

the interstellar gas, and the depletion of some of these elements onto interstellar dust grains was established. The achievements of Copernicus were many; Spitzer records several of them and carefully notes their ramifications.

The book is written for those familiar with physical principles who seek an overview of an important field of research. The presentation is clear and may be read without reference to mathematical representations (which are included, where appropriate, in parenthetical statements). The most delightful aspect of the book is that it communicates the excitement of scientific research: questions posed, estimates and theories suggested, and finally answers sought. The book ends, as it must, not with a compendium of "answers" but with a new, more sophisticated way of asking the questions.

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Colonial Invertebrates

Recent and Fossil Bryozoa. Papers from a conference, Durham, England, Sept. 1980. GILBERT P. LARWOOD and CLAUS NIELSEN, Eds. Olsen and Olsen, Fredensborg, Denmark, 1981. viii, 334 pp., illus. Paper, \$55.

Bryozoologists have been getting together for mutual stimulation and enlightenment triennially since 1968. This volume is the fifth report of their meetings. Although the original intent of the gatherings was to share ideas and talk about current research, the proceedings volumes have contained along with papers that do this a preponderance of completed research reports that normally would be published in journals. The happy result is that biologists, including invertebrate zoologists, paleontologists, and other bryozoologists, can obtain in this volume a cross-section of the ideas, research trends, and the types of information found in the study of Bryozoa today.

Among the 35 papers presented I found the ecological studies of competition between encrusting colonies of particular interest. The "war games" school of J. Jackson and L. Buss and their associates is providing broadly applicable insights into competition for space and food in sessile communities. Factors such as angle of encounter (frontal, oblique, and flanking attacks), ability to scale defenses (frontal budding), to lay

siege (starve out the opponent), and to detect and retreat, sacrifice of rear guard but gain in recruits (colony fission), and David and Goliath (zooid size) strategies are some of those shown to be important by Buss, Jackson and J. Winston, and S. Lidgard. As if the sessile combatants did not have enough problems, predators such as dorid nudibranchs apparently have highly specialized feeding requirements and pick out a small number of bryozoan prey species (S. Chadwick and J. Thorpe).

Two patterns of polypide (tentacle and gut) generation-degeneration examined by P. Dyrinda are considered in relation to colony growth and sexual reproduction. Cyclic regeneration of these parts allows reutilization of zooids, extending zooid active life and increasing larval productivity, in contrast to inefficient nonregenerative patterns. Dyrinda also describes androgynoid and gynozoid seasonal development and for the first time the presence of a nurse cell associated with oogenesis.

Of general interest is an essay on growth and reproduction in colonial animals by J. Ryland. Ryland observes that colonial invertebrates tend to have short-lived larvae, implying that their prime role is site selection and not dispersal and that, like the colonial habit itself, this is adaptive to adult life in stable ecosystems.

Several evolutionary themes deserve special note. S. Mundy *et al.* suggest that the horseshoe-shaped lophophore and epistome of phylactolaemate bryozoans are adaptive features correlated with large zooid size. This interpretation and the lack of pre-Tertiary statoblasts lead them to propose a late origin of the phylactolaemates from a phoronid ancestor, an independent earlier derivation of marine bryozoans (also from phoronids), and thus a polyphyletic origin for the phylum. This is supported by comparative ultrastructural studies of spermatids and spermatozoa by A. Franzén. P. Taylor presents a well-considered hypothesis that the spectacular phases of bryozoan diversification during the Ordovician and Cretaceous were related to the evolution of new modes of tentacle eversion. J. Thorpe and J. Beardmore find an unusually low level of genetic variation at 393 enzyme loci; only 53 of the loci are polymorphic. Thorpe and Beardmore relate this to a high selective pressure to optimize metabolic efficiency and growth rate, important features in organisms whose fecundity is dependent on colony size.

Other themes of investigation with Recent Bryozoa are development of rooted

colony forms (P. Cook and P. Chimonides), early colony growth (R. Wass *et al.*), regional faunas (A. Occhipinti Ambrogi and J.-L. d'Hondt on that of Italy; V. Gontar on that of the Kurile Islands), heavy metal uptake (S. Mundy and J. Soule and D. Soule), and body wall innervation (G. Lutaud).

Paleontological studies also show a diversity of interests. The first known fossil bryozoan-seagrass association is reported by E. Voigt from his remarkable specimens from the Upper Cretaceous Maastrichtian localities in the Netherlands. Other topics include intraspecific competition in Devonian fistuliporid and trepostome bryozoans (F. Bigey), colony growth forms (F. McKinney with R. Wass and T. Stedman, G. Brown and E. Daly, G. Illies), global Paleozoic biogeography (C. Ross and J. Ross), stratigraphic, paleofacies, and paleogeographical studies from England (P. Balson, P. Taylor *et al.*), Baltoscandia (K. Brood), eastern Europe (V. Ghiurca, N. Mongereau, N. Varva), Japan (T. Hayami), China (J. Yang and L. Lu), and California (R. Cuffey *et al.*). Cretaceous cribrimorphs receive taxonomic treatment by G. Larwood.

Twenty-one abstracts of other papers presented at the conference are also included in the volume. A number of these papers are now published in full elsewhere.

Finally, I nominate Dyrinda's figure 3, on growth and reproduction relationships, and Taylor's figure 4, of stylized, tentacle eversion diagrams, for inclusion in invertebrate zoology textbooks.

FRANK J. MATURO, JR.

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University of Florida,
Gainesville 32611*

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(Continued on page 272)

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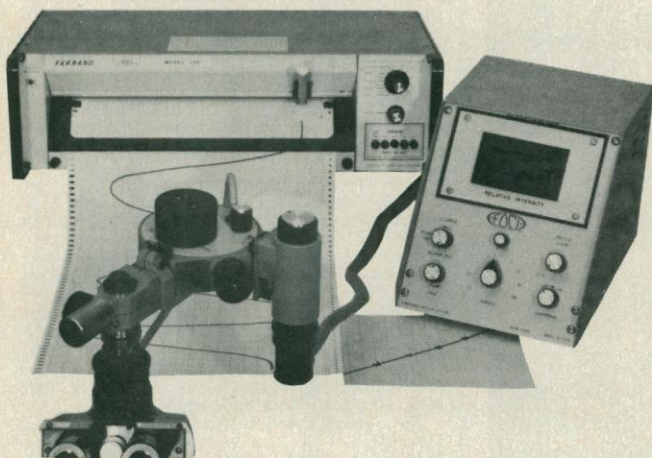
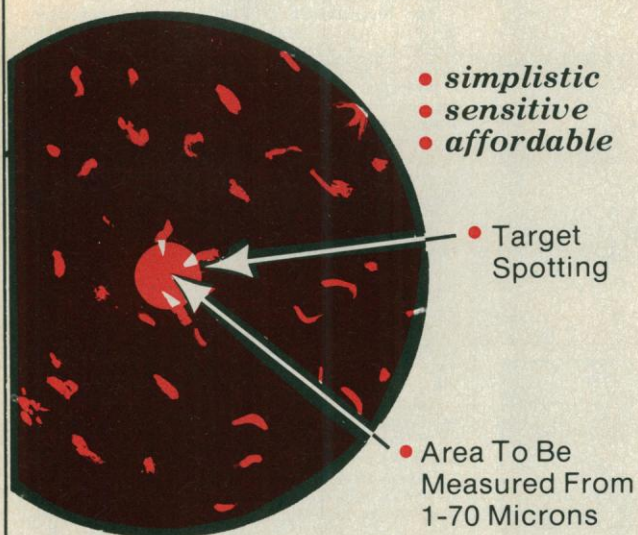
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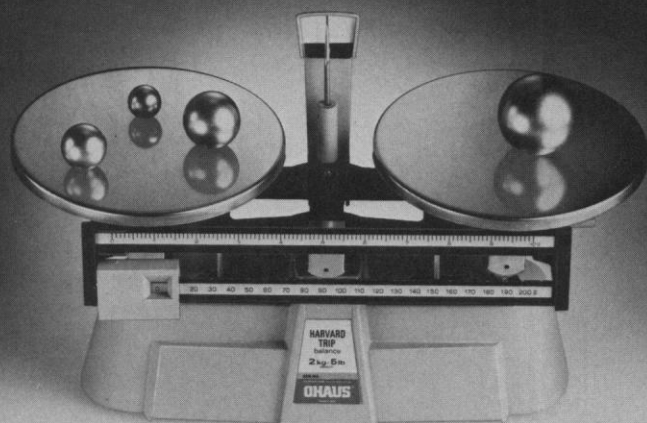
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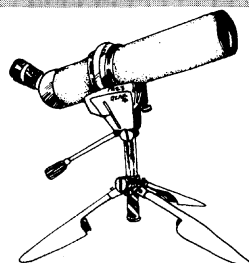
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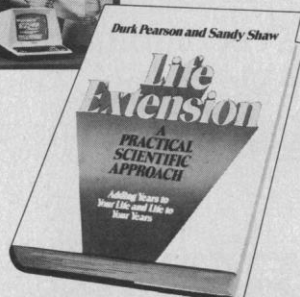
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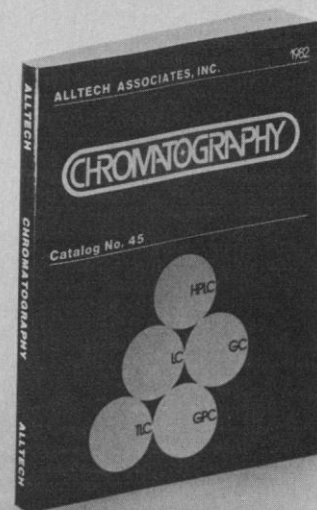
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Thirst. Barbara J. Rolls and Edmund T. Rolls. Cambridge University Press, New York, 1982. xiv, 194 pp., illus. Cloth, \$29.50; paper, \$10.95. Problems in the Behavioural Sciences.

