

events within the epithelial cell are presented in this volume. Most of the excitement in the book stems from the first dozen papers, in which a variety of electrophysiologic approaches are presented. These methods were designed to define the ionic content, membrane permeability, and ion transport rates of epithelial cells; they range from simple determinations of transmembrane potential differences to sophisticated noise and impedance analysis. Computerized voltage clamp studies of epithelia are described that enable the simultaneous determination of the current-voltage relationships of the total tissue and of the cellular membranes. Analysis of the kinetics of ionic channel fluctuations in the apical membrane by determination of the inherent electrical noise is discussed as an approach to the study of the mode of action of inhibitors and competitors of the transported species. The widespread use of ion-selective microelectrodes has opened new areas of investigation into epithelial ion transport. Three papers discuss the use of ion-sensitive microelectrodes to define the role of neutral, coupled sodium chloride transport in the absorption or secretion of fluid (Frizzell *et al.*, Armstrong *et al.*, and Giebisch *et al.*). Half a dozen others describe electrophysiologic approaches to high-resistance epithelia, such as urinary bladder and frog skin (Helman, Frömter *et al.*, Finn *et al.*, Clausen and Wills, Lewis and Wills, and Civan). The heavy emphasis on electrophysiology is only partially counterbalanced by the last four papers in the book, which report on other approaches to the analysis of ion transport. Included in this group is a paper by Taylor on a topic of current intense research, the role of intracellular calcium in the control of the sodium permeability of the cell's apical membrane.

The heavy emphasis on electrical approaches to the study of ion transport by epithelia may deter those readers unfamiliar with the techniques. However, the study of epithelia has advanced to new levels of sophistication and this book constitutes an up-to-date appraisal of the state of epithelial electrophysiology. The recent attempts to get into the "black box" have been successful and exciting; it is rewarding indeed to see that the diverse boxes are equipped with the similar transporters arranged in a fashion determined by the functional requirements of the organ.

KENNETH R. SPRING
Laboratory of Kidney and Electrolyte Metabolism, National Institutes of Health, Bethesda, Maryland 20205

Gravitation

Theory and Experiment in Gravitational Physics. CLIFFORD M. WILL. Cambridge University Press, New York, 1981. x, 342 pp. \$75.

The development of extremely precise gravitational experiments during the past two decades has helped to stimulate theoretical work aimed at classifying the various gravitational theories, general relativity among them, as well as clarifying the empirical foundations on which any theory of gravity rests. Clifford Will has been a major contributor to this enterprise, and he provides a masterly survey in this book.

The early chapters of the book describe the experiments designed to test the fundamental nature of space-time and matter and their theoretical significance. Among these are the Eötvös-type experiments that compare the free fall of bodies of different mass and internal constitution. A priori there is no reason to expect that the contributions to the mass of nuclear matter from the strong, electromagnetic, and weak interactions should respond identically to a gravitational field. The experimental result that different materials all fall with the same acceleration limits the viable theories of gravitation. Other experiments, among them tests for a possible anisotropy of inertial mass, investigations of the position invariance of local experiments, and searches for the secular variation of the fundamental physical constants, are assessed, and it is shown how these tests may be used to delineate the class of viable theories of gravitation.

The book reconstructs the line of reasoning that leads to the conclusion of many theorists that the only completely viable theory of gravity must be a metric theory. The remainder of the book focuses on metric theories of gravity and the formalism used to compare their predictions in the weak-field, low-velocity approximation. Will has been one of the leaders in the development of this parameterized post-Newtonian formalism during the last ten years. His treatment of the subject is the most detailed summary of the PPN formalism currently available, thus making the book a valuable reference for those working in gravitational physics. The next several chapters deal with the application of the PPN formalism to the understanding of a variety of solar system, geophysical, and laboratory experiments. These chapters may also be profitably read without a detailed knowledge of the PPN formalism by those wishing to obtain the flavor of modern experimental gravitation.

An entire chapter is devoted to the binary pulsar, a system in which a pulsar, an extremely accurate cosmic clock, orbits an unseen companion. The discovery of this system by the detection of its pulses of electromagnetic radiation provided a new testing ground for relativistic gravity in which post-Newtonian effects are an order of magnitude larger than in our solar system.

With its short orbital period, about eight hours, the secular effects of the binary pulsar are amplified to orders of magnitude larger than the largest in the solar system. For example, the rotation of the orbit of Mercury by 43 seconds of arc per century had long been the single most accurate test of general relativity; this same "periastron shift" in the binary pulsar is approximately four degrees per year! The book does not provide a detailed procedural account of gravitational experiments, but it gives a thorough enough explanation of them to enable a reader to appreciate their significance in the development of the theory.

Will's book consolidates much of the literature on experimental gravity and should be invaluable to researchers in gravitation and those who wish to obtain a detailed working knowledge of the "theoretical underpinnings of experimental gravity."

DAVID H. DOUGLASS
MARK BOCKO

*Department of Physics,
University of Rochester,
Rochester, New York 14627*

Books Received

Amorphous Semiconductor Technologies and Devices, 1982. Y. Hamakawa, Ed. OHM, Tokyo, and North-Holland, Amsterdam, 1981 (U.S. distributor, Elsevier North-Holland, New York). xii, 380 pp., illus. \$124. Japan Annual Reviews in Electronics, Computers and Telecommunications.

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Antarctic Law and Politics. F. M. Auburn. Indiana University Press, Bloomington, 1982. xx, 362 pp. \$32.50.

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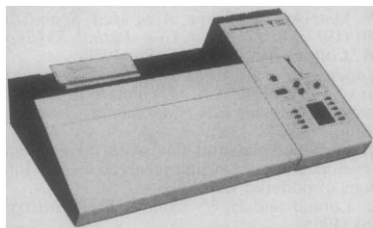
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(Continued on page 1022)

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BOOKS RECEIVED

(Continued from page 979)

Development in the Nervous System. Papers from a symposium, Southampton, England, Sept. 1980. D. R. Garrod and J. D. Feldman, Eds. Cambridge University Press, New York, 1982. x, 404 pp., illus. \$84.50. British Society for Developmental Biology Symposium 5.

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General Nematology. Armand Maggenti. Springer-Verlag, New York, 1981. x, 372 pp., illus. \$29.80. Springer Series in Microbiology.

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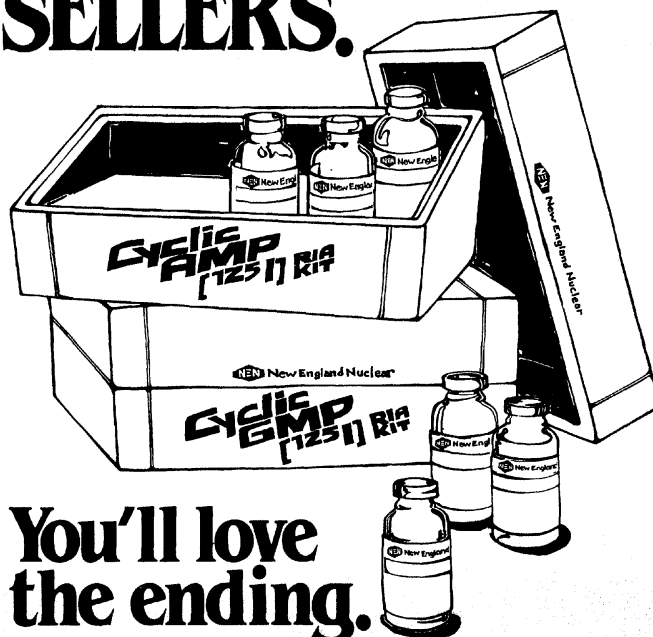
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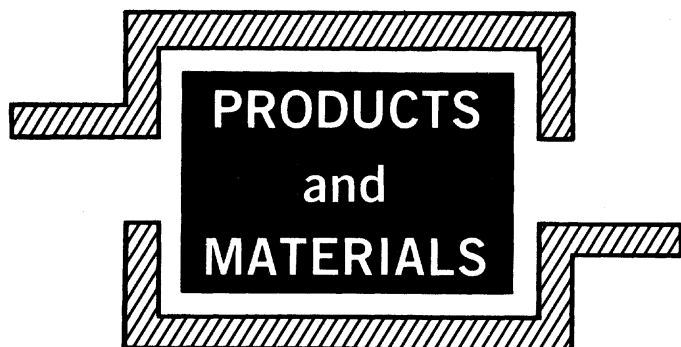
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Literature

Small Computer describes the VAX-11/730 for all scientific applications. Digital Equipment. Circle 610.

Recombinant DNA Research is featured in a product brochure. Chemical Dynamics. Circle 611.

HPLC for the Biochemist describes the basic principles of gel filtration, ion exchange, and reversed phase chromatography. LKB Instruments. Circle 612.

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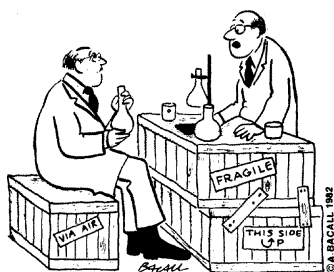
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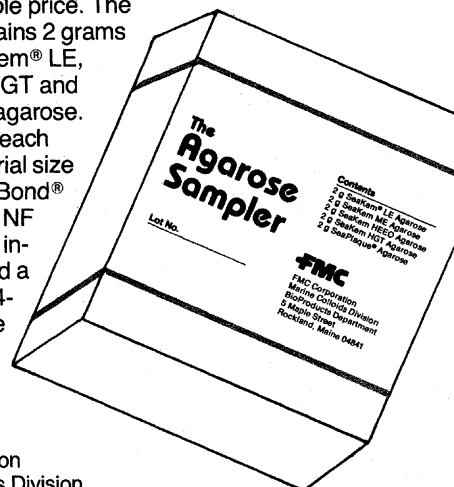
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Personnel Placement

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18 June issue (mailed 11 June): **28 May**
25 June issue (mailed 18 June): **4 June**
2 July issue (mailed 25 June): **11 June**
9 July issue (mailed 2 July): **18 June**

POSITIONS WANTED: 40¢ per word, plus \$4 for use of box number, per insertion. \$10 minimum, per insertion. Prepayment required. This rate is available only to individuals seeking jobs.

