

tude and complexity of the potential subject matter. An enclosed time-stratigraphic chart shows the European mammal ages, which, unlike the biostratigraphic framework for any other part of the world, are documented through much of the Tertiary by rodent zones. A discussion of the still debated origin of the South American rodents presents recent data and arguments, and the significance of Li Chuan-kuei's important evidence bearing on the origin of the Rodentia, a long-standing puzzle, is reviewed.

An overall objective of the book, culminating in the final chapters, is appraisal of the modes of evolutionary change. The authors summarize chronologic successions of rodent species that have been described here and there in recent years by a number of authors (Chaline, A. J. Van de Weerd, J. J. Jaeger, M. Vianey-Liaud, J. M. Rensberger). These lineages exhibit successions of dental modifications with transitions frequently small enough to indicate a continuum of populations yet with endpoints different enough to signify distinct species or genera. The levels of difference in some parts of these lineages are comparable to differences between subspecies of living rodents; in some transitions there is little or no change, in others clearly directed change. In certain Pleistocene forms with modern survivors, such differences may be directly compared with magnitudes of variation in biologic species and subspecies and interpreted in consonance with karyotypic data. Vianey-Liaud's late Eocene to late Oligocene succession of 11 assemblages of the theridomyid *Issiodoromys* has seven transitions involving varying rates of size increase believed to be linked with climatic changes. I was somewhat disappointed that Chaline and Mein generally leave to the reader the task of extracting from the original studies the details of the temporal-spatial distributions of the fossils discussed. Although I understand the economy of this decision, readers wanting to evaluate many of these examples will be unable to do so.

The authors view equilibrating anagenesis, that is, the acquisition of small increments of change that adapts the species to varying environments or new situations, as the dominant mode of evolution. It is this mode, they suggest, that is also responsible for the rapid divergence of new species following cladogenesis (speciation). They describe a number of examples of cladogenesis in Pleistocene rodents and observe in almost every case the influence of geographic separation. They also point to the inter-

esting case of *Mus poschiavinus*, the tobacco mouse, which, amid the range of *Mus musculus*, apparently is genetically isolated because of chromosome fusions. However, the authors admit that even here the speciation may alternatively be the result of temporary isolation of a population segment during a Pleistocene climatic change.

The record of rodent evolution is interpreted to be "complex cladogenesis, with differential anagenesis." With its stress on the role of anagenesis, this interpretation clashes with that of N. Eldredge, S. J. Gould, and S. M. Stanley, who interpret the sudden geologic appearances of many new species as representing genuinely sudden biologic events that punctuate long periods of stability. Chaline and Mein conclude that one's interpretation is largely determined by one's choice of examples, that those taken from studies embodying a typological concept of the species and not utilizing a stratigraphic scale many times finer than the scale of events that are to be resolved will invariably lead to a punctuated model. Regardless of what the outcome of this controversy may be, it has promoted a new vigor among paleontologists and an increased attention to the finer details of the fossil record.

This book is partly a response to this stimulus, but, even more important, it represents the overdue introduction of fossil rodents as a significant tool for the analysis of evolutionary events. It is written to a wide audience of life scientists. G. G. Simpson once commented on the inherent difficulty of studying and interpreting fossil rodents, with the demand for special knowledge and techniques. *Les Rongeurs et l'Evolution* seems to transcend many of these difficulties, and I strongly recommend it.

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- Atlas of Blood Cells.** Function and Pathology. D.

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(Continued on page 1040)



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millivolts is simple and requires no calibration. Model 1501 is similar, but it offers only a single high-impedance input. Model 1500 is the economy model without such features as the adjustable tilt base, operating mode lights and display test function of the other two models. All three offer binary coded decimal output. Pope Scientific. Circle 800.

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Literature

Image Array Processor is devoted to the IP8500 and its design characteristics and applications. DeAnza Systems. Circle 794.

Standards for Mass Spectroscopy features materials for environmental toxicology. Kor Isotopes. Circle 806.

Chromatography Products News emphasizes preventative maintenance of gas chromatographs. L. C. Circle 808.

Media for Affinity Purification describes materials for rendering glycoproteins, nucleic acids, and other biomolecules free of impurity. Amicon. Circle 809.

Biological and Chemical Abstracts describes a joint service of BIOSIS and CAS to produce biweekly abstracts and summaries from biologic and chemical literature. Biosciences Information Service. Circle 810.

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This complete guide to current nuclear theory and design provides the tools you need to understand today's commercial practice. Combining a clear explanation of fundamental principles with up-to-the-minute analyses of recent developments, it presents the state of the art in nuclear power, in the U.S. and around the world, in one comprehensive volume.

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Norman Chigier, University of Sheffield, England

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PRINCIPLES OF SOLAR ENGINEERING

Frank Kreith, Solar Energy Research Institute, and
Jan F. Kreider, Consultant

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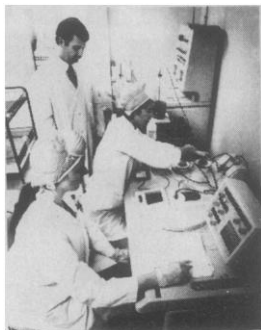
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Edited by Philip H. Abelson and Mary Dorfman

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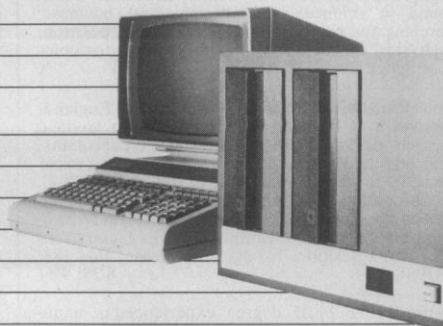
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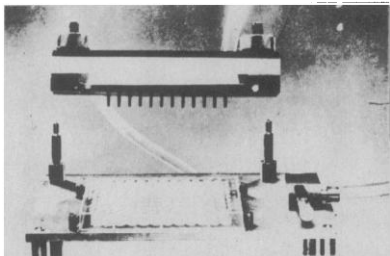
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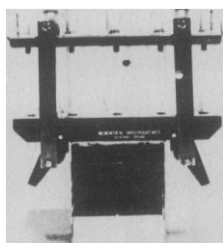
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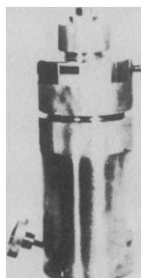
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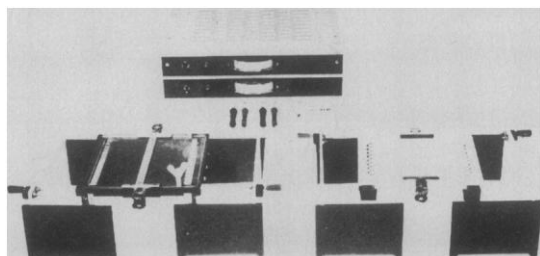
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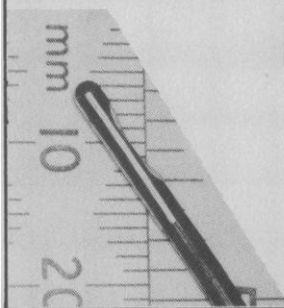
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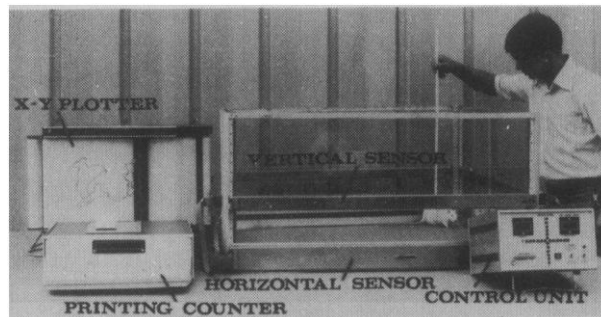
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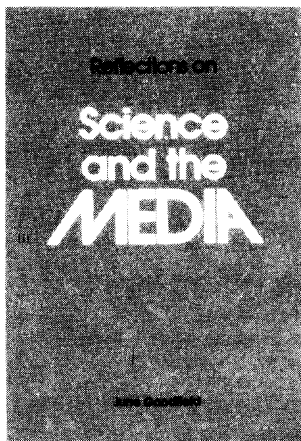
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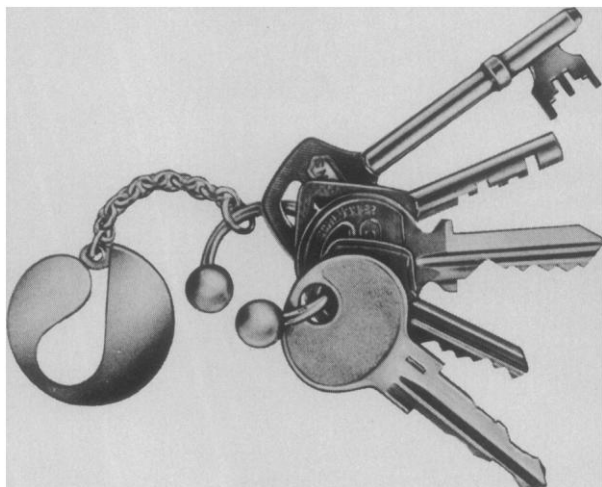
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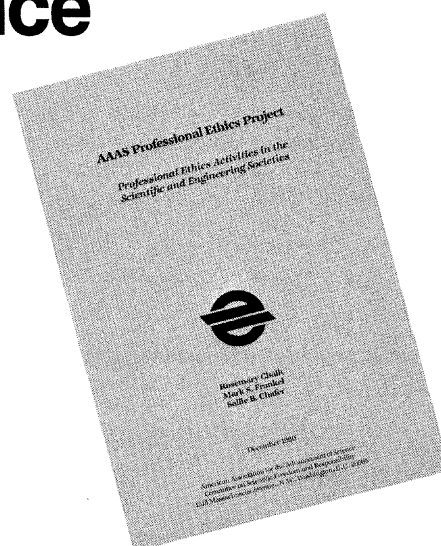
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Research Associates Office, National Research Council of Canada, Ottawa, Ontario, Canada K1A 0R6.