This Is Reading. Frank G. Jennings. Plenum, New York, 1982. xviii, 196 pp. Cloth, \$19.50; paper, \$9.95. Reprint of the 1965 edition.

Three Dimensional Microanatomy of Cells and Tissue Surfaces. Proceedings of a symposium, Mexico City, Aug. 1980. Delmas J. Allen, Pietro M. Motta, and Liberato J. A. DiDio, Eds. Elsevier/North-Holland, New York, 1981. x, 372 pp., illus. \$65.

Titanium and Titanium Alloys. Scientific and Technological Aspects. Proceedings of a conference, Moscow, May 1976. J. C. Williams and A. F. Belov, Eds. Plenum, New York, 1982. 3 vols. xi, 2468 pp., illus. \$195. The Metallurgical Society of AIME Proceedings.

Uranus and the Outer Planets. Proceedings of a colloquium, Bath, England, Apr. 1981. Garry Hunt, Ed. Cambridge University Press, New York, 1982. x, 308 pp., illus., \$34.50.

Virus Persistence. Papers from a symposium, Cambridge, England, Mar. 1982. B. W. J. Mahy, A. C. Minson, and G. K. Darby, Eds. Published for the Society for General Microbiology by Cambridge University Press, New York, 1982. x, 300 pp., illus. \$49.50. Symposia of the Society for General Microbiology, 33.

Personnel Placement

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

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20 August issue (mailed 13 August): **30 July**
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Box (give number)
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1515 Massachusetts Avenue, NW
Washington, D.C. 20005

POSITIONS WANTED

Biochemist/Tissue Culturist. M.S. 1972, 10 years of research experience in electrophoresis, column chromatography, tissue culture, serum proteins, serum-free media, hormones, growth factors. Several publications; seeking position in industry or academic/research institution in New Jersey area. Box 182, SCIENCE. 7/16, 23, 30

Biochemist. Ph.D. 1978. Postdoctoral experience. Broad academic background. Extensive experience in protein and lipid biochemistry. Hormonal regulation of CNS myelinogenesis and endocrine steroidogenesis. Experience in glycolipids, gangliosides, cyclic nucleotides, cell culture, radioimmunoassay, radioreceptor assay, poly A(+)RNA isolation and translation, TLC, GLC, HPLC, electrophoresis, isoelectric focusing. Teaching experience. Publications. Seeking permanent position in research and/or teaching or industry with opportunity for professional growth and career advancement. Box 189, SCIENCE. X

Developmental Botanist. Ph.D. 1979. Broad research interests and experience in morphogenesis and cytology of vascular plants, including cell cycle kinetics, plant growth regulator effects, and root development. Seeks industrial academic position on West Coast. Box 184, SCIENCE. X

Environmental Scientist with 15 years of experience managing and conducting international natural history studies and ecological baseline inventories; more than 40 publications. Also, 8 years of experience, each, in environmental consulting and university-level teaching. Expertise: systematics/ecology, ornithology, island biogeography, wetlands, endangered species, and scientific editing. Education: M.A. plus 3½ years of additional graduate studies. Desires ecological/biological position with governmental agency, private industry, university, or museum. B. Amerson, 4020 Brookhaven Club Drive, Apartment 1520, Dallas, Texas 75234. Telephone: 214-241-1726, 233-8261. Available August. X

POSITIONS WANTED

Business Manager/Research Administrator—M.B.A. (finance, 1982) plus Ph.D. (microbiology, 1973). Seeks business position in academic science department or industrial research/development. Ten years in academic biological/biochemical laboratories, plus 6 years of college teaching. Box 183, SCIENCE. X

Coatings/Color Scientist. Extensive experience in chemistry of building products and color science. Expert on water borne systems, color matching and control. Box 190, SCIENCE. X

Experimental Psychologist. Ph.D. Desires teaching position at small college or research position in brain disorder (for example, alcoholism, trauma, psychosis); 17 years of experience; 12 publications. R. J. Vetter, telephone: 913-825-0835. X

Materials Engineer: nonferrous and precious metal research and testing for technical and electronic applications. Wrought metals and bimetals, chemical processes, and surface properties. Box 191, SCIENCE. X

Microbiologist. B.S. Seeks industrial position in R & D or QC. Skilled in development of new selective/differential culture media for pathogenic bacteria. Experience in bacterial taxonomy, culture preservation, antimicrobial assays. QC procedures, GMP's, and handling and disposing of hazardous biological and chemical wastes. Presently with company manufacturing rapid microbial identification system. Box 192, SCIENCE. 7/16, 23

Neurochemistry. M.S. 1980. Seeks challenging position at industry, government, or university level. Experience in wide range of receptor, enzyme, small molecule, and electrophysiological studies of biogenic amines in CNS. Box 178, SCIENCE. X

Zoologist/Oceanographer. M.S. (1972). Self-motivated individual seeks research-oriented position in East or West Coast location. Broad background includes: crustacean systematics, 16 publications, and proven skills as technical and proposal writer; oceanographic cruises with experience in planning and directing successful deep-sea programs and familiarity with most benthic sampling devices; benthic sample sorting and animal identification; computer programming in higher level languages; some teaching experience; small boat operation and maintenance; experienced diver; microphotography; scientific illustration. Box 193, SCIENCE. X

POSITIONS OPEN

ASSISTANT/ASSOCIATE PROFESSOR—MICROBIOLOGY

The Department of Biochemistry, Microbiology, Molecular and Cell Biology of The Pennsylvania State University invites applications for a tenure-track position at the assistant or associate professor level. Candidates should be trained in bacteriology (microbiology), have postdoctoral experience, and be capable of developing a competitive research program. Individuals with research interests in microbial toxins are encouraged to apply. Applications should include curriculum vitae, copies of recent publications, a brief but detailed description of research goals, and the names of four individuals from whom we may request letters of recommendation. Applications will be accepted until 1 September 1982, or until the position is filled thereafter. Send to: **Dr. R. W. Bernlohr, Department of Biochemistry, Microbiology, Molecular and Cell Biology, The Pennsylvania State University, 108B Althouse Laboratory, University Park, Pennsylvania 16802.**

An Affirmative Action/Equal Opportunity Employer

READVERTISED ASSISTANT PROFESSOR OF MICROBIOLOGY

The West Virginia School of Osteopathic Medicine (WVSOM) has an opening for a tenure-track position as assistant professor of microbiology starting no later than 1 January 1983. Responsibilities include teaching immunology and parasitology to medical students. Review of applications will begin 15 August and continue until the position is filled. (The development of a research program is encouraged.) Submit curriculum vitae, transcripts, and three letters of recommendation to: **Elizabeth Blatt, Ph.D., Associate Dean for Basic Sciences, West Virginia School of Osteopathic Medicine, 400 North Lee Street, Lewisburg, West Virginia 24901.**

WVSOM is an Affirmative Action/Equal Opportunity Employer.

POSITIONS OPEN

ANATOMY—NEUROSCIENCE

The Department of Anatomy, University of Rochester School of Medicine, anticipates filling several faculty positions during the 1982 and 1983 academic years. We are interested in scientists whose research interests and accomplishments provide evidence of independent growth as well as group interactions especially for individuals at the more senior ranks. Major research emphasis in the department is in neurobiology with particular program focuses on central endocrine neurons, aging, transplantation, behavioral teratology, development, and transmitter interactions. We would prefer to add diversity in general areas including vision, plasticity, receptor localization, electrical properties, synaptogenesis, behavior, and cell—molecular biology, as well as building additional strength in certain of the existing areas of expertise. Teaching responsibility will reside in one of our medical school courses and in the training of pre- and postdoctoral students. Rank and salary will be commensurate with accomplishments. Please send curriculum vitae, representative publications, and a list of three references to:

Dr. John R. Sladek, Jr., Professor and Chairman
Department of Anatomy—Box 603
University of Rochester School of
Medicine and Dentistry
601 Elmwood Avenue
Rochester, New York 14642

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

ASSISTANT PROFESSOR. Applications are invited for a position at the level of assistant professor (tenure-track) in the Department of Chemistry at Stanford University in the general area of organic chemistry. Applicants must be strongly motivated toward research and have a commitment to teaching undergraduates as well as graduates. In applying, send curriculum vitae, list of publications, and a brief statement of research interests (three pages or less), and, in addition, have three letters of recommendation sent to: **Professor John I. Brauman, Chairman, Department of Chemistry, Stanford University, Stanford, California 94305.** *Stanford is committed to Equal Opportunity through Affirmative Action in employment, and we are especially eager to identify minority persons and women with appropriate qualifications.* The deadline for receipt of applications is 15 October 1982.

THE WEIZMANN INSTITUTE OF SCIENCE

is pleased to announce the availability of the **CHARLES H. REVSON CAREER DEVELOPMENT CHAIRS.**

The Revson Chairs are intended for promising scientists who are eligible for appointment as senior scientists at the Weizmann Institute.

The Revson Chairs are intended for either scientists who reside in Israel or for those who are considering making their residence in that country.

The appointment for Revson Career Development Chairs are for 3 years. Appointees found suitable at the end of this period will be invited to continue their employment as permanent members of the Weizmann Institute's scientific staff.