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POSITIONS WANTED

Aquatic Biologist. Ph.D. Aquatic toxicology, hazard assessment, water quality monitoring, limnology, fisheries management. Publications and references. Desires research position. Box 151, SCIENCE. X

Biochemist/Cellular Immunologist/Pharmacologist. Ph.D. 1971. More than 30 publications. Expertise in various leukocyte functions, receptors, cyclic nucleotide, phospholipid and arachidonic acid metabolism. Supervisory and consulting experience. Seeks challenging research position in industry. Box 150, SCIENCE. 5/28; 6/11

Biochemist/Physiologist. Ph.D. Several years of experience in research and teaching; 30 publications; scientific reviewer. Interests in metabolic regulation (cyclic nucleotides) and environmental toxicology. Seeks academic position. Box 154, SCIENCE. 5/28; 6/4

Biologist. M.S. Desires career change; interested in patent law of biologicals; needs immunity from Reaganomics. Seeks corporations or law firms with interest in patent law to assist through law school. Box 128, SCIENCE. X

Biologist—Ph.D. Zoology major; botany minor. Several years of experience in college teaching/research. Publications. Specialty in vertebrate taxonomy/ecology. Desires position in research and/or administration at industry, government, or university level. Box 147, SCIENCE. 5/28; 6/4

Environmental/Agricultural Chemist. Ph.D. (agronomy) and M.S. (organic chemistry). Strong multidisciplinary experience. Pesticide residue analysis of agricultural commodities such as feed, feed ingredients, animal fat, and water. Adsorption and characterization of farm wastes by soils. Effluent and leachate study. Well versed in GC, GPC, and wet methods. EPA standard methods. Box 116, SCIENCE. 5/28; 6/11, 25

POSITIONS WANTED

Environmental Scientist. M.S. biology and M.S. geoenvironmental studies, 1980. Seeks entry-level position in research or environmental/engineering concern. Interest in erosion, sedimentation, control and fate of toxic chemicals. Training in aquatic ecology, remote sensing, terrain analysis. Experience with conservation district and aerial spraying firm. Box 155, SCIENCE. X

Food Chemist M.Sc., Biochemist Ph.D.; 12 years of experience in teaching, research, and management. Available for position in chemical, food chemical, biochemical, pharmaceutical, or other company. Box 152, SCIENCE. X

Geneticist. Ph.D. Broad background in plant/animal studies; 20 years of research/teaching in universities; strong electrophoresis, SEM, plant TC, micropropagation, bioscience literature, languages. Adaptable South African seeking change for better in West Coast or adjacent areas. Research/teaching/administration/academe/industry. Box 146, SCIENCE. X

Immunologist. M.S. Five years of experience. Desires challenging position on interesting project with researcher in industry, government, academe. Hybridoma, immunochemical, and protein separation techniques background. Box 129, SCIENCE. X

Molecular Biologist. Ph.D., 4 years of postdoctoral training in world renowned laboratory; 5 years of independent research at world renowned institute. Experience in all areas of recombinant DNA research. Seeks position to direct and coordinate a group (or groups) involved in industrial recombinant DNA projects. Résumé detailing qualifications and publications will be forwarded on request. Box 153, SCIENCE. 5/28; 6/4, 11, 18

Population Biologist, background in university teaching and government, broad geographical experience. Seeking work in research, teaching, field station management, or research support activity. Fluent in Spanish. Box 149, SCIENCE. X

Quantitative Ecologist/Fisheries Biologist. Ph.D. Seeks challenging position concerned with renewable natural resources evaluation, management, and utilization. Strong quantitative skills and communicative abilities; knowledge of applied economics, resource development, and federal regulatory agencies; excellent references. Research experience in fish population dynamics, mathematical modeling, and aquatic toxicology. Box 148, SCIENCE. 5/28; 6/4

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ANATOMISTS—The Department of Anatomy is seeking applicants for a teaching position in **GROSS ANATOMY**; research area open. Ph.D., M.D., or both degrees, at least 1 year of postdoctoral research, and demonstrated excellence in research are required. Rank and salary are negotiable, depending upon experience. Tenure track. Position available 1 July 1982. Submit curriculum vitae and letters of reference by 11 June 1982 to: **Dr. Robert D. Yates, Chairman of Anatomy, Tulane Medical School, 1430 Tulane Avenue, New Orleans, Louisiana 70112. Tulane is an Equal Opportunity/Affirmative Action Employer. Applications from qualified women and qualified minority members are encouraged.**

The **Department of Geology** invites applications for a tenure-track position at the **ASSISTANT PROFESSOR** level beginning September 1982. Applicants should have the Ph.D. degree with specialization in stratigraphy, petrology, or environmental geology and a strong interest and commitment to undergraduate teaching at all levels. Send résumé, transcript, and three letters of support to: **Dr. Robert E. Hay, Chairman, Search Committee, Department of Geology, State University of New York-Cortland, Cortland, N.Y. 13045.**

ASSISTANT PROFESSOR, IMMUNOLOGY/PATHOLOGY. A tenure-track position is available immediately for a **CELLULAR IMMUNOLOGIST** with established credentials of excellence in research to work as part of a group investigating mucosal immunity. Salary commensurate with qualifications and experience. Send curriculum vitae, selected reprints, a brief statement of research accomplishments, and the names and addresses of three references to: **Dr. Michael E. Lamm, Director, Institute of Pathology, Case Western Reserve University, 2085 Adelbert Road, Cleveland, Ohio 44106. An Equal Opportunity/Affirmative Action Employer.**

POSITIONS OPEN

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The Department of Microbiology at Southwestern Medical School is soliciting applications for a tenure-track faculty appointment in the area of pathogenic mechanisms. Candidates should have a Ph.D. and postdoctoral training, preferably with experience in modern molecular biology and genetics. Appointee will be expected to participate in the teaching programs for medical and graduate students and to establish an active research program. Send curriculum vitae, names of three references, and a brief statement of research plans to: **Dr. Eugene D. Rosenblum, Department of Microbiology, The University of Texas Health Science Center at Dallas, Dallas, Texas 75235. An Affirmative Action/Equal Opportunity Employer.**

ASSISTANT PROFESSOR—VIROLOGY

The Department of Microbiology at Southwestern Medical School is soliciting applications for a tenure-track faculty appointment in the area of virology. Candidates should have a Ph.D. and postdoctoral training, preferably with experience in modern molecular biology and genetics. Appointee will be expected to participate in the teaching programs for medical and graduate students and to establish an active research program. Send curriculum vitae, names of three references, and a brief statement of research plans to: **Dr. Bradford Ozanne, Department of Microbiology, The University of Texas Health Science Center at Dallas, Dallas, Texas 75235. An Affirmative Action/Equal Opportunity Employer.**

ASSISTANT PROFESSOR OF PHARMACOLOGY.

Applications are invited by the Department of Pharmacology, University of Tennessee, for a tenure-track position available 1 July 1982. The applicant should possess a Ph.D. in pharmacology or a related discipline or an M.D.; have a strong background in biochemistry, molecular biology, or immunology; and should apply this knowledge to the study of fundamental problems in pharmacology. The applicant should have approximately 3 years of postdoctoral experience, should have demonstrated excellence in research, and should have an active interest in teaching. The candidate will be expected to establish and support an independent research program. Please submit complete curriculum vitae, three letters of reference, and a brief statement of future research plans, no later than 1 July 1982, to: **Dr. Murray Heimberg, Chairman, Department of Pharmacology, University of Tennessee Center for the Health Sciences, Memphis, Tennessee 38163. An Equal Opportunity/Affirmative Action Employer.**