Closing date: 15 December 1981.

Biophysicist/ Bioengineer

Are you the
seasoned professional
to pilot our new venture?

If so, you'll have full responsibility for the development and sales positioning of a new business activity and you'll be applying your knowledge of cell culture and fermentation to the design, manufacture and marketing of diagnostic instrumentation and allied materials/equipment.

You'll need several years of solid experience in an industrial/educational environment . . . with emphasis on the formulation and packaging of biological/ medical commercial applications . . . as well as an advanced degree in biophysics or bioengineering or its equivalent.

The new technology is fully developed . . . all ready for your implementation. Our compensation and benefits are liberal . . . and your future will grow along with the project's success.

Please send resume and salary history to:

Box 225, SCIENCE

An Equal Opportunity Employer

Canada

POSITIONS OPEN

CELL BIOLOGIST—Tenure-track and postdoctoral positions available immediately for individuals to investigate cell differentiation in eye tissues; background in membrane chemistry, electron microscopy, immunohistochemistry, and cell culture desirable. Send curriculum vitae and names of three references to: **Abraham Spector, Ph.D., Department of Ophthalmology, College of Physicians and Surgeons, Columbia University, 630 West 168 Street, New York, N.Y. 10032.** An Equal Opportunity/Affirmative Action Employer.

CELLULAR IMMUNOLOGIST. Seek collaborator in investigative program concerned with mechanisms of immediate-type hypersensitivity and with regulations of IgE production. Experience in cell culture essential. Opportunity for teaching undergraduate and graduate students and for academic appointment in Mayo Medical School. Send résumé and names of three referees to: **John W. Yunginger, M.D., Mayo Clinic, Rochester, Minnesota 55901.** An Equal Opportunity/Affirmative Action Institution.

UNIVERSITY OF QUEENSLAND CHAIR IN THE DEPARTMENT OF PHYSIOLOGY AND PHARMACOLOGY

The University of Queensland invites applications for a chair of physiology in the Department of Physiology and Pharmacology which became vacant in January 1981, with the resignation of Professor G. D. Thorburn. Applicants should be able to present evidence of substantial research achievement and acknowledged leadership in the field of physiology. The successful applicant will be expected to demonstrate and foster excellence in research, and will be responsible to the head of the department for undergraduate and postgraduate teaching in keeping with Faculty Board and departmental requirements.

Salary: A\$41,509 per annum. This position is subject to the availability of funds.

Applications, with the names of three referees, should be forwarded to: **Staff Officer, University of Queensland, St. Lucia, Queensland, 4067, Australia,** as soon as possible and must reach there by 16 October 1981.

CHEMISTRY. Assistant professor, tenure-track position beginning September 1982. Position involves undergraduate and graduate teaching and development of active research programs in organic or physical chemistry. Ph.D. degree required; teaching and/or postdoctoral experience desirable. Send résumé, an original copy of graduate transcript, and three letters of reference to: **Dr. Bruce N. Storhoff, Chairman, Department of Chemistry, Ball State University, Muncie, Ind. 47306.** All credentials must be postmarked prior to 30 September 1981. In addition to satisfactory performance, various factors, such as staffing needs and budgetary requirements, may influence tenure recommendations. *Ball State University practices Equal Opportunity in Education and Employment.*

COMMUNICATION ENGINEER. Position as head of Communication Engineering Laboratory at the Boys Town Institute for Communication Disorders in Children. Responsibilities include the conduct of a research program relevant to disorders of hearing and speech, possibly emphasizing the development of improved hearing aids and computer-based speech training aids, and consultation with other groups doing related behavioral and biological research. Requires Ph.D. in electrical engineering or equivalent experience beyond the M.S. degree and thorough background in the analog and digital processing of acoustic waveforms. Send résumé and three references to: **C. S. Watson, Boys Town Institute for Communication Disorders in Children, 555 North 30 Street, Omaha, Nebr. 68131.** An Equal Opportunity Employer.

Three tenure-track openings, fall 1982, **Department of Zoology, University of Maryland, College Park, Md. 20742.** Areas: **EVOLUTIONARY BIOLOGY, CELL BIOLOGY, and COMPARATIVE BIOCHEMICAL PHYSIOLOGY.** Ph.D. required. Salary negotiable. Able to participate in lower-level core curriculum program for majors, teach specialized upper-level and graduate courses, and sustain an active grant-supportable research program attractive to graduate students. Send curriculum vitae, names of five references, synopsis of research interests, and reprints by 16 November 1981 to appropriate Search Committee chairperson (**D. E. Gill, D. Goode, S. K. Pierce**, respectively) at above address. *Affirmative Action/Equal Opportunity Employer.*

POSITIONS OPEN

CYTOGENETICIST/MOLECULAR BIOLOGIST. A position as research associate is available in a productive cytogenetics laboratory to study chromosome abnormalities in human leukemia, particularly consistent translocations with the use of in situ hybridization of cloned human DNA. Knowledge of the banding pattern of the human karyotype and of various techniques for in situ hybridization are essential. Skills in recombinant DNA technology for developing specific DNA clones for in situ hybridization would be advantageous. Completion of postdoctoral training is desirable. Exact title and salary are subject to negotiations depending on qualifications. Send letter of application, including research interests, curriculum vitae, and names of three references to: **Dr. Janet D. Rowley, Box 420, University of Chicago, 950 East 59 Street, Chicago, Illinois 60637.** The University of Chicago is an Equal Opportunity Employer.

DEAN SCHOOL OF BASIC SCIENCES VIRGINIA COMMONWEALTH UNIVERSITY RICHMOND, VIRGINIA

Applications and nominations are invited for the position of dean, School of Basic Sciences, Virginia Commonwealth University (VCU). VCU is a state-supported institution enrolling over 19,000 students on two campuses. Located on the Medical College of Virginia Campus of the university, the School of Basic Sciences includes the Departments of Anatomy, Biochemistry, Biophysics, Biostatistics, Human Genetics, Microbiology, Pharmacology, and Physiology. Those departments enroll about 170 graduate students in M.S. and Ph.D. programs and provide instruction for medical, dental, pharmacy, and other health professional students. The Basic Science departments are the recipient of over \$8 million of sponsored research and have about 70 postdoctoral trainees.

Candidates must have an earned doctorate degree and a record of scholarly achievement sufficient to qualify them for tenured rank in the university faculty. Required qualifications include experience with teaching students in the health professions, with supervision of pre- and postdoctoral trainees in basic science disciplines, and with administration of a basic science department or its equivalent.