Application forms and further information are available from:
The Charles H. Revson Foundation Program
c/o The Academic Secretary
Weizmann Institute of Science
Rehovot 76100, Israel

FACULTY POSITION, ORGANIC CHEMISTRY. Applications are invited for a tenured senior appointment in the Department of Chemistry at Stanford University. Applicants must have outstanding research credentials in the general area of organic chemistry and a strong commitment to teaching undergraduates as well as graduates. In applying, send curriculum vitae and bibliography to: **Professor J. I. Brauman, Department of Chemistry, Stanford University, Stanford, California 94305.** *Stanford is committed to Equal Opportunity through Affirmative Action in employment and we are especially eager to identify women and minority persons with appropriate qualifications.* Applications should be received by 15 October 1982.

POSITIONS OPEN

ASSISTANT PROFESSOR position to begin 1 September 1982. Ph.D. in immunogenetics and minimum of 3 years of postdoctoral research experience in immunogenetics required. Perform research in immunobiology, specifically in human immune responses, toward possible immune manipulation in certain disease states; research to include cloning of human T cells, study of human T cells and how they may be governed by genetically determined products of the major histocompatibility complex. Teaching responsibilities to include relating theory and practice to graduate students and postdoctorates; participation in coursework presentations. Salary range: \$21,132 to \$22,000 per year. Send résumé (to be received no later than 31 July 1982) to: **Dr. M. Widmer, Immunobiology Research Center, Laboratory Medicine and Pathology, Box 724 Mayo, University of Minnesota, Minneapolis, Minn. 55455.** *The University of Minnesota is an Affirmative Action Employer and specifically invites and encourages applications from women and minorities.*

The Departments of Biochemistry and Pharmacology invite applications from qualified persons for a joint tenure-track appointment at the level of **ASSISTANT PROFESSOR.** The individual is expected to develop a strong and creative research program in the application of basic techniques of recombinant DNA to problems in eukaryotic molecular biology. Teaching some aspect of biochemistry and/or pharmacology also will be required. Please send curriculum vitae, bibliography, and three letters of reference to: **Dr. Michael J. Peach, Department of Pharmacology, Box 448, University of Virginia School of Medicine, Charlottesville, Virginia 22908.** *University of Virginia is an Equal Opportunity/Affirmative Action Employer.*

ASSISTANT PROFESSOR OF BIOLOGY (SEARCH REOPENED)

A full-time, tenure-track faculty position opening in the Science Division. Teaching advanced biology courses including biochemistry and introductory chemistry courses as assigned on a rotation basis in the area's department. Also would manage the Medical Technology Program offered by the college. A Ph.D. in cell biology/biochemistry, including a significant background in chemistry, is required and teaching experience is preferred. Appointment date will be January 1983. Send letter of application, detailed résumé, and names of three references by 30 September 1982. Please send all materials to:

Dianna B. Lammert
Director of Personnel
Maryville College—St. Louis
13550 Conway Road
St. Louis, Missouri 63141

Affirmative Action/Equal Opportunity Employer

ASSISTANT PROFESSOR—VIROLOGIST. Duties include teaching virology to undergraduates, graduates, and medical students. Successful candidate will have at least 2 years of postdoctoral experience and ability to mount an independent research program competitive for outside funding. Send applications to: **Chairperson, Virology Search Committee, Department of Microbiology, Michigan State University, East Lansing, Mich. 48824-1101.** *An Affirmative Action/Equal Opportunity Institution.*

BIOCHEMIST/POSTDOCTORAL FELLOW. Excellent opportunity to study carcinogen metabolism in human tissues. The metabolic activation and detoxification of polynuclear aromatic hydrocarbons and N-nitrosamines will be compared in oral cavity tissues from patients with differing nutritional status. Submit curriculum vitae and two letters of recommendation to: **Dr. Stephen S. Hecht, Chief, Division of Chemical Carcinogenesis, American Health Foundation, Naylor Dana Institute, 1 Dana Road, Valhalla, N.Y. 10595.** *Equal Opportunity Employer, M/F/H.*

BIOCHEMIST Ph.D., faculty position in Department of Pediatrics with joint appointment in Biochemistry. This position will entail work with lung secretions and mucin components in these secretions. Overall program objective will be to define regulation and structure-function relationships of lung mucins as related to chronic lung disease. Experience in structure and synthesis of glycoproteins, preferably mucin-type glycoproteins required. Must have proven ability for competitive research funding and excellence in teaching. Women and minorities are encouraged to apply. Send curriculum vitae and three references by 13 August 1982 to: **A. M. Collier, M.D., Department of Pediatrics, University of North Carolina School of Medicine—229H, Chapel Hill, N.C. 27514.** *An Equal Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

ASSISTANT PROFESSOR OF PEDIATRICS AND MICROBIOLOGY/IMMUNOLOGY to begin on 1 September 1982. Ph.D. with training and expertise in surface immunofluorescence and natural resistance in tumor immunology. Tenure-track position. Salary: \$28,500. Initial seed money for research provided.

Applicants should send current curriculum vitae or résumé to: **Thomas D. Miale, M.D., Head, Division of Hematology/Oncology, c/o Dharmapuri Vidyasagar, M.D., Head, Department of Pediatrics, University of Illinois, 840 South Wood Street, Chicago, Illinois 60612.**

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

BIOENERGY PROJECT MANAGER

The New Mexico Solar Energy Institute at New Mexico State University has a position available for a bioenergy project manager. The applicant should have a Ph.D. or equivalent in field related to biomass production—agricultural background desired. At least 3 years of experience with aquatic biomass systems in addition to a broad range of successful research experience and a strong interest in seeking ways to use biomass-captured solar energy to reduce New Mexico's use of fossil fuels and petrochemicals. The applicant must demonstrate excellence in research and have the capability to manage large, interdisciplinary projects which are staffed with researchers from various academic colleges and departments, as well as from industry. Responsibilities would include development of a program and goals encompassing the range from photosynthetic capture to utilization of biomass, define projects to achieve the goals, identify funding sources, and write proposals to acquire additional funds for projects. Salary is negotiable. Application and three references should be sent to: **Dr. Harry Zwiibel, Director, New Mexico Solar Energy Institute, Box 3SOL, Las Cruces, New Mexico 88003,** by 15 August 1982. *New Mexico State University is an Equal Opportunity/Affirmative Action Employer.*

BIOTECHNOLOGIST. Martin Marietta Laboratories, Biosciences Department, has an opening in fermentation technology. Initial emphasis will be on bench scale R & D rather than large scale processes. New team member will conduct research in biological production of chemicals as well as interact with other scientists in an interdisciplinary approach to novel applications of fermentation processes. Advanced degree preferred.

We are the corporate R & D laboratories for a multi-industry company with competitive salaries and excellent benefits. Send résumé to: **Monica C. Ballard, MARTIN MARIETTA LABORATORIES, 1450 South Rolling Road, Baltimore, Md. 21227.** *Equal Opportunity Employer, M/F.*

CHAIRMAN, DEPARTMENT OF ANATOMY COLLEGE OF MEDICINE UNIVERSITY OF TENNESSEE CENTER FOR THE HEALTH SCIENCES SEARCH REOPENED

The University of Tennessee College of Medicine has reopened its search for a new chairman of its Department of Anatomy. In addition to creative leadership abilities, the ideal candidate should have: (i) significant and continuing research achievements, (ii) an appropriate background in the anatomical sciences, (iii) commitment to excellence in teaching at the professional and graduate and postgraduate levels, and (iv) academic administrative experience. Continuation of an active research program with extramural support is expected; ability to interact effectively with both preclinical and clinical colleagues is essential. The department's current faculty members, who number over 20, have diverse research interests in neurobiology, reproductive and developmental biology, endocrinology, and other aspects of cell biology. The new chairman should continue the development of a department with strong research programs in several areas but is expected to maintain the current highly respected teaching programs. New faculty openings, as well as replacements for faculty approaching retirement, are expected to provide excellent growth potential over the next several years. Nominations or applications should include curriculum vitae and the names of three or more individuals who will provide references on request, and should be sent by 20 August 1982 to: **Dr. Robert E. Taylor, Jr., Chairman, Anatomy Search Committee, University of Tennessee Center for the Health Sciences, 800 Madison Avenue, Memphis, Tennessee 38163.** *An Equal Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

UNIVERSITY OF BRITISH COLUMBIA DEPARTMENT OF OCEANOGRAPHY

Applications are invited for a 12-month position, available 1 January 1983, at the beginning assistant professor level in the Department of Oceanography. Of primary interest is a person having training in one of the following areas: (i) marine microbiology (heterotrophic production, microbial ecology), (ii) benthic processes (chemical, physical, and biological interactions in the benthic boundary layer), or (iii) marine sedimentology/geochemistry (sedimentary processes, isotopes). However, applications submitted by qualified persons in any oceanographic specialty will also be considered. Candidates should have a Ph.D. qualification and relevant postdoctoral experience and will be expected to help establish and to teach in a new combined undergraduate programme in oceanography.

In accordance with Canadian immigration requirements, the advertisement is directed to Canadian citizens and permanent residents. Closing date for applications is 30 September 1982. Submit curriculum vitae and the names and addresses of three referees to:

Dr. S. E. Calvert, Head
Department of Oceanography
University of British Columbia
6270 University Boulevard
Vancouver, British Columbia, Canada V6T 1W5

Embryologist—Cell Biologist—Zoologist. Temporary assistant professor, 20 September 1982 to 10 June 1983. Ph.D. required; teaching experience desirable. One course per quarter: embryology, introductory cell biology, and zoology, also co-teach developmental biology one quarter. Curriculum vitae, transcripts, and three letters of recommendation by 16 August to: Zoology, University of Montana, Missoula, Montana 59812. *The University of Montana is an Equal Opportunity Employer.*

FACULTY POSITIONS IN BASIC AND CLINICAL SCIENCE RELATED TO DENTISTRY. Candidates holding a Ph.D. or equivalent qualification who are capable of carrying out independent research in an appropriate discipline are invited to apply. Dental training and a knowledge of French would be an advantage. Applications should be sent to: Dr. James P. Lund, Assistant Dean for Research, Faculté de médecine dentaire, Université de Montréal, C.P. 6209 Succursale A, Montréal, Québec, Canada H3C 3T9; telephone: 514-343-7815.

