

to the references in the paper, I would like to call attention to work by J. Guckenhimer and by R. Williams).

A large number of fields that rely upon models of nonlinear differential equations are plagued by resonances; celestial mechanics definitely is one of them. As just one of many examples, the planet Mercury, in its rotation about the sun and about its own axis, is in a resonance state; is this an accident, or did the dynamics force this behavior to be "captured into resonance"? There are several emerging ways to attack various resonance questions, and one is represented here by J. Henrard's development and application of the adiabatic invariant. Other more specialized treatments are represented by P. J. Message's analysis of planar three-body problems and by B. Garfinkel's review of his "ideal resonance problem" and his work on the Trojan asteroids. (These are the asteroids that are strongly influenced by the Sun-Jupiter system. The key members of this family are located at the vertices of the equilateral triangles in which both the plane of motion and the base of the triangle are defined by the motion and the locations of the Sun and Jupiter.) K. Aksnes relates resonances to other problems coming from astronomy in his paper on that most current topic, the rings of Saturn and of Uranus. (A companion paper by G. Colombo considers satellites of Saturn.) As part of his discussion, Aksnes reminds us of the Kirkwood gaps; these are gaps in the distribution of asteroids that are described in terms of resonances. Some of these resonance zones are populated whereas others are avoided. Why? Hadjidemetriou's paper sheds some light on the problem, but it remains unresolved.

The conference also included topics more specialized to celestial mechanics. I'm not familiar with lunar theory, so I found J. Kovalevsky's introduction to some of the modern problems very interesting. (I was unaware of how fast technology had outstripped theory—lunar laser technology demands an analytic theory with internal precession of better than 10 centimeters. This demands a theory that will include even relativistic corrections. As a result, I was intrigued by a related paper by S. Coffey, represented in the book only by an abstract, in which he claims to have developed a higher-order analytic satellite theory.) Other more specialized topics are discussed in papers by C. Marchal and J. Waldvogel on the behavior of collisions, A. E. Roy on the possible ways to interpret n -body hierarchical systems, and U. Kirchgraber on invariant manifold the-

ory. More practical concerns are raised by R. O. Vicente, who outlines the merits of an agreed-upon reference system for Earth dynamics, and P. van de Kamp, who describes perturbations in stellar paths.

The book is a potpourri of topics, of approaches, and of research interests. Some of the papers trace their birth to practical considerations, others to more theoretical ones. Yet, similar themes tie papers and their various concerns together.

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Cyanocobalamin

B₁₂. DAVID DOLPHIN, Ed. Wiley-Interscience, New York, 1982. In two volumes. Vol. 1, Chemistry. xvi, 672 pp., illus. Vol. 2, Biochemistry and Medicine. xvi, 506 pp., illus. The two-volume set, \$130.

An earlier treatise on vitamin B₁₂ (*Second European Symposium on Vitamin B₁₂*, H. C. Heinrich, Ed., Enke, Stuttgart, 1962) is prefaced by the statement "B₁₂ is not a vitamin—it is a fraternity." The intervening 20 years bear testimony to a continuing and deepening interest in the multifaceted chemical, biochemical, and medical problems posed by this most complex organometallic natural product. The latest work brings together 29 papers encompassing the literature of B₁₂ in a critical and frequently stimulating way. Volume 1, which is largely devoted to structure, synthesis, biosynthesis, and chemical reactivity, provides an encyclopedic account of these topics that will serve as important reference material for both novice and expert. This reviewer particularly enjoyed the more controversial papers in which attention is drawn to the many unsolved problems concerned with the mechanism of action of coenzyme B₁₂, a topic still largely shrouded in mystery. These critical reviews, by B. T. Golding, J. Halpern, and J. M. Pratt, indicate a wide range of fascinating subjects for future investigation. The remaining contributors to volume 1 provide comprehensive coverage of the structural, spectroscopic, and biochemical data, which allows the reader to attempt the solution of the mechanistic puzzles and to follow this exercise with a perusal of the biochemical details fully elaborated in volume 2 without recourse to the primary literature. In fact, volume 2 contains a series of beautifully written and highly detailed papers that not only

provide complete background to the ten main biochemical reactions catalyzed by coenzyme B₁₂ but in some cases contain sufficient experimental data to allow a reader to perform the requisite enzymology. The volume is nicely balanced, with up-to-date coverage of transport, binding, and analysis. The theme throughout both volumes is one of excitement and challenge in unraveling the synthetic, biosynthetic, and mechanistic problems posed by the corrin family. Since the main structural, stereochemical, and synthetic problems relating to B₁₂ itself have now been solved, the whole emphasis of research is on mechanistic details of mode of action (including mimicry), transport, metal-free corrins, and intrinsic factor, all of which are discussed in depth in the book. Some idea of the complexity of studying the cleavage and formation of the cobalt-carbon bond in vivo is conveyed by discussions of the controversial nature of the various model reactions in chapters 10, 14, and 15 (volume 1). Much definitive work is needed on this subject.