The effective date of appointment is 1 July 1982. Deadline for applications: 2 October 1981. Submit nominations and applications to:

**Dr. Hugo R. Seibel, Secretary
Search Committee for Dean, School of Basic Sciences
Box 549—MCV Station
Richmond, Virginia 23298**

An Equal Opportunity/Affirmative Action Employer

ELECTRON MICROSCOPIST, University of Kentucky, College of Medicine, Department of Anatomy. Tenure-track position for an electron microscopist available at the assistant professor level in the Department of Anatomy. Minimum of 2 years of postdoctoral training required. Active research program with good publication record essential. Research areas: neuroendocrinology of reproduction or other aspects of reproductive endocrinology. Participation in teaching anatomy courses. Department has excellent facilities and strong research programs in neuroscience and reproductive endocrinology. Send curriculum vitae with detailed description of research goals and names of four referees to: **Dr. M. B. Nikitovitch-Winer, Chairman, Department of Anatomy, University of Kentucky Medical Center, Lexington, Ky. 40536-0084.** Deadline: 1 November 1981. *Equal Opportunity/Affirmative Action Employer.*

TENURE FACULTY POSITION at the University of California, Los Angeles. Associate or full professor in the field of planetary atmospheres. A position has now become available for a joint appointment in the Department of Atmospheric Sciences and the Institute of Geophysics and Planetary Physics. Preference will be given to senior scientists with recognized accomplishments, whose interests are in global atmospheric composition and evolution of planetary atmospheres. The position will require the successful candidate to develop a strong research program. A moderate teaching load will be expected in the Department of Atmospheric Sciences. Application deadline: 30 November 1981. Please send résumé to: **Hans Pruppacher, Chairman, Department of Atmospheric Sciences, University of California, Los Angeles, California 90024.** An Equal Opportunity/Affirmative Action Employer.

POSITIONS OPEN

CRSP PROGRAM DIRECTOR—Associate/full research nutritionist. The University of California, Berkeley, seeks a director for a U.S. Agency for International Development-funded collaborative research support program (CRSP) in nutrition intake and function, to administer CRSP scientific aspects through its component projects and centralized management systems. Initial projects are with the University of Connecticut (Mexico); the University of California, Los Angeles and Berkeley (Kenya); and Purdue University, the University of Arizona, and the University of Kansas (Egypt). Director will serve under CRSP program administrators (Professors D. H. Calloway and C. Rosberg).

Candidates must have doctoral degree in nutrition or closely relevant field with experience and/or training in nutrition; demonstrated research record; and administrative experience. Research management includes data collection and analysis, project and program evaluation, and linking information to decisions on policies and programs to improve and sustain nutrition. United Nations specialized agency experience in nutrition and development is desirable. Some foreign travel required.

Initial 2-year appointment with reappointment for additional period possible pending continued funding for the CRSP. Salary commensurate with experience and qualifications. Send résumé and names of three references to: **D. H. Calloway, 200 California Hall, University of California, Berkeley, Calif. 94720.** Closing date for applications is 1 October 1981. Several assistant/associate research nutritionists may also be hired to participate in fieldwork management and collect research data overseas.

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

EXPERIMENTAL DEVELOPMENTAL PLANT BIOLOGIST, emphasis on physiological aspects. Faculty position available, assistant professor, tenure track; Ph.D. required. Direct and assume primary teaching responsibility in undergraduate developmental biology course and develop graduate course in area of specialty. Develop strong research program and direct M.S. and Ph.D. students. Willingness to participate periodically in teaching introductory biology. Duties usually involve an average of 1½ courses per semester and the customary departmental services. Salary based on background and experience.

Candidate should send complete curriculum vitae with a cover letter detailing their professional career plans to the search committee no later than 1 October 1981.

**Search Committee
Attention: Dr. Donald R. Geiger
Department of Biology
University of Dayton
Dayton, Ohio 45469**

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

The Department of Chemistry at Purdue University solicits applications for a **FACULTY POSITION** in any area of **ANALYTICAL CHEMISTRY**, effective August 1982. Applicants will be considered at any professorial rank. Minimum requirements include a Ph.D. in chemistry and exceptional promise in research and teaching at the undergraduate and graduate levels. Applicants for more senior ranks must have demonstrated distinguished research and teaching abilities. Curriculum vitae, including undergraduate and graduate transcripts for applicants at the assistant professor level, a summary of planned research, and three letters of recommendation should be sent by 1 December 1981 to: **Professor Dale W. Margerum, Head, Department of Chemistry, Purdue University, West Lafayette, Indiana 47907.** *Purdue is an Equal Opportunity/Affirmative Action Employer.*

MANAGER OF CHEMICAL INSTRUMENTATION. An immediate opening is available for a scientist with experience in modern chemical instrumentation to oversee the advancement and maintenance of instruments located in a center serving university and regional needs. Expertise in mass spectrometry, FT-IR, NMR, or x-ray crystallography is desirable, as is a graduate degree in chemistry or related field. Please send curriculum vitae and three letters of reference to: **Dr. J. H. Prestegard, Chemistry Department, Yale University, P.O. Box 6666, New Haven, Conn. 06511.** *Yale University is an Affirmative Action/Equal Opportunity Employer.*

Ph.D. Senior Pharmacologist and B.S./M.S. Associate Level Pharmacologist

The Immunology and Connective Tissue Research division of the Lilly Research Laboratories has an immediate need for individuals to study airway smooth-muscle pharmacology in vitro and respiratory mechanics of laboratory animals in vivo.

Senior Pharmacologist — To establish a new independent program designed to examine the pharmacology and physiology of the respiratory system. The successful candidate should have broad experience in studying airway reactivity, including a thorough knowledge of the literature and the ability to carry out various in vivo and in vitro techniques. This new laboratory will be expected to conduct basic research studies in addition to the primary function of characterizing the action of bronchoactive agents. (Postdoctoral experience is essential.)

Associate Level Pharmacologist — To join a pharmacology laboratory currently involved in developing drugs useful in the treatment of asthma. Experience required.

Send résumé with salary requirements to:

Roger D. Miller
Senior Personnel Representative
Eli Lilly and Company
307 East McCarty Street
Indianapolis, IN 46285



Lilly Research Laboratories
A Division of Eli Lilly and Company
An Equal Opportunity Employer, M/F

DIRECTOR CENTER FOR ASTROPHYSICS

The Smithsonian Institution and Harvard University invite applications or nominations for the directorship of the Center for Astrophysics, a scientific collaboration between the Smithsonian Astrophysical Observatory (SAO) and the Harvard College Observatory (HCO) in Cambridge, Massachusetts. The incumbent will serve jointly as director of SAO and director of HCO. It is expected that this person will receive a federal excepted appointment with the Smithsonian Institution, and that he or she will also be appointed to a tenured position as a professor of astronomy at Harvard University. Duties must be assumed by July 1983, and preferably sooner.

The Center for Astrophysics conducts a broad program of research, including x-ray, optical, infrared, and radio astronomy; solar physics; earth and planetary science; atomic and molecular physics; and theoretical astrophysics. A summary of this program, together with details of the observational and support facilities, may be obtained from the address given below.

Candidates will be evaluated primarily on their research achievements in astronomy or some related field; breadth of scientific understanding; intellectual leadership and vision; and talent for management and administration. Applications should contain the following: a résumé describing scientific and administrative experience, a list of publications, and names of three persons who may be contacted for references. Any supplementary statement of goals or conditions would also be welcome. Applications or nominations should be submitted by 1 October 1981 to:

Dr. Alar Toomre, Chairman
Search Committee
Center for Astrophysics
60 Garden Street
Cambridge, Mass. 02138

The Smithsonian Institution and Harvard University are Equal Opportunity/Affirmative Action Employers. Applications from women and minority groups are encouraged. All candidates will be evaluated in accordance with the established procedures of the two institutions. The person selected for this position will be required to file a confidential statement of employment and financial interests with the Smithsonian Institution.

VACANCY ANNOUNCEMENT IN THE NATIONAL INSTITUTES OF HEALTH PUBLIC HEALTH SERVICE DEPARTMENT OF HEALTH AND HUMAN SERVICES

The National Institutes of Health invites nominations and applications for the position of **associate director for medical applications of research**. This is a Civil Service position in the Senior Executive Service (SES), with a salary range from \$52,247 to \$57,673 per annum, depending on qualifications (currently, salary limited to \$50,112.50). Candidates may be eligible for Physicians Comparability Pay 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 individual selected, if not presently in the SES, must serve a 1-year probationary period.

The position of associate director for medical applications of research is that of principal adviser to the Institutes and to the director, NIH, on matters concerning patents, licensure, and linkages to industrial developers of health technology. Further information about the position, including qualifications and requirements, may be obtained by **telephoning: Sharon Posy on 301-496-6521**. Applications (Personal Qualifications Statement, SF-171) are to be sent to: **Chairman, Search Committee for Director, OMAR, National Institutes of Health, Building 1, Room 132, 9000 Rockville Pike, Bethesda, Maryland 20205**. Current curriculum vitae and bibliography must accompany all applications. *Applications from women and/or minority group members are especially solicited.*

Applications will be accepted through 15 October 1981 and must be postmarked by that date.

An Equal Opportunity Employer

Biotechnology Research

Damon Biotech is entering an exciting phase of growth in the research and development of a broad range of products in cellular and molecular biology, genetics and immunology. **Damon Biotech** will utilize its proprietary microencapsulation process to produce interferon, monoclonal antibodies, cancer diagnostics, vaccines, and other biological products.

