

search indicating a ubiquitous role for cyclic AMP as a mediator of cellular responses.

From his own experimental work and from his appraisal of the reported results of others, Rasmussen concludes that the nature of neither the stimulus (hormone, voltage change, neurotransmitter) nor the cellular response (contraction, secretion, ion flux) has predictive value in determining the nature of the second messenger. In fact, it would appear that in most (if not all) instances, both calcium and cyclic AMP play roles, often interacting to fine-tune or modulate the final expression of cell function.

That calcium and cyclic AMP act together in most stimulus-response pathways is well supported by the available data. However, there appears to be considerable variability in the mode of interaction, ranging from cooperative or coordinate roles (as in *Calliphora* salivary gland, for example) to complete antagonism (as in smooth muscle contraction, for example). To describe this phenomenon of dual messengers acting almost universally together but in a variety of ways, Rasmussen suggests the term "synarchy." The word is derived from the Greek "syn," meaning together, and "archon." The archons were a special class of heralds who, because of the importance of their messages, were often dispatched in pairs carrying either the same message or parts of a total message.

The book begins with a historical review of the development of our understanding of second messengers. The regulation of calcium metabolism in cells is reviewed, with particular emphasis on calcium in subcellular organelles. A number of ancillary topics of current interest in cellular regulation are addressed, including phospholipids (methylation and phosphoinositide metabolism) and calcium-binding regulatory proteins (troponin, calmodulin, and leiotonin). Rasmussen then attempts to categorize the steps involved in a general stimulus-response coupling sequence in much the same way in which the steps in synaptic transmission, an extracellular communication process, have been categorized before. This is followed by a general discussion of the principles of synarchic regulation. The sections on general principles of second messengers and synarchic regulation make up about one-half of the monograph. The second half contains discussions of specific cellular control systems in the context of the general principles developed. These are subdivided on the basis of general modes of calcium-cyclic AMP interac-

tion into chapters on coordinate control, hierarchal control, redundant control, antagonistic control, and sequential control.

The discussions of specific systems are developed in ways that reinforce the general concepts already developed. Rasmussen permits himself considerable speculation in attempting to synthesize holistic models for which, in some systems, sufficient data are not available at present. Thus, there are some statements and theories that may be at odds with currently favored views. One can predict that some of Rasmussen's speculations may prove to be prophetic; others, I believe, may eventually be proved wrong. It is for this reason that *Calcium and cAMP as Synarchic Messengers* is probably not useful specifically as a reference for factual information, nor would it appear to be the author's intent that it should be. It should be extremely valuable to biologists interested in the roles of these second messengers in cellular regulation by a variety of receptor types in a variety of cell types. The one lesson the book well teaches is the usefulness of a broad perspective on universal control mechanisms. The book makes clear that scientists interested in mast cells have much to learn from understanding smooth muscle; the mechanisms involved in controlling hepatic glucose production may tell us much about the puzzling hormonal controls of intestinal absorption and secretion.

Rasmussen's book convincingly demonstrates that synarchic regulation is the general mode of response regulation in most systems. The development of this concept adds a new dimension to our understanding of cell function and adds new challenges to the task of characterizing detailed mechanisms of stimulus-response coupling.

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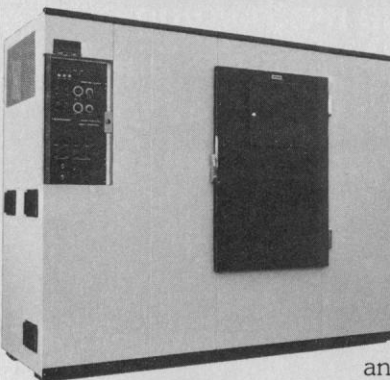
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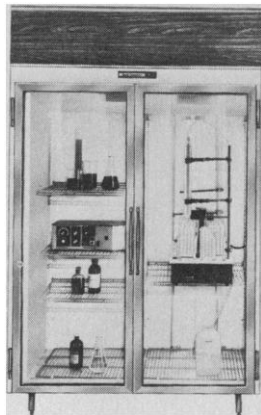
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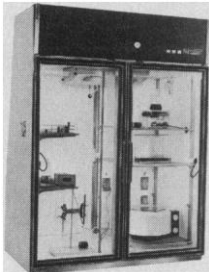
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**Regions of Recent Star Formation.** Proceedings of a symposium, Penticton, B.C., Canada, June 1981. R. S. Roger and P. E. Dewdney, Eds. Reidel, Boston, 1982 (distributor, Kluwer Boston, Hingham, Mass.). xvi, 496 pp., illus. \$59.50. Astrophysics and Space Science Library, vol. 93.

**Relaxin.** Proceedings of a conference, Columbia, Mo., Oct. 1979. Ralph R. Anderson, Ed. Plenum, New York, 1982. xiv, 360 pp., illus. \$45. Advances in Experimental Medicine and Biology, vol. 143.

**The Replication of Negative Strand Viruses.** Proceedings of a symposium, Frenchman's Reef, St. Thomas, U.S. Virgin Islands, Oct. 1980. David H. L. Bishop and Richard W. Compans, Eds. Elsevier/North-Holland, New York, 1981. xxiv, 990 pp., illus. \$150. Developments in Cell Biology, vol. 7.

**Rheophytes of the World. An Account of the Flood-Resistant Flowering Plants and Ferns and the Theory of Autonomous Evolution.** C. G. G. J. van Steenis. Sijthoff & Noordhoff, Alphen aan den Rijn, Netherlands, 1981 (U.S. distributor, Kluwer Boston, Hingham, Mass.). xvi, 408 pp., illus. \$75.

**Rural Society in the U.S. Issues for the 1980s.** Don A. Dillman and Daryl J. Hobbs, Eds. Westview, Boulder, Colo., 1982. xviii, 438 pp., illus. Cloth, \$27.50; paper, \$10.50. The Rural Society Series of the Rural Sociological Society.

**Satellite Hydrology.** Proceedings of a symposium, Sioux Falls, S.D., June 1979. Morris Deutsch, Donald R. Wiesnet, and Albert Rango, Eds. American Water Resources Association, Minneapolis, Minn., 1981. xiv, 730 pp., illus. \$85.

**Science and Scientists.** Essays by Biochemists, Biologists and Chemists. M. Kageyama, K. Nakamura, T. Oshima, and T. Uchida, Eds. Japan Scientific Societies Press, Tokyo, and Reidel, Boston, 1982 (distributor, Kluwer Boston, Hingham, Mass.). xvi, 454 pp., illus. \$59.50.

**Science and Tantra Yoga.** A. K. Sinha. Vishal Publications, Kurukshetra, India, 1981 (U.S. distributor, Humanities Press, Atlantic Highlands, N.J.). xx, 286 pp., illus., + plates. \$30.25.

**Searching Between the Stars.** Lyman Spitzer, Jr. Yale University Press, New Haven, Conn., 1982. xvi, 180 pp., illus. \$25. Mrs. Hepsey Ely Silliman Memorial Lectures.

**Seattle Solar Potential Study.** Existing Single Family Housing. City of Seattle Light Department, Seattle, 1981. viii, 98 pp., illus. Paper.

**Seeing the Insane.** Sander L. Gilman. Brunner/Mazel, New York, and Wiley-Interscience, New York, 1982. xiv, 242 pp., illus. \$39.95.

**Solar Energy R & D in the European Community, Series E.** Reidel, Boston, 1981 and 1982 (distributor, Kluwer Boston, Hingham, Mass.). Vol. 1, Energy from Biomass. Proceedings of a meeting, Copenhagen, June 1981. P. Chartier and W. Palz, Eds. x, 220 pp. \$28. Vol. 2, Energy from Biomass. Proceedings of a workshop, Brussels, Oct. 1981. W. Palz and G. Grassi, Eds. viii, 184 pp., illus. \$26.

**Solar Heating and Cooling.** Active and Passive Design. Jan F. Kreider and Frank Kreith. Hemisphere, Washington, D.C., and McGraw-Hill, New York, ed. 2, 1982. xvi, 480 pp., illus. \$29.95.

**Solar Houses for a Cold Climate.** A Detailed Study of 26 Solar Heated Houses. Dean Carriere. Photographed by Fraser Day. Scribner, New York, 1982. vi, 280 pp. Paper, \$14.95.

**Statistical Mechanics and Dynamics.** Henry Eyring, Douglas Henderson, Betsy Jones Stover, and Edward M. Eyring. Wiley-Interscience, New York, ed. 2, 1982. xiv, 786 pp., illus. \$27.50.

**Sterile Preparation for the Hospital Pharmacist.** An Illustrated Manual of Procedures. Kenneth E. Avis and Michael J. Akers. Ann Arbor Science (Butterworth), Ann Arbor, Mich., 1982. iv, 110 pp. Paper, \$9.95.

**Stochastic Processes.** J. Medhi. Halsted (Wiley), New York, 1982. xii, 388 pp. \$17.95.

**Structural and Functional Aspects of Enzyme Catalysis.** Papers from a colloquium, Mosbach/Baden, Germany, Apr. 1981. H. Eggerer and R. Huber, Eds. Springer-Verlag, New York, 1981. x, 216 pp., illus. \$27.

**Surface Treatments for Improved Performance and Properties.** Proceedings of a conference, Bolton Landing, N.Y., July 1979. John J. Burke and Volker Weiss, Eds. Plenum, New York, 1982. x, 224 pp.,

illus. \$35. Sagamore Army Materials Research Conference Proceedings, 26.

**Surface and Colloid Science.** Vol. 12. Egon Matijević, Ed. Plenum, New York, 1982. xii, 474 pp., illus. \$55.

**Synergetics.** Explorations in the Geometry of Thinking. R. Buckminster Fuller in collaboration with E. J. Applewhite. Macmillan, New York, and Collier Macmillan, London, 1982. xxxii, 878 pp., illus. Paper, \$12.95. Reprint of the 1975 edition.

**Synfuels.** The Problems and the Promise. E. J. Hoffman. Energon Company, Laramie, Wyo., 1982. viii, 348 pp. \$29.50.

**The Technology of Plasticizers.** J. Kern Sears and Joseph R. Darby. Wiley-Interscience, New York, 1982. xiv, 1166 pp., illus. \$130. SPE Monographs.