University of Michigan Medical School, Department of Surgery, in the Section of Emergency Services, has two openings for **FACULTY POSITIONS** in leading Midwest university hospital. Candidates should have an M.D. and completed an accredited residency program in internal medicine, pediatrics, surgery, and so forth. Candidates should have experience in emergency service and a long-term commitment to a career in emergency medicine. Send curriculum vitae to: James R. Mackenzie, M.D., Head, Department of Surgery, University of Michigan Medical School, M5240 Medical Science I Building, Box 45, 1335 East Catherine Street, Ann Arbor, Mich. 48109. *A nondiscriminatory, Affirmative Action Employer. Codes 202 and 203.*

FACULTY POSITIONS IN THE DEPARTMENT OF PHARMACOLOGY AND TOXICOLOGY

Cardiovascular Pharmacology
Neuropharmacology
Cancer Chemotherapy
Immunopharmacology
or Renal Pharmacology

Three tenure-track faculty positions in the above-mentioned areas are available immediately in the Department of Pharmacology and Toxicology at the University of Mississippi Medical Center in Jackson. Rank is open, depending on experience. Candidates must have at least 2 years of postdoctoral training and a record of research accomplishment. On the assistant professor level, candidates should be committed to developing a strong, independent, fundable research program and to participate in medical, dental, and graduate teaching in one of the above areas. On the senior faculty level, the candidates should have a record of peer reviewed grants, research publications, and participation in teaching. Complete curriculum vitae, including a brief statement of research interests, and three letters of recommendation should be sent to: Dr. I. K. Ho, Professor and Chairman, Department of Pharmacology and Toxicology, University of Mississippi Medical Center, Jackson, Miss. 39216. *An Equal Opportunity Employer, M/F/V/H.*

POSITIONS OPEN

CHAIR, DEPARTMENT OF ANATOMY UNIVERSITY OF CALIFORNIA, IRVINE

The California College of Medicine of the University of California at Irvine invites applications and nominations for the chairmanship of the Department of Anatomy. The chair must be capable of exerting strong intellectual leadership in a department with a strong research emphasis in neuroscience. Demonstrated scholarly eminence and capabilities in administration, planning, and teaching are required. Applications and nominations should be submitted by 1 September 1982 to: Professor Larry Stein, Chair of the Anatomy Search Committee, Department of Pharmacology, California College of Medicine, University of California, Irvine, Calif. 92717. *The University of California is an Equal Opportunity/Affirmative Action Employer.*

CHAIRPERSON DEPARTMENT OF BIOCHEMISTRY

Biochemists of established national reputation are invited to apply for the chair of biochemistry by the University of Maryland School of Medicine. The university seeks candidates committed to building programs of excellence in teaching and research in a dynamic medical school setting.

Submit curriculum vitae and bibliography to: Stephen Schimpff, M.D., Chairman, Biochemistry Search Committee, University of Maryland School of Medicine, 660 West Redwood Street, Baltimore, Maryland 21201.

Closing date: 1 August 1982. *An Equal Opportunity/Affirmative Action Employer.*

DEAN COLLEGE OF PHARMACY THE UNIVERSITY OF IOWA

Available 1 January 1983

Applications and nominations are now invited for the position of dean of the College of Pharmacy of The University of Iowa. Applicants should have appropriate academic credentials and must have demonstrated excellence in scholarship and teaching. Administrative experience is desirable. The appointment will be at the rank of tenured full professor. Salary, starting date, and other aspects pertaining to this position are negotiable.

Applicants should provide complete curriculum vitae, including names of references. Nominations, inquiries, and applications will be received until the position is filled and should be addressed to:

Professor Douglas Flanagan, Chair
Dean Search Committee
College of Pharmacy
The University of Iowa
Iowa City, Iowa 52242

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

ELECTRON MICROSCOPIST

An outstanding scientist is sought to conduct vigorous research and teach in areas of cell biology to graduate and medical students. The facility occupies a five-room suite in the Basic Sciences Center. Rank at assistant or associate professor, depending upon credentials. Joint appointment will be arranged with appropriate basic or clinical science department, depending on applicant's research interests. Submit résumé and the names of five references by 1 December 1982 to: Dr. Charles W. Johnson, Vice President for Academic Affairs, Meharry Medical College, Nashville, Tennessee 37208.

MOLECULAR BIOLOGISTS

Applications are invited for two faculty positions at the assistant or associate professor levels for individuals who will establish vigorous independent research programs in the areas of: (i) **developmental biology**, and (ii) **sickle cell research**. Preferred research interests for position (i) should include molecular biology of eukaryotes using recombinant DNA technology. The anticipated starting date is 1 December 1982, or as soon as suitable candidates are located. Applicants should have a Ph.D. or M.D. degree and postdoctoral training or faculty experience. Successful applicants will be expected to maintain a research program of high quality as well as to teach in the graduate and medical biochemistry programs. Applications, including curriculum vitae, representative publications, a concise statement of research interests and/or proposed research, and the names of three references, should be sent to: Dr. Ifeanyi J. Arinze, Department of Biochemistry, School of Medicine, Meharry Medical College, Nashville, Tenn. 37208.

POSITIONS OPEN

CHAIRPERSON, Department of Pathology—**FOX CHASE MEDICAL CENTER**, a center of excellence in primary patient care, clinical oncology, and basic research located in northeast Philadelphia, seeks a chairperson for a campus-wide Department of Pathology. A suitable candidate should possess demonstrated competence in clinical surgical and/or anatomical pathology, administrative experience, evidence of research achievement, and a commitment to medical education. The position will entail supervision of clinical and anatomical pathology at Jeanes Hospital (a 188-bed acute care general hospital with a 74-bed extended care facility) and American Oncologic Hospital (a 100-bed medical/surgical oncology referral center) as well as liaison with experimental animal pathology at the Institute for Cancer Research (a basic research institute consisting of 40 laboratories). The chairperson also will oversee the research pathology section of the Fox Chase Cancer Center and will be responsible for the planning and implementation of postgraduate teaching activities of the department through affiliation with local universities. This position is a unique opportunity to participate in the growth of a medical center with a clear commitment to excellence in clinical research, patient care, and teaching. Qualified candidates should send curriculum vitae and three references to: Chairman of the Search Committee for Pathology, c/o Personnel Department, FOX CHASE CANCER CENTER, 7701 Burholme Avenue, Philadelphia, Pa. 19111. *Equal Opportunity Employer.*

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE ST. LOUIS, MISSOURI

DEPARTMENT OF PHYSIOLOGY AND BIOPHYSICS CHAIRPERSON

Applications and nominations are invited for the position of chairperson of the Department of Physiology and Biophysics. Candidates should be distinguished as scholars and scientists with demonstrated commitment to medical and graduate education.

Curriculum vitae and bibliography may be submitted to:

M. M. King, M.D.
Dean
Washington University School of Medicine
660 South Euclid Avenue
St. Louis, Missouri 63110

An Equal Opportunity/Affirmative Action Employer

ELECTRON MICROSCOPIST

The Cell Biology Group of the Worcester Foundation for Experimental Biology invites applications for the position of electron microscopist. Duties include operation and maintenance of EM facility (including one SEM and two TEM's) and assistance of staff in specimen preparation and the use of the electron microscopes. Applicant must be highly competent in standard techniques used in scanning and transmission electron microscopy. Expertise in specialized EM techniques such as nucleic acid spreading, autoradiography, immunocytochemistry, and freeze-etching would also be highly desirable. The institute is situated on a wooded, semirural campus, 38 miles west of Boston. Send curriculum vitae and names of three references to: **Electron Microscopist Position, Cell Biology Group, c/o Personnel Office, Worcester Foundation for Experimental Biology, 222 Maple Avenue, Shrewsbury, Mass. 01545.**

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

TRUDEAU INSTITUTE, INC.

A position exists for an **IMMUNOBIOLOGIST** at the **ASSISTANT PROFESSOR** level to develop an independent research program related to immunity to cancer or infectious diseases. Applicants should have at least 3 to 4 years of postdoctoral experience and provide visible evidence that they already have been scientifically productive. Funds are available to support the successful applicant for at least a 3-year period. The Trudeau Institute is a not-for-profit, pure research institute situated on the shore of Saranac Lake, 10 miles from Lake Placid, N.Y. Send résumé and names of three references to:

Dr. R. J. North, Director
Trudeau Institute, Inc.
P.O. Box 59
Saranac Lake, N.Y. 12983

POSITIONS OPEN

DIRECTOR OF METHODS DEVELOPMENT FOR THE AMERICAN OIL CHEMISTS' SOCIETY (AOCS)

Duties: Interpreting, organizing, and coordinating a program to revise and maintain the AOCS Official and Tentative Methods; formulating a plan to collect, evaluate, and publish relevant methodology; maintaining liaison with related technical and industrial groups; and facilitating the efforts of technical committees involved in methods development. Reports to the executive director and Uniform Methods Committee.

Desired qualifications: Self-starter; experience in analytical chemistry, including fats, oils, and their derivations; experience in methods development; excellent oral and written communication skills; and ability to work with volunteers.

