruses; comparative biochemistry and genetics of insect and vertebrate cells; sequence and structure of ribosomal and transfer RNA; biogenesis and evolutionary origin of mitochondria; basis studies on adeno-, toga-, poxviruses, bacteriophages, fungal viruses, immunotherapy of melanoma. Submit résumé to: **R. Walter Schlesinger, M.D., Professor, Department of Microbiology, COLLEGE OF MEDICINE AND DENTISTRY OF NEW JERSEY, Rutgers Medical School, P.O. Box 101, Piscataway, N.J. 08854, Equal Opportunity/Affirmative Action Employer, M/F.**

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**POSTDOCTORAL TRAINEESHIPS**—2 to 3-year appointments on a competitive basis for candidates with Ph.D., M.D., D.V.M., or equivalent degree who qualify for an NIH National Research Service award.

**PREDOCTORAL TRAINEESHIPS**—Available for support of training leading to a Ph.D. degree in experimental pathology. Appointments are open to qualified candidates with M.D., Ph.D., or equivalent degree who seek this additional doctorate.

Send curriculum vitae and names of three references to: **Dr. J. W. Grisham, Department of Pathology, University of North Carolina School of Medicine, Chapel Hill, N.C. 27514. The University of North Carolina is an Equal Opportunity/Affirmative Action Employer.**

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### GRADUATE STUDIES IN MOLECULAR BIOLOGY AND BIOCHEMISTRY

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## FELLOWSHIPS

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- 3) Studies on the interaction of antibiotics and restriction endonucleases with minichromosomes, and reconstituted nucleosomes on synthetic polynucleotides and metaphase chromosomes (Professor J. H. van de Sande).

Salaries will be on the M.R.C. of Canada scale (\$13,100 to \$15,100) and support will be from either M.R.C. or the Alberta Heritage Foundation for Medical Research. Assistance with travel expenses to Calgary is available. Applications with curriculum vitae and naming three referees to: **Professor G. H. Dixon, F.R.S., or Professor J. H. van de Sande, Division of Medical Biochemistry, Faculty of Medicine, Health Sciences Centre, The University of Calgary, Calgary, Alberta, Canada T2N 1N4.**

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- 3) The biosynthesis and structure of cell surface macromolecules in normal and tumor cells (Professors Burns, Heath, Shires, and Specator).

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### POSTDOCTORAL FELLOWSHIPS

Radiation oncology, medical radiation dosimetry, and radiobiology available 1 July 1981 at Radiation Oncology Center, University of Kentucky Medical Center. Supported by NIH training grant for qualified M.D. or Ph.D. applicants. Must be U.S. citizens or permanent residents. Candidates must be interested in research and academic career. Submit curriculum vitae, bibliography, and names of three references to: **Chairman, Radiation Oncology Center, University of Kentucky Medical Center, Lexington, Kentucky 40536. An Equal Opportunity Employer.**

## FELLOWSHIPS

**POSTDOCTORAL FELLOWSHIP IN ENDOCRINOLOGY AND METABOLISM.** NIH-supported positions available July 1981. One to 3 years of training in basic or clinical research in areas of secretion and action of pancreatic and gut hormones, diabetes mellitus, hypothalamic-pituitary-gonadal system, adrenal cortex, renin-angiotensin-aldosterone system; growth hormone structure-function relationship; collaboration with Departments of Physiology and Biochemistry available. Applicants should have M.D. or Ph.D. and must have U.S. citizenship or immigration visa. For M.D.'s, includes training in clinical endocrinology and metabolism. Also, one institutionally funded position at Wayne County General Hospital (WCGH), a major teaching hospital of the University of Michigan. WCGH provides clinical training and research opportunities in thyroid, diabetes and catecholamine areas (U.S. citizenship not required). Contact with curriculum vitae: **S. S. Fajans, M.D., Division of Endocrinology and Metabolism, University Hospital, Ann Arbor, Mich. 48109. Telephone: 313-764-4165. An Equal Opportunity/Affirmative Action Institution.**

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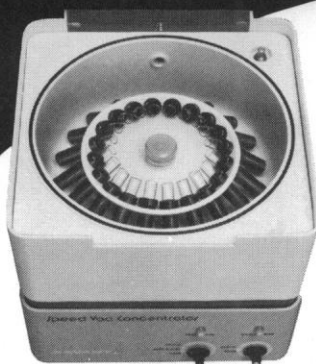


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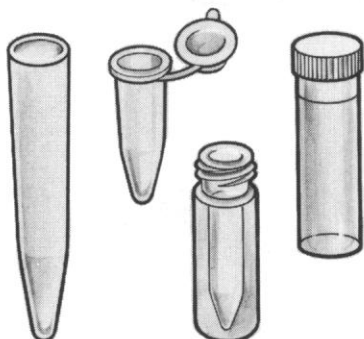
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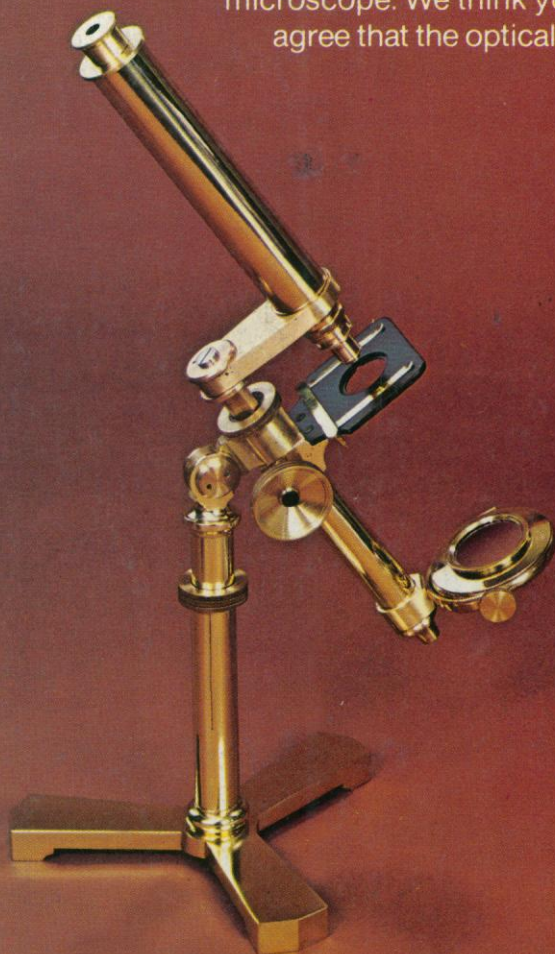
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