**Textbook of Biochemistry with Clinical Correlations.** Thomas M. Devlin, Ed. Wiley, New York, 1982. xxxvi, 1266 pp., illus. \$35.95.

**The Theory and Practice of Reliable System Design.** Daniel P. Siewiorek and Robert S. Swarz. Digital Press, Bedford, Mass., 1982. xxiv, 772 pp., illus. \$55.

**Thin-Layer Chromatography.** Techniques and Applications. Bernard Fried and Joseph Sherma. Dekker, New York, 1982. viii, 308 pp., illus. \$49.50. Chromatographic Science, vol. 17.

**Three Mile Island.** Thirty Minutes to Meltdown. Penguin, New York, 1982. 272 pp. Paper, \$5.95.

**The Three Voyages of Edmond Halley in the *Paramore*, 1698-1701.** Norman J. W. Thrower, Ed. The Hakluyt Society (c/o The Map Library, British Library), London, 1982. 392 pp. + plates + portfolio of maps. £20.

**Treating and Overcoming Anorexia Nervosa.** Steven Levenkron. Scribner, New York, 1982. xviii, 206 pp. \$12.95.

**Trends in Cancer Incidence.** Causes and Practical Implications. Proceedings of a symposium, Oslo, Aug. 1980. Knut Magnus, Ed. Hemisphere, Washington, D.C., 1982. xviii, 446 pp., illus. \$49.50. A Publication of the International Union Against Cancer and the Norwegian Cancer Society.

**Triage and Justice.** Gerald R. Winslow. University of California Press, Berkeley, 1982. xii, 228 pp. \$19.95.

**Triplet State ODMR Spectroscopy.** Techniques and Applications to Biophysical Systems. Richard H. Clarke, Ed. Wiley-Interscience, New York, 1982. x, 566 pp., illus. \$59.

**Understanding Our Atmospheric Environment.** Morris Neiburger, James G. Edinger, and William D. Bonner. Freeman, San Francisco, ed. 2, 1982. x, 454 pp., illus. \$19.95.

**Understanding Radioactive Waste.** Raymond L. Murray. Battelle Press, Columbus, Ohio, 1982. x, 118 pp., illus. Paper, \$10.

**The Unfathomed Mind.** A Handbook of Unusual Mental Phenomena. Compiled by William R. Corliss. Illustrated by John C. Holden. Sourcebook, Project, Glen Arm, Md., 1982. vi, 754 pp. \$19.95.

**Urban Water Conservation.** Increasing Efficiency-in-Use Residential Water Demand. J. Ernest Flack. American Society of Civil Engineers, New York, 1982. xii, 100 pp., illus. Paper, \$13.25.

**Vascular Smooth Muscle.** Metabolic, Ionic, and Contractile Mechanisms. M. F. Crass, III, and C. D. Barnes, Eds. Academic Press, New York, 1982. xiv, 206 pp., illus. \$32. Research Topics in Physiology, 4.

**Vegetation Dynamics in Grasslands, Heathlands and Mediterranean Ligneous Formations.** Papers from a symposium, Montpellier, France, Sept. 1980. P. Poissonet, F. Romane, M. A. Austin, E. van der Maarel, and W. Schmidt, Eds. Junk, The Hague, 1981 (U.S. distributor, Kluwer Boston, Hingham, Mass.). x, 286 pp., illus. \$85. Advances in Vegetation Science, 4. Reprinted from *Vegetatio*, vols. 46/47.

**Vibrations at Surfaces.** Proceedings of a conference, Namur, Belgium, Sept. 1980. R. Caudano, J.-M. Gilles, and A. A. Lucas, Eds. Plenum, New York, 1982. xii, 586 pp., illus. \$69.50.

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**Writings of the Revolution.** Selected Readings on Software Engineering. Edward Yourdon, Ed. Yourdon Press, New York, 1982. xii, 460 pp., illus. Paper, \$30.

**Yankee Enterprise.** The Rise of the American System of Manufactures. Papers from a symposium, Washington, D.C. Otto Mayr and Robert C. Post, Eds. Smithsonian Institution Press, Washington, D.C., 1981. xx, 236 pp., illus. Cloth, \$19.95; paper, \$9.95.

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## POSITIONS OPEN

### ANATOMIST

Assistant professorship available 15 August 1982. Responsibilities include conducting classes in human anatomy, cytology, and histology, and maintaining an active research program. Position is non-tenure-track; however, there is anticipation of a reclassification to tenure-track subsequent to the first academic year. The Ph.D. degree is required and postdoctoral experience is desired. Salary commensurate with qualifications. Submit résumé, including names of three references, to: **Dr. Gary Childers, Chairman, Department of Biology, Southeastern Louisiana University, Hammond, La. 70402.**

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From time to time, positions are available in the **DEPARTMENT OF ANESTHESIOLOGY**, Yale University School of Medicine, at the **clinical and research faculty and resident levels**. Interested individuals should apply to:

**Luke M. Kitahata, M.D., Ph.D.**  
Chairman, Department of Anesthesiology  
Yale University School of Medicine  
333 Cedar Street  
New Haven, Connecticut 06510

Please respond by 1 October 1982.

*Equal Opportunity/Affirmative Action Employer. Qualified women, minority group members, and handicapped individuals are encouraged to apply.*

### ASSISTANT PROFESSOR

The Department of Medical Microbiology and Immunology, College of Medicine, Texas A & M University, invites applications for a tenure-track faculty position at the assistant professor level starting 1 March 1983. Applicants should have appreciable postdoctoral experience and the capacity to continue with, or develop, an independent research program. Preference will be given to candidates with a strong background in molecular biology and with training and interest in the application of molecular approaches to the study of mechanisms of microbial pathogenesis. Interest and ability in teaching medical and graduate students is required. A letter of application, including curriculum vitae, reprints, a statement of research goals, and the names of three references, should be sent to: **Search Committee, Department of Medical Microbiology and Immunology, Texas A & M University, College Station, Texas 77843.** Texas A & M University is an Equal Opportunity/Affirmative Action Employer.

### VISITING ASSISTANT PROFESSORSHIPS INDIANA UNIVERSITY—BLOOMINGTON

The Department of Biology may appoint one or two visiting assistant professors for a period of 1 year to begin 15 August 1982. Individuals filling these positions will be expected to aid in the development of an undergraduate laboratory course in microbial genetics or to teach an established undergraduate course in developmental biology. In addition, they will gain postdoctoral research experience by participating in the research program of a faculty member. These appointments are contingent upon the availability of funds and may be renewable for a second year. Send a résumé, representative publications, and three letters of reference to: **Rollin C. Richmond, Chairman, Department of Biology, Indiana University, Bloomington, Ind. 47405**, by 15 July 1982. Indiana University is an Equal Opportunity/Affirmative Action Employer.

**ASSOCIATE DEAN FOR RESEARCH.** Applications are invited for the associate dean of research in the School of Physical and Mathematical Sciences at North Carolina State University. The duties will include advising the dean and assisting faculty on all aspects of research. The position is a full-time, 12-month one. Applicants, who must have a strong research record, should submit a résumé and arrange for three letters of reference to be sent to: **E. E. Burniston, Department of Mathematics, North Carolina State University, Raleigh, N.C. 27650.** The deadline for receipt of completed applications is 24 September 1982. *Affirmative Action/Equal Opportunity Employer.*

## POSITIONS OPEN

The Department of Dermatology, University of Michigan Medical School, is searching for an ASSISTANT PROFESSOR. The primary responsibility will be basic research with some teaching and patient care. Candidates must be Board-certified in dermatology and have suitable training in dermatologic research. The salary is negotiable. A departmental subsidy for supplies and travel is available. Research grants are available from the Veterans Administration Medical Center. The research area consists of 3238 square feet of well-equipped laboratory space. There is also a possibility of a joint appointment with a basic science department.

The position will be available September 1982. Address applications, including curriculum vitae, to: John J. Voorhees, M.D., Professor and Chairman, Department of Dermatology, University of Michigan Medical School, M5240 Medical Science I Building, Box 045, 1335 East Catherine Street, Ann Arbor, Mich. 48109. A nondiscriminatory, Affirmative Action Employer. Code 16 and 26.

### ASSISTANT PROFESSOR OF MARINE ECOLOGY

The Department of Earth and Planetary Sciences at Johns Hopkins University invites applications for a tenure-track position at the assistant professor level in marine ecology, to begin 1 July 1983. Applicants should have completed the Ph.D. and should have a strong academic and research background in ecology and evolutionary biology. Candidates interested in genetics, developmental biology, or behavior will be favored, but outstanding scientists specializing in other areas of marine ecology will be considered. The successful candidate will be expected to develop a strong research program, advise graduate students, and teach undergraduate and graduate courses in the departmental program in ecology and paleobiology. Send curriculum vitae, list of publications, summary of research interests, and the names of at least three referees to:

Dr. George W. Fisher  
Department of Earth and Planetary Sciences  
Johns Hopkins University  
Baltimore, Md. 21218

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**BIOCHEMISTRY FACULTY POSITION.** The Department of Biochemistry at the University of Massachusetts Medical Center seeks a faculty member for a tenure-track position with a rank consistent with previous experience and qualifications. The successful candidate will be expected to establish a vigorous research program with external funding and to participate in the teaching of graduate and medical students. Preference will be given to applicants with demonstrated research experience in the regulation of gene expression at the molecular level. Applicants with a Ph.D. or M.D. degree and at least 2 years of postdoctoral research experience may write to: Biochemistry Search Committee, Dr. Michael P. Czech, Department of Biochemistry, University of Massachusetts Medical Center, Worcester, Mass. 01605.

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**CELL/MOLECULAR BIOLOGIST** position in the Department of Cellular and Molecular Biology at the Southwest Foundation for Research and Education which is affiliated with the University of Texas Health Science Center at San Antonio. The individual sought is expected to collaborate in established programs examining hormonal regulation of target tissue function during aging and in neoplasia and to develop an independent complementary research program. Applicants with a Ph.D. degree with predoctoral and at least 2 years of postdoctoral experience in studies examining gene expression by techniques of in vitro translation or transcription analysis are particularly desired. The Department of Cellular and Molecular Biology is directed by Dr. Sydney A. Shain, maintains a large colony of inbred rats for studies in aging, and has established programs of in vivo and in vitro studies related to prostatic cancer. The research environment provides an excellent opportunity for an aggressive, creative scientist. Send résumé, a statement of research interests, and names of three references to: Personnel Manager, Southwest Foundation for Research and Education, P.O. Box 28147, San Antonio, Texas 78284.