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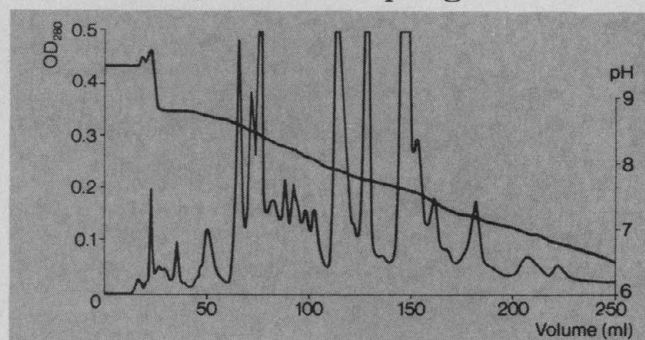
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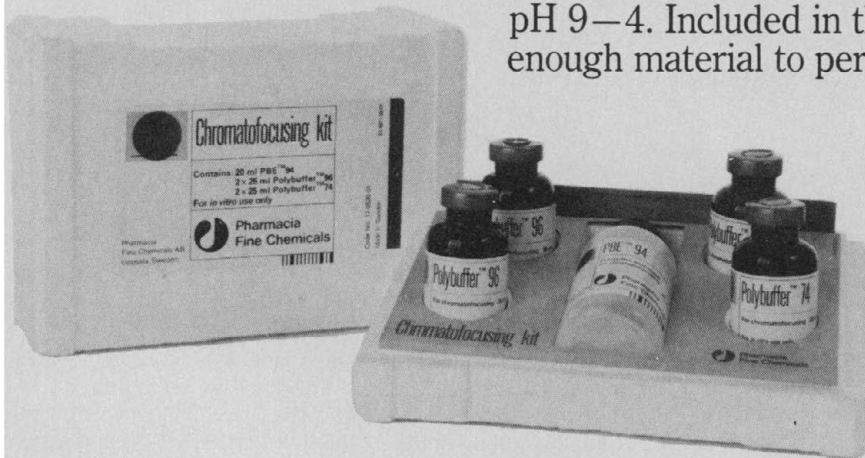
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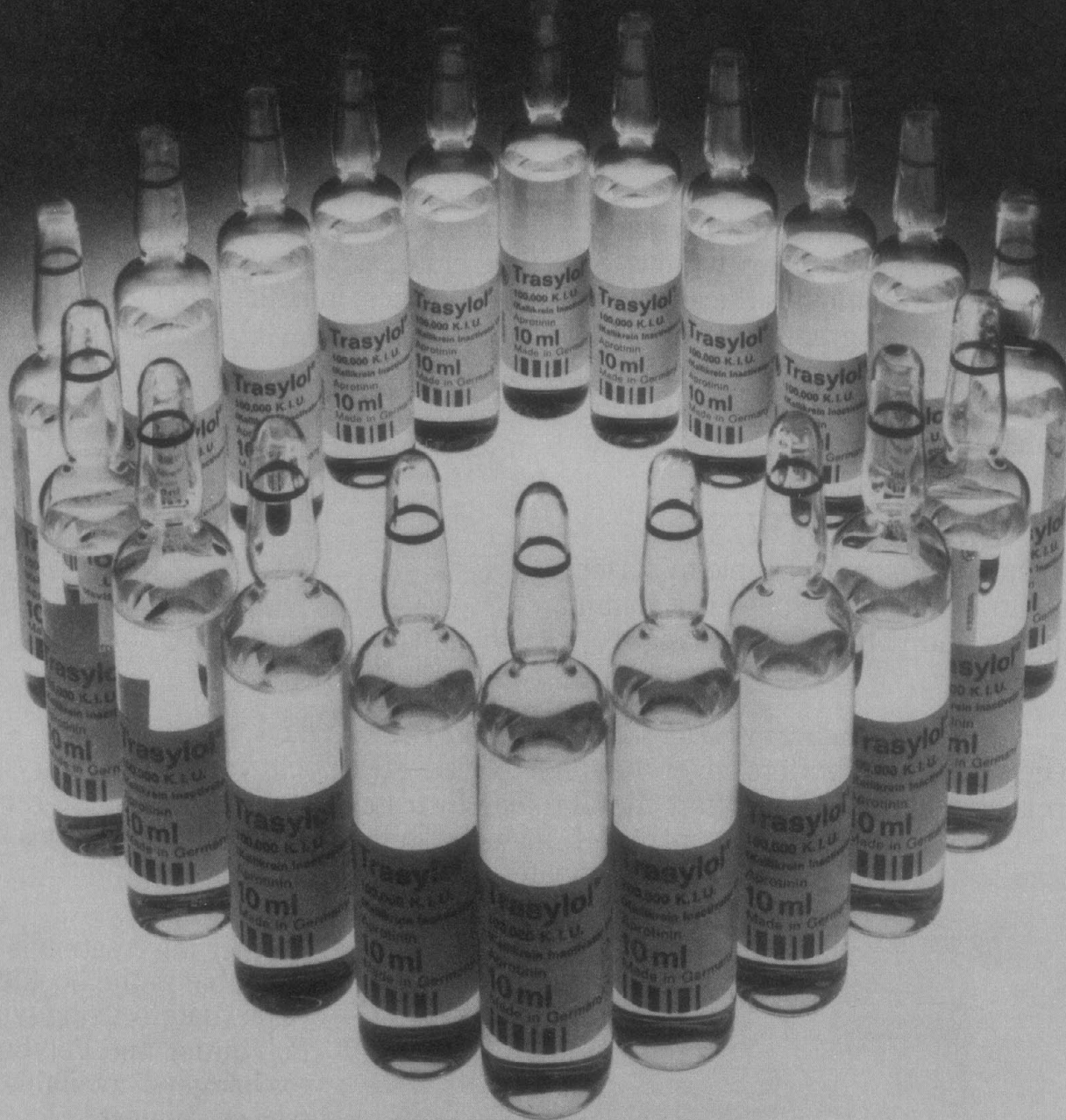
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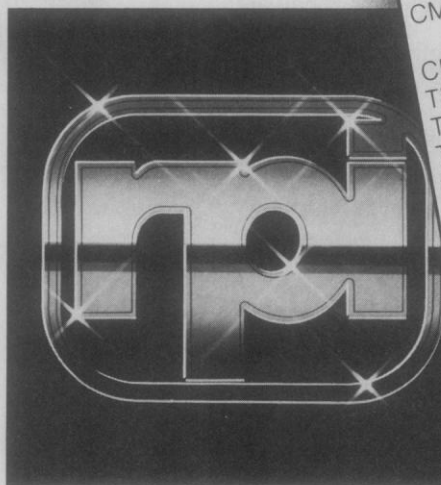
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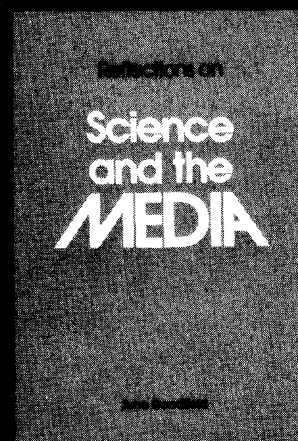
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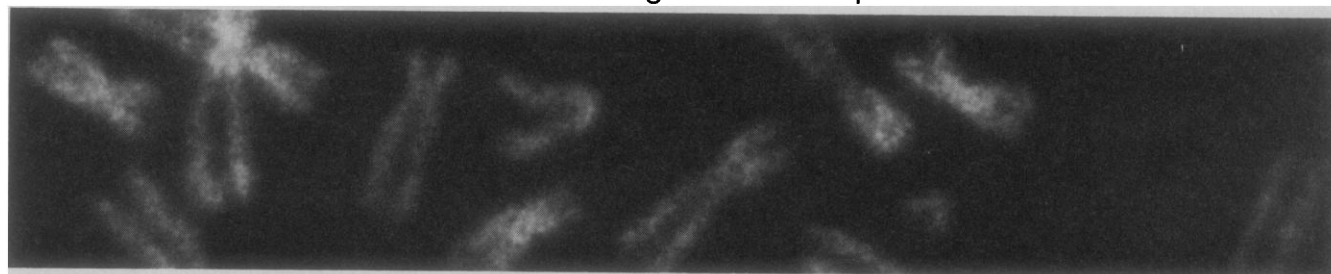


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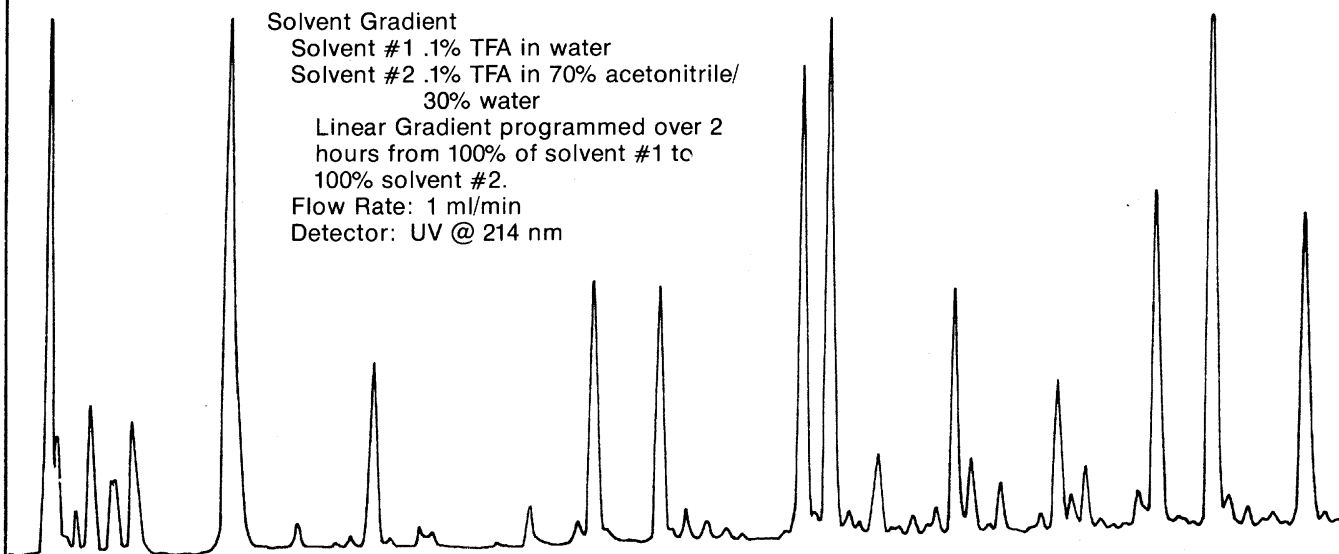
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- **Mechanical Engineer, GS-11 or 12.** Research in structural dynamics/mechanics to enhance the reliability and survivability of Navy components, subsystems and vehicles. (I.D. #5830)
- **Electronics Engineer, GM-14.** Supports solar physics researchers in the technical and program management aspects of space flown experiments. (I.D. #41-033-13)

Salaries range from \$20,701 (GS-7) to \$51,596 (GM-14) depending on qualifications and experience. Interested applicants should submit a Personal Qualifications Statement (SF-171) or a detailed resume with position and I.D. number included by 30 June 1982 to:

**NAVAL RESEARCH LABORATORY
Civilian Personnel Office
Code 1813.1; #2 (S)
4555 Overlook Avenue, S.W.
Washington, D.C. 20375**

An Equal Opportunity Employer

U.S. Citizenship Required

SENIOR PARASITOLOGIST LILLY RESEARCH LABORATORIES DIVISION OF ELI LILLY AND COMPANY

Eli Lilly and Company, a leader in the research and development of agricultural chemicals and animal products, is seeking applicants for a research position in parasitic protozoology.

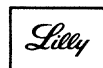
Candidates should have a Ph.D. in parasitology with special interest and training in coccidiosis research and host-parasite defense mechanisms. A knowledge of the commercial poultry industry would be beneficial but is not required.

Immediate research interests might include innovative methods for the control of avian coccidiosis and a research program in host-parasite defense mechanisms.

The scientist who desires inter-disciplinary research, is creative, and can lead a group of peers should consider this career opportunity offered by the Lilly Research Laboratories.

Qualified individuals should send their resume in confidence to:

Mr. Michael Levitt
Personnel Representative
Eli Lilly and Company
Greenfield Laboratories, P.O. Box 708
Greenfield, Indiana 46140



An Equal Opportunity
Employer, M/F

Research Opportunities In Pharmacology

Berlex Laboratories, Inc., a growing ethical pharmaceutical company in northwest New Jersey, provides an exceptional environment for research, including modern equipment and technical support. We are a wholly-owned subsidiary of Schering A. G. of West Germany and are not affiliated with Schering-Plough of Kenilworth, New Jersey. Immediate openings are available for professionals in the following areas:

CARDIOVASCULAR BIOCHEMISTRY

This Section Head position requires a Ph.D. in Pharmacology or Biochemistry and three or more years of post-doctoral experience in various aspects of biochemical Cardiovascular Pharmacology. In addition to establishing a new section of Cardiovascular Biochemistry, the successful candidate will lead the development of biochemical screens, determination of drug mechanisms, and explore new approaches to the understanding and treatment of cardiovascular diseases.

VASCULAR PHARMACOLOGY

This position requires a Ph.D. in Pharmacology or Physiology with broad training and three or more years of experience in Vascular Physiology to establish a section of Vascular Pharmacology. This Section Head position involves the exploration of new approaches to the understanding and treatment of vascular diseases with emphasis on cardiovascular function. Extensive knowledge of both in vivo and in vitro methodologies for the study of vascular function is required.

These positions provide an excellent salary and benefits package including relocation assistance. Interested candidates are invited to submit a resume which includes salary requirements, in confidence, to: P. M. Griffoul, Personnel Administrator, Berlex Laboratories, Inc., 110 East Hanover Ave., Cedar Knolls, New Jersey 07940. An equal opportunity employer M/F.

BERLEX

Laboratories Inc.