In my view, B₁₂ will find a lasting place not only as a well-thumbed work-book in all laboratories connected with research on corrinoids but as a valuable and comprehensive reference source for organic and inorganic chemists, biochemists, theorists, clinicians, and physicians.

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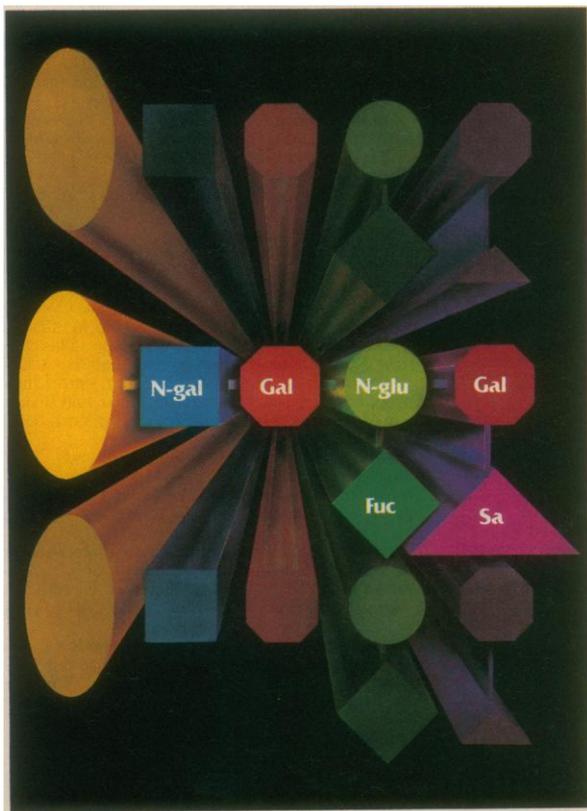
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Analyzing Natural Systems. Analysis for Regional Residuals—Environmental Quality Management. (Continued on page 704)

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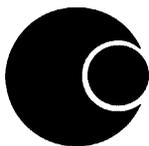
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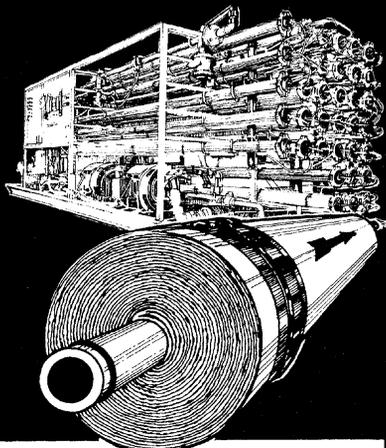


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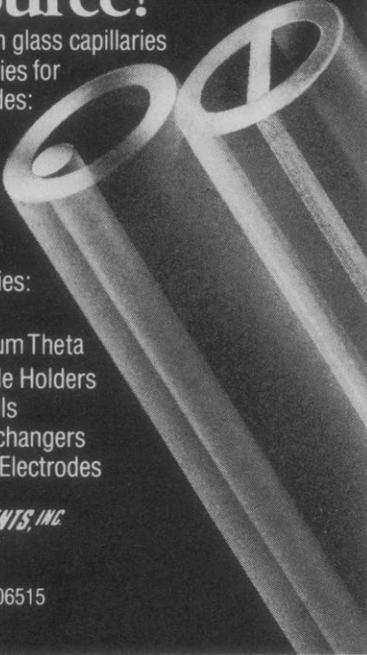
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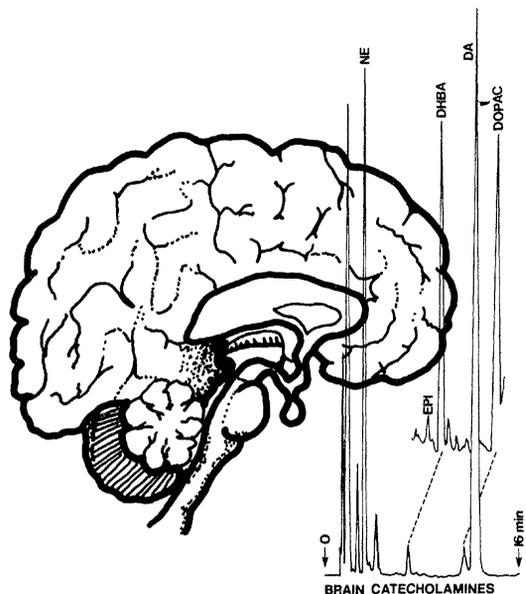
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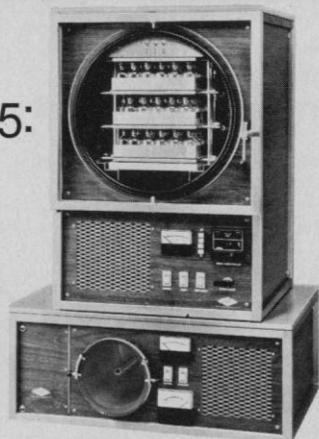
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Applications are invited from suitably qualified persons, regardless of sex, race, colour or national origin for appointment to the above post.