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## POSITIONS OPEN

Opening for TWO ASSISTANT RESEARCH BIOCHEMISTS OR POSTDOCTORAL FELLOWS (depending on experience), one beginning 1 October 1982, the second beginning 1 May 1983. Experience required in chromatin biochemistry, nucleic acid biochemistry and enzymology, cell biology, and cell cultures. Experience: HPLC, protein, nucleic acid separations, and gel technology. The area of research is chromatin regulation related to hormonal and carcinogen related mechanisms. Salary range: \$15,936 to approximately \$19,600 for postdoctoral fellows; \$22,900 to approximately \$28,500 for assistant research biochemists. Apply to: Professor Ernest Kun, Cardiovascular Research Institute, 1315-Moffitt Hospital, University of California, San Francisco, San Francisco, Calif. 94143. An Equal Opportunity/Affirmative Action Employer.

### BIOLOGY INSTRUCTOR

Temporary teaching position available September 1982 through May 1983 to instruct general biology with two laboratory sections. Applicants must possess master's degree in biology. Ph.D.'s may have opportunity for upper division electives. Please send curriculum vitae to: Dr. H. Butcher, Chair, Biology Department, Loyola College, 4501 North Charles Street, Baltimore, Maryland 21210. An Equal Opportunity Employer.

Central Michigan University (CMU) is seeking an ELECTRON MICROSCOPE TECHNICIAN to maintain and operate transmission and scanning electron microscope, electronic equipment, optical light microscopes, and photographic darkroom, and to assist in teaching practical courses in biological electron microscopy. Candidate must have a knowledge of solid-state electronics and be able to communicate effectively with students and faculty. B.S. required; M.S. preferred. Salary: \$15,225 to \$18,283, commensurate with qualifications. Send résumé, three reference letters, and transcripts by 16 July 1982 to: Personnel Office, 109 Rowe Hall, Mt. Pleasant, Mich. 48859.

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### FACULTY POSITION IN PHYSIOLOGY

The Division of Basic Sciences invites applications for a permanent position available fall 1982. The Division is seeking an individual with experience in teaching and research capabilities. Requirements: Ph.D. or M.D. degree or equivalent. Salary and rank commensurate with qualifications and experience. Reply with letter of interest, curriculum vitae, and names of three references by 15 July 1982 to:

Dr. Robert C. Sauter  
Los Angeles College of Chiropractic  
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### FACULTY POSITIONS APPALACHIAN ENVIRONMENTAL LABORATORY

Center for Environmental and Estuarine Studies  
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**FISHERIES SCIENTIST** with broad interests in fisheries science and management. Specialties may include population dynamics, modeling, stock assessment, biostatistics, and related fields.

**AVIAN ECOLOGIST** with broad interests in ornithology. Specialties may include systematics, physiology, game and nongame bird management, waterfowl ecology, behavior, and related disciplines.

**ECOLOGIST/ENVIRONMENTAL BIOLOGIST** with broad interests in ecology and population biology. Specialties may include mammalogy, ornithology, ichthyology, herpetology, limnology, habitat reclamation, evolutionary biology, biometrics, and related disciplines.

Successful candidates will be expected to develop and maintain support for a vigorous research program, teach one course in wildlife or fisheries, and advise graduate students. Appointments will be made between 1 December and 30 June 1983. Rank and salary are open.

Applications should include current curriculum vitae, a statement of research and teaching interests, and names of three references. The deadline for applications is 15 November 1982. Send to: Dr. Joseph A. Chapman, Appalachian Environmental Laboratory, Center for Environmental and Estuarine Studies, University of Maryland, Frostburg State College Campus, Frostburg, Maryland 21532.

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## POSITIONS OPEN

University of London

### CHAIR OF BIOPHYSICS TENABLE AT KING'S COLLEGE, LONDON

The Senate of the University invites applications for this chair which carries with it the additional title of head of department. The post has fallen vacant upon the retirement of Professor Maurice H. F. Wilkins, Nobel Laureate, and it is hoped to appoint a replacement as early as possible in the session 1982-1983.

Applications (ten copies) should be submitted to: Academic Registrar (Sc.), University of London, Malet Street, London WC1E 7HU, England, from whom further particulars should first be obtained. Closing date: 31 July 1982.

**ENVIRONMENTAL SCIENCES/NATURAL MANAGEMENT.** The South-East Consortium for International Development (SECID), a nonprofit corporation providing research, training, and extension in developing nations, invites applications for the position of East Africa Project Representative for the Environmental Training and Management in Africa Project. The successful applicant will be posted in Nairobi, Kenya, and will be expected to work with African institutions and U.S. AID environmental officers in planning and implementing training programs in environmental sciences, environmental planning, and resource management in eastern and southern African nations. Candidates must have a Ph.D. degree in environmental sciences/natural resource management or related subjects; preference will be given to candidates with significant international experience, particularly in East Africa. The position is available from 1 August 1982. Send résumé, including description of international experience, a complete list of publications, and the names and addresses of three references, to:

Dr. Earle N. Buckley  
SECID  
400 Eastowne Drive  
Suite 207  
Chapel Hill, N.C. 27514

Application deadline: 15 July 1982. SECID is an Equal Opportunity/Affirmative Action Employer.

### FACULTY POSITION—PHYSICAL OCEANOGRAPHY

Tenure-track assistant professor faculty position is available in the Department of Oceanography, Florida State University. This is a new position funded by the state of Florida. It is a part of a growing research program in the geophysical sciences which, in addition to the Department of Oceanography, includes the Departments of Meteorology and Mathematics and the Geophysical Fluid Dynamics Institute. Both observationalists and theoreticians are invited to apply; candidates with considerable experience may apply at higher academic ranks. Please send curriculum vitae, a brief statement of research interests, selected reprints, and names of four references to: Dr. Doron Nof, Chairman, Physical Oceanography Search Committee, Department of Oceanography, Florida State University, Tallahassee, Fla. 32306. Florida State University is an Equal Opportunity Employer with an Affirmative Action Program.

## Faculty Positions in Cellular, Molecular, or Developmental Biology

Qualifications should include an M.D. or Ph.D., postdoctoral experience, a distinguished research record, and an ability to teach, or willingness to learn to teach, course material in neuroanatomy, microscopic anatomy, or growth anatomy. Salary and rank depend upon qualifications.

Candidates should send résumé, published and prepublished work, and at least three letters of recommendation to:

Dr. Donald A. Fischman,  
Chairman, Department of  
Cell Biology and Anatomy  
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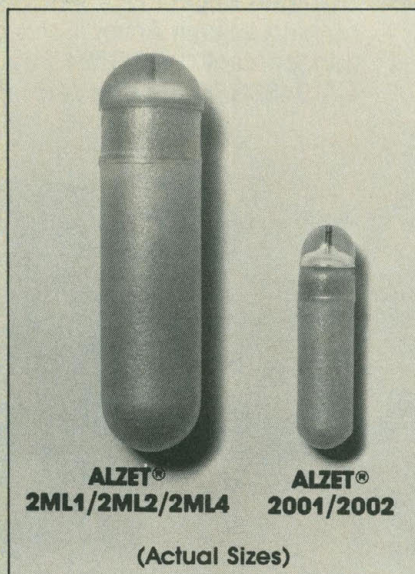
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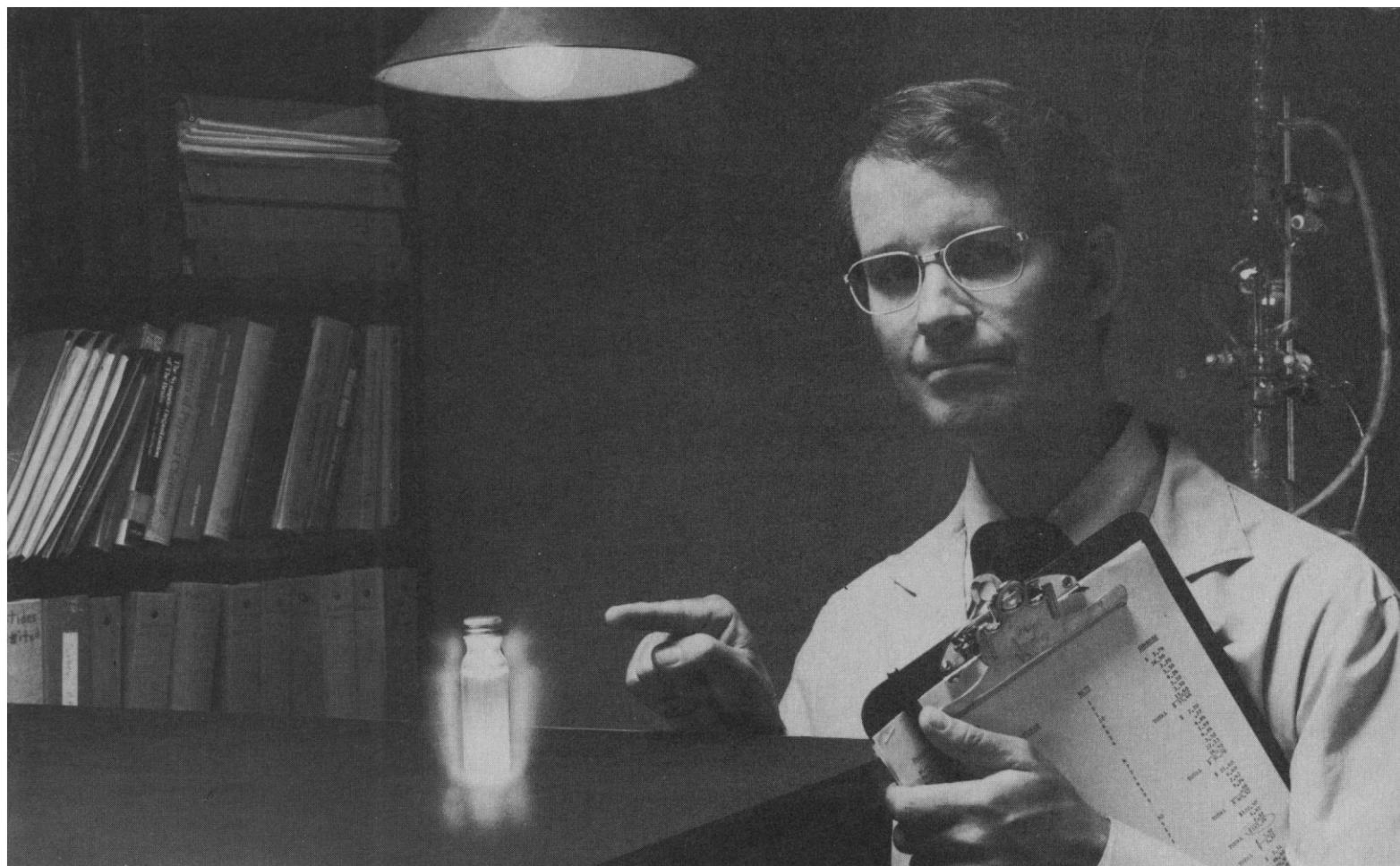
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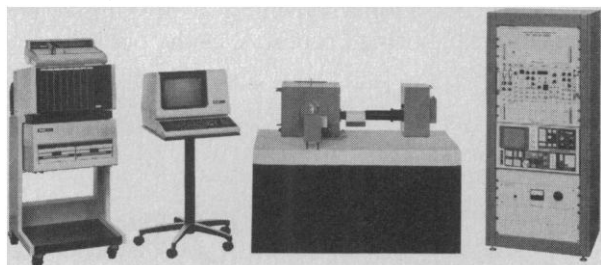
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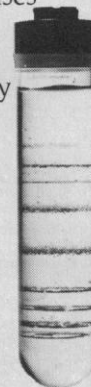
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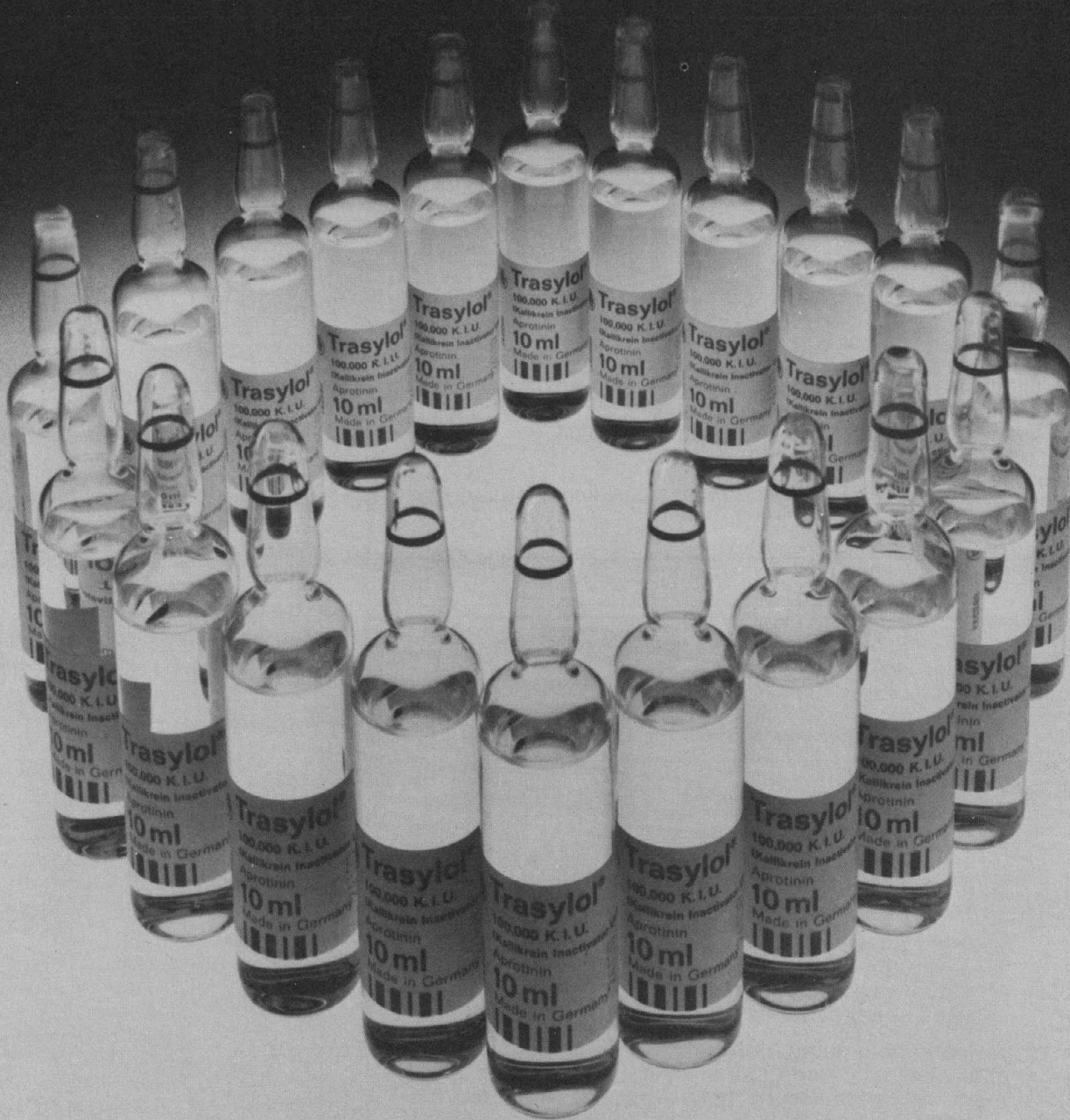
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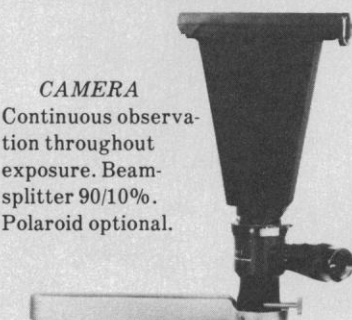
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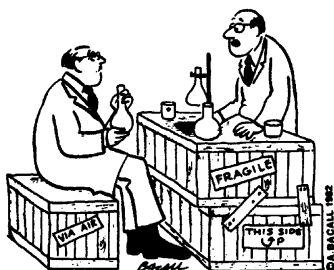
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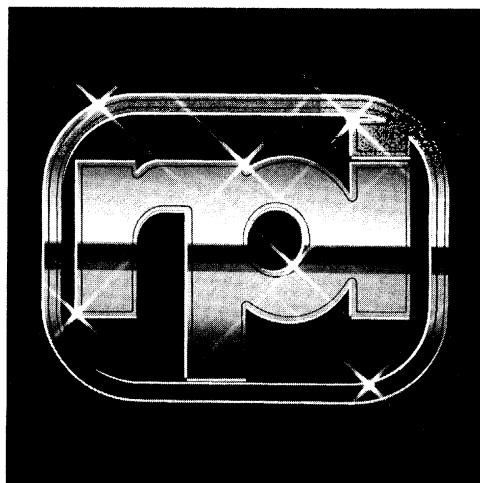
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**QUALIFICATIONS:** Candidates should have a terminal degree; achieved academic and professional excellence; have had university teaching and academic administrative experience; should be able to represent the University in the national health science and education communities; and should be able to interpret and communicate to the statewide community the contributions and needs of the faculty, students, and staff of the institution. Salary commensurate with experience and abilities. Letters of nomination/application should be submitted by 1 August 1982 to:

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### FACULTY POSITION IN PHARMACOLOGY

The Department of Pharmacology at The University of Texas Health Science Center at Houston invites applications for a tenure-track faculty position (assistant/associate professor) from qualified individuals with a commitment to teaching and research in biochemical or molecular pharmacology. Responsibilities will include participation in the medical school curriculum and in the graduate training program within the Graduate School of Biomedical Sciences, as well as developing and conducting an independent research program. The exact area of research is open; applicants should have at least 2 years of postdoctoral research experience. Please send curriculum vitae, list of publications, names of at least three references, and a summary of research interests and career goals to: **Search Committee, Department of Pharmacology, The University of Texas Medical School at Houston, P.O. Box 20708, Houston, Texas 77025**, by 1 September 1982. *An Equal Opportunity/Affirmative Action Employer.*

**FACULTY POSITION IN PHARMACOLOGY.** Applications are being sought for a full-time, 12-month, tenure-track faculty position in the area of pharmacology and toxicology. Duties include teaching pharmacology and/or toxicology to undergraduate and graduate students. Candidates should be firmly committed to excellence in teaching and are expected to develop a strong research program. Applicants must have an earned doctorate in pharmacology or toxicology. Eligibility for Michigan pharmacy licensure is desirable, but not essential. The academic rank and salary are negotiable and commensurate with experience. The earliest starting date for the position is 1 August 1982. Interested persons should send a letter of application outlining their research interests, goals, salary history, and salary requirements together with curriculum vitae. In addition, please arrange for three letters of reference to be sent to: **Charles F. Ryan, Ph.D., Deputy Dean of Pharmacy, College of Pharmacy and Allied Health Professions, Wayne State University, Detroit, Mich. 48202.** *An Equal Opportunity/Affirmative Action Employer.*

**MOLECULAR BIOLOGIST, Ph.D.** Applications are invited for a permanent research position in the area of the effect of dietary changes on the structure and kinetics of hormone and lipoprotein receptor sites in various target cells. The applicant must have experience with receptor methodology and isolation. Experience with tissue culture methodology would be helpful. Salary range from \$28,200 (GS-12) to \$33,000 (GS-13). Adjunct academic appointment possible. Send curriculum vitae and names of three references to: **Dr. Sheldon Reiser, Chief, Carbohydrate Nutrition Laboratory, Beltsville Human Nutrition Research Center, NER, ARS, U.S. Department of Agriculture (USDA), Building 307, BARC-East, Beltsville, Maryland 20705.** Telephone: 301-344-2396. *USDA is an Equal Opportunity/Affirmative Action Employer.*

### NEUROBIOLOGY RESEARCH FELLOW POSITIONS

To participate in several research projects using the techniques of computer-assisted anatomical reconstruction, EM computer-assisted autoradiography, intracellular HRP, iontophoresis in vivo and in brain slice preparations, and unit recording in behaving animals. Send curriculum vitae and two letters of reference to one of the following: **Dr. Gregory Mihailoff, Dr. Donald Woodward, Dr. John Chapin, or Dr. Barry Waterhouse, Cell Biology Department, University of Texas Health Science Center, Dallas, Texas 75235.**

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

## POSITIONS OPEN

### NUTRITIONIST

Interested candidates are invited to submit application for the following responsibilities: (i) developing a research program or participating in research activities in the area of **NUTRITION AND PUBLIC HEALTH** or **HUMAN NUTRITION**; (ii) teaching graduate courses in nutrition; and (iii) advising graduate students at Ph.D. level. Ph.D. and evidence of research competence required; experience in teaching desirable. Candidate expected to teach in French after 1 year.