We are looking for research scientists and assistants with expertise in either of the following major areas: (A) Human interferon systems, tissue culture, protein isolation, purification and characterization, (B) Hybridoma technology, large-scale culture of suspension and anchorage dependent cells, isolation and purification of monoclonal antibodies and antibody purification methods.

Qualified candidates should have a PhD degree in Molecular Biology/Biochemistry or Immunology/Cell Biology with 1-3 years post-doctoral experience in the above mentioned areas. Candidates for the positions as Research Assistants should have a BS or MS degree with some related experience.

*Candidates interested in exploring this opportunity further should submit curriculum vitae and letter describing interests to Supervisor of Employment Services, **Damon Biotech**, 115 Fourth Avenue, Needham Heights, MA 02192. We are an equal opportunity employer m/f/h.*

DAMON *Biotech*

POSITIONS OPEN

ASSISTANT OR ASSOCIATE PROFESSORSHIP in analytical toxicology, metabolic toxicology, or general toxicology. Must have significant training and experience in the toxicology metabolism, pharmacokinetics, and analytical chemistry of xenobiotics and drugs. Doctorate in biochemistry, analytical chemistry, pharmacology, or organic chemistry is required. The position involves working with a group of scientists on government and industrial contracts. Time will be made available to develop individual research interests. Salary: \$20,000 to \$35,000. Reply to: **Dr. Edward D. Helton, Primate Research Institute, New Mexico State University, P.O. Box 1027, Holloman AFB, N.M. 88330.** Deadline: September 1981. *An Equal Opportunity/Affirmative Action Employer.*

HYDROMETEOROLOGIST, assistant/associate professor level, tenure-leading. Develop and lead a research program to provide quantitative information on precipitation and evapotranspiration contributing to an understanding of the hydrologic balance of the Sandhills and other regions of Nebraska. Research program will involve cooperation with other meteorologists, hydrologists, ecologists, engineers, and others involved in planning rational development of Nebraska's land and water resources. Requires Ph.D. in meteorology or climatology with training and experience in hydrometeorology essential. Strong background in hydrology, instrumentation, mathematics, and computer science desirable. Apply with letter and curriculum vitae by 15 September to: **Norman J. Rosenberg, Director, Center for Agricultural Meteorology and Climatology, 202 C. Y. Thompson Library, University of Nebraska—Lincoln, Lincoln, Nebraska 68583-0728.** *Affirmative Action/Equal Opportunity Employer.*

IMMUNOLOGIST. Ph.D. Available now for ongoing research on immunology of the eye. Specific areas include herpes simplex virus immunology, autoimmunity of the retina, and role of lymphocytes in the ocular immune response. Experience in cellular immunology desirable. Send résumé and names of three references to: **Roberta Meyers-Elliott, Ph.D., Jules Stein Eye Institute, University of California, Los Angeles, School of Medicine, Los Angeles, Calif. 90024.** *Affirmative Action/Equal Opportunity Employer.*

MICROBIOLOGIST

Rapidly growing industry leader in biotechnology seeks M.S. or Ph.D. microbiologist with experience in isolating, culturing, and identifying microorganisms. Pollution control and chemical production application biotechnology are the focus of several research programs. Experience in genetics and small-scale fermentations a definite plus. Competitive salary and full fringe-benefit package.
Box 208, SCIENCE

MICROBIOLOGY AND IMMUNOLOGY POSITIONS—Several junior faculty (instructors) and postdoctoral research and training positions are available for highly motivated and competent individuals interested in immunobiology, microbiology, and infectious diseases. Applicants should submit their curriculum vitae, copies of doctoral transcripts, and letters from three individuals familiar with their background to: **Dr. Herman Friedman, Professor and Chairman, Department of Medical Microbiology and Immunology, MDC Box 10, University of South Florida, College of Medicine, 12901 North 30 Street, Tampa, Fla. 33612.**

PHYSICIST—A research facility is seeking a full-time Ph.D. physicist to formulate and accomplish fundamental high energy physics research and participate in an ongoing program in both day-to-day running and long-range projects such as a superconducting magnet program. The completion of a postdoctoral appointment in high energy physics or 2 years of like training is required. The annual salary offered would be \$27,000. Contact: **Jim Lasenby, Fermi National Accelerator Laboratory, P.O. Box 500, Batavia, Ill. 60510.** *An Equal Opportunity Employer, M/F.*

POSTDOCTORAL ASSOCIATE. Position available September 1981 or after. Postdoctoral associate to work on rapid kinetics of hemoglobin and thus study of protein conformation. Salary commensurate with experience. Send résumé to: **Dr. Quentin H. Gibson, Section of Biochemistry, Molecular and Cell Biology, Wing Hall, Cornell University, Ithaca, New York 14853.** *An Equal Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

MOLECULAR BIOLOGY

The Department of Biochemistry and the Rosenstiel Center of Brandeis University invite applications for a tenure-track position at the assistant or associate professor level. The criterion for selection will largely rest on excellence of research, both accomplished and planned. Excellence in teaching is also expected. Send curriculum vitae and a short description of accomplished and planned research and arrange for three letters of reference to be sent to: **Dr. Pieter C. Wensink, Rosenstiel Center, Brandeis University, Waltham, Mass. 02254.** Deadline for applications is 5 October 1981. *We are an Equal Opportunity/Affirmative Action Employer.*

GOVERNMENT OF NEW ZEALAND

PETROLEUM GEOPHYSICIST NEW ZEALAND GEOLOGICAL SURVEY

New Zealand is undergoing major expansion of its energy resource investigations including prospecting for hydrocarbons. The Department of Scientific and Industrial Research, the principal government R & D agency and the adviser to government and industry in science and technology, has a vacancy in its Geological Survey for a seismic interpreter. The position, in the Petroleum and Basin Studies Section, requires a person with a sound geological background primarily for regional analysis for the Basin Studies Programme.

Qualifications: A good 4-year bachelor's degree or higher and at least 3 years of petroleum exploration experience are preferred.

Salary: A salary of up to NZ\$23,520 per annum is offered for this position, depending on qualifications and experience.

Further information, application forms, and so forth, may be obtained from the **Ambassador Extraordinary and Plenipotentiary, New Zealand Embassy, Washington, D.C.** Applicants should quote vacancy number 2557 and forward applications, accompanied by a résumé, to:

**The Ambassador Extraordinary and Plenipotentiary
New Zealand Embassy
Observatory Circle, NW
Washington, D.C. 20008**

Closing date for applications: 28 November 1981.

OKLAHOMA—ORAL ROBERTS UNIVERSITY, DEPARTMENT OF PHARMACOLOGY, is recruiting faculty, preferably at the full or associate professor level. The department desires applicants who are highly qualified to teach both preclinical and clinical pharmacology and who will engage in basic and clinical pharmacology research with extramural funding. *The University is an Equal Opportunity/Affirmative Action Employer* and a nondenominational, private Christian institution. M.D.'s and Ph.D.-M.D.'s are invited to inquire. **Clinton N. Corder, Ph.D., M.D., Chairman, Department of Pharmacology, Oral Roberts University, 7777 South Lewis Avenue, Tulsa, Oklahoma 74136; telephone 918-492-6161, extension 2332.**

POSTDOCTORAL ASSOCIATE—NEUROBIOLOGY. Seeking person with interest in chemistry and physiology of peptide neuroendocrine systems. Studies in progress concern differential regulation of synthesis, transport, and secretion of two neuropeptide factors in the CNS of *Aplysia*. Experience with biochemical analyses and knowledge of neurophysiology desirable. Send letter with names of three referees to: **S. Arch, Biology Department, Reed College, Portland, Oregon 97202.** *Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL POSITION to study health effects of energy-related pollutants. Background in toxicology, microbiology, or immunology desirable. Send curriculum vitae and names of three references to:

**Dr. James J. McGrath
Department of Physiology
Texas Tech University Health Sciences Center
Lubbock, Texas 79430**

POSTDOCTORAL POSITION IN ORGANIC CHEMISTRY. Research involving the isolation, characterization, and synthesis of naturally occurring insecticides. Ability to utilize FT-NMR and GC-MS in structure determinations is essential. Experience in chromatographic methods (especially HPLC) and heterocyclic chemistry is required. Salary: \$13,500. Submit résumé and two letters of recommendation to: **Tom Cannon, Job Service of Iowa, 1810 Lower Muscatine Road, Iowa City, Iowa 52242.** *The University of Iowa is an Equal Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