Send résumé and salary history to:

Search Committee
c/o Executive Director
508 South Sixth Street
Champaign, Ill. 61820

TENURE-TRACK SENIOR FACULTY POSITION ELECTRON MICROSCOPIST

The Materials Engineering Department at Rensselaer Polytechnic Institute invites applicants for a tenure-track position at the full professor level in the area of materials characterization. Position includes responsibility for departmental TEM, SEM, and microanalytical laboratories. Opportunities exist to teach courses at the undergraduate and graduate levels in quantitative microscopy, microanalysis, scanning and transmission electron microscopy, and diffraction theory. The successful candidate is expected to build a strong externally funded research program in the areas of metallurgy and ceramics as related to advanced electron microscopy. A Ph.D., D.Sc., or equivalent earned degree in material science and a minimum of 15 years of related research experience are required. Qualified candidates must demonstrate through research publications a high level of expertise and experience in advanced electron contrast techniques, including weak beam methods and kindred techniques. Qualified applicants should send curriculum vitae, a statement of research interests, and names of three references to: **Dr. M. E. Glicksman, Chairman, Materials Engineering Department, Rensselaer Polytechnic Institute, Troy, New York 12181.** Position available 1 September 1982. Applications will be accepted through 15 August 1982 or until a suitable candidate is identified.

Rensselaer is an Equal Opportunity/Affirmative Action Employer.

FISHERIES BIOLOGIST with Ph.D., 5 years of experience consulting in fisheries biology, marketing and management expertise. Full-time position with consulting company providing services to industry and government in physical and biological oceanography, environmental chemistry, marine geosciences, hydrography, and engineering. Successful candidate will develop comprehensive capability in fisheries biology. Present staff: 45. Excellent laboratory facilities. Competitive salaries. Send résumé to: **Andrew L. Wood, Dobrocky SEATECH Limited, P.O. Box 6500, Sidney, British Columbia, Canada V8L 4M7.**

MANAGING ROBOTICS POSTDOCTORAL. A postdoctoral research position on understanding and managing the productivity, human resource, and societal implications of robotics and advanced information systems is available at Carnegie-Mellon University. Candidates must hold a Ph.D., have at least the background of an undergraduate degree in science or engineering, and have reasonable skills in economics. Depending on the candidate's background, affiliation with several different units of the university is possible. Send résumé with list of publications to: **Sandra Rocco, 129 Baker Hall, Carnegie-Mellon University, Pittsburgh, Pa. 15213.**

POSTDOCTORAL POSITION for recent Ph.D. or M.D., U.S. citizen or permanent resident, available immediately, supported by NIH Training Grant (National Research Service Awards), in the area of basic cancer chemotherapy, clinical cancer chemotherapy, cancer biology, or cancer drug development (organic synthesis). Application deadline: 1 month. Send résumé, indicating area(s) of interest, and two or more letters of reference to: **Dr. Sungman Cha, Brown University, Box G, Providence, R.I. 02912.** Telephone: 401-863-3114. *An Equal Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

MEMORIAL UNIVERSITY OF NEWFOUNDLAND FACULTY OF SCIENCE HEAD OF THE DEPARTMENT OF PHYSICS

Applications and nominations are invited for the post of head of the Department of Physics at Memorial University. Applicants should be able to demonstrate ongoing and outstanding achievement in research in a field of physics compatible with the interests and development of the department. They should also be committed to maintaining and further developing a strong undergraduate and graduate program. This position offers a unique opportunity to interact with new developments in the university and the province and with the possibility of some expansion of the department.

The appointment will be at the rank of full professor, to take office as soon as may be mutually agreed. Salary will be negotiable and related to qualifications and experience.

Applications and nominations should be forwarded to:

The Dean of Science
(Dr. P. J. Heald)
Faculty of Science
Memorial University of Newfoundland
St. John's, Newfoundland, Canada A1B 3X7
from whom further particulars can be obtained.

HEMATOPATHOLOGIST. The Department of Pathology is seeking an experienced Board-certified pathologist for a position at a junior to intermediate faculty level with responsibilities to assist in Clinical Laboratories hematology services and educational programs. Proven teaching ability and research accomplishments are necessary. Particular expertise in coagulation is desired. Send curriculum vitae and names of four references to: **George S. Smith, M.D., Director, Clinical Laboratories, University of California, Los Angeles (UCLA) Center for Health Sciences, Los Angeles, Calif. 90024.** *UCLA is an Equal Opportunity/Affirmative Action Employer. Minority and women candidates are encouraged to apply.*

ST. JUDE CHILDREN'S RESEARCH HOSPITAL, MEMPHIS, TENNESSEE MARROW TRANSPLANTATION RESEARCH

A new position is available at assistant professor level for a Ph.D. or M.D. to establish and supervise a tissue-typing laboratory for the Marrow Transplant Program of St. Jude Children's Research Hospital. The major responsibility will be the establishment of a research program directed toward the study of the major histocompatibility complex, its relationship to transplantation, and the specific problems of graft-versus-host disease and graft-versus-leukemia. A joint appointment will be offered in the Departments of Hematology-Oncology and Immunology.

Interested candidates should send their curriculum vitae to: **Dr. F. Leonard Johnson, St. Jude Children's Research Hospital, 332 North Lauderdale, Memphis, Tennessee 38101.**

POSTDOCTORAL POSITION Physical Oceanography

The Joint Institute for the Study of
the Atmosphere and Ocean (JISAO)
University of Washington

Research associate (postdoctoral) position in physical oceanography. Person will work with scientists in the Deep-Sea Physics Group at the Pacific Marine Environmental Laboratory (NOAA) who are studying ocean circulation and air-sea interaction processes in the tropical Pacific. Candidates with either observational or theoretical interests are invited to apply. Term of appointment is 1 year with the option to renew for a second year. Starting date is 1 October 1982 or later. Send curriculum vitae and a list of three references to: **Director, JISAO, c/o Department of Atmospheric Sciences, AK-40, University of Washington, Seattle, Wash. 98195.** Closing date: 15 September 1982.

An Equal Opportunity/Affirmative Action Employer

RESEARCH ASSOCIATES. A number of positions available in hydrogen technology (advanced electrolyzers, photoelectrochemical decomposition of water). Ph.D. in either electrochemical engineering or electrochemistry required. Salary: \$16,000 to \$20,000. *Texas A & M University is an Equal Opportunity/Affirmative Action Employer.* Apply to:

Professor J. O'M. Bockris
Chemistry Department
Texas A & M University
College Station, Texas 77843
Telephone: 713-845-5335

POSITIONS OPEN

The DEPARTMENT OF NEUROBIOLOGY at Stanford University School of Medicine invites applications from qualified individuals for a faculty position available September 1983 at the level of assistant professor. The successful candidate will have teaching responsibilities in neurobiology and will be expected to maintain an independent research program of high quality. Preference will be given to those individuals who have significant research accomplishments in developmental neurobiology and nerve cell regeneration at both molecular and systemic levels. Applications, including curriculum vitae and the names of three references, should be addressed to: **Chairman, Search Committee, Department of Neurobiology, Stanford University School of Medicine, Stanford, California 94305.** *Stanford University is an Equal Opportunity Employer and welcomes nominations of women and minority group members and applications from them.*

PATENT ADMINISTRATOR UNIVERSITY OF MINNESOTA

The University of Minnesota invites applications and nominations for the position of **patent administrator.** Responsibilities include liaison with research faculty to identify inventions, authorization to file patent applications in the United States and abroad, negotiations with potential licensees, monitoring of license agreements, and distribution of royalties.

Research funding of over \$100 million per year and university-wide coverage (for example, engineering, medical, pharmaceuticals, agriculture, computer science) offer an exciting challenge to expand greatly the developments that reach a commercial stage (products and services to the public) and bring royalty income to the university and the inventors. We are committed to such increased emphasis.

Reports to the vice president of finance and supervises associate patent administrators.

Desirable background includes research administration, identification of inventions, and patent licensing.

Minimum requirements are a bachelor's degree in science or engineering and 7 years in applied research and patent administration.

Closing date for applications is 1 August 1982. Send résumé to:

W. G. Shepherd, Chairman
Search Committee
UNIVERSITY OF MINNESOTA
334 Morrill Hall
100 Church Street, SE
Minneapolis, Minn. 55455

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

WANTED

PHYSICIAN/BIOCHEMICAL PHARMACOLOGIST—M.D., Ph.D. to conduct studies on human mast cell mediator release with clinical relevance. Must have at least 10 years of clinical and research experience. Salary: \$16,000 to \$20,000 per annum. Apply to:

Box 180, SCIENCE

PLANT SCIENTIST Applied Ecology

Battelle Columbus Laboratories, a worldwide leader in contract research, has a critical need for a senior level Ph.D. research scientist with a strong plant sciences background to develop and conduct major research programs in applied ecology/plant physiology. This career position requires technical strengths in air pollutant impacts, plant growth and development, and agronomic research programs. A background in evaluating pesticides with radiolabeled tracers is desirable. The person we select must have contract research and market development experience.

Battelle offers a competitive salary, a multidisciplinary approach to research, excellent employee benefits, and opportunities for career growth. Interested individuals should send résumé, in confidence, to: **Richard C. Needles, Employment Department F-2,**



Battelle

Columbus Laboratories
505 King Avenue
Columbus, Ohio 43201

An Equal Opportunity Employer

UNIVERSITY—GOVERNMENT INTERFACE POSSIBILITIES

U.S. Army, Chemical Systems Laboratory, has numerous openings for 6-month to 1-year **RESEARCH APPOINTMENTS** for chemistry, physics, and life sciences faculty members on leave from U.S. academic institutions. Starting date is negotiable. Specialities of interest vary considerably but relate to new concepts in analytical chemistry and toxicology methodology, immunochemistry, surface chemistry, chemical detection, reaction mechanisms, air filtration, aerosol and cloud physics, laser physics and chemistry, catalysis, organic synthesis, chemical and physical decontamination, and spectroscopy. Appointees may participate in basic and applied research projects. All appointments are under the conditions of the Intergovernmental Personnel Act of 1970 which enables the Army to contract with the educational institution and the academic employee. Extensions to a second year are permissible. Interested applicants, who must be U.S. citizens, may obtain details on specific research opportunities from: **Dr. Prescott Ward, Chief Scientist, Research Division, Chemical Systems Laboratory, Aberdeen Proving Ground, Md. 21010; telephone: 301-671-4144.**

An Equal Opportunity Employer

Pharmaceutical Research Opportunities

The pharmaceutical research division of the Schering-Plough Corporation has two exceptional opportunities for individuals interested in the field of Biotechnology.