Applications, including curriculum vitae, reprints, and three letters of recommendation, should be sent to:

**Dr. G. J. Brisson, directeur  
Programme de doctorate en nutrition  
Centre de recherche en nutrition  
Université Laval  
Québec, Canada G1K 7P4**

## POSITIONS OPEN

**POSTDOCTORAL POSITION** available July 1982 for 1 to 2 years. Recent Ph.D. in biochemistry or nutrition to work on apolipoproteins in human hyperlipoproteinemia and dietary effects in nonhuman primates. Salary: \$16,000 per annum. Send résumé and names of three references to: **Dr. Elaine B. Feldman, Director, Clinical Nutrition Research Unit, Department of Medicine, Medical College of Georgia, Augusta, Georgia 30912.**  
*Equal Opportunity/Affirmative Action Employer*

**POSTDOCTORAL POSITION** available for research on microinjection of eggs and gene regulation in the mouse. Apply with curriculum vitae to:

**R. L. Brinster  
Laboratory of Reproductive Physiology  
School of Veterinary Medicine  
University of Pennsylvania  
Philadelphia, Pennsylvania 19104**

## Universiteit van Amsterdam

The University of Amsterdam, Department of Geology and Geophysics has a position open for a full time

# professor of tectonics (m/f)

Applicants, specialized both in tectonics and structural geology are invited for this position.

He/she is expected to:

- teach in structural geology and tectonics
- conduct research within these specialisms
- stimulate and co-ordinate research in structural geology and tectonics in both metamorphic and sedimentary terrains
- participate in administration and organisation at department, faculty and inter-university levels.

He/she should have:

- thorough knowledge of tectonics and structural geology, including that of sedimentary terrains
- insight into the related disciplines, especially the use of geophysical methods and data in tectonics
- outstanding scientific qualities, as shown by a distinguished research and publications record within the fields of structural geology and tectonics
- good didactic qualities and extensive teaching experience
- the readiness to work with and give leadership to the members of the department
- considerable organising ability.

If he/she does not already speak Dutch, he/she will be expected to acquire a working knowledge of the language within two years.

Salary min. Dfl. 6.352,- max. Dfl. 9.075,- per month (Dutch Civil Servants Code).

Applications, including a curriculum vitae, list of publications and referees should be sent within 6 weeks to the Secretary of the Appointments Committee, Drs. T.G.M. Winnubst, Geologisch Instituut, Nieuwe Prinsengracht 130, 1018 VZ Amsterdam, the Netherlands, quoting number 5333.

Suggestions for possible candidates may be sent to the same address.

## Microbiologist

The Microbiology Section of Wyeth Laboratories Research Division has an opening at the senior leader level for a Ph.D. in Microbiology. The object of the research program is the development of new drugs in the anti-infective area. The candidate should have approximately 5 years of post-doctoral experience and should be familiar with current animal models for infectious diseases as well as standard assay and screening techniques. In addition, the candidate should have the capacity to develop new *in vivo* and *in vitro* procedures and improve on the existing ones.

If interested, send resume including salary requirement to Personnel Department,

**Wyeth Laboratories, Inc.**



P.O. BOX 8299  
Philadelphia, PA 19101

Equal Opportunity Employer, M/F/H

## REVSON FELLOWSHIPS IN BIOMEDICAL RESEARCH

Through the generosity of the Charles H. Revson Foundation, the Mount Sinai School of Medicine announces the availability of Fellowships in Biomedical Research for a period of up to 2 years. The objective of these awards is to assure a period of further growth and development for beginning scientists of promise in the life sciences. Those eligible for this research training, which is to be conducted with members of our faculty, are persons with some research experience holding either the Ph.D. degree for not more than 5 years, or the M.D. degree for not more than 7 years. Candidates will be considered for research training in either basic or clinical disciplines or some combination thereof. The award, which may be supplemented, is for \$25,000 per annum. Applications are due on 1 December 1982 and 1 June 1983.

Faculty members of the Mount Sinai School of Medicine will serve as sponsors or preceptors for the Revson Fellows. Further information and application forms may be obtained from individual members of our faculty with whom an individual wishes to study.

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OF MEDICINE**  
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New York, New York 10029

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## POSITIONS OPEN

**PHARMACOLOGIST**—Applicants are invited for an associate professorship (tenure-track) in the Department of Oncology, University of Miami School of Medicine, in conjunction with the Comprehensive Cancer Center. Applicants should have an M.D. or a Ph.D. degree with appropriate postdoctoral experience in pharmacologic disposition of antitumor drugs *in vivo*.

It is essential that applicants shall have an unqualified commitment to research and active research in a funded or potentially fundable area.

Position available immediately. Application deadline: 13 August 1982. Send curriculum vitae, selected reprints, and a concise description of current and prospective research programs to: **A. Ganju Krishan, Scientific Director, Comprehensive Cancer Center, D8-4, University of Miami School of Medicine, P.O. Box 016969, Miami, Florida 33101. An Affirmative Action/Equal Opportunity Employer.**

### PHYSICAL OCEANOGRAPHER

A postdoctoral position is open for a physical oceanographer interested in research on deep ocean currents, eddies, fronts, and internal waves. The candidate should have experience in experimental techniques and oceanographic data analysis. The position offers the opportunity to participate in the analysis and interpretation of velocity profiles and collaborative measurements obtained in the POLY-MODE and other field programs and in the planning and execution of future experiments. The research program, under the direction of Dr. T. B. Sanford, emphasizes the development and use of innovative instrumentation. Candidates will be considered for a joint appointment in the Applied Physics Laboratory and in the School of Oceanography as a research associate (postdoctoral). The initial appointment can begin after 1 July 1982 and will extend for 1 year with a second and final year granted upon successful progress. Recent Ph.D.'s with interest and experience in the above research are requested to submit a résumé and four letters of recommendation to: **Chairman, Recruitment Committee, School of Oceanography, University of Washington, Seattle, Washington 98105. The University of Washington is an Equal Opportunity/Affirmative Action Employer.**

### POSTDOCTORAL IMMUNOLOGISTS

The University of Kentucky College of Medicine has postdoctoral positions available within the Department of Medical Microbiology and Immunology for individuals interested in macrophage-T cell interactions, macrophage activation/differentiation, neuroimmunology, and macrophage membrane antigens. Available 1 July 1982. Send curriculum vitae and names of three references to: **Dr. Alan M. Kaplan, Professor and Chairman, Department of Medical Microbiology and Immunology, University of Kentucky, College of Medicine, MS-409 Medical Center, Lexington, Kentucky 40536-0084.**

*The University of Kentucky is an Equal Opportunity Employer, F/M.*

**POSTDOCTORAL POSITION** available for studies on hormonal regulation of human breast cancer cells. Areas include mechanism of hormone action, cell growth and growth factors, protein metabolism and gene expression, and tumor invasion. Background in endocrinology, biochemistry, and cell biology desirable. Salary: \$17,000 for first year. Send curriculum vitae and three letters of reference to: **Dr. Robert P. C. Shiu, Department of Physiology, University of Manitoba, Winnipeg, Manitoba, Canada R3E 0W3.**

**POSTDOCTORAL POSITION** available immediately; molecular biology background; research on development and hormonal regulation of a mammalian enzyme, involving cloned cDNA for study of gene structure, transcription and mRNA processing; modern research laboratory at university-affiliated hospital. Send curriculum vitae to: **Dr. Muriel Feigelson, Director, Obstetrics-Gynecology Basic Research Laboratory, St. Luke's-Roosevelt Hospital, Roosevelt Division, Columbia University, 428 West 59 Street, New York, N.Y. 10019. An Equal Opportunity/Affirmative Action Employer.**

**POSTDOCTORAL POSITION** in mammalian developmental neurogenetics. Available immediately to study gene action and CNS development using mutant mice and experimental chimeras. Background in neuroanatomy, developmental biology, and/or immunology desirable. Send curriculum vitae and names of three references to: **Richard J. Mullen, Ph.D., Department of Anatomy, University of Utah School of Medicine, Salt Lake City, Utah 84132.**

# Associate Director Microbial Biochemistry

SmithKline Beckman, a leader in pharmaceutical research, is seeking an outstanding senior scientist with an international reputation to provide the overall scientific direction of our Microbial Biochemistry Program in an environment designed to foster creative, innovative research and to promote personal and professional growth.

The successful candidate will be expected to direct a group of senior scientists in microbial biochemistry and metabolite isolation. The role of the group is to:

- collaborate with medicinal chemists and microbiologists in the establishment of novel drug design and targeted screening programs for selective anti-infective agents
- identify and evaluate biochemical targets directed against clinically important pathogens
- establish automated assay procedures for investigating enzyme inhibition and receptor drug interactions due to novel natural products
- isolate, at pilot plant scale, bioactive cellular products from metabolite screening and molecular biology programs

Candidates are required to have:

- a PhD in Biochemistry or Biological Chemistry with 8 or more years relevant post doctoral experience
- experience in studying the mechanism of enzyme/inhibitor interactions
- a working knowledge of purification and analytical techniques for enzymes and other biologically active proteins
- Demonstrated capacity for scientific innovation supported by an excellent publication record.