The appointee will be expected to foster post-graduate research and to lecture in his/her field of speciality. A particular interest in research, the ability to cross interdisciplinary boundaries and enthusiastic leadership in research will be looked for. Participation in the academic planning and administration of the department will be expected. It is the University's concern to make an appointment on the basis of outstanding personal attributes rather than the field of interest.

A standard salary of up to R30 255 for the professorial post will be paid. In addition an annual bonus is payable, other benefits include generous leave, pension and medical aid facilities and a housing subsidy.

Intending applicants should obtain the information sheet relating to this post from the: Academic Staffing Office, University of the Witwatersrand, 1 Jan Smuts Avenue, Johannesburg 2001, South Africa with whom all applications should be lodged by 31 December 1982.

**UNIVERSITY OF THE WITWATERSRAND,
JOHANNESBURG**

Grey Recruitment 10030

MIT

STUDY FELLOWSHIPS FOR SCIENTISTS AND ENGINEERS IN SCIENCE, TECHNOLOGY, AND SOCIETY

The Program in Science, Technology, and Society, with the support of the Andrew W. Mellon Foundation, invites applications for several one-year study fellowships on the relationships of science, technology, and society.

Applicants should have a record of outstanding performance in a particular field of engineering, science, or medicine. The fellowships are intended to assist people who wish to pursue further advanced studies in science, technology, and society, but who do not necessarily have a highly defined research project.

Selection of fellows will be based on:

- evidence of a developed interest in the relationship of science and technology with society;
- an indication of plans for continued work in the field;
- a statement of a coherent plan for study at M.I.T. in an area related to the Program's major fields of interest, which include:

Science, Technology, and Public Policy

Social and Historical Studies of Science and Technology

Technology and the Political Economy of Industrial Societies

Cultural Dimensions (e.g. ideological, aesthetic, ethical) of Science and Technology

Application should consist of a curriculum vitae, names of three references, and a description of the applicant's proposed studies not to exceed five typed pages. Additional material will be requested if needed. A PhD or equivalent in science or engineering is desirable. Partial or full stipend is available, normally not to exceed \$25,000, and to be based on current salary. Fellows are expected to reside in the Boston area, and appointments will begin in September 1983. Address inquiries and application to:

**Professor Kenneth Keniston, Chairman
Mellon Fellowship Committee
'Box S'**

STS Program, E51-210
M.I.T.
Cambridge, MA 02139

**Deadline for receipt of applications:
February 1, 1983**

MIT is an Equal Opportunity/Affirmative Action Employer.

DEAN
COLLEGE OF AGRICULTURE
UNIVERSITY OF MINNESOTA
ST. PAUL, MINNESOTA

The University of Minnesota invites nominations, applications, or expressions of interest for the position of dean of the College of Agriculture.

The College of Agriculture is part of the University of Minnesota, Institute of Agriculture, Forestry and Home Economics. The College is composed of 12 academic departments. The dean is the chief executive officer with general administrative authority over college faculty and programs. The dean is responsible for integrating resident instruction programs with research and extension and for serving as spokesperson for agriculture within the university and with clientele in the population at large.

Qualifications include an earned doctorate and academic experience in a discipline within agriculture as well as demonstrated administrative leadership. Familiarity with the Land Grant University system and philosophy are essential. Academic rank and tenure as a faculty member is dependent upon appropriate qualifications.