Plant Scientist

Applications are invited for a position on the research staff of the Biology Department at Brookhaven National Laboratory, from Ph.D. degreed individuals whose interests overlap those of strong existing programs in the genetics, cell biology, and biochemistry of higher plants.

Candidates should have demonstrated ability to conduct a vigorous research program at the forefront of their specialty. Salary and conditions of appointment will be commensurate with experience.

Curriculum vitae (including list of publications) with names of three references should be sent to: H. Z. Kondratuk, Biology Department, Brookhaven National Laboratory, Associated Universities, Inc., Upton, L.I., New York 11973. An Equal Opportunity Employer m/f.

**BROOKHAVEN
NATIONAL
LABORATORY**



SENIOR IMMUNOCHEMIST

Will work with immunoassay project teams performing protein modification, purification and iodination.

SR. CLINICAL MICROBIOLOGIST

Will work in varied aspects of diagnostic microbiology — R & D and applications. A thorough grounding in modern microbiology techniques required.

Ph.D. and/or extensive related experience required for both positions.

We are located 5 miles from the Pacific Ocean just north of San Diego. We offer superior pay, benefits and opportunities. Please submit your c.v. to Manager, Professional Staffing.

BECKMAN

Microbics Division
6200 El Camino Real
Carlsbad, CA 92008

Equal Opportunity Employer M/F/H

POSITIONS OPEN

ANATOMIST. Histology/Embryology. The Department of Basic Sciences is seeking applicants for a tenure-track position available immediately. Primary responsibility will be teaching courses in human microscopic anatomy and embryology. Earned doctorate in anatomical sciences required. Preference will be given to individuals having prior teaching experience in gross anatomy and histology. Facilities, resources, and time are available for research. The college is a free-standing, state-supported institution located near downtown Tulsa. Rank and salary are negotiable. Send curriculum vitae and names of three references to: **Chairman, Search Committee, The Oklahoma College of Osteopathic Medicine and Surgery, P.O. Box 2280, Tulsa, Oklahoma 74101. An Affirmative Action/Equal Opportunity Employer.**

ASSISTANT PROFESSOR—BIOLOGY. Texas Woman's University, Denton, Texas. Nine-month, full-time position beginning August 1982. Ph.D. required; postdoctoral experience preferred. Commitment to quality teaching and research is required. The department offers Ph.D. degrees in radiation and molecular biology and the B.S. and M.S. degrees in biology. Areas of interest include neurobiology, microbiology, cell biology, medical mycology, pathophysiology, and environmental science. Deadline for application is 15 June 1982. Submit curriculum vitae, transcripts, and three letters of reference to: **Dr. Alan Cockerline, Chairman, Search Committee, P.O. Box 23971, TWU Station, Denton, Texas 76204. Texas Woman's University is an Equal Opportunity Employer.**

UNIVERSITY OF CALIFORNIA, BERKELEY
College of Natural Resources
Faculty and Agricultural Experiment Station
Position in the Division of Biological Control and Department of Entomological Sciences

A position as **ASSISTANT PROFESSOR OF ENTOMOLOGY AND ASSISTANT ENTOMOLOGIST** in the Experiment Station will be available 1 July 1982. Qualifications must include a Ph.D. degree with broad preparation in entomology, including areas such as ecology, genetics, behavior of predatory and/or parasitic arthropods, and biosystematics is required. Demonstrated skills in statistics and quantitative methods of data analysis, and experience in techniques required in specific areas of research are expected. Research emphasis to be in predator/prey, host/parasite interactions, including intra- and/or interspecific competition, distribution of progeny, sex determination and sex ratio, biosystematics of entomophagous insects. Interest in conducting or directing foreign exploration for exotic parasites and predators is expected. Teaching will be in biological control of pests. Applicants should send curriculum vitae, relevant publications and manuscripts, official academic transcripts, and the names of three persons for reference by 15 July 1982 to:

A. P. Gutierrez
Search Committee Chairman
Division of Biological Control
University of California
Berkeley, California 94720

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

THE UNIVERSITY OF TEXAS HEALTH CENTER AT TYLER is seeking an individual of proven excellence to fill the post of **ASSOCIATE DIRECTOR FOR CLINICAL AFFAIRS**. The Health Center at Tyler is a health component of The University of Texas System reporting to the chancellor and the Board of Regents. This young institution has a commitment to excel in patient care, teaching, and research in chest diseases. The associate director for clinical affairs will be responsible for supervision and strengthening of all clinical services, and will assist in further development of the teaching program in a postgraduate level, and will provide guidance in the expansion of a clinical research program. This position requires a doctor of medicine degree and Board-certification in an appropriate specialty. The candidate must have a record of leadership in clinical care, administration, and teaching. Familiarity with clinical research is highly desirable. The position should provide a rewarding challenge with salary and benefits commensurate with the outlined responsibilities. Send curriculum vitae and letter of interest to:

Search Committee, c/o Director of Personnel
The University of Texas Health Center at Tyler
Box 2003
Tyler, Texas 75710

Equal Opportunity Employer

POSITIONS OPEN

UNIVERSITY OF CALIFORNIA
College of Natural Resources
Faculty and Agricultural Experiment Station
Position in the Division of Biological Control and Department of Entomological Sciences

A position as **ASSISTANT PROFESSOR OF ENTOMOLOGY AND ASSISTANT ENTOMOLOGIST** in the Experiment Station will be available 1 January 1983. Qualifications must include a Ph.D. degree with training in entomology, botany, insect behavior, and ecology. A background in plant biochemistry and physiology is desirable. Research responsibilities will emphasize the arthropod feeding relationship with plants. Research on the mechanisms involved in recognition, acceptance, and feeding impact by the arthropod on its host at both the individual and population level is expected. Behavioral, physical, chemical, physiological mechanisms of the arthropod/plant relationship are potential investigative areas. Teaching responsibilities will be in the Department of Entomological Sciences in the above research area. Applicants should send full curriculum vitae, relevant publications and manuscripts, official academic transcripts, and the names of three persons for reference by 1 August 1982 to:

K. S. Hagen
Search Committee Chairman
Division of Biological Control
Department of Entomological Sciences
University of California
Berkeley, California 94720

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

ASSISTANT PROFESSOR

University of California, Irvine, Department of Pathology, is recruiting for a faculty position in surgical pathology at the assistant professor level. Required: M.D., must be Board-certified in anatomic pathology and eligible for licensure in California. Subspecialty experience highly desirable. Demonstrated interests in clinical service functions, teaching, and research. Duties: assist the division chief in such administrative activities as the functioning of the histology laboratory, maintenance of clerical support, and the Residency Teaching Program; instructing medical students and residents in pathology; and presenting conferences for the clinical staff and the community. *An Equal Opportunity/Affirmative Action Employer.* Send curriculum vitae and references to: **Stephen G. Romansky, M.D., Department of Pathology, University of California, Irvine, 101 City Drive South, Orange, California 92668, by 5 July 1982.**

BIOLOGY. Comparative animal physiologist. One-year appointment (1982-1983) in the joint Department of Biology at the College of St. Benedict and St. John's University, to teach general physiology, comparative animal physiology, and lower division courses. Ph.D. preferred in designated area. Send letter of application, curriculum vitae, and three letters of reference to: **Director of Personnel Services, St. John's University, Collegeville, Minn. 56321.** Application deadline: 18 June 1982. *Equal Opportunity/Section 504 Employer.*

BIOPHYSICAL CHEMISTRY postdoctoral position is available fall 1982. Visual pigments, bacteriorhodopsin, and enzymes are to be studied by resonance Raman spectroscopy in a state-of-the-art equipped laboratory. Rich detailed molecular information of active sites is provided by this new probe. Applicants should possess a desire to pursue challenging new problems. Send curriculum vitae to: **Dr. R. Callender, Physics Department, City College of New York, New York, N.Y. 10031.**

CELLULAR ENDOCRINOLOGIST

Applications are invited for a tenure-track position at the assistant professor level. Appointee will be expected to develop an active research program in the area of hormone action at the cellular/molecular level with special emphasis on receptor function. Postdoctoral experience is required. Teaching responsibilities will include participation in undergraduate cell biology, advanced level endocrinology, and supervision of Ph.D. candidates. Send curriculum vitae, statement of academic training and research interests, and three letters of reference by 1 July to: **Search Committee, Biology Department, Wesleyan University, Middletown, Conn. 06457.**

Wesleyan University is an Equal Opportunity/Affirmative Action Employer and encourages applications from members of minority groups and women.

DIRECTOR RESEARCH & DEVELOPMENT

NML (Nuclear-Medical Laboratories, Inc.), a Division of Warner-Lambert Company, is currently seeking a Ph.D. in Immunology or Immunochemistry or Biochemistry with 5-7 years experience in radioimmunoassay development to direct immunoassay research in the Dallas/Fort Worth Metroplex. Functional knowledge of ELISA technology and tissue culture development preferred, but not required.

The successful candidate will not only possess the above, but will also have demonstrated:

- effective administrative and managerial ability
- outstanding oral and written communication skills
- a documented record of scientific accomplishments.

Reporting directly to the Vice-President of Research for the General Diagnostics Research Group, you will interface directly with Marketing and Manufacturing in the development of significant products that will affect the future growth of NML.

Salary, bonus and benefits are exceptional, including a comprehensive relocation package. Qualified candidates should forward Curriculum Vitae and list of accomplishments in confidence to:



Division of

**WARNER
LAMBERT**

Mr. Don Barnett
Manager, Human Resources
Nuclear-Medical Laboratories, Inc.
P.O. Box 47864
Dallas, TX 75247

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M/F/H*

QUALITY ASSURANCE MANAGERS

As the premier manufacturer of a full line of snack food products, Frito-Lay recognizes that an emphasis on high quality standards is a key reason for our annual revenues of over \$1.8 billion and 13 consecutive years of record earnings.

As a Quality Assurance Manager, you'll manage the quality assurance process for all raw materials/finished products in a Frito-Lay manufacturing facility. Reporting directly to the Plant Manager, you'll also be responsible for ensuring the quality of all products in the plants.

We are seeking a results-oriented professional with expertise in management and experience in food or pharmaceutical quality assurance. Individual selected must have the potential and desire to advance beyond QA manager. A technical degree is required.

Frito-Lay offers outstanding compensation and benefits, in addition to significant promotional opportunities for exceptional performers. Please send your resume and salary history, in confidence to:

Frito-Lay, Inc.

Professional Placement-QAS

P.O. Box 45789

Dallas, Texas 75245

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Principals Only Please!



Director, Animal Science Regulatory Affairs, International

Merck Sharp & Dohme Research Laboratories is seeking a Director of Regulatory Affairs, International to join our Division of Animal Science Research with headquarters in Rahway, New Jersey.