POSTDOCTORAL POSITION available immediately in area of **CELL SURFACE**. Preference will be given to individuals with background and interests in applying biochemical and immunological approaches to the study of dynamic cell surface phenomena utilizing *Chlamydomonas* and its flagellar surface. Send résumé with list of references to: **Dr. R. A. Bloodgood, Department of Anatomy, Box 439, University of Virginia Medical Center, Charlottesville, Virginia 22908.** *An Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL POSITION available for a person with training in biochemistry, cell biology, or pharmacology to participate in ongoing cancer research program in cell kinetics and biochemical pharmacology. Preference will be given to candidates with experience in flow cytometry, HPLC, cell culture, or in vivo animal tumor model systems. Send résumé and names and addresses of three references to: **Dr. Ruth Moran, Division of Neoplastic Diseases, New York Medical College, Valhalla, N.Y. 10595.**

POSTDOCTORAL POSITION for biochemist with background in membrane or cell biology. Investigation of cell-cell communication and chemotaxis focusing on the cAMP-mediated aggregation of *D. discoideum* as a model system. Position available immediately. Please send curriculum vitae to: **Dr. Peter N. Devreotes, Department of Physiological Chemistry, The Johns Hopkins University School of Medicine, 725 North Wolfe Street, Baltimore, Md. 21205.**

POSTDOCTORAL POSITIONS (one or two) available in somatic cell genetics and immunogenetics to study (i) the genetic organization of gene clusters coding for cell surface antigens such as the mammalian histocompatibility complex (MHC), and (ii) mechanisms by which variants arise in somatic cells. Backgrounds in molecular genetics, recombinant DNA, other areas of genetics, or immunochemistry desirable. Send curriculum vitae, brief statement of research experience and goals, and three letters of reference to: **Dr. Donald Pious, Departments of Pediatrics and Genetics, RD-20, University of Washington, Seattle, Washington 98195.** *An Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL POSITION available immediately to study bacteriophage assembly with emphasis on the biochemistry of the morphogenetic reactions. General experience in molecular biology including protein isolation and enzymology desirable. Send curriculum vitae and three references to: **Lloyd M. Kozloff, S-412, Department of Microbiology and Immunology, University of California, San Francisco, California 94143.** *Equal Opportunity Employer.*

VANDERBILT UNIVERSITY

POSTDOCTORAL POSITION available to study the biochemistry and physiology of androgen-binding proteins. A strong biochemical background is required; a knowledge of cell culture and immunological techniques would be helpful. Stipend is based on National Institutes of Health guidelines. Send curriculum vitae and the names and telephone numbers of three references to: **Benjamin J. Danzo, Ph.D., Department of Obstetrics and Gynecology, Vanderbilt University, Nashville, Tennessee 37232.**

POSTDOCTORAL POSITIONS—Two positions open immediately to study regulation of protein glycosylation and metabolism of dolichol derivatives during chick oviduct differentiation. Background in lipid intermediates, carbohydrate chemistry, or polyprene biosynthesis desirable but not essential. Salary negotiable depending upon experience. Send curriculum vitae and three letters of reference to: **Dr. John J. Lucas, Department of Biochemistry, State University of New York—Upstate Medical Center, Syracuse, N.Y. 13210.** *An Equal Opportunity/Affirmative Action Employer.*

MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT)

BIOCHEMICAL ENGINEERING LABORATORY

POSTDOCTORAL POSITION available immediately in bacterial genetics and the application of this discipline for improvement and construction of strains for overproduction of amino acids. Experience in recombinant DNA technology and cloning essential. Send curriculum vitae and three letters of reference to: **Professor Charles L. Cooney, Biochemical Engineering Laboratory, c/o MIT Personnel Office, E19-239, 77 Massachusetts Avenue, Cambridge, Mass. 02139.** *MIT is an Equal Opportunity/Affirmative Action Employer.*

INGENE is a young and rapidly growing company creating industrial and biomedical products through genetic engineering technologies. Our laboratory facilities support projects utilizing recombinant DNA approaches, molecular genetics, cell culture, DNA synthesis and sequencing, and immunology. We are recruiting personnel in the fields of:

GENETIC ENGINEERING/RECOMBINANT
DNA TECHNOLOGY

MOLECULAR GENETICS/MICROBIOLOGY
BACTERIA/YEAST

IMMUNOLOGY/HYBRIDOMA TECHNOLOGY

PROTEIN BIOCHEMISTRY/ENZYMOLGY

PLANT CELL GROWTH and GENETICS/
SEED SCIENCE

Opportunities exist for qualified Ph.D. candidates with postdoctoral experience and an interest in participating in a stimulating, scholarly research program. We also are seeking technical personnel and postdoctoral fellows for work on diversified genetic engineering projects.

INGENE has attractive laboratory facilities in coastal Santa Monica, California, one of the most desirable commercial and residential sections in the Los Angeles area.

Please send a resume and list of three references to:

INGENE
1701 Colorado Avenue
Santa Monica, CA 90404

INGENE is an Equal Opportunity Employer and welcomes applications from qualified women and minorities.

FACULTY RESEARCH LEAVE AT ARGONNE

Argonne National Laboratory, one of the U.S. Department of Energy's major research and development centers, announces a Program of Faculty Research Leave at Argonne (FRLA). This Program is intended to accommodate the needs of a member of the faculty of a U.S. university wishing to use his/her sabbatic leave to conduct research at a major research institution. Opportunities exist for faculty who are active researchers to participate in Argonne's extensive program of basic and applied energy-related research. Typical financial support remitted to the university for these appointments includes 50% of salary and fringe benefits for nine months of the appointment and 100% of the summer salary and fringe benefits.

Additional information may be obtained from: ARGONNE DIVISION OF EDUCATIONAL PROGRAMS, 9700 South Cass Avenue, Argonne, Illinois 60439. Or call (312) 972-3374.



An Affirmative Action/Equal Opportunity Employer, Women, Minorities, the Handicapped and Veterans are Urged to Apply.

Post~Doctoral Research Position

The Department of Biological Research of G.D. Searle & Co.'s Research & Development Division has a post-doctoral research position available immediately under the sponsorship of George Fuller, Senior Research Scientist. Qualified candidates should have a recent PhD or equivalent terminal degree with biochemical orientation. Familiarity in cell culture methodology and with the biochemistry of prostaglandins is preferred. This individual would be a member of a multidisciplinary group working on platelet dysfunction. Project focus is on the regulation of prostacyclin production by vascular endothelial and smooth muscle cells in culture. The appointment is for 1 year, renewable for a second year.

We offer a liberal salary and benefits package. Candidates are encouraged to send resume, including summary of research experience and three references to:

Barbara Gardner
#81154-014

Research & Development Division
G.D. Searle & Co.
Box 5110 / Chicago, IL 60680

*Equal Opportunity M/F/H...
A Practice, Not Just A Policy*



TOXICOLOGIST

The Department of Safety Assessment, Merck Institute for therapeutic research, is seeking an innovative and creative toxicologist.

The position involves responsibility for the design and conduct of acute, subacute and chronic toxicity studies of potential therapeutic agents with widely varying biologic activity in multiple animal species. Responsibilities will also include interpretation of data and generation of reports suitable for submission to regulatory agencies.

We are seeking an applicant with a Doctorate in Toxicology or a closely related discipline, post-doctoral training or equivalent and a strong record of publication. The successful candidate should have a broad background in toxicology with an interest in mechanisms of toxicity and a demonstrated ability to contribute to problem solving in this broad area.

The Merck Institute has always provided exceptional opportunities for professional growth in a multi-disciplinary research environment. Merck also offers an outstanding benefits package. The research facilities are located in a rural setting, 25 miles northwest of Philadelphia.

Please send curriculum vitae
with publication record to:

Donal E. Jackson

**Merck Sharp & Dohme
Research Laboratories**
West Point, PA 19486

EEO/AA/VH/EMPLOYER

POSITIONS OPEN

POSTDOCTORAL POSITION available immediately in ongoing program on coagulation and thrombosis and on vitamin K and vitamin K antagonists. Applicants should have a recent Ph.D. or M.D. and a strong background in biochemistry and experience with different types of chromatography (column, HPLC, GC/MS) is preferred. Send curriculum vitae and names of three references to: **Thorir D. Bjornsson, M.D., Division of Clinical Pharmacology, Box 3813, Duke University Medical Center, Durham, N.C. 27710.**

PROFESSIONAL RESEARCH ASSISTANT IN PLANT BIOCHEMISTRY

Duties will include culture of plant cells and isolation and purification of cell walls from cultured cells. Polysaccharides will be extracted from purified cell walls and purified by gel permeation chromatography and ion-exchange chromatography. Other duties will include qualitative and quantitative analysis of polysaccharides including glycosyl and glycosyl linkage composition analyses. Experience in these areas is desirable. Applicants should have the equivalent of a B.Sc. or M.Sc. in biochemistry, chemistry, or biology (with chemical training). Starting salary (between \$12,000 and \$15,000) will depend on experience. *The University of Colorado is an Affirmative Action/Equal Opportunity Employer.*

Applications should be sent to: **Dr. Alan Darvill or Dr. Peter Albersheim, Department of Chemistry, University of Colorado, Campus Box 215, Boulder, Colorado 80309**, and should be received by 30 September 1981.