We offer excellent compensation and benefits and an attractive relocation policy. For confidential consideration, send your C.V. and names of 3 references to: **Mr. Walter Flagg, SMITHKLINE BECKMAN CORPORATION, P.O. Box 7929, 1502 Spring Garden Street, Philadelphia, PA 19101**

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## Postdoctoral Position

The Biomedical Science Department, General Motors Research Laboratories, has an opening for a Ph.D. in Neurophysiology or related discipline, having a broad background in cellular neurophysiology with interest, and preferably experience, in the functional effects and mechanisms of injury to neurons and axons in the CNS.

The successful candidate will participate in on-going basic research into the physiologic effects of traumatic injury to the nervous system, evaluate injury mechanisms related to axonal conduction, and conduct original research. The position is nominally open for one year, with possible extension for two.

Interested professionals with U.S. Citizenship or Visa status that permits legal acceptance of employment under U.S. Immigration laws should send their c.v. and a statement of research interest to:

J. B. Sparhawk  
Personnel Placement

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## PHARMACOLOGISTS Pharmaceuticals R & D

We are US subsidiary of ICI (UK) whose research introduced propranolol, clofibrate, tamoxifen citrate, and chlorhexidine. Last fall, we introduced atenolol, a unique, cardioselective, once-a-day beta blocker.

Expanded program activity in these laboratories has established the following vacancies:

### PULMONARY

- Ph.D. in pharmacology with 1-2 years post-doctoral experience in isolated tissue techniques, analysis of drug receptor interactions, and measurement of pulmonary mechanics. Oral and written communication skills essential and supervisory experience advantageous.
- BS/MS in biology with experience in isolated tissue techniques required and familiarity with radioimmuno, fluorometric, and bioassays highly desirable.

### RENAL

- Ph.D. in life sciences with strong background in renal pharmacology or physiology. Should demonstrate familiarity with hypertension models. Work will entail the discovery and evaluation of novel antihypertensive agents.
- BS/MS in biology to support Ph.D. scientists in screening of compounds. Should demonstrate good laboratory techniques and competence in isolated smooth muscle preparation.

One of the newest laboratories in the country in suburban campus setting 25 miles south of Philadelphia. Competitive salaries and benefits, including unique tax-sheltered investment program. Moving expenses covered. Please submit full CV. Principals only.

Chas. T. Brodigan



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## Microbiology Research

A world leader in microbiology, BBL Microbiology Division of Becton Dickinson, is currently at work on a spectrum of exciting projects that are new in the field. We're staffing a range of positions with scientists for hands-on responsibility in biotechnology. You'll perform studies using laboratory equipment that is unquestionably state-of-the-art . . . work with top level associates . . . and have the resources of a billion dollar health care corporation supporting you. If you've been seeking new challenges, investigate these openings at our Maryland facility.

### • Manager, Immunochemistry

PhD with at least four years experience in the development of immunoassays. Previous supervisory experience necessary.

### • Scientist, Immunochemistry

PhD with at least two years post-doctoral experience in protein purification and derivatization.

### • Manager, Monoclonal Antibody Development

PhD with at least one year experience preparing monoclonal antibodies against bacterial and/or viral antigens. Extensive experience in tissue culture and virus production also important. Some experience in managing scientists in an industrial setting would be useful.

### • Scientist, Monoclonal Antibody Screening

PhD with at least two years experience in all phases of hybridoma technology. Extensive experience in characterizing the surface components of bacteria using immunologic techniques also required.

Excellent salary and benefits with each position. To obtain more specifics on the projects, working environment and career prospects available at this expanding division, send your resume with salary history to: **Dr. Ken Noonan, Becton Dickinson, BBL Microbiology Systems, P.O. Box 243, Cockeysville, MD 21030. An equal opportunity/affirmative action employer.**

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DICKINSON**

## POSITIONS OPEN

**POSTDOCTORAL POSITION** to study staphylococcal host-parasite interactions involving bactericidal fatty acids and lipid-modifying enzymes. Experience in fractionating lipids and purifying enzymes preferred. Send résumé and references to: **Dr. Frank Kapral, Department of Medical Microbiology, Ohio State University, Columbus, Ohio 43210**, by 10 July 1982. *An Equal Opportunity Employer.*

**POSTDOCTORAL POSITION** available immediately for individual with training in plant biochemistry or chemistry. Studies concern the physiology and molecular biology of host recognition in parasitic angiosperms. Send curriculum vitae to either: **James Riopel (telephone: 804-924-3981), Department of Biology**, or **David Lynn (telephone: 804-924-3100), Department of Chemistry, University of Virginia, Charlottesville, Va. 22901**. *Equal Opportunity/Affirmative Action Employer.*

**POSTDOCTORAL POSITION** available immediately in biophysical chemistry of membranes. Washington, D.C., area. Please write to: **Box 175, Science, Affirmative Action/Equal Opportunity Employer.**

**POSTDOCTORAL RESEARCH ASSOCIATE.** Ph.D. in biochemistry or microbiology to study molecular basis of hypovirulence in the chestnut blight fungus. Research will involve use of fungal protoplast systems, and characterization and molecular cloning of nucleic acids. Send résumé and references to: **Dr. S. A. Ghabrial, Department of Plant Pathology, University of Kentucky, Lexington, Ky. 40546**. *An Equal Opportunity Employer.*

### ENDOWED PROFESSORSHIP IN BOTANY AND MICROBIOLOGY

The Department of Botany and Microbiology at the University of Oklahoma is seeking candidates for the George Lynn Cross Professorship in Botany and Microbiology, to be filled by September 1983. This newly endowed professorship is in recognition of Dr. George Lynn Cross, former president of the University of Oklahoma and former chairman of the Department of Botany and Microbiology. Candidates for this position should:

- 1) Be established scholars with international reputations,
- 2) Possess distinguished research records,
- 3) Have an active and funded research program,
- 4) Be able to interact with faculty from different disciplines, and
- 5) Be willing to participate in the education of our graduate students.

The salary for the position is negotiable. Submit curriculum vitae, description of current and future research goals, and the names of five references. Applications will be reviewed at 4-month intervals, starting on 1 September 1982, until the position is filled. Application materials or names of suggested candidates should be sent to: **John S. Fletcher, Chairman of Search Committee, Department of Botany and Microbiology, University of Oklahoma, Norman, Okla. 73019**.

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

### PROJECT DIRECTOR

Technical support agency, U.S. Congress, for multidisciplinary team addressing advanced materials technologies and policies to reduce U.S. vulnerability to imports of strategic materials. The development of design, manufacturing, substitution, new materials, processing, and recovery technologies over the next 25 years will be considered. The project director should have a technical background and an advanced degree (Ph.D. preferred) and several years of experience in engineering, a physical science, or political science. Broad knowledge of science and technology essential. Industrial experience desirable. Excellent writing and verbal communication skills needed; proven ability to organize complex project and produce results within schedule and budget is required. Ability to examine technology in a context of public policy essential. Employment may be on a contract basis or permanent staff basis. Salary is negotiable, based on previous experience. Location is Washington, D.C. Send résumé, salary history, and names of three references to: **Box 174, SCIENCE**

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## POSITIONS OPEN

Two **POSTDOCTORAL POSITIONS** to study molecular cloning of genes coding for biosynthesis of iron transport agents (siderophores) and their membrane receptors from plant growth-promoting rhizobacteria [*Biochemistry* 20, 6446 (1981)]. Experience in cloning helpful but not required. Strong background in biochemistry or microbiology required. Positions available 1982 until filled. Send résumé and two letters of reference to: **Dr. John Leong, Department of Chemistry, D-006, University of California, San Diego, La Jolla, Calif. 92093**.

### THE SALK INSTITUTE

**Postdoctoral Position, Neurophysiology**  
To study visual properties of single posterior parietal cortical neurons in behaving rhesus monkeys. Ideal candidate will have a Ph.D. in physiology, neuroscience, or closely related field. Please send detailed curriculum vitae and names of three professional references to: **Dr. Richard Andersen, THE SALK INSTITUTE, P.O. Box 85800, San Diego, Calif. 92138**. *Equal Opportunity Employer, M/F/H.*

**POSTDOCTORAL RESEARCH ASSOCIATE** position is available immediately to work in the area of internalization and intracellular binding of prostaglandins in corpora lutea. Candidates with experience in one or more of the following areas (preferably the first four) will be considered: monoclonal antibody production; protein chemistry and synthesis; prostaglandin biosynthesis and metabolism; molecular biology; subcellular fractionation; and marker enzyme assays. Send curriculum vitae and three letters of recommendation to: **Dr. Ch. V. Rao, Department of Obstetrics/Gynecology, 436B MDR Building, University of Louisville, Louisville, Kentucky 40292**.

**POSTDOCTORAL RESEARCH POSITIONS** immediately available for recent Ph.D.'s or M.D.'s who are U.S. citizens or permanent residents. Appointees will work in specific laboratory or clinical settings within the **University of Washington Multidisciplinary Pain Center** with NIH Training Grant (NRSA) support. A commitment to animal or human research on pain is essential. Send curriculum vitae and names of three references, together with a statement of interest and career goals, to: **C. Richard Chapman, Ph.D., Associate Director for Research, Department of Anesthesiology RN-10, University of Washington, Seattle, Wash. 98195**.

**RADIATION BIOLOGIST.** Opening is anticipated for an assistant professor with a doctoral degree in radiation biology with research experience in radiation cytogenetics, radiation health, environmental sciences, or related fields. Responsibilities will include participation in graduate-level teaching and research and initiation of appropriate independent research projects. Send résumés to: **Dr. Niel Wald, Department of Radiation Health, RC510 Scaife Hall, University of Pittsburgh, Pittsburgh, Pa. 15261**. *The University of Pittsburgh is an Affirmative Action/Equal Opportunity Employer.*

## UNIVERSITY OF HOUSTON Central Campus

### Position Announcement Vocational Industrial Teacher Educator

Must be able to meet Texas Education Agency requirements for vocational teacher educators.

Appropriate doctorate in vocational education desired.

Send résumé to:

**Dr. Kenneth W. Brown, Chair  
Technical Education  
Department  
College of Technology  
University of Houston  
Houston, Texas 77004**

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## POSITIONS OPEN

### POSTDOCTORAL POSITION—POMOLOGY

The Department of Pomology, University of California at Davis, invites applications for a postdoctoral position for research on pistachio productivity and quality. This continuing position is available 1 September 1982. The salary is consistent with level of experience and current University rates for the postgraduate research pomologist series. The appointee will be located in Davis. A Ph.D. is required with training in plant physiology, biochemistry, horticulture, and pomology.