FERMENTATION MICROBIOLOGIST

The Molecular Biology Department is seeking a qualified Genetic Fermentation Microbiologist, with a BS and 3 years, MS and 1 year, or equivalent experience with bacterial fermentations at or above the 10 liter scale. The successful candidate will have a strong background in bacterial genetics and experience in extraction procedures.

BIOCHEMICAL PHARMACOLOGIST/BIOCHEMIST

Expanding effort in the development of novel cardiovascular drugs has resulted in the creation of a new position for a Senior Investigator. Required background includes PhD, 0-3 years or equivalent experience in biochemical pharmacology/biochemistry with particular emphasis on the biochemistry of cardiovascular disease processes and the biochemical mechanisms of action of drugs used in cardiovascular therapy. The successful candidate will participate in on going programs as well as contribute to the development of new approaches to therapy.

We offer a stimulating scientific environment with opportunity for advancement. The successful candidate will receive compensation commensurate with education and experience together with a program of comprehensive company benefits including profit sharing.

Qualified candidates should forward resume with pertinent salary information indicating position desired to: Louis DeMartino, Schering-Plough Pharmaceutical Research Division, Box DD 82-11A, 60 Orange Street, Bloomfield, New Jersey 07003.



Schering-Plough

We Are An Equal Opportunity Employer.
Women, Minorities, Handicapped & Veterans
Are Strongly Encouraged To Apply

Director, National Institute on Aging

The National Institutes of Health invites nominations and applications for the position of Director, National Institute on Aging (NIA). This Institute conducts, fosters, and supports research and training on one or more areas related to the aging process and the diseases and other special problems and needs of the aged. Programs encompass intramural laboratory research and extramural (grants and contracts) activities in fundamental clinical geriatric research.

This is a Civil Service position in the Senior Executive Service (SES), with an authorized salary range from \$54,755 to \$61,300 per annum (payment currently limited to \$58,500) depending on qualifications. Candidates may be eligible for Physicians Comparability Allowance up to \$10,000 per year. Alternately, candidates may be eligible for appointment in the Commissioned Corps of the U.S. Public Health Service. The SES individual selected, if not presently in the SES, must serve a one-year probationary period.

The mandatory qualifications are: (1) meet the minimum educational requirements for Medical Officer, GS-602, or Health Scientist, GS-601 (or equivalent combination of experience and training), as defined in the U.S. Office of Personnel Handbook X-118, Qualification Standards for positions under the General Schedule, which is available in Federal Job Infor-

mation Centers and Federal Personnel Offices; and (2) have research experience and knowledge of research programs in one or more areas related to the aging process and the diseases and other special problems and needs of the aged. In addition, candidates must meet the following managerial/executive qualifications: demonstrated competence to assume leadership responsibilities in: (1) assuring that key national and agency goals, priorities, and values are considered in making program decisions; (2) establishing effective external communications by being a representative spokesperson for the organization, and maintaining working relationships within the organization and with outside key individuals and groups; (3) developing policy, directing and guiding programs and projects, including establishing long-term and short-term goals and priorities, and the structure and processes necessary to carry them out; (4) obtaining and allocating the fiscal and material resources necessary to support program or policy implementation; (5) developing processes and overseeing activities to assure that people are appropriately employed, effectively and efficiently utilized, and dealt with in a fair and equitable manner; and (6) developing activities and procedures to assure that program and policy are being executed, adjusted as necessary, and that the appropriate results are being achieved.

Candidates who meet the mandatory requirements will be further evaluated by the Search Committee on the following desirable factors: scientific recognition/peer recognition; communications and interpersonal skills; training and education; honors and awards; and the degree to which they exceed the minimally qualified level of the mandatory managerial/executive qualifications. Information on any of the above requirements may be obtained by calling Mrs. Helen Stafford at (301) 496-4197.

Applications (Personal Qualifications Statement, SF-171) are to be sent to Helen C. Stafford, Executive Secretary, Search Committee for Director, NIA, National Institutes of Health, Building 1, Room 19, Bethesda, Maryland 20205. A current curriculum vitae and bibliography must accompany all applications. Applications of women and/or minority group members are especially solicited.

**National Institutes of Health
Public Health Service
Department of
Health and Human Services**

Opening date: July 15, 1982
Closing date: Aug. 15, 1982

(All applications must be postmarked before closing date)

NIH is an Equal Opportunity Employer

POSITIONS OPEN

Ph.D. IN MOLECULAR OR CELLULAR BIOLOGY available immediately for candidate with a demonstrated interest and technological expertise in developmental and molecular biology. Experience in hematopoietic stem cell growth in vitro desirable. Excellent research opportunity in the area of the regulation of hemoglobin synthesis in man and baboon. Salary competitive and dependent on qualifications. Candidate must have qualifications for an academic appointment at the University of Illinois. Career possibilities. Send curriculum vitae and names of three references to: **Dr. Joseph DeSimone, Hematology Research Laboratory, VA West Side Medical Center, 820 South Damen Avenue, Chicago, Ill. 60612. An Affirmative Action/Equal Opportunity Employer.**

POSTDOCTORAL IN NUTRITION IMMUNITY AND INFECTION

Perform research on role of trace element nutrition in immunity and infection. Experience with nutritional studies, immune parameters, and infectious diseases. Ph.D., M.D., or D.V.M. required. One-year position with possibility for renewal. Available immediately at a salary range of \$15,000 to \$17,000. Send curriculum vitae, names of three references, and relevant publications to:

Ramona J. Martin
Human Nutrition Research Center
P.O. Box 7166, University Station
Grand Forks, N.D. 58201

An Equal Opportunity/Affirmative Action Employer

POSTDOCTORAL POSITION available for studies involving regional intracellular transport and local synthesis of proteins and RNA in a normal and regenerating model vertebrate neuron, utilizing techniques and methods on a microscale for quantitative and compositional analyses. Send résumé of background, training, and interests, including three letters of reference, to: **Dr. Edward Koenig, Division of Neurobiology, State University of New York (SUNY) at Buffalo, School of Medicine, Buffalo, N.Y. 14214. SUNY at Buffalo is an Affirmative Action/Equal Opportunity Employer.**

POSTDOCTORAL POSITIONS IN NUTRITION are available for a 2-year period in the Department of Surgery at the Graduate Hospital. Positions are available for research in: (i) clinical nutrition using stable isotopes; (ii) parenteral nutrition and lung metabolism; and (iii) protein metabolism during space flight on the space shuttle. The Graduate Hospital is part of the University of Pennsylvania Medical Center. Send curriculum vitae and names of three references to: **Dr. T. P. Stein, Department of Surgery, The Graduate Hospital, 1 Graduate Plaza, Philadelphia, Pa. 19146.**

POSTDOCTORAL POSITION. Investigation of human and mouse oncogenes and their expression in genetically distinct human population groups and chemically induced mouse tumors. Available 1 September. Send résumé and other information to: **Dr. Leonard H. Augenlicht, Sloan-Kettering Institute, Walker Laboratory, 145 Boston Post Road, Rye, New York 10580.**

TWO POSTDOCTORAL POSITIONS AVAILABLE IMMEDIATELY for the study of structure-function relations of cytochrome *c* in the terminal portion of the eukaryotic respiratory chain. These studies involve: (i) cloning and site directed mutagenesis of cytochrome *c* genes; (ii) study of the evolution of gene families; (iii) protein modification of cytochrome *c* and crosslinking to mitochondrial membranes; and (iv) kinetics of electron transport of structurally modified and native cytochrome *c* with its mitochondrial respiratory chain partners. Background in nucleic acid biochemistry, protein chemistry, or enzymology necessary. Send curriculum vitae, including three references, and personal letter to: **Dr. E. Margoliash, Department of Biochemistry, Molecular Biology and Cell Biology, Northwestern University, Evanston, Ill. 60201. Northwestern University is an Equal Opportunity/Affirmative Action Employer.**

POSTDOCTORAL POSITION available September 1982. Research in the molecular biology of insulin action and the hormonal regulation of mRNA turnover. Background in biochemistry and recombinant DNA technology preferred. Send curriculum vitae, reprints, and names of three individuals who may be contacted for references to: **Dr. Michele Cimbala, Department of Biochemistry, University of Massachusetts Medical School (UMMS), 55 Lake Avenue North, Worcester, Massachusetts 01605. UMMS is an Equal Opportunity Employer.**

POSITIONS OPEN

POSTDOCTORAL POSITION available September 1982. Use of two-dimensional NMR and distance-geometry calculations to study conformation and lipid interactions of membrane proteins. NMR experience essential. Computer programming and/or protein purification experience advantageous. Send résumé and three letters of reference to: **Dr. L. R. Brown, Michigan Molecular Institute, 1910 West St. Andrews Road, Midland, Michigan 48640. Equal Opportunity/Affirmative Action Employer.**