Salary is competitive. Send letter of application, curriculum vitae, and names and addresses of three references to:

Dr. G. Edward Schuh
Chairperson of Search Committee
Department of Agricultural and
Applied Economics
University of Minnesota
1994 Buford Avenue
St. Paul, Minn. 55108

Deadline for receipt is 15 January 1983.

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

DESERT RESEARCH INSTITUTE

The Atmospheric Sciences Center of the Desert Research Institute is seeking applicants for the following positions:

INSTRUMENTATION SCIENTIST to support scientific program. Requires Ph.D. or equivalent in physics, computer science, mathematics, or related field; good electrical engineering background and also experience, or a strong motivation to become involved, in the design, construction, testing, and scientific use of airborne instrumentation, with personal involvement in all phases. Experience, or other qualifications, in atmospheric science and airborne measurements and instrumentation is very desirable. The ideal applicant would be able, if the opportunity arises, to design a new instrument for cloud electrification measurements, for example, under the guidance and with the support and direction of the laboratory director; supervise its construction; debug it and demonstrate that it works in the field; participate in its use; and help make scientific discoveries using it.

ATMOSPHERIC PHYSICIST for the Air Motions Laboratory, to work in studies of the lower troposphere from the surface to the top of the convective layer. The position is in support of current and future programs related to the boundary layer, sea surface, and convection over the ocean, and in studies of cumulus clouds, precipitation development, and cloud dissipation. The work also has the unifying theme of the development of the understanding of turbulence in the atmosphere. Appointee will be expected to take a major interest in the science, by gathering data and interpreting it, and be able to take all steps necessary to achieve this using his/her own skills, under the direction of the laboratory director, and in consultation with the members of the laboratory as appropriate. Requires Ph.D. or equivalent in physics, computer science, mathematics or related field.

Salary is commensurate with qualifications; complete benefit package. Send résumé and letter of application, stating any special qualifications and the position that application is for, to: Personnel Office, Desert Research Institute, University of Nevada System, P.O. Box 60220, Reno, Nevada 89506. Applications must be postmarked by 7 December 1982. *An Affirmative Action/Equal Opportunity Employer.*

POSITIONS OPEN

ASSISTANT PROFESSOR OF BOTANY. Nine-month, tenure-track appointment beginning 1 September 1983 to engage in teaching and research in the Division of Life Sciences, University of Alaska-Fairbanks. Successful candidate will teach introductory botany and advanced courses. Research interest should emphasize field-oriented studies applicable to northern terrestrial environments. Applicants interested in plant-animal interactions are particularly invited. Curriculum vitae, graduate transcripts, and a list of five referees whom we may contact must be received by 15 January 1983. Reply to: David F. Murray, Chairman, Botany Search Committee, Division of Life Sciences, University of Alaska, Fairbanks 99701. *The University of Alaska is an Equal Opportunity/Affirmative Action Employer and Educational Institution.* Your application for employment with the University of Alaska may be subject to public disclosure if you are selected as a finalist.

The University of Minnesota, Department of Ophthalmology, is actively seeking a qualified Ph.D. in **IMMUNOLOGY** for a tenure-track appointment of **ASSISTANT PROFESSOR.** This individual will be provided laboratory space and support to apply the principles of immunology to ophthalmic research. Collaboration with a well-established immunology research center is available. Send résumé to: Richard Lindstrom, M.D., Box 493 Mayo, University of Minnesota Department of Ophthalmology, Minneapolis, Minn. 55455. *University of Minnesota is an Equal Opportunity Educator and Employer and specifically invites and encourages applications from qualified women and minorities.* Applications are due by 1 December 1982.

UNIVERSITY OF CALIFORNIA, SAN DIEGO, Department of Psychology, anticipates a position as **ASSISTANT PROFESSOR** in the area of **NEUROPSYCHOLOGY.** We seek a candidate with a Ph.D., who will be active in research and be able to teach a variety of areas such as language disorders, brain damage, diagnosis and treatment of brain injuries, or psychopharmacology at the undergraduate and graduate levels. Salary related to qualifications. Send résumé, reprints, and three letters of reference to: Search Committee: Neuropsychology, Department of Psychology C-009, University of California, San Diego, La Jolla, California 92093. Deadline for receipt of applications is 30 November 1982. *An Affirmative Action/Equal Opportunity Employer.*

ASSOCIATE IN PHARMACOLOGY

The Department of Pharmacology of Columbia University, College of Physicians and Surgeons, is seeking applicants for the position of associate in pharmacology. This is a junior faculty appointment. Applicants must have the M.D. and/or Ph.D. degree and significant expertise in the area of cardiac electrophysiology. A strong background in cardiac surgical techniques, techniques for recording extracellular activity from the in situ heart and transmembrane potentials from isolated cardiac tissue preparations is required. Skills as a teacher and potential to be an independent investigator also are important to this position and will be included in the evaluation.