RESEARCH ASSOCIATE (POSTDOCTORAL)—Cellular or molecular immunologist to participate in collaborative and independent research in broad areas. Genetic control of the immune response in mice using synthetic polymers of amino acids. Studies concentrate on T cell receptors, factors, idiotype (anti-idiotypic), and hybridomas. Contact: **Dr. Paul H. Maurer, Department of Biochemistry, Jefferson Medical College, Thomas Jefferson University, 1020 Locust Street, Philadelphia, Pa. 19107.** *Equal Opportunity Employer.*

THE AUSTRALIAN INSTITUTE OF MARINE SCIENCE RESEARCH POSITION CHEMICAL OCEANOGRAPHY

The Australian Institute of Marine Science was established as a Statutory Authority of the Commonwealth Government in 1972 and in 1977 moved into a modern, comprehensively equipped laboratory complex at Cape Ferguson near Townsville. The Institute is well situated for studies in tropical marine science including phenomena at the land-sea interface, on the complex environment of the Great Barrier Reef, and in the adjacent ocean. The ongoing programs of the Institute are augmented by active collaboration and interaction with visiting investigators from research organizations within Australia and overseas.

Applications are invited from researchers with interests and experience in chemical and related aspects of oceanography to take part in comprehensive investigations of the environment and living communities of the Great Barrier Reef. Within the overall program, an understanding is sought of the physical, chemical, and biological interactions taking place within reefal systems and between those systems and adjacent waters.

Qualifications: The appointee must possess Ph.D.-level qualification and preferably experience demonstrably applicable to the research program outlined.

Salary: The salary offered shall be commensurate with the qualifications and experience of the successful candidate.

Applications, including complete curriculum vitae and the names of at least three but not more than five referees, should be forwarded to:

The Secretary
Australian Institute of Marine Science
P.M.B. Number 3
M.S.O. Townsville, Queensland 4810
Australia

Closing date for applications is 30 September 1981.

POSITIONS OPEN

POSTDOCTORAL POSITION to study in vivo and in vitro regulation of pituitary hormone biosynthesis and secretion with emphasis on interactions of neurotransmitters and releasing hormones under physiologic and pathologic conditions including uremia. Prior experience with hormone receptors especially catecholamines and/or animal studies. Salary flexible. Send curriculum vitae and two letters of reference to: **Dr. Paul Woolf, University of Rochester Medical Center, Endocrine Unit, Rochester, N.Y. 14642.** *Equal Opportunity Employer.*

POSTDOCTORAL POSITION in cell biology. Project involves analysis of development following conjugation in a ciliate protozoan system, using cytological approaches (including microbeam irradiation). Experience in cytological techniques desirable. Available September 1981. Salary approximately \$14,500. Send curriculum vitae and names of three references to: **Dr. John A. Kloetzel, Department of Biological Sciences, University of Maryland Baltimore County, Catonsville, Maryland 21228.** *Equal Opportunity/Affirmative Action Employer.*

MICHIGAN STATE UNIVERSITY POSTDOCTORAL RESEARCH POSITIONS ENVIRONMENTAL CARCINOGENESIS-MUTAGENESIS

Two positions available immediately (as well as two later) for persons with strong background in molecular biology, biochemistry, biophysics, or microbiology to investigate diploid human cells in culture, the molecular mechanisms of radiation, and chemical carcinogen-induced mutagenesis and oncogenic transformation. The multidisciplinary approaches used include comparative studies in cells which differ in DNA repair capabilities; determination of the nature of the DNA lesions responsible for the biological effects; gene isolation, cloning, and sequencing; and site-specific mutagenesis. Send application, including curriculum vitae, reprints, and letters of recommendation to: **Dr. J. Justin McCormick or Dr. Veronica M. Maher, Co-directors, Carcinogenesis Laboratory, Fee Hall, Michigan State University, East Lansing, Mich. 48824.** *An Affirmative Action/Equal Opportunity Institution.*

POSTDOCTORAL RESEARCH FELLOWSHIPS

New program for outstanding M.D.'s or Ph.D.'s with an interest in 1 or preferably 2 years of involvement in innovative cancer research. Areas of research cover a broad spectrum including clinical investigation, epidemiology and biostatistics, molecular and cellular biology, biophysics, and medical physics. M.D.'s will receive awards equivalent to current stipends for residents, and all awards are competitive with other prestigious fellowships in Canada. Send curriculum vitae, brief statement of research background and interests, plus names, addresses and telephone numbers of three references to:

**Dr. James E. Till
Coordinator
Terry Fox Postgraduate Program
Ontario Cancer Institute
500 Sherbourne Street
Toronto, Ontario, Canada
M4X 1K9**

POSITIONS OPEN

POSTDOCTORAL RESEARCH ASSOCIATE IMMUNOLOGY PROGRAM DARTMOUTH MEDICAL SCHOOL HANOVER, NEW HAMPSHIRE

Two postdoctoral positions are open as of January to July 1982 for research on T-cell growth factor and the regulation of T- and B-cell function. Experience in cellular immunology, the long-term culture of T-cells, biochemistry, and/or hormone-receptor interaction is desirable. The appointment will be for a minimum of 2 years. Salary is negotiable depending on experience. Send curriculum vitae and two letters of reference to:

**Dr. Kendall A. Smith
The Basel Institute for Immunology
487 Grenzacherstrasse
CH 4058 Basel
Switzerland**

An Equal Opportunity/Affirmative Action Employer

POSTDOCTORAL RESEARCH ASSOCIATE

A position is available for studies aimed at identification of germ-line specific RNA transcripts in *D. melanogaster* and *C. erythrocephala*. Techniques include DNA cloning and sequencing, cytogenetics, and tissue-specific RNA studies. Experience with *D. melanogaster* genetics preferred.

Available October 1981. Send curriculum vitae and three references to: **Dr. K. Beckingham, Department of Biochemistry, Rice University, Houston, Texas 77001.**

POSTDOCTORAL RESEARCH ASSOCIATES to study (i) regulation of proteoglycan synthesis and mechanism of proteoglycan induction by circulating factors and (ii) regulation of lysosomal enzyme synthesis and activity in articular cartilage. Applicants should have strong background in biochemistry and/or immunology. Experience with HPLC is helpful. Salary range up to \$20,000. Please send curriculum vitae and three references to: **Dr. Edith Schwartz, Department of Orthopedics, Tufts University, 136 Harrison Avenue, Boston, Mass. 02111.** *Tufts University is an Equal Opportunity Employer.*

QUEEN'S FELLOWSHIPS IN MARINE SCIENCE

To commemorate the Royal visit to Australia in 1970, the Australian Government established the Queen's Fellowships Scheme. Under this Scheme up to five fellowships may be awarded each year for full-time research by young scientists of exceptional promise and proven capacity for original work. These awards are tenable at an Australian university or approved research institution normally for 2 years. Tenure of a fellowship is expected to commence within 9 months of the announcement of the award.

QUALIFICATIONS: Queen's fellows should have a Ph.D. or equivalent qualifications or equivalent research or professional experience in a discipline applicable in marine science or coastal engineering.

SALARY: A\$21,509 per annum, increased to \$23,107 at age of 28 years (at present under review).

TRAVEL EXPENSES: Necessary travel expenses are payable.

APPLICATIONS: Persons interested in applying for the above fellowships should obtain application forms from:

The Secretary, Queen's Fellowship Committee, Department of Science and Technology, P.O. Box 65, Belconnen, A.C.T. 2616, Australia;

The Minister (Scientific), Australia House, The Strand, London WC2B 4LA, United Kingdom; or

The Counsellor (Scientific), The Australian Embassy, 1601 Massachusetts Avenue, Washington, D.C. 20036.

The next round of awards will be announced in January 1982. Applications close at the Canberra address on 30 September 1981.

**UNIVERSITY OF ZURICH
(Switzerland)**

**FACULTY OF
VETERINARY MEDICINE**

**invites applications for the position of
PROFESSOR in
VETERINARY PHYSIOLOGY**

Applicants should have a higher degree, a PhD or an equivalent qualification in veterinary physiology and teaching experience at university level. They are expected to perform and to direct experimental research, to teach physiology (in German) to undergraduate veterinary students and to be head of the institute of veterinary physiology.

Salary range SFr. 99 300.- to 128 200.-
(1 SFr. = 0,5 US\$).

Applications including a curriculum vitae and a list of applicant's published papers should be addressed to the **Dekanat der Veterinärmedizinischen Fakultät der Universität Zürich, Winterthurerstr. 260, CH 8057 Zürich (Switzerland)** to arrive no later than October 1, 1981.