Due to expansion of our registration activities, we are seeking an individual with advanced training in chemistry, animal science, pharmacy, pharmacology, biochemistry, toxicology or veterinary medicine, as well as superior oral and written communication skills. A Ph.D. and/or D.V.M. degree is desirable. The successful candidate must be able to interface well with Merck personnel, as well as foreign regulatory officials and be willing to travel abroad. Knowledge of foreign language is desirable.

Responsibilities include the registration of animal health products in Europe, Africa, Latin America, Japan and Australasia; the supervision, preparation and continuous follow up of all International registration documents, as well as negotiation with regulatory agencies in defense of our submissions.

Excellent benefits and opportunities for career growth accompany this key position. Salary commensurate with training and experience. Send resume with salary requirements to Ms. J. Y. Zeltner, Ref. SM,



MERCK & CO., INC.

P.O. Box 2000, Rahway, New Jersey 07065

An equal opportunity employer, m/f.

POSITIONS OPEN

BIOCHEMISTRY—ASSISTANT PROFESSOR (physical biochemistry). The Biochemistry and Biophysics section of the University of Connecticut will have a tenure-track position available in the area of physical biochemistry, to begin September 1982. We seek a person with postdoctoral training who will establish a research program and teach in our undergraduate and graduate biochemistry and biophysics programs. Applicants should submit curriculum vitae, an outline of proposed research, and names of at least three references to: **Professor Alvah H. Phillips, Head, UNIVERSITY OF CONNECTICUT, Biochemistry and Biophysics Section, U-125, Storrs, Conn. 06268.** Deadline: 1 July 1982. *Equal Opportunity/Affirmative Action Employer* (SEARCH 2A57).

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE PITTSBURGH, PENNSYLVANIA DEPARTMENT OF ANATOMY AND CELL BIOLOGY CHAIRPERSON

Applications and nominations are invited for the position of chairperson of the Department of Anatomy and Cell Biology. The candidates should be recognized scholars and investigators with demonstrated commitment to medical and graduate education.

Curriculum vitae and bibliography may be submitted to:

T. Terry Hayashi, M.D.
Department of Obstetrics-Gynecology
Magee-Women's Hospital
Halket and Forbes
Pittsburgh, Pa. 15213

An Equal Opportunity/Affirmative Action Employer

CHIEF, MEDICAL SERVICE. VA Medical Center, Shreveport, Louisiana. A 449-bed teaching Medical Center with an ongoing medical research program and an active affiliation with Louisiana State University Medical Center in Shreveport. Board-certification and qualifications for a senior academic appointment are required. Salary negotiable. Inquiries, including curriculum vitae, should be sent to: **Richard D. Maca, M.D. (151), Chairman, Search Committee, VA Medical Center, 510 East Stoner Avenue, Shreveport, La. 71130.** *Equal Opportunity/Affirmative Action Employer.*

CRYSTALLOGRAPHER—RIBOSOME STRUCTURE. Postdoctoral position for recent Ph.D. in protein crystallography interested in large protein-nucleic acid structures. Involves crystallization and collection of x-ray diffraction data from ribosome crystals (see this issue of *Science*). Please submit curriculum vitae and names of three references to: **Dr. James A. Lake, Molecular Biology Institute, University of California, Los Angeles, Calif. 90024.** *An Equal Opportunity/Affirmative Action Employer.*

Applications are invited for the position of **DEAN** of the West Virginia University School of Medicine. The position involves the duties of the chief executive and academic officer of the school.

Candidates must have academic administrative experience, preferably in a medical school. Candidates should have a career showing scientific and scholarly activity, and an M.D. degree is preferable.

Letter of application and curriculum vitae, including the names and addresses of at least three professional references, should be forwarded to:

Alvin L. Watne, M.D.
Chairman, Dean's Search Committee
West Virginia University Medical Center
Morgantown, W.Va. 26506

The deadline for receipt of applications is 1 July 1982. *West Virginia is an Equal Opportunity/Affirmative Action Employer.*

PHYSIOLOGIST. The National College of Naturopathic Medicine, a private 4-year college, invites applications for a faculty position in basic medical sciences for fall 1982. The position involves the teaching of medical physiology to first-year students as part of a conjoint basic medical sciences program. Applicant must have teaching experience and have a Ph.D. or equivalent degree. She/he should be well versed in all areas of human physiology and demonstrate a strong interest in teaching. An interest in natural holistic health care or related areas is preferred. Rank and salary depend on qualifications and experience. Send letter of application, curriculum vitae, and three letters of reference by 18 June 1982 to: **Dr. G. S. S. Khalsa, Dean of Curriculum and Instruction, National College of Naturopathic Medicine, 11231 S.E. Market Street, Portland, Oregon 97216.**

POSITIONS OPEN

SOUTH AFRICAN MEDICAL RESEARCH COUNCIL BIOMEMBRANE RESEARCH UNIT CHIEF RESEARCH OFFICER

Applications are invited for the post of Chief Research Officer in the Biomembrane Research Unit. The post is intended for a postdoctoral or more senior scientist who wishes to pursue fundamental and applied research into the biochemical and physiological properties of biomembranes and their possible applications in disease states.

Two lines of research are being followed:

- 1) Mechanisms of active calcium transport across biomembranes, and
- 2) Mechanisms of oxygen activation/insertion reactions in biological systems.

The emphasis in this research is on chemical and biophysical characterisation of the systems involved, including the use of advanced physical and analytical chemical techniques.

Applicants should have experience in physical, biophysical, or biochemical areas.

In the appointment of staff no discrimination will be made on the ground of sex, race, colour, or creed.

Interested persons should write, sending curriculum vitae, to: **Professor M. C. Berman, Director, Biomembrane Research Unit, Department of Chemical Pathology, UCT Medical School, OBSERVATORY, 7925, Republic of South Africa.**

DIRECTOR, CLINICAL PHARMACOLOGY

The University of Alabama in Birmingham is seeking qualified candidates for the directorship of a newly created program in clinical pharmacology. Substantial space and state support are available. Appointments in an appropriate clinical department and pharmacology are available. Applicants should apply to: **John R. Durant, M.D., Chairman, Search Committee, Clinical Pharmacology, University of Alabama in Birmingham, University Station, Birmingham, Alabama 35294.** *An Equal Opportunity/Affirmative Action Employer.*

DIRECTOR, PRIMATE RESEARCH CENTER

The University of Puerto Rico seeks a director of a Primate Research Center. Advanced degree (M.D., Ph.D., or D.V.M.) in biomedical sciences required. Proven administrative and research skills. The Center contains 1600 primates at three separate sites, including a unique free-ranging colony of 900 rhesus monkeys. Core support from NIH and institutional funds. Opportunity to develop strong Graduate Program. Faculty rank commensurate with qualifications and experience. Send inquiries with curriculum vitae or telephone: **Karlis Adamsons, M.D., Ph.D., Chairman Search Committee, Department of Obstetrics and Gynecology, University of Puerto Rico, Box 5067, San Juan, P.R. 00936; telephone: 809-767-8740.**

FACULTY POSITION. Applications are invited for a tenure-track faculty position which may be available beginning September 1982. Candidates should have strong research and teaching credentials in one or more of the following areas: fluid dynamics, thermal sciences, or computer-aided design. Send curriculum vitae, three letters of recommendation, and a statement of current and future research interests by 30 June 1982 to: **Dr. T. F. Irvine, Jr., Chairman, Department of Mechanical Engineering, State University of New York (SUNY) at Stony Brook, Stony Brook, N.Y. 11794.** *SUNY, Stony Brook, is an Equal Opportunity/Affirmative Action Employer.* AK number 358.

FACULTY POSITION

Anesthesiology Department is seeking a Ph.D. with background in pharmacology, physiology, or biochemistry for tenure-track position as **Director of Research Laboratories** in Sunbelt region at a major health sciences center with excellent laboratory facilities and equipment. A record of excellence in scientific achievement demonstrated by publications, grants, independent research, and attainment of senior faculty level in an academic or research-oriented institution is required. Candidate must have ability to work effectively with clinical faculty, to help design and carry out research, obtain funding, and participate in resident physician teaching. Applicants should send curriculum vitae, selected reprints, and three letters of reference to: **Noel W. Lawson, M.D., Chairman, Search Committee, Department of Anesthesiology, Texas Tech University Health Sciences Center, 3601 4th Street, Lubbock, Texas 79430.** *An Equal Opportunity Employer.*

POSITIONS OPEN

DIRECTOR REHABILITATION ENGINEERING CENTER

Applications are requested for the position of Director, Rehabilitation Engineering Center, which is jointly operated by Moss Rehabilitation Hospital and Drexel and Temple Universities. The position involves the planning, implementation, management, and acquisition of research grants and training programs for a Center that conducts research and development to improve the function of individuals with lower-limb functional problems as a result of impairments of the neuromusculoskeletal system. The Center has a staff of approximately 35 positions. The director is required to have substantial background and experience in biomechanics, neurophysiology, locomotion, prosthetics, and orthotics. The position also requires demonstrated management experience and an ability to communicate with individuals at all organizational levels and several disciplines including engineering, medical, and allied health. Experience with federal, state, and private funding agencies is essential. A Ph.D. in engineering discipline is required. The director must also be acceptable for an academic appointment at either Drexel or Temple University. The salary for this position is negotiable based upon qualifications and experience. For additional information, contact: **Martin Kaplan, Executive Director, Moss Rehabilitation Hospital, telephone: 215-329-5715.** Application with curriculum vitae and a list of three references should be sent to: **Martin Kaplan, Executive Director, Moss Rehabilitation Hospital, 12th Street and Tabor Road, Philadelphia, Pa. 19141.**

UNIVERSITY OF PUERTO RICO MEDICAL SCIENCES CAMPUS SCHOOL OF MEDICINE SEEKS

Experienced **ELECTRON MICROSCOPIST** to teach histology to a combined class, first-year medical and dental students, and to serve as a consultant (20 percent of the total time) to other faculty members. Area of research open. Position is at the assistant professor level in the tenure-track. Appointment begins 1 July 1982. Send curriculum vitae, brief description of research interests, list of publications, and three letters of recommendation to: **Dr. W. P. Luckett, Department of Anatomy, School of Medicine, University of Puerto Rico, GPO Box 5067, San Juan, Puerto Rico 00936.**

FACULTY POSITIONS IN PHYSIOLOGY

The Department of Physiology and Pharmacology at the University of South Dakota has openings for two physiologists. (i) A tenure-track position at the assistant professor level for a **cardiovascular physiologist** whose duties will include teaching cardiovascular physiology to medical and graduate students and developing an active research program. Candidates with postdoctoral training will be given preference. (ii) A nontenured teaching position for a **physiologist** who will be responsible for teaching courses in human physiology to undergraduates. Individuals with teaching experience will be given preference.