POSTDOCTORAL POSITION for research focusing on antigens of trypanosomes and their roles in eliciting acquired immune responses and resistance. Experience in tissue culture, hybridoma technology and/or an excellent background in immunology is desirable. Send résumé and three letters of recommendation to: **Dr. Donald G. Dusanic, Department of Life Sciences, Indiana State University, Terre Haute, Ind. 47809. An Equal Opportunity/Affirmative Action Employer.**

POSTDOCTORAL POSITION IN ZOOPLANKTON ECOLOGY available for 18 to 24 months, to study the short-term respiratory, excretory, or reproductive responses of marine copepods to changes in food concentration. This, or related, work is to be done in conjunction with an ongoing study of copepod feeding-responses to patchy foods. The position is available 1 October. Salary is \$18,500 a year. Send curriculum vitae and names of three references to:

Dr. Michael Dagg
Louisiana Universities Marine Consortium
(LUMCON)
Star Route, Box 541
Chauvin, Louisiana 70344

Affirmative Action/Equal Opportunity Employer

POSTDOCTORAL POSITION in neuroscience is available for studies in electrophysiology of drugs of abuse. Please submit curriculum vitae and names of three references to: **Dr. Naim Khazan, Department of Pharmacology and Toxicology, University of Maryland School of Pharmacy, 636 West Lombard Street, Baltimore, Md. 21201. An Equal Opportunity/Affirmative Action Employer.**

POSTDOCTORAL POSITION available in the area of membrane receptor pharmacology to investigate the application of neuropharmacology and receptor binding techniques toward the development of radiodiagnostic agents for the heart and adrenal glands. The position will be available in October 1982. Send curriculum vitae and the names of three references to: **Dr. Richard Deth, Section of Pharmacology (312 Mugar Hall), Northeastern University, 360 Huntington Avenue, Boston, Mass. 02115.**

POSTDOCTORAL RESEARCH ASSOCIATE position available to study the fidelity of gene expression at the level of protein synthesis. Study involves peptide isolation and sequencing. Experience in protein purification and biochemistry required. Knowledge of microbial genetics an asset. Send curriculum vitae and names of three references by 31 July 1982, or until filled, to: **Dr. Jack Parker, Department of Microbiology, Southern Illinois University, Carbondale, Ill. 62901. Equal Opportunity/Affirmative Action Employer.**

RESEARCH MANAGER

We are seeking a scientist with substantial experience in microbiology or biochemistry, a record of outstanding achievement, and demonstrated managerial skills in directing research to head a new research group for a client, located in Des Moines, Iowa. If you are looking for an excellent challenge and opportunity and the following profile fits you, please contact us.

- Able to work independently
- Project oriented
- Good at problem-solving
- An experienced research manager
- Have a drive to make things happen

If interested, please write: **Leonard Hudson, Batten, Batten, Hudson & Swab, Inc., 518 Grand Avenue, Suite 340, Key Building, Des Moines, Iowa 50309.**

POSITIONS OPEN

The Department of Neurology, University of Utah School of Medicine, is seeking a **Ph.D. NEUROVIROLOGIST** at junior staff level to participate in research programs at the VA and University Medical Centers. Address inquiries, including curriculum vitae and bibliography, to: **J. Richard Baringer, M.D., Chairman, Department of Neurology, University of Utah Medical Center, Salt Lake City, Utah 84132. The University of Utah is an Equal Opportunity/Affirmative Action Employer. Closing date: 1 September 1982.**

POSTDOCTORAL POSITION AVAILABLE IMMEDIATELY for recent Ph.D. in biochemistry or molecular biology, preferably of prokaryotic organisms. Must have experience in molecular genetic/DNA sequencing techniques. Project to study regulation of expression of a developmentally regulated gene family in *Caulobacter*. Send curriculum vitae, including three letters of reference and personal letter, to: **Dr. Nina Agabian, Department of Biochemistry, University of Washington, Seattle, Wash. 98195. An Equal Opportunity/Affirmative Action Employer.**

POSTDOCTORAL POSITIONS available immediately to study biochemical, immunological, or molecular aspects of host or cellular interactions with unicellular parasite. Send résumé and names of references to:

Dr. F. Kierszenbaum
Department of Microbiology and Public Health
Michigan State University
East Lansing, Mich. 48824

Affirmative Action/Equal Opportunity Employer

POSTDOCTORAL POSITION available immediately investigating structure and interactions of contact phase protein clotting factors, particularly factor XI and high molecular weight kininogen. Ph.D. in biochemistry or related field and experience in proteins required; experience in clotting/immunology desirable. Contact: **Sandra Schiffman, Ph.D., Department of Medicine, University of Southern California Medical School, 2025 Zonal Avenue, Los Angeles, Calif. 90033. Telephone: 213-224-7223.**

POSTDOCTORAL RESEARCH POSITION is available to study electrophysiology of mammalian neurons using in vitro brain slices. Background in neuroscience emphasizing electrophysiology or computers is preferred. Position is for at least 1 year. Send letter, curriculum vitae, and references to: **Dr. F. E. Dudek, Department of Physiology, Tulane University School of Medicine, 1430 Tulane Avenue, New Orleans, La. 70112.**

RESEARCH ASSOCIATE position for Ph.D. in biochemistry with 2 years of postdoctoral experience in peptide synthesis and protein sequencing, at a Palo Alto, California, research laboratory. Research projects include synthesis of novel peptides, development of protein and gene sequencing of eye crystallin from invertebrate (squid) lens. Applicants should have strong background and experience in the protein chemistry of lens crystallin. Salary: \$19,000 per year. Send this ad and your résumé to: **Job Number 8091, P.O. Box 865, Sacramento, Calif. 95804, not later than 15 August.**

SENIOR RESEARCH CHEMIST

Senior research chemist. Applicant will perform basic research in synthetic organic chemistry. Applicant will utilize modern synthetic techniques and tools to design and synthesize biologically active organic compounds drawing upon knowledge of the biochemical enzymatic system. Ph.D. synthetic organic chemistry; B.A. biochemistry; 40 hours per week, 8 a.m. to 5 p.m.; \$2750 per month. Send résumé only, reference number 561770, to: **Job Service, 505 Washington Street, St. Louis, Missouri 63101, attention: June Carroll.**

RepliGen

Research Assistants Biotechnology

Repligen Corporation, a rapidly growing biotechnology company involved in the development of a variety of innovative peptide and protein products, seeks qualified candidates (B.S./M.S. level) in the following areas:

Enzymology/Protein Chemistry—Experience should include protein isolation and assay of biologically active proteins and peptides. Experience in protein sequencing and amino acid analysis is desirable.

Fermentation Microbiology—Position requires a strong background in microbial physiology, and experience in preparative or pilot scale fermentation.

Successful candidates will be highly motivated individuals who can take advantage of the outstanding growth opportunities at Repligen. Repligen offers competitive salary, excellent benefits and equity participation. Submit resume including references to: **Director of Personnel, Repligen Corporation, 101 Binney St., Cambridge, MA 02142.**

An equal opportunity employer

RESEARCH SCIENTIST/ MANAGER BIOTECHNOLOGY

Rohm and Haas, a leading multinational chemical company, is expanding its research commitment in genetic engineering and plant molecular biology.

We are currently seeking a senior research scientist who has a proven record in plant genetics and biochemistry, tissue culture, and somatic genetics. You must have an interest in, and aptitude for, interaction with academic institutions for the purpose of developing research objectives for application of biotechnology to agriculture, and for the assembly of an appropriate research department. In addition, you will be responsible for liaison with Advanced Genetic Sciences, Inc., a company closely associated with Rohm and Haas Company. The position is located in our Research Center in Spring House, PA — an attractive suburb of Philadelphia.

We offer a salary commensurate with your achievement; an excellent, fully paid comprehensive benefits package including relocation assistance; and an environment conducive to professional growth.

Please send a resume, including publications and salary history, in confidence, to Dr. F. J. Hirsekorn:

Recruiting and Placement #1582



An equal opportunity employer M/F.

Post Doctoral Scientist Gastrointestinal Research

Smith Kline & French, a leader in pharmaceutical research is seeking a post-doctoral scientist to join an interdisciplinary research program investigating new approaches to the therapeutic control of gastrointestinal disorders.

Qualified candidates should have a PhD in pharmacology, physiology or neuroscience. Experience in smooth muscle physiology or neurophysiology is highly desirable.

This position offers opportunities for innovative research and productive interaction with other scientists within the research division.

We offer excellent salary and benefits and an attractive relocation policy. For confidential consideration, send your C.V. and names of three references to: Ms A. Southall, SMITH KLINE & FRENCH LABORATORIES, a division of, SMITHKLINE BECKMAN CORPORATION, 1532 Spring Garden Street, Philadelphia, PA 19101.

SK&F
a SmithKline company

We are an equal opportunity employer. M/F/H/V

CSIRO

RADIO RESEARCH BOARD
AUSTRALIA

POSTDOCTORAL FELLOWSHIP IN TELECOMMUNICATIONS

GENERAL: As part of its activities designed to foster research in telecommunications and radio science in the universities and other appropriate organizations, the Radio Research Board offers a Fellowship Scheme. Under this scheme one fellowship may be awarded each year for full-time research by scientists or engineers of exceptional promise and proven merit. These are postdoctoral awards tenable for a period of 2 years in an Australian university, approved research institute, or industrial laboratory as determined by negotiation between a prospective fellow and the Board. The agreed area of research will also be determined by negotiation but the Board is open to consider any proposal in the broad field of telecommunications and radio science.

QUALIFICATIONS: The applicants should have a Ph.D. degree or its equivalent and be preferably under 30 years of age.

Radio Research Board Fellowships are available to applicants of all nationalities but they are asked to indicate their future plans.

STIPEND: A\$21,904 per annum, increased to \$23,781 per annum at age 28 years. Stipend is subject to income tax.