THE
UNIVERSITY
OF CALGARY

**ALBERTA HERITAGE
MEDICAL FOUNDATION RESEARCH
POSITIONS IN ENDOCRINOLOGY**

The Endocrine Research Group at The University of Calgary, Faculty of Medicine, Calgary, Canada, will be seeking up to four new faculty members over the next two years. Although junior faculty positions are envisioned, applications from more senior investigators will be considered. Preference will be given to those interested in molecular or clinical endocrinology with expertise in recombinant DNA technology, peptide synthesis and/or microsequencing, membrane chemistry or in the study of hormone action in tissue culture systems.

Enquiries, including a complete *curriculum vitae* and at least two personal references, should be directed to:

Dr. Y. Lefebvre, Head
Endocrine Research Group, Faculty of Medicine
Health Sciences Centre 2961
The University of Calgary
3330 Hospital Drive N.W.
Calgary, Alberta T2N 4N1

**MEDICAL PROGRAMS
SCIENCE ADMINISTRATOR**

The American Heart Association has an opportunity for a Medical Programs Science Administrator at the National Center, Dallas, Texas, in the Office of Research and Medical Programs. The successful candidate will have completed all requirements for a PhD (or equivalent doctoral degree) and is qualified to work directly with medical and scientific volunteer leaders expediting timely decisions on appropriate medical and scientific issues. The administrator will be responsible for acquiring and continuously updating a data base for State-of-the-Art judgments in one or more scientific areas. This position includes management and administrative duties, coordinating provisions for functions of Scientific Councils and providing direct staff services to volunteers by reviewing issues and preparing draft position papers. Duties also include providing staff leadership in association with the planning and implementation of Council-related matters to scientific meeting and Council-planned professional education projects. The salary is negotiable depending upon background and experience.

For confidential consideration, please forward resume with salary history to: **Division Director of Personnel and Training, American Heart Association, National Center, 7320 Greenville Ave., Dallas, Texas 75321**



**American Heart
Association**

An Equal Opportunity Employer M/F

**Molecular Biology — Virology — Immunology
Syngene Products and Research — Colorado**

Applications are invited from research scientists (Ph.D. or M.D.) and technicians (B.S. or M.S.) to join Syngene Products and Research, Inc. (SPAR), a TechAmerica Group Company. TechAmerica Group, Inc. is a rapidly growing company with advanced production and marketing capabilities. We are forming a diverse group of energetic, creative scientists for the purpose of developing new products for use in animal and human medicine and agriculture.

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Virology	— development of new vaccines
Hybridomas	— monoclonal antibodies for affinity chromatography, diagnostics and serotherapy
Biochemistry	— isolation and sequencing of proteins
Microbiology	— physiology and fermentation technology

We encourage publication and sponsor cooperative research programs with university groups, and private research companies.

SPAR laboratories are near Colorado State University in Fort Collins, located about 110 Km north of Denver, Colorado. Climate and recreational opportunities are excellent.

Attractive salaries and benefits, and generous bonus programs are offered.

Send curriculum vitae or resume, reprints of recent papers, and the names and addresses of three to five references to:

Dr. K.A. Larson
Syngene Products and Research, Inc.
225 Commerce Drive
P.O. Box 2211
Fort Collins, CO 80524
Phone: (303) 221-2050

Communications Confidential

POSITIONS OPEN

Ph.D. in horticulture and a master's in applied statistics. Conduct plant-breeding research work with vegetables and small fruit. Must use statistical analysis in the evaluation of his/her breeding program. Must be able to conduct tours for visitors. Research data recorded statistically, analyzed, and published whenever research project completed. Salary: \$24,000; 40 hours per week. Job order No. 777805. *Equal Opportunity Employer.*

Louisiana Department of Labor
1919 Franklin Street
Gretna, La. 70053
Telephone: 504-361-6324

POSTDOCTORAL POSITION

Research involves a biochemical, genetic, and molecular biological analysis of cytochrome P-450 and other enzymes of aromatic hydrocarbon hydroxylase activation in cultured mammalian cells. Doctorate in biochemistry of pharmacology is essential. Experience with P-450, carcinogen or drug metabolism, and cell culture are all advantageous. Please submit curriculum vitae and names of three references to: **Laboratory Personnel Officer, OH, Laboratory of Biomedical and Environmental Sciences, 900 Veteran Avenue, Los Angeles, Calif. 90024.** *An Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL POSITION—ELECTRON MICROSCOPY OF ALGAE, FUNGI, BACTERIA. For research program studying adaptations of microorganisms to extreme conditions in the Antarctic cold desert. Available immediately; renewal possible. Send résumé, supporting material, and names of three referees to: **Dr. E. Imre Friedmann, Department of Biological Science, Florida State University, Tallahassee, Fla. 32306.** Telephone: 904-644-5438.

POSTDOCTORAL POSITION available immediately to study the genetics of alkane metabolism by *Acinetobacter*. Experience in modern molecular genetics essential. Send curriculum vitae and names of three references to: **Dr. W. R. Finnerty, Department of Microbiology, University of Georgia, Athens, Ga. 30602.** *An Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL RESEARCH ASSOCIATE

Position available for EM study of mammalian muscle spindles. Experience desired in skeletal muscle ultrastructure. Salary dependent upon qualifications. Send résumés and names of three references to: **Dr. Jan Kucera, Neurology Department, Boston University School of Medicine, 80 East Concord Street, Boston, Mass. 02118.** *An Equal Opportunity Employer, M/F.*

RESEARCH ASSOCIATE for animal tumor studies. A scientist (Ph.D. or M.D.) with experience in studies of antitumor agents in model tumors in mice to join a group studying interferons, lymphokines, and cytokines. Salary dependent on experience and qualifications. Send curriculum vitae and names and telephone numbers of three references to: **Dr. Samuel Baron, Department of Microbiology, The University of Texas Medical Branch, Galveston, Texas 77550.** *An Equal Opportunity/Affirmative Action Employer, M/F/H.*

RESEARCH GEOLOGIST. Faculty-level research position within the Conservation and Survey Division, University of Nebraska, responsible for stratigraphic and sedimentologic studies on the Quaternary and related educational and service activities. Affiliated with state Geological Survey. Ph.D. degree and experience related to radiometric dating preferred. Submit résumé and three letters of reference by 15 September to: **R. R. Burchett, University of Nebraska-Lincoln, 113 Nebraska Hall, Lincoln, Nebraska 68588-0517.** *An Affirmative Action/Equal Opportunity Employer.*

Job opening: **SYSTEM SOFTWARE STAFF** of the computer-based Education Research Laboratory (PLATO), with duties in maintenance, development, system management, and system design. Qualifications: bachelor's degree with experience in system software and/or CAI programming. Should be able to work on own initiative in group of 10 to 20 people. Starting salary: \$16,000 to \$19,000. Send letter and résumé to: **D. R. K. Rader, 252 ERL, 103 South Mathews, University of Illinois, Urbana, Ill. 61801.** Closing date: 15 September 1981.

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

POSITIONS OPEN

RESEARCH ASSOCIATE POSITION available immediately for work on evolutionary studies of the primate globin gene clusters. Experience with recombinant DNA preferred. Send curriculum vitae, statement of research background and interests, and names, addresses, and telephone numbers of two references to: **Dr. Alan F. Scott, 933 Traylor Building, Johns Hopkins University, School of Medicine, 720 Rutland Avenue, Baltimore, Md. 21205.**

RESEARCH ASSOCIATE POSITION: Ph.D. required in protein chemistry/biochemistry; experience in research on physical properties of proteins. To conduct and coordinate research on structural-functional relationships in food proteins. Please send résumé and three letters of reference to: **John E. Kinsella, Director, Institute of Food Science, Stocking Hall, Cornell University, Ithaca, N.Y. 14853,** by 18 September 1981.

Cornell University is an Affirmative Action/Equal Opportunity Employer.