Interested persons should send a résumé, a summary of research interests, and names of three references to: **Dr. Evelyn Schlenker, Physiology/Pharmacology, University of South Dakota School of Medicine, Vermillion, S.D. 57069,** by 15 June 1982. *The University of South Dakota is an Equal Opportunity Employer.*

FACULTY POSITION

**Department of Anatomy
Loyola University of Chicago
Stritch School of Medicine**

A full-time, tenure-track assistant professorship is available in the Department of Anatomy. The responsibilities of the position include participation in the gross anatomy course taught to medical and graduate students, and the maintenance of an active research program. Applicants should possess the Ph.D. or M.D. degree and should, preferably, have completed a postdoctoral fellowship or equivalent.

Applications, including curriculum vitae and names of three references, should be sent by 20 June 1982 to:

Charles C. C. O'Morchoe, M.D., Ph.D., D.Sc.
Professor and Chairman
Department of Anatomy
Loyola University of Chicago
Stritch School of Medicine
2160 South First Avenue
Maywood, Illinois 60153

Loyola University is an Equal Opportunity Employer.

Associate Director

Cardiovascular/Renal Pharmacology

SmithKline Beckman, a leader in pharmaceutical research, is seeking a senior scientist to serve as an Associate Director of Cardiovascular and Renal Pharmacology programs involved in the discovery and characterization of drugs for the treatment of cardiovascular and renal diseases. This position offers significant opportunities for innovative basic research, participation in the development of new directions within the Research Division and career growth potential.

Preference will be given to candidates who have:

- PhD in pharmacology or physiology with expertise in Cardiovascular, Renal and Molecular Pharmacology
- 6 or more years post doctoral research experience in an industrial or academic environment
- Excellent publication record with national recognition of applicant's research
- Demonstrated capacity to initiate, supervise and conduct unique research
- Capacity to lead and motivate a multidisciplinary team
- Excellent written and oral communication skills
- Proven administrative skills

SmithKline Beckman offers an excellent compensation and benefits package along with opportunity for personal and professional growth. Please forward your resume in confidence to: Mr. Walter B. Flagg, Senior Employment Administrator, SMITHKLINE BECKMAN CORPORATION, 1596 Spring Garden Street, Philadelphia, PA 19101.

SK&F
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Astor Chair In Applied Science

Applications and nominations are solicited for the Astor Professorship in the Department of Applied Science. We seek candidates of international reputation who have a wide knowledge of technology, a vigorous research program, and an interest in helping to launch our newly established doctoral programs in energy and atmospheric science. Fields of research currently represented in the department include combustion, fuel technology, renewable energy resources and climatic effects.

The post may be assumed anytime in the period **September 1, 1982 to September 1, 1983**. Please send resumes, including a description of research interests and the names of three references to:

NEW YORK UNIVERSITY
A PRIVATE UNIVERSITY IN THE PUBLIC SERVICE

Astor Chair Search Committee

Department Of Chemistry
4 Washington Place, Room 514
New York, New York 10003
Attn: Prof Alvin L Kosak, Chairperson

NYU is an Equal Opportunity/Affirmative Action Employer

Associate Medical Director

International Medical Department

To support the introduction of new products

Sterling Drug is a Fortune 300 leader in ethical pharmaceutical and health care products. With leadership comes responsibility; and accordingly, the efforts of our Medical Department are key to our success. Plans for continued expansion have created this challenging professional career opportunity for a highly competent medical doctor to assist in analyzing and planning medical activities.

Reporting to the Vice President of the Medical Department, your responsibilities will include writing the results of research studies to be submitted to Federal authorities for registration of new ethical pharmaceutical products; and writing, reviewing, and editing of scientific articles on clinical research conducted by our International Group for external and internal publication. You will also serve as principal medical contact between our New York headquarters and area field locations throughout the world, interfacing with marketing and executive management to determine strategies and assist in the selection of local medical personnel.

Qualifications include: specialty board certification as a physician; having had significant, original research published in recognized journals; superior academic credentials and administrative and communications skills (both verbal and written); plus an aptitude for becoming involved in a corporate/business environment. Pharmaceutical experience would be desirable, but is not necessary; and we will consider an academic background.



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DRUG INC.**
INTERNATIONAL GROUP

We offer a competitive salary, outstanding benefits, and an opportunity to make a large contribution to the advancement of pharmaceutical science on a global scale. To apply, send your "c.v." (no telephone calls or agency referrals please) with salary history/requirement, in strictest confidence to: **Todd McGovern, Department S, STERLING DRUG INC., International Group, 90 Park Avenue, New York, New York 10016**. We are an equal opportunity employer m/f/h.

POSITIONS OPEN

UNIVERSITY OF OKLAHOMA COLLEGE OF MEDICINE

Applicants are solicited for **FACULTY POSITIONS** in the following departments.

ANATOMICAL SCIENCES. (Number 401) **Instructor/adjunct assistant professor.** Wish to hire on a temporary basis for a 1-year period, an individual whose responsibilities will include teaching gross anatomy to medical, dental, and health-related students. This faculty member is expected to take an active part in graduate education and to carry out independent research projects. Ph.D. in anatomical sciences and teaching experience in gross anatomy are musts. Experience in research with electron microscopy and postdoctoral fellowship for 1 or 2 years are desirable. Closing date for application is 1 July 1982. (Number 402) **Instructor/adjunct assistant professor.** Wish to hire on a temporary basis, for a 1-year period, an individual whose responsibilities will include teaching microanatomy to medical, dental, and health-related students. This faculty member is expected to take an active part in graduate education and to carry out independent research projects. Ph.D. in anatomical sciences and teaching experience in microanatomy are musts. Experience in research with electron microscopy and postdoctoral fellowship for 1 or 2 years are desirable. Closing date for application is 1 July 1982.

Applicants should send curriculum vitae, identifying vacancy number for which they are applying, to: O. C. Coleman, Assistant Dean, College of Medicine, University of Oklahoma Health Sciences Center, P.O. Box 26901, Oklahoma City, Okla. 73190. We are an Equal Opportunity Employer.

PHARMACOLOGY FACULTY positions at the assistant professor level are available at the Morehouse School of Medicine associated with the Atlanta University Center. Candidates with an M.D. and/or Ph.D. in pharmacology or related disciplines with demonstrated evidence for establishing an independently funded research program should send their research goals, curriculum vitae, and three references to: Department of Pharmacology, 830 Westview Drive, SW, Atlanta, Ga. 30314. An Affirmative Action/Equal Opportunity Employer.

Scripps Institution of Oceanography invites applications for **TWO POSTDOCTORAL POSITIONS** in physical oceanography.

1) A position sponsored by the Institute of Geophysics and Planetary Physics to participate in research in the field of ocean acoustic monitoring (acoustic tomography) as applied to problems of ocean climate. Applicant should have a background in physical oceanography at the Ph.D. level or equivalent. Some experience in the analysis of long-range acoustic transmissions and their interpretation in terms of ocean characteristics is a strong asset.

2) A position sponsored by the Ocean Research Division to conduct research into the processes responsible for large-scale annual and interannual changes in the general circulation of the world's oceans. Expertise in large-scale geophysical fluid dynamics is required, with motivation directed toward the analysis and interpretation of global-scale upper ocean data sets now being collected at Scripps Institution for the study of short-term climate changes in the oceans.

Appointments for 1 or 2 years in the University of California system will be at the level of postgraduate research or assistant research, salary from \$19,848 to \$30,100, commensurate with qualifications. Private foundation funding limits awards to U.S. citizens. Please specify position you seek and submit résumé, including names of at least three references, before 30 June 1982 to: J. D. Frautschy, Deputy Director, A-010, Scripps Institution of Oceanography, University of California, San Diego, La Jolla, California 92093. Request position profile at the same address. An Equal Opportunity/Affirmative Action Employer.

POSTDOCTORAL POSITION available in laboratory studying the effects of calcium fluxes on neuromuscular transmission and the directional effects of neuronal growth factors on neurite extension. Background in tissue culture and micromanipulation is required. Salary of \$14,000, with a starting date of September 1982. Send statement of prior research and future research interests, curriculum vitae, and names and addresses of three references to: Dr. R. W. Gundersen, Biomedical Research Institute, University of Wisconsin-Parkside, Box 2000, Kenosha, Wis. 53141. University of Wisconsin-Parkside is an Equal Opportunity/Affirmative Action Employer.

POSITIONS OPEN

POSTDOCTORAL FELLOW/RESEARCH ASSOCIATE. Ph.D. in microbiology or biochemistry to study pathogenetic mechanisms; cell membrane biochemistry, cell surface analysis and adherence mechanisms, immune response. Send curriculum vitae and the names of three references to: Dr. I. van de Rijn, Associate Professor, Department of Microbiology and Immunology, Bowman Gray School of Medicine, 300 South Hawthorne Road, Winston-Salem, N.C. 27103.

POSTDOCTORAL POSITION open for 1 to 3 years to investigate the cell biology and membrane biochemistry of malaria parasites with major emphasis on ion transport processes of erythrocytic forms. Send curriculum vitae to: Ross Mikkelsen, Ph.D., Radiobiology Division, Therapeutic Radiology, Tufts New England Medical Center, 171 Harrison Avenue, Boston, Mass. 02111. An Equal Opportunity Employer, M/F.

POSTDOCTORAL POSITION to study DNA damage and repair in prokaryotic systems and human cells. Studies include mechanism of DNA damage, enzymology of DNA repair, and genetics and regulation of repair functions. Techniques include molecular cloning, in vitro mutagenesis, bacterial genetics, tissue culture, and enzyme purification. Send résumé and references to: Dr. Robb Moses, Department of Cell Biology, Baylor College of Medicine, Houston, Texas 77030. An Equal Opportunity Employer.

POSTDOCTORAL POSITION to join a team studying the organization, control, and interaction of behavioral and glucocorticoid rhythms. Experience with radioimmunoassay essential. Knowledge of biological rhythms desirable. Salary per NIH guidelines. Send curriculum vitae and two letters of recommendation to: Dr. B. H. Natelson or Dr. W. N. Tapp, Department of Neurosciences, University of Medicine and Dentistry—New Jersey Medical School, 88 Ross Street, East Orange, N.J. 07018. An Equal Opportunity/Affirmative Action Employer.