Submit curriculum vitae, official undergraduate and graduate transcripts, list of publications, and names of three referees to: **Dr. Julian C. Crane, Search Committee Chairman, Department of Pomology, University of California, Davis, Calif. 95616**.

Competition for the position will cease 1 August 1982.

*In compliance with federal and state laws and University policy, the University of California does not discriminate on the basis of race, color, national origin, religion, sex, handicap, age, or against disabled veterans of the Vietnam era. The University of California is an Affirmative Action/Equal Opportunity Employer.*

### RESEARCH ASSISTANT/TECHNICIAN MARINE BENTHIC ECOLOGY

Office of Research and Development, McNeese State University, is accepting applications for a position in benthic ecology. Primary responsibility: laboratory supervision of sorting marine and estuarine benthic samples. Preference given to candidates with taxonomic expertise in Mollusca. Send curriculum vitae to: **Dr. Larry DeRouen, Director, Office of Research and Development, McNeese State University, Lake Charles, La. 70609**. Position available after 1 July 1982. *McNeese State University is an Equal Opportunity/Affirmative Action Employer.*

The Department of Land, Air, and Water Resources, **UNIVERSITY OF CALIFORNIA, DAVIS**, announces a position in the area of **RESOURCE SCIENCE**. Tenure-track (11-month) position will be divided 25 percent teaching and 75 percent research. The appointment will be at the assistant or associate professor level, depending on qualifications.

**QUALIFICATIONS:** A Ph.D. in a physical science (physics or closely allied field) with an expertise in solar and other alternate energy sources and the impacts of energy development on the environment. Applicants should have strong training in radiation physics, solar radiation as a resource, methods of data analysis in natural resources, and monitoring programs.

The appointee would be expected to teach undergraduate and graduate courses in solar energy resources and applications, an undergraduate course in air pollution, and additional teaching duties including graduate and undergraduate advising. The appointee will be expected to develop a research program in energy resources analysis with emphasis on solar energy and other natural energy resources. This research program is also expected to evaluate the impacts of energy development, in general, on the environment.

**APPLICANTS:** Applicants should submit curriculum vitae, transcripts, statement of research and teaching interests and background in each, copies of publications and manuscripts, and the names and addresses of at least three references to: **L. O. Myrup, Chair, Search Committee, Department of Land, Air, and Water Resources, 165 Hoagland Hall, University of California, Davis, California 95616**, prior to 1 August 1982.

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

### VERTEBRATE PHYSIOLOGIST/ MOLECULAR BIOLOGIST

Assistant professor tenure-track position, beginning 1 January 1983. Successful candidate must be committed to undergraduate science education. Teaching responsibilities include vertebrate physiology, cell and molecular biology, and core courses in zoology. Ph.D. required. Salary: \$18,000. Application deadline: 1 September 1982. Send curriculum vitae, transcripts, three letters of recommendation, and other supportive material to: **Dr. E. J. Bacon, Head, Department of Natural Sciences, University of Arkansas at Monticello, Monticello, Ark. 71655; telephone: 501-367-6811, extension 66**.

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# SQUIBB

## RESEARCH ASSOCIATE Pharmacology

E.R. Squibb & Sons, Inc., a leader in the pharmaceutical industry, currently is seeking a Research Associate to work within our Pharmacology Department. This position is located at our scenic World Headquarters in Princeton, New Jersey.

The individual we seek will develop immunological and anti-inflammatory assays dealing with dermatological conditions in animals and should have the ability to perform independently in vitro and in vivo techniques.

Qualified candidates should meet the following criteria:

- BS/MS Degree or equivalent in Biochemistry or Biology with 1 to 3 years related experience.
- Experience with small laboratory animal handling, biochemical techniques and radioisotopes required.

We offer an excellent starting salary and a good benefits package. Interested candidates are requested to send resumes, including salary requirements in confidence to: **E.R. SQUIBB & SONS, INC., Employment Office, Department PD/BW, P.O. Box 4000, Princeton, New Jersey 08540.** Equal Opportunity Employer, M/F/H/V.

## NATIONAL SCIENCE FOUNDATION HEAD, ASTRONOMY CENTERS SECTION

The National Science Foundation is seeking qualified candidates for the position of **Head, Astronomy Centers Section**. The section head is responsible to the division director for the overall planning, management, and commitment of budgeted funds for the Section, which is involved in the administration of the five national centers for astronomy.

Applicants must have a Ph.D. or equivalent professional experience in astronomy or closely related field, supervisory and managerial experience in the achievement of organizational objectives through subordinates, experience in the planning of scientific or technical programs, and demonstrated familiarity with relevant academic community and/or recognized professional standing in the astronomical community.

This position is part of the Senior Executive Service with a salary ranging from \$54,755 to \$59,119 (currently limited by law to \$58,500 per annum). Appointment will be on a career basis. Applicants should contact: **Margaret Cademartori, telephone: 202-357-7857** to request announcement EPB 82-21 which contains additional qualification requirements as well as instructions concerning the preparation of the supplemental narrative required with the SF-171 as application. Send SF-171 and narrative to: **National Science Foundation, Executive Personnel Section, Room 212, 1800 G Street, NW, Washington, D.C. 20550** (attention: EPB 82-21). Applications must be received by 31 August 1982.

*Equal Opportunity Employer*

## DIRECTOR OF PHARMACOLOGY

**Multi-national pharmaceutical company has a newly created position in its rapidly expanding R&D facility in Yonkers, New York.**

The successful candidate will possess a PhD in Pharmacology and a minimum of 7-10 years experience in the pharmaceutical industry. This position is responsible for the coordination of all outside laboratory studies in compliance with GLP and GMP and the preparation of IND and NDA documents.

We offer excellent working conditions and a complete benefits package including dental coverage.

Please send resume including salary history to: Vice President, Personnel

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## POSITIONS OPEN

Position open for **RESEARCH ASSOCIATE**. This position is available to study the effects of centrally administered neuropeptides (for example, neurotensin) on development of gastric and intestinal ulcerations produced by chemical and neurogenic insults. Experience should include all or most of these areas: computer software design, management use and application to real time, behavioral, physiological, or pharmacological analysis; animal treatment (general and stereotaxic surgery); design and conduction of studies using different behavioral paradigms, activity and antinociception meters, and gastrointestinal mucosal integrity, as well as developing and standardizing new methods and bioassays related to these independent techniques. A relevant and broad background in neurobiology is essential. Previous teaching and experience in supervising B.A./B.S., medical-level (or higher) individuals is desirable. Qualifications: Ph.D., M.D., or equivalent degree, with a minimum of 3 years of postdoctoral experience. Please reply to: **Judy Perry, Business Manager, Biological Sciences Research Center, University of North Carolina School of Medicine, Chapel Hill, N.C. 27514**. Closing date for applications: 15 July 1982.

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## ANNOUNCEMENT

The American Red Cross Blood Services, Southeastern Michigan Region, is planning development of research laboratories to operate in the field of blood transfusion-related problems. Of particular interest may be programs related to plasma proteins. **Identification of an experienced scientist to lead this program is sought.**

Interested parties should send their curriculum vitae and detailed information concerning past accomplishments, past and current support, and thoughts on how they would develop the program to:

**A. William Shafer, M.D.**  
Director, Southeastern Michigan  
Red Cross Blood Service  
P.O. Box 351  
Detroit, Michigan 48232  
Telephone: 313-494-2771

## FELLOWSHIPS

**POSTDOCTORAL RESEARCH FELLOWSHIPS**, funded by an NIH Training Grant, are available immediately at the University of Cincinnati Medical Center.

Research is in **perinatal physiology** dealing with the renal, cardiovascular, and respiratory systems. Applicants should submit curriculum vitae, research interests, and names of two references to: **Dr. Leonard I. Kleinman, Department of Pediatrics, Newborn Division, University of Cincinnati Medical Center, 231 Bethesda Avenue, Cincinnati, Ohio 45267**.

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**POSTDOCTORAL RESEARCH FELLOWSHIP** available after 1 September 1982 for research on the influence of extracellular matrix and hormones on the regulation of growth and/or expression of differentiated functions in mammalian cells, especially human and rodent liver cells. The cells are being analyzed by cDNA probe analysis for various liver-specific functions when the cells are cultured on substrates of extracellular matrix and in media supplemented only with hormones and growth factors. The intent is to assess gene regulatory mechanisms by the synergistic interactions of hormones and extracellular matrix. Candidates interested in the studies should submit their curriculum vitae, three letters of recommendation, and a one-page summary of why they are interested to: **Dr. L. M. Reid and Dr. L. Leinwand, 601 Chanin Cancer Center, Albert Einstein College of Medicine, 1300 Morris Park Avenue, Bronx, New York 10461**. An Affirmative Action/Equal Opportunity Employer.

## FELLOWSHIPS

**POSTDOCTORAL RESEARCH FELLOWSHIPS IN DIABETES-METABOLISM**. Applications for 1983 are being considered for NIH-sponsored postdoctoral research fellowships in the following areas: hormonal control of glucose, ketone body and amino acid metabolism; insulin, glucagon and somatostatin secretion; insulin receptors and insulin action. For information, write: **John Gerich, M.D., Director, Endocrine Research Unit, Mayo Medical School/ Mayo Clinic, Rochester, Minnesota 55905**. An Equal Opportunity/Affirmative Action Institution.

## ASSISTANTSHIP

### GRADUATE RESEARCH ASSISTANTSHIP

Graduate assistantship in neurobiological research of basal ganglia, cortex, and thalamus. Position available September 1982 or later, with tax-free stipend of \$7900 plus out-of-state tuition remission for Ph.D. candidate. Apply to: **Dr. G. J. Royce, Department of Anatomy, University of Wisconsin, Madison, Wis. 53706**.