HOSPITAL FOR SPECIAL SURGERY CORNELL MEDICAL CENTER

Research neurophysiologist (Ph.D.) and/or postdoctoral fellow to conduct ongoing research in spinal cord monitoring during corrective spinal surgery and to develop electrophysiological techniques for intraoperative recording of evoked responses. For further information, contact: **Peter Tsairis, M.D., Director of Neurology, Hospital for Special Surgery-Cornell Medical Center, 535 East 70 Street, New York, N.Y. 10021.** *An Equal Opportunity Employer.*

MEETING

Frontiers in Liposome Research: Targeted Chemotherapy

5 to 7 November 1981, San Francisco, California
A meeting sponsored by the Northern California Cancer Program and the School of Medicine, University of California, San Francisco, and organized by Dr. D. Papahadjopoulos, will bring together a group of investigators with diverse backgrounds to critically evaluate the use of liposomes for targeted chemotherapy. Recent advances in the field will be presented as a background for discussions on the prospects for future progress and clinical trials. The meeting will be limited to 75 participants. For additional information, contact: **Dr. F. Szoka, School of Pharmacy, University of California at San Francisco, San Francisco, California 94143.**

SYMPOSIUM

Application of Short-Term Tests in the Analysis of Complex Environmental Mixtures. Sponsor: Genetic Toxicology Division, U.S. Environmental Protection Agency, 25 to 27 January 1982, Chapel Hill, North Carolina. Discuss current and future approaches for evaluating mutagenic, carcinogenic, and teratogenic effects; soil, water, and air media; pollutant characterization; sources, exposure, and hazard assessment. Paper and poster presentations invited before 15 September 1981. Contact: **Olga Wierbicki, NSI, P.O. Box 12313, Research Triangle Park, N.C.; telephone: 919-541-0411.**

FELLOWSHIPS

POSTDOCTORAL FELLOWSHIPS (two positions)—Intercellular communication in plants: **Characterization of the stress-induced signal**, provides for one postdoctoral position. Identify and characterize the signal generated upon wounding which evokes polysome formation in distant tissues. Ph.D. in biology/biophysics with experience in membranes, ion localization, or electrophysiology. **Protein synthesis in wounded plant tissues**, provides for one doctoral position. Determine whether novel proteins are synthesized in response to wounding. Ph.D. in biology/biochemistry with experience in molecular biology, especially protein biosynthesis and cDNA techniques. Submit résumé and three letters of reference by 15 September to: **Dr. Eric Davies, Project Director, 205 Manter Hall Life Sciences, University of Nebraska-Lincoln, Lincoln, Nebraska 68588-0118.** *An Affirmative Action/Equal Opportunity Employer.*

FELLOWSHIPS

POSTDOCTORAL FELLOWSHIP available immediately in study of mitogenic and differentiative actions of epidermal growth factor and other mitogens in fibroblasts and epithelium in culture. Biochemical background desirable. Candidates must be U.S. citizens or permanent residents. Send curriculum vitae, three letters of recommendation, and graduate school records to: **Dr. Edward J. O'Keefe, Cancer Cell Biology Program, Cancer Research Center, Box 30, MacNider Building, Chapel Hill, N.C. 27514.** *University of North Carolina is an Equal Opportunity/Affirmative Action Employer.*

PRINCETON UNIVERSITY DEPARTMENTS OF PSYCHOLOGY AND BIOLOGY NEUROSCIENCE AND BEHAVIOR GROUP POSTDOCTORAL FELLOWSHIPS AND RESEARCH ASSOCIATE POSITIONS

A limited number of postdoctoral fellowships and research associate positions with individual faculty members become available from time to time. Applicants must have received a Ph.D. prior to their appointment. Relevant neuroscience and behavior faculty in psychology include: B. Campbell, J. Farley, C. Gross, W. Hirst, B. Jacobs, D. Kelley, and G. Miller; in biology: M. Constantine-Paton, A. Gelperin, J. Gould, R. Lisk, W. Quinn, and D. Ready.

For further information about specific laboratories with openings write: **Neuroscience Coordinator, Department of Psychology, Princeton University, Princeton, New Jersey 08544.**

Princeton University is an Equal Opportunity/Affirmative Action Employer, M/F.

POSTDOCTORAL RESEARCH FELLOWSHIP

In the Department of Pathology at the University of Manitoba. To work on a project studying the biology of pulmonary tumor metastasis. Applicants must have a doctoral degree in the biological sciences and should send brief curriculum vitae with the names and addresses of three references to:

Dr. F. W. Orr or Dr. I.Y.R. Adamson
Department of Pathology
University of Manitoba
770 Bannatyne Avenue
Winnipeg, Manitoba, Canada R3E 0W3

POSTDOCTORAL FELLOWSHIP IN CARDIAC CELLULAR ELECTROPHYSIOLOGY. Two traineeships are available (2 to 3 years) to study (i) action potential conduction mechanisms and intercellular junctional coupling and (ii) membrane ionic conductance mechanisms in isolated cells and tissue-cultured model cardiac preparations. Conventional microelectrode methods, voltage clamp, and patch-electrode techniques will be employed as well as impedance/noise analysis. Training will be provided in these techniques and in the preparation and manipulation of isolated cell systems. Support and excellent facilities are provided through an active interdepartmental program project. Send curriculum vitae and names of three professional references to: **Dr. R. L. DeHaan, Department of Anatomy, Emory University School of Medicine, Atlanta, Ga. 30322.** *Emory University is an Equal Opportunity/Affirmative Action Employer.*

MARKETPLACE

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RESEARCH ASSOCIATE Fermentation Process Development

Genentech, Inc., a pioneer in the field of genetic research, engineering and manufacturing, is presently seeking a Research Associate to join our research team on the beautiful San Francisco Peninsula.

Successful candidate will be concerned primarily with the application of *E. coli* molecular genetics including construction of new *E. coli* strains for fermentation production. In addition, will screen existing *E. coli* strains for better expression of recombinant plasmids and stabilize intracellular products.

The individual we are seeking will have a strong academic background and extensive lab training in *E. coli* genetics, microbial physiology and biochemistry. A Master's Degree and 5 years experience are required.

We offer excellent compensation and benefits, complemented by a challenging, stimulating work environment. For immediate consideration please send curriculum vitae along with the names of three references to **Professional Employment**, referring to Position #11-108.

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Assistant Professor of Pharmacology/ Division of Neuropsychopharmacology

The Department of Pharmacology at The Medical College of Pennsylvania invites applications for a full time appointment within the Division of Neuropsychopharmacology as a Behavioral Physiologist or Psychopharmacologist. Applicants should have a PhD or equivalent degree with at least 2 years post doctoral experience. This position requires an individual to set up his/her own research program and also collaborate with other individuals in basic neurochemistry and clinical psychopharmacology. Submit curriculum vitae and references to:

Benjamin Weiss, PhD
Director, Division Of
Neuropsychopharmacology

MEDICAL COLLEGE OF PENNSYLVANIA

Department of Pharmacology
3300 Henry Avenue
Philadelphia, Pa. 19129

An Equal Opportunity Employer, M/F

THE INDUSTRIAL LIAISON PROGRAM OF THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY PRESENTS A COLLOQUIUM ENTITLED "MICROCAPSULES AND MICROCARRIERS IN BIOTECHNOLOGY"

Date: October 15, 1981
Chairman: Professor Robert S. Langer, Jr., MIT
Co-Chairman: Professors Marcus Karel, Alexander Klivanov, William Thilly, MIT
Other Speakers: Professor E. Katchalski-Katzir
Weizmann Institute of Science

Professor D. Papahadjopoulos
University of California, San Francisco

Professor T. Chang
McGill University

J. Salk, M.D.
Salk Institute

Location: MIT Kresge Auditorium
Cambridge, MA 02139

Contact: Maria Clara V. Suva Martin
Industrial Liaison Program
Tel. (617) 253-2691
Telex: 921473

Attendance Fee: Industrial Liaison Program (ILP) Members—free
Non-ILP Members—\$500

Topics: Immobilized Enzymes
Enzyme Stabilization
Controlled Drug Delivery Systems
Liposomes—Drug Targeting
Microcapsules
Diffusion Control in Food Systems
Microcarriers for Mammalian Cell Culture
Microcarriers in Vaccine Production

Abstract:

Major advances have been witnessed in the past few years in the area of biotechnology, which can be defined as the application of engineering principles to biological processes. In this colloquium, the use of novel systems—microcapsules and microcarriers—in biotechnology will be discussed. These particles possess significant potential in both basic and applied research. The applications in several important areas will also be discussed including their use as (i) supports for cells which make useful products, (ii) matrices for enzymes to be used as bioproducers or bioconverters, and (iii) important components in drug and food delivery systems.

Department Chairman Biology

The Woods Hole Oceanographic Institution invites applicants for the position of Chairman, Department of Biology. This position requires an appointment as Senior Scientist, with tenure in the Department. The candidate should have a record of distinguished publication in the field and the ability to obtain support for research. A Chairman usually devotes about one-half time to his own research. The remainder is devoted to administrative tasks and to teaching. The chief responsibility of the successful candidate will be to maintain and to enhance the quality of the Department. The salary is negotiable.

Please send curriculum vitae and list of publications to:

Dr. Derek W. Spencer
Chairman of the Search Committee
Box 54 P



Woods Hole Oceanographic Institution

Woods Hole, MA 02543

Applicants should respond before September 30, 1981, if possible.

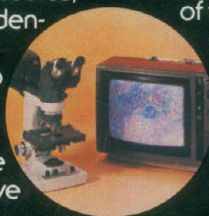
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