POSTDOCTORAL POSITION available August 1982 for research on various aspects of the migration and regulation of B cells in the mucosal immune system. Background in cellular immunology essential. Experience with hybridoma technology, T cell cloning, or lymphocyte migration highly desirable but not essential. Send résumé and names of three references immediately to: Dr. Julia Phillips-Quaglia, Department of Pathology, New York University (NYU) Medical Center, 550 First Avenue, New York, N.Y. 10016. NYU is an Equal Opportunity/Affirmative Action Employer.

POSTDOCTORAL POSITION available from September 1982 for a neurochemist experienced in immunological or cell culture techniques to study neurotransmitter localization in mammalian retina. Send curriculum vitae to: Dr. P. V. Sarthy, Department of Ophthalmology, HSB RJ-10, University of Washington, Seattle, Wash. 98195. An Affirmative Action/Equal Opportunity Employer.

POSTDOCTORAL POSITION

Available immediately, to study the molecular aspects of coordinate gene regulation in erythroid differentiation. The project involves mRNA cloning, RNA transcription, and isolation and characterization of chromosomal genes. Send curriculum vitae and names of three references to: Dr. P. Curtis, The Wistar Institute, 36th at Spruce Streets, Philadelphia, Pa. 19104. Equal Opportunity Employer.

BAYLOR COLLEGE OF MEDICINE DEPARTMENTS OF CELL BIOLOGY, NEUROLOGY AND THE PROGRAM IN NEUROSCIENCE POSTDOCTORAL RESEARCH ASSOCIATES

Postdoctoral positions available immediately for studies into the molecular biology of muscle gene expression. The study will involve the analysis of specific regulatory proteins to DNA sequences of developmental interest, cloning and sequencing of structural gene domains, and related in vitro transcription experiments.

Applicants should hold a Ph.D. degree with relevant experience in molecular biology or biochemistry. Salary is competitive with fringe benefits.

Send résumé and letters of recommendation to either: Dr. Henry F. Epstein, or Dr. Robert J. Schwartz, Program in Neuroscience, NB 302, The Neurosensory Center, Baylor College of Medicine, Houston, Texas 77030. An Equal Opportunity Employer.

POSITIONS OPEN

POSTDOCTORAL POSITION available immediately for research on psychobiological mechanisms of reinforcement and drug abuse. Background in behavioral pharmacology and neuropharmacology required. Experience with computers and electronic control desirable. Send curriculum vitae and names of three references to: Dr. Larry Stein, Chairman, Department of Pharmacology, College of Medicine, University of California, Irvine, Calif. 92717.

POSTDOCTORAL RESEARCH ASSOCIATE POSITION available immediately to study the molecular mechanism(s) utilized by mitochondrial inner membrane proteins to transport metabolites, as well as the biosynthetic and degradative pathways of these proteins. Special emphasis will be placed on the phosphate transport protein. Minimum salary: \$14,652, plus fringe benefits. Send curriculum vitae and two references to: Dr. Hartmut Wohlrab, Boston Biomedical Research Institute, 20 Staniford Street, Boston, Mass. 02114. Equal Opportunity/Affirmative Action Employer.

POSTDOCTORAL RESEARCH ASSOCIATE. A position is available to study DNA-binding proteins in *N. gonorrhoeae* as related to genetic transformation. Position available fall 1982. Experience in biochemistry or microbial genetics an asset. Send curriculum vitae and three letters of reference to: Dr. John Socca, Department of Biochemistry, The Johns Hopkins University, School of Hygiene and Public Health, 615 North Wolfe Street, Baltimore, Maryland 21205.

ALICE E. DOISY PROFESSOR AND CHAIRMAN EDWARD A. DOISY DEPARTMENT OF BIOCHEMISTRY ST. LOUIS UNIVERSITY SCHOOL OF MEDICINE

The St. Louis University School of Medicine invites applications for the position of Alice E. Doisy Professor and Chairman of the Edward A. Doisy Department of Biochemistry. We are particularly looking for a scientist with an outstanding record of accomplishments in research and a clear commitment to both medical and graduate education. The successful candidate will be responsible for the leadership of 19 tenure-track faculty dedicated to research, teaching, and service. Interested candidates should send curriculum vitae and the names of three references to:

Dr. Thomas C. Westfall, Chairman
Biochemistry Search Committee
Department of Pharmacology
St. Louis University School of Medicine
1402 South Grand Boulevard
St. Louis, Missouri 63104

Application deadline is 1 July 1982. St. Louis University is an Affirmative Action/Equal Opportunity Employer and will welcome applications from members of minority groups and women.

STATISTICIAN. Position at the instructor level. Ph.D. with strong mathematical background required. Experience with the design, management, and analysis of long-term epidemiological studies and clinical trials involving large number of subjects. Strong background in the estimation of multivariate survival functions from censored data. Demonstrated research potential in both theoretical and applied areas of biostatistics. Experience in teaching statistics to medical students. Experience in submitting scientific proposals for funding purposes. Computational skills in FORTRAN, SAS, BMDP, and IMSL. Responsibilities include supervision of systems analysts and close interaction with biomedical investigators, in addition to teaching biostatistics to medical students. Salary: \$22,300. Send curriculum vitae and references to: W. Healey, Boston Placement Office, Hurley Building, Boston, Mass. 02114, and refer to job reference number 2333.

TOXICOLOGISTS AND ENVIRONMENTAL HEALTH SCIENTISTS—Clement Associates, Inc., a leader in consulting services to industry and government, located in metropolitan Washington, D.C., is seeking M.S. and Ph.D. toxicologists and scientists in health-related subspecialties, especially including genetics and pharmacology. Work is principally on the application of toxicologic knowledge to public policy and regulatory evaluations. No laboratory work is involved. Diversified experience in the life sciences is desirable. Send résumé with salary requirements to: Marie Baumann, Director of Personnel, Clement Associates, Inc., 1515 Wilson Boulevard, Suite 700, Arlington, Va. 22209. We are an Equal Opportunity Employer.

Senior Information Scientist

Smith Kline & French Laboratories, an ethical pharmaceutical company, is seeking a Senior Information Scientist for our R & D Information Center.

The selected candidate will be required to: conduct manual and computerized literature and patent searches; supervise other information scientists; maintain current knowledge of information retrieval technology and recommend equipment/system changes; keep abreast of scientific aspects of ongoing S K & F projects.

Candidates should have a PhD in biochemistry, chemistry, pharmacy or law degree with BS in biomedical sciences; and industrial experience conducting on-line literature and patent searches. Supervisory and administrative experience highly desirable.

We offer an excellent opportunity for professional growth coupled with an inviting benefit package. If interested, please send resume to: Ms. Andrea Southall, SMITHKLINE BECKMAN CORPORATION, 1530 Spring Garden Street, Philadelphia, PA 19101.

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NATIONAL SCIENCE FOUNDATION DIRECTOR, DIVISION OF ELECTRICAL, COMPUTER AND SYSTEMS ENGINEERING

The National Science Foundation is seeking qualified applicants for the position of **Director, Division of Electrical, Computer and Systems Engineering** in the Directorate for Engineering. This is a Senior Executive Service position with a salary ranging from \$56,936 to \$59,119 (currently limited to \$58,500 per annum). The person selected will receive either a permanent, career appointment or a 2-year rotational appointment. Persons interested in a leave of absence from their current employment are encouraged to apply for the rotational appointment.

Duties of the position include managing a division responsible for the evaluation of proposals and award of research grants for the conduct of basic research in the areas of electrical engineering, computer engineering, systems theory, and operations research, quantum electronics, and science and technology to aid the handicapped. Incumbent also plans and implements research initiatives, determines funding requirements, balances program requirements, allocates resources, and supervises both professional and support staff.

Applicants should contact: **Margaret Cademartori (telephone: 202-357-7857)** to request announcement EPB 82-9 for a permanent appointment or announcement EPB 82-19 for a rotational appointment. Announcements contain qualification requirements and instructions concerning the supplemental narrative required with 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 82-9 or EPB 82-19). Application must be received by 11 June 1982

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POSITIONS OPEN

UNIVERSITY OF MARYLAND EASTERN SHORE PRINCESS ANNE, MARYLAND 21853 PROJECT COORDINATOR/ANALYST

Interested applicants must have a Ph.D. degree in psychology (with emphasis in physiological psychology or must be a graduate student in advanced degree status). Competence in human electrophysiology (EEG and EP), including data acquisition and analysis skills and the application of multivariate statistics is required. The ability to conduct high-quality research in areas of human nutrition, toxicology, and child development, as well as to participate in applied clinical programs, are necessary.

Send curriculum vitae with a description of research and teaching interests and names, addresses, and telephone numbers of three references to:

Dr. Robert Thatcher
Applied Neuroscience Laboratories
University of Maryland School of Medicine
10 South Pine Street
Baltimore, Maryland 21201

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UNIVERSITY OF MELBOURNE RESEARCH FELLOW GRADE 1 DEPARTMENT OF PHYSIOLOGY

Graduates interested to work in the field of developmental haematology are invited to apply for the position of Research Fellow Grade 1 in the laboratory of Dr. Neil Williams, Department of Physiology, University of Melbourne. Applicants should have attained or be completing a Ph.D. degree or equivalent qualification.

Research would involve the study of megakaryocyte development from precursor cells, using animal models and cell culture techniques. Expertise in haematology, immunology, physiology, or biochemistry is essential. The laboratory is within a multidisciplinary department and in close proximity to other excellent research centres in related fields.

The position is for 2 years and commences in January 1983, with a starting salary of A\$18,068 within the range A\$18,068 to A\$20,699.

Enquiries regarding this position should be directed to: Dr. Neil Williams, Department of Physiology, University of Melbourne, Parkville, Victoria 3052, Australia; telephone: 341-5834.

Further information regarding details of application procedure and conditions of appointment is available from the Staff Officer. Applications, referring to Position Number 536 100, should be addressed to: Staff Officer, University of Melbourne, Parkville, Victoria 3052, Australia, and close on 1 July 1982.

ALBERT EINSTEIN COLLEGE OF MEDICINE
Applications are invited for RESEARCH POSITIONS in studies of the molecular biology of chemically induced leukemia in mice. A funded program grant (F. Lilly, D. Dina, L. Leinwand, and G. Childs, principal investigators) supports the positions starting at the postdoctoral or research associate level. Salary will be commensurate with experience in the areas of RNA tumor viruses, tumor biology, chemical carcinogenesis, and/or recombinant DNA technology. Apply with curriculum vitae, brief summary of experience, and letters of recommendation to: Dr. Frank Lilly, Chairman, Genetics Department, Albert Einstein College of Medicine, Bronx, N.Y. 10461. This College is an Equal Opportunity/Affirmative Action Employer.