## REQUEST FOR PROPOSALS

### PROPOSAL SOLICITATION

The EPA/NCU Acid Precipitation Program (a cooperative research program between the U.S. Environmental Protection Agency (EPA) and North Carolina State University (NCU)) is now requesting preproposals for research on the effects of acid deposition on aquatic and terrestrial ecosystems and their components. Awards will be made contingent upon the availability of funds and receipt of proposals in the priority research areas. For submission details, send a self-addressed envelope to: **EPA/NCU Acid Precipitation Program, NCSU, Department of Botany, P.O. Box 5186, Raleigh, N.C. 27650**. Deadline for requesting information is 20 July 1982.

## COURSE

30 and 31 October 1982, Minneapolis: **Society for Neuroscience Short Course: "Strategies for Studying the Roles of Peptides in Neuronal Function."** Topics and moderators are: Morphological Methods (S. Watson), Biochemical Techniques (J. McKelvy), Electrophysiological Assays (J. Barker), Multidisciplinary Strategies (T. Jessell), and Behavioral Approaches (F. Bloom). For further information, contact: **Society for Neuroscience, 9650 Rockville Pike, Bethesda, Md. 20814**.

## CONGRESS

### 15th PACIFIC SCIENCE CONGRESS

The 15th Pacific Science Congress will be held in Dunedin, New Zealand, 1 to 11 February 1983. Theme: "Conservation, Development, and Utilization of the Resources of the Pacific." The program includes four general symposia and 14 sections, each with a number of symposia. Closing date for registrations: 1 September 1982. Second circular now available from: **Secretary-General, P.O. Box 6063, Dunedin, New Zealand**.

## PROGRAMS

### MOLECULAR REGULATORY BIOLOGY PROGRAM POSTDOCTORAL AND PREDOCTORAL PROGRAMS

The research interests of the participating investigators include hormonal regulation of gene expression, RNA processing regulation, cell growth and DNA synthesis and human genetics. Funded positions are available for exceptionally qualified candidates with outstanding records of achievement. Postdoctoral applicants should provide résumé and the names of two or three references. Predoctoral applicants should send copy of transcripts and GRE results and a description of pertinent laboratory or other scholarly experience to: **Dr. Michael G. Rosenfeld, Molecular Regulatory Biology Program, University of California, San Diego, M-013, La Jolla, California 92093**.

## PROGRAMS

### CAREER CHANGE

This unique program offers the candidate with an earned doctorate in the sciences (or equivalent) the opportunity to obtain a Doctor of Optometry (O.D.) degree in two calendar years. Employment opportunities exist in private practice, industry, education, and research. Contact: **The Dean of Admissions, The New England College of Optometry, 424 Beacon Street, Boston, Mass. 02115**.

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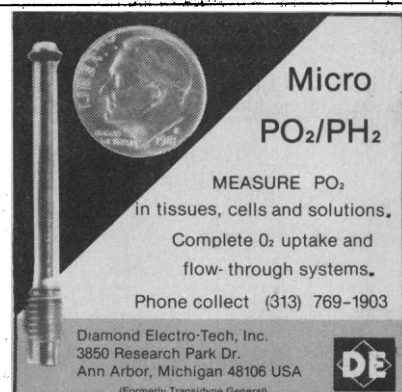
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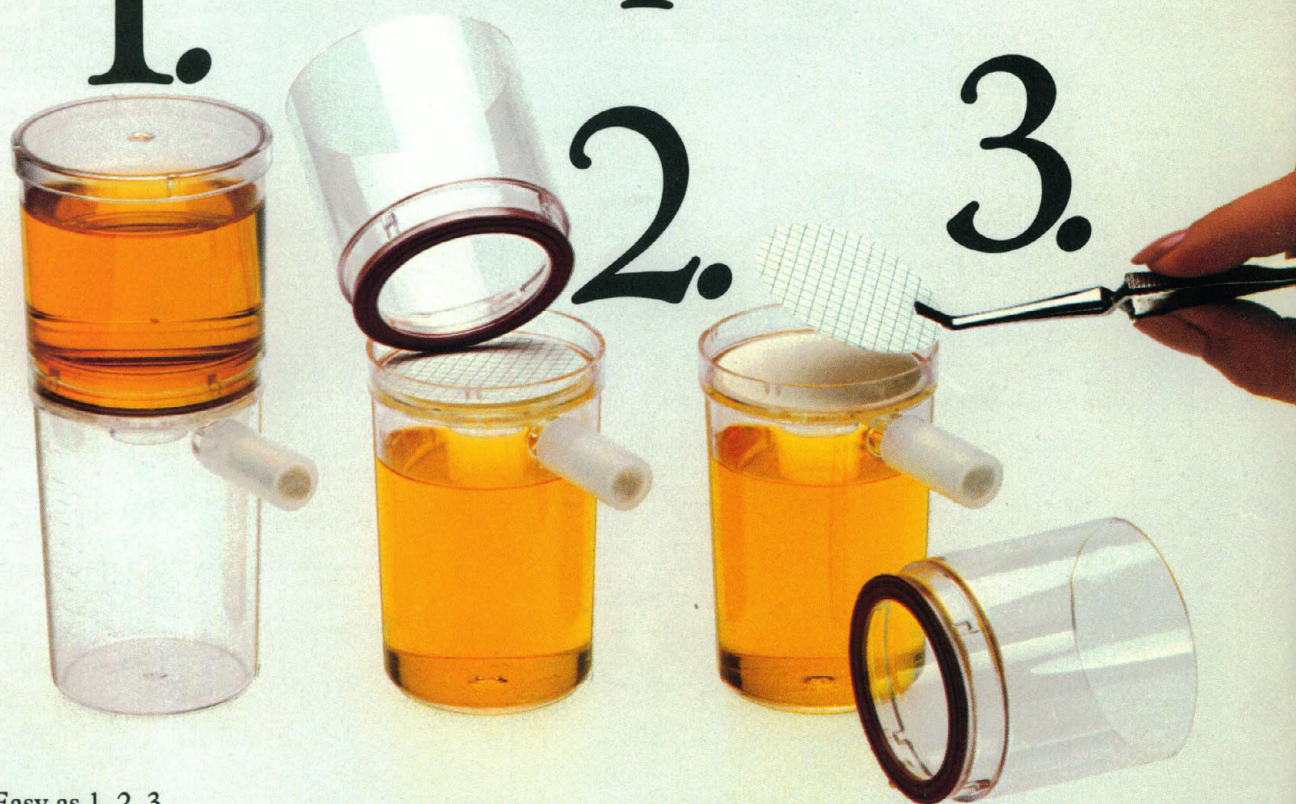
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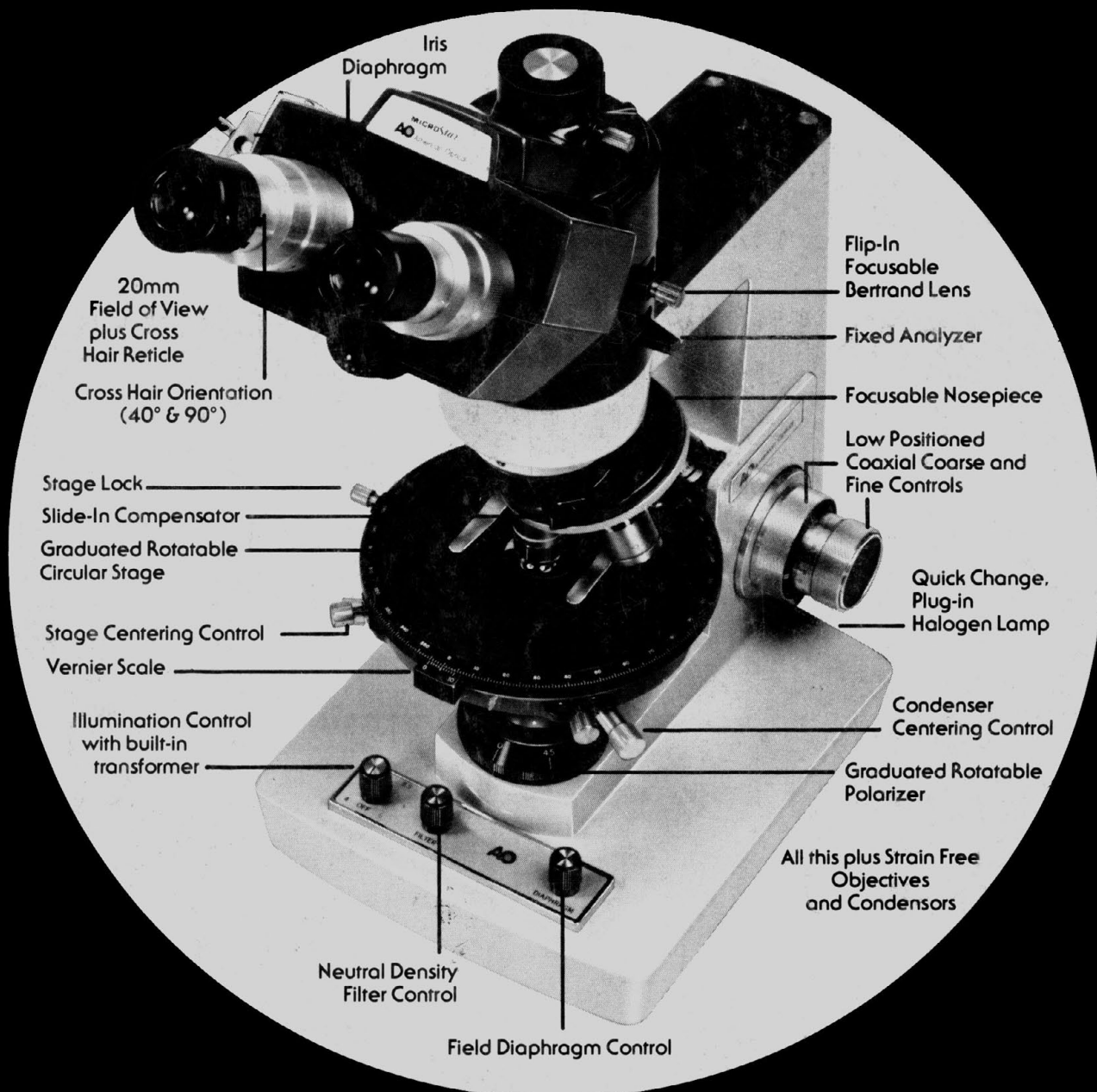
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