ALLOWANCES: Payable in respect of a fellow's dependent spouse (\$500 per annum), each dependent child (\$200 per annum), 'superannuation-like' payments (up to 10 percent of stipend), appropriate insurance coverage, and necessary travel expenses. Host institutions may be paid an allowance towards the cost of supporting the fellow.

APPLICATIONS: Persons interested in applying for the above fellowship should obtain application forms and a statement of the conditions from:

The Secretary
Radio Research Board
P.O. Box 225
Dickson, A.C.T. 2602, Australia

Applications close on 17 September 1982 and in the normal course of events candidates may expect to be advised on the outcome of their applications in December 1982.

POSITIONS OPEN

THE ERNA AND JAKOB MICHAEL VISITING PROFESSORSHIPS

1983-1984

The Weizmann Institute of Science, Rehovoth, Israel, offers a limited number of visiting professorships in the natural and exact sciences.

The Erna and Jakob Michael Visiting Professorships are intended for candidates already holding the rank of full professor and will be for a duration of 3 months to 1 year.

For further information, please contact: The Academic Secretary, The Weizmann Institute of Science, Rehovot 76100, Israel.

RESEARCH ASSOCIATE position available for a recent Ph.D. in biochemistry to investigate the mechanisms of organophosphorus induced delayed neurotoxicity. Strong background in protein chemistry is required. Salary: \$14,000 to \$16,000, plus fringe benefits. Send curriculum vitae and three letters of recommendation to: Dr. M. B. Abou-Donia, Department of Pharmacology, Duke University Medical Center, Durham, N.C. 27710. *Equal Opportunity/Affirmative Action Employer.*

RESEARCH ASSOCIATE position available immediately to carry out circular dichroism and ultracentrifuge studies on proteins related to hemostasis. Experience in optical spectroscopy/physical biochemistry/biophysics highly desirable. Salary commensurate with education and experience. Send curriculum vitae and names of three references to: Dr. N. M. Tooney, Winter Building, Department of Medicine, Mount Sinai Medical Center, 836 North 12 Street, Milwaukee, Wis. 53233.

RESEARCH ASSOCIATE to conduct experimental studies of thermotropic liquid crystals. Applicant should have a doctorate in physics and practical experience in studying liquid crystal phases using high resolution x-ray scattering, optical microscopy, and precision calorimetric methods, as well as in the synthesis and purification of liquid crystal materials. Write to: Professor J. D. Litster, Massachusetts Institute of Technology, Room 13-2030, 77 Massachusetts Avenue, Cambridge, Mass. 02139.

UNIVERSITY OF MELBOURNE RESEARCH FELLOW, GRADE 1 (EXTENDABLE TENURE) (READVERTISED) in SOMATIC CELL GENETICS in the DEPARTMENT OF VETERINARY PRECLINICAL SCIENCES

The Sheep Biology Unit within the Department of Veterinary Preclinical Sciences encompasses groups working in foetal and neonatal immunology, developmental and differentiation antigens, and somatic cell genetics. The successful applicant will join the somatic cell genetics group which is developing techniques for the manipulation of embryonic cells and genes in sheep.

Salary within the range A\$18,068 to A\$20,699 per annum.

For further information about the position, write to the head of the department, Professor R. N. P. Cahill.

Further information regarding details of application procedure and conditions of appointment is available from the Staff Officer. Applications, referring to Position Number 260 3001, should be addressed to: Staff Officer, University of Melbourne, Parkville, Victoria 3052, Australia, and close on 16 August 1982.

COLD SPRING HARBOR LABORATORY, in collaboration with Exxon Research and Engineering, is initiating a research program to study the molecular genetics of anaerobic bacteria. Positions at different levels, starting with postdoctoral fellowships, will be open. Scientists interested in working on molecular genetics of anaerobic bacteria should send their curriculum vitae to: Cold Spring Harbor Laboratory, Box 100, Cold Spring Harbor, New York 11724, attention: Patrick Hickey, Personnel Manager.

POSITIONS OPEN

RADIOBIOLOGIST—The Department of Therapeutic Radiology, Henry Ford Hospital, has an opening at the postdoctoral or junior staff level. Areas of interest include drug-radiation interactions, hyperthermia, and phototherapy. Salary negotiable. Please send curriculum vitae and names of three references to: Dr. Fred W. Hetzel, Division of Radiation Biology, Henry Ford Hospital, 2799 West Grand Boulevard, Detroit, Mich. 48202.

RESEARCH COORDINATOR

Medical school located in pleasant rural surroundings invites applications from persons with an earned doctoral degree in a biomedical science, who have demonstrated experience in research, publication, and grant acquisition. The individual chosen will administer the office of research, with the following duties: to develop and support faculty research interests, to develop external funding sources, and to administer the animal facility. Salary is negotiable, depending on experience. Curriculum vitae and three letters of recommendation should be sent by 31 August 1982 to: Elizabeth Blatt, Associate Dean for Basic Sciences, West Virginia School of Osteopathic Medicine (WVSOM), 400 North Lee Street, Lewisburg, West Virginia 24901.

WVSOM is an Affirmative Action/Equal Opportunity Employer.

SECRETORY IMMUNITY AND INFECTION

A postdoctoral position is immediately available in basic research relevant to immunobiology and immunochemistry of the mucosal immune system. Preference will be given to those individuals with training in immunology and immunochemistry and experience with bacterial antigens and with adjuvants including liposomes. Excellent facilities available including 360 MHz NMR, GC/mass spectrometer, cytofluorograph, HPLC, protein sequencer, chemostat, and fermentation facilities. Technical assistance. Send curriculum vitae and three references to: Dr. R. T. Evans, Department of Oral Biology, State University of New York, 4510 Main Street, Buffalo, N.Y. 14226. *An Equal Opportunity/Affirmative Action Employer.*

WHITEHEAD INSTITUTE FOR BIOMEDICAL RESEARCH AND THE DEPARTMENT OF BIOLOGY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY, seek to make a senior and a junior level appointment in the area of early developmental biology of vertebrates.

Candidates are sought with significant research experience in the area of early developmental biology of the vertebrates, with special emphasis in the use of organismic and molecular genetics, molecular biological techniques and reagents, gene transfer, and in vitro culture techniques.

Such candidates will be considered for joint academic appointment between the Whitehead Institute for Biomedical Research and the Department of Biology, Massachusetts Institute of Technology. A candidate will be expected to conduct a research program in developmental biology and to assume normal academic responsibilities.

Send résumé to: Dr. Robert A. Weinberg, Massachusetts Institute of Technology, Center for Cancer Research, E17-517, Cambridge, Mass. 02139.

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VETERINARY MEDICAL OFFICER

The Plum Island Animal Disease Center, U.S. Department of Agriculture, is accepting applications for a veterinary medical officer. Applicants must have a D.V.M. and 3 years of advanced research training and experience in veterinary microbiology with emphasis in virology and immunology. Advanced degree(s) with appropriate accomplishments demonstrated by thesis or publications may be substituted for experience. Candidates should have broad knowledge in virology and immunology. Duties and responsibilities involve analysis of foot-and-mouth disease virus antibody response in vaccinated bovine and swine, development of data on optimum dosage and adjuvants for primary and secondary vaccination, and statistical analysis of various innocuity and potency tests. This is a permanent position subject to Office of Personnel Management requirements and benefits. The salary is \$33,586 to \$43,666. To be assured of full consideration, applicants should submit current résumé and the names of three references to: Beverly J. Hallock, Personnel Officer, Plum Island Animal Disease Center, P.O. Box 848, Greenport, New York 11944. *All applicants will receive consideration without regard to race, color, religion, national origin, sex, age, or handicap.*

SYMPOSIUM

Reclamation and the Phosphate Industry

Symposium will be held in Clearwater, Florida, 26 to 28 January 1983. Emphasis will be on the current state of phosphate-mined land reclamation, including abandoned land reclamation, concurrent mining and reclamation, and new mine reclamation planning. Topics include regional reclamation planning, habitat restoration, hydrology, planting and maintenance techniques, evaluating reclamation success, and so forth. Information and/or "Call for Papers" (Abstracts due 15 August 1982) available from: Dr. David Robertson, Florida Institute of Phosphate Research, 1855 West Main, Bartow, Florida 33830.

FELLOWSHIPS

NEUROSCIENCE RESEARCH FELLOWSHIPS.

Postdoctoral fellowships are available through the Neuroscience Research Laboratory of The Ohio State University College of Medicine for recent Ph.D.'s or M.D.'s with career interests in neuroscience research. Neuroscience research in the College encompasses a wide range of interests, including development and plasticity of the nervous system and mechanisms of neurologic disorders. Approximately 25 faculty members are available as potential sponsors. The fellowship director will make applications from individuals available to appropriate potential sponsors. Applicants wishing to be considered for the coming academic year should submit curriculum vitae, a statement of research interests and goals, and the names of three references before 31 July to: Dr. Michael S. Beattie, Fellowship Director, Neuroscience Research Laboratory, 410 Hamilton Hall, 1645 Neil Avenue, Columbus, Ohio 43210, or telephone: Dr. Beattie at 614-422-2206 for further information.

The Weizmann Institute of Science is pleased to announce the establishment of the

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The Meyerhoff Fellowships are intended to attract outstanding scientists to the Weizmann Institute. They will be awarded to candidates from all over the world and are offered in two categories: to senior scientists for a period of 2 months to 1 year; and to candidates who have completed their Ph.D. requirements within the past 8 years.

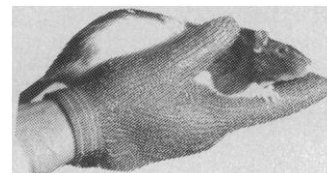
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