VETERINARY CLINICAL PHARMACOLOGIST, Tufts University Schools of Veterinary Medicine, Medicine, Dental Medicine, and Sackler School of Graduate Biomedical Sciences.

Tufts University seeks an individual to establish a research program in veterinary clinical pharmacology and to accept major responsibility in teaching students in the Veterinary, Medical, and Dental Schools. Through the School of Veterinary Medicine, access will be available to excellent small animal and large animal hospitals. Potential exists for interaction with human clinical pharmacology and basic science groups. Candidate will be expected to develop vigorous funded research program. Apply to:

Dr. B. David Stollar
Veterinary Pharmacology Search Committee
Department of Biochemistry and Pharmacology
Tufts University
136 Harrison Avenue
Boston, Mass. 02111

Tufts University is an Equal Opportunity/Affirmative Action Employer.

POSITIONS OPEN

RESEARCH ASSOCIATES, with Ph.D. in biochemistry, cell, or molecular biology. Positions are available immediately to study the role of cyclic AMP-dependent phosphorylation in hormonal regulation of gluconeogenesis and transport in kidney. These processes will be examined with purified enzymes and isolated epithelial cells. Other positions are available to study the biosynthesis and secretion of cell surface antigens in tumor cells and acidic mucin glycoproteins in respiratory tissue. These studies will involve carbohydrate structural analysis and gene regulation in isolated cell systems using current DNA technology. Salary: \$16,000.

Send résumé and references to:

Dr. Joseph Mendicino
Department of Biochemistry
University of Georgia
Athens, Ga. 30602

STAFF OFFICER, ARMY RESEARCH

The National Research Council seeks applicants for the position of staff officer for the Board on Army Science and Technology. Responsibilities include assisting in the design and operation of free workshops as well as helping select speakers and preparing reports. The staff officer will help organize other studies, constitute committees, and brief the Board. Applicants must have an M.A. or higher degree in systems engineering, operations research, or a related field; also 7 to 10 years of experience in systems design, systems engineering, operations research, or related planning activities in private industry or university. Some understanding of the military system is desirable. Send résumé to: Dennis F. Miller, National Research Council, JH 738, 2101 Constitution Avenue, NW, Washington, D.C. 20418. An Equal Opportunity Employer.

TERRESTRIAL ECOLOGISTS

The Center for Energy and Environment Research (CEER) is soliciting applications for scientists, including core staff in the following areas:

- **Plant community ecologist** with interaction in vegetation structure and plant-animal interactions. Tropical experience required.
- **Population ecologist** with interest in plant-animal and lower trophic level dynamics (insects and other invertebrates primarily).
- **Environmental chemist** to be responsible for analyses of biota, soil, and water.

Existing studies are federally and state-funded programs at the University of Puerto Rico and focus on the structure and function of the tropical rainforest in relation to the effects of development by man.

The type of position and salary will be commensurate with training and experience. Serious candidates should contact: Dr. Laurence J. Tilly, CEER/UPR, College Station, Mayaguez, Puerto Rico 00706, with a letter of professional interest, curriculum vitae, and names of at least three referees qualified to comment on their professional capabilities.

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TISSUE CULTURE TECHNOLOGIST—Immediate opening in a biochemical genetics laboratory for individuals with an M.Sc. degree in biochemistry, microbiology, or related fields or B.Sc. with experience in tissue culture. Responsibilities include setting up and culturing of fibroblast cell lines and performing of assays for biochemical diagnosis of genetic metabolic diseases. There is also opportunity for doing independent research. Interested individuals please send current résumé and names of references to: Dr. Wai-Yee Chan, Department of Pediatrics, Oklahoma Children's Memorial Hospital, 940 NE 13 Street, Oklahoma City, Oklahoma 73190.

FELLOWSHIPS

POSTDOCTORAL FELLOWSHIPS IN TERATOLOGY available 1 July 1982 in NIEHS-funded Training Grant in Teratology at the University of Cincinnati and Children's Hospital Medical Center. Research includes molecular basis of environmental agents and drugs that cause congenital malformations such as cleft palate, limb anomalies, and neural tube defects. Genetics and epidemiology of human congenital malformations. In vitro assays in teratology. Role of biotransformation and interactions in teratogenesis. Send résumé, a short description of research experience, and three letters of reference to: Dr. Ernest F. Zimmerman, Institute for Developmental Research, Children's Hospital Medical Center, Cincinnati, Ohio 45229. Equal Opportunity/Affirmative Action Employer.

SYMPOSIUM

ISOLATION, CHARACTERIZATION, AND USE OF HEPATOCYTES, 23 and 24 October 1982, Indianapolis, Ind. This will be an international symposium with oral and poster presentations on methodological aspects of preparing hepatocytes of good physiological quality, studies with primary cultures, hepatocytes from various species, and new results obtained with hepatocytes. Information from: Patricia Jenkins, Symposium Secretary, Department of Biochemistry, Indiana University School of Medicine, Indianapolis, Ind. 46223.

PROGRAM

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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.

TRAINEESHIPS

POSTDOCTORAL TRAINING IN ELECTRON OPTICAL-CARDIOVASCULAR RESEARCH PENNSYLVANIA MUSCLE INSTITUTE UNIVERSITY OF PENNSYLVANIA

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STAFF: A. P. Somlyo (director), C. Franzini-Armstrong, T. Frey, J. Haselgrove, J. S. Leigh, L. D. Peachey, A. Scarpa, H. Shuman, and A. V. Somlyo.

ELIGIBILITY: U.S. citizens or permanent residents with an M.D. or Ph.D. in basic biological sciences, physics, or chemistry and background in conventional electron microscopy or spectroscopy.

FINANCIAL SUPPORT: National Heart, Lung and Blood Institute Training Grant.

APPLICATION: Send curriculum vitae, bibliography, and two letters of reference to: A. P. Somlyo, M.D., Pennsylvania Muscle Institute, University of Pennsylvania School of Medicine, B42 Anatomy-Chemistry Building/G3, Philadelphia, Pa. 19104.

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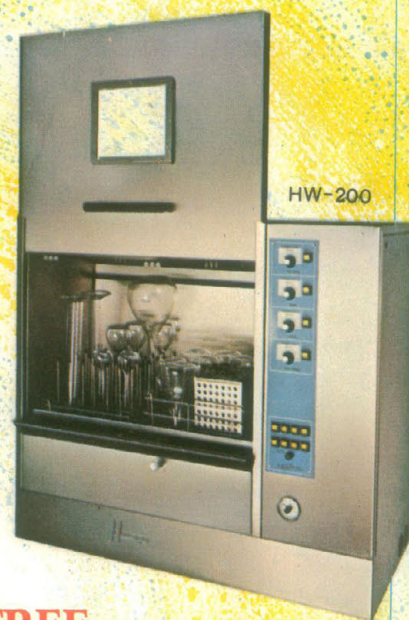
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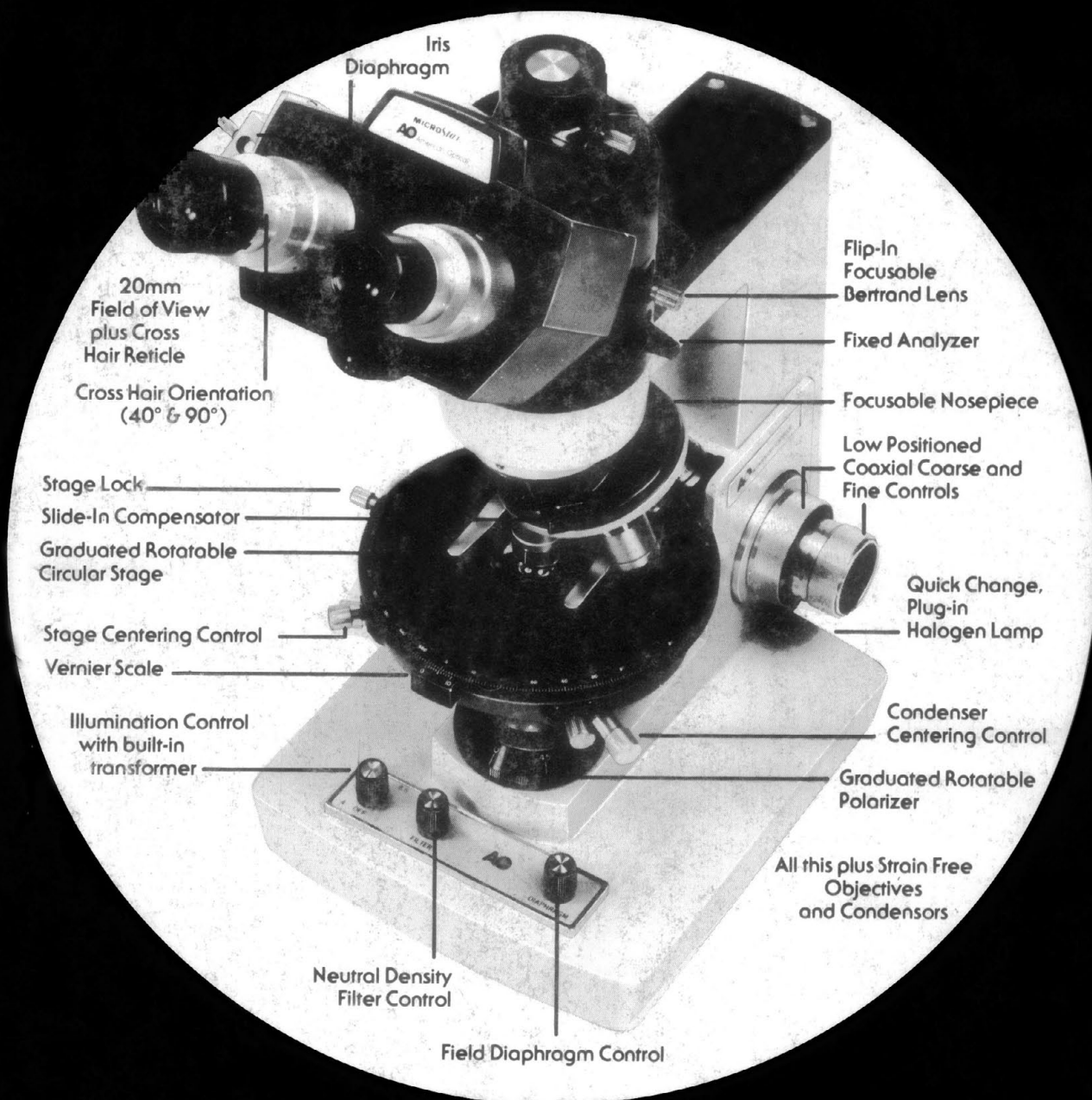
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