Salary will be commensurate with experience. Candidates should submit curriculum vitae and the names of three references to: Dr. Brian F. Hoffman, Department of Pharmacology, College of Physicians and Surgeons, 630 West 168 Street, New York, N.Y. 10032. *Columbia University is an Affirmative Action/Equal Opportunity Employer.*

DEPARTMENT OF BIOLOGY
Swarthmore College

Two 1-year leave replacement positions, preferably at the assistant professor level, starting September 1983. Applicants should have research experience and be able to teach in one or more of the following areas: vertebrate anatomy and physiology, neurobiology, animal behavior, developmental biology, and immunology. Candidates should have a strong commitment to undergraduate education.

Interested persons should submit: (i) curriculum vitae, (ii) statement of current teaching and research interests, and (iii) three letters of recommendation. All materials should be submitted by 17 December to:

Dr. John B. Jenkins, Chairman
Department of Biology
Swarthmore College
Swarthmore, Pennsylvania 19081

Swarthmore College is an Equal Opportunity Employer.

POSITIONS OPEN

BIOCHEMIST—TENURE-TRACK

Assistant professorship starting September 1983, contingent on funding in an ACS-accredited program with ten chemists. Duties include teaching undergraduate courses in biochemistry and chemistry. Ph.D. and postdoctoral experience required. Strong commitment to teaching and ability to develop research program is expected. Research interests in metabolic or enzyme studies preferred. Send application, three letters of recommendation, and transcripts by 15 December 1982 to: Biochemistry Faculty Search Secretary, Department of Natural Sciences, University of Michigan-Dearborn, Dearborn, MI 48128. *A nondiscriminatory, Affirmative Action Employer.*

BIOLOGY FACULTY

The Biology Department, George Mason University, anticipates two tenure-track positions at the assistant professor level beginning September 1983.

ENVIRONMENTAL TOXICOLOGIST. Duties will include graduate and undergraduate teaching, developing a research program, and involvement in the Ph.D. program in environmental biology-public policy. Preference will be given to candidates with training in ecology and whose research concerns toxicological impacts at the ecosystem and community level. Experience in public policy is desirable.

VERTEBRATE PHYSIOLOGIST. Duties will include coordination and teaching in multisection human anatomy and physiology course for nonbiology majors. The candidate must have demonstrated a continuing research interest and have the ability to develop an active research program in an area of physiology.

Candidates must have a Ph.D. by 1 September 1983. Send curriculum vitae, names of three references, and statement of research and teaching interests by 15 December 1982 to: Chairperson, Search Committee (specify position), Department of Biology, George Mason University, Fairfax, Va. 22030. *George Mason University is an Affirmative Action/Equal Opportunity Employer.*

BIOMEDICAL MASS SPECTROMETRY, Vanderbilt University. The Department of Pharmacology is seeking an investigator with interests and experience in the application of mass spectrometry to biomedical research, including the related organic synthetic capabilities required to fully address bioanalytical problems. This position would have principal responsibility for directing mass spectrometric research in the department and affords an opportunity for independent and collaborative investigation. With an emphasis on the pharmacological sciences, the mass spectrometry facility also is an institutional resource with five mass spectrometers currently in operation. Applications should include curriculum vitae and the names of at least four persons who could provide a letter of reference, and should be sent to:

Dr. John A. Oates
Vanderbilt Medical School
Nashville, Tennessee 37032

Vanderbilt University is an Equal Opportunity/Affirmative Action Employer.

CHAIRPERSON AND PROFESSOR OF
CHEMISTRY

Growth-oriented department seeks individual to provide leadership in moving toward a level of national distinction through increased research and continued development of undergraduate and graduate teaching programs. Candidate must be a Ph.D. chemist with a minimum of 8 to 10 years of professional experience; have an active research program and significant publication record; and must have proven ability in obtaining research support. Administrative experience will be helpful, as will qualities of energetic leadership in developing the resources which the department requires to achieve its goals. Applicant should send curriculum vitae, names of three references, and a statement of current research interests and instrumentation needs, along with any additional information which might be useful to the department in its selection process. Starting date and research field open; salary competitive. Mortgage Subsidy Program available. Send application or nominations to:

Professor Eugene H. Man
Department of Chemistry
University of Miami
Coral Gables, Florida 33124

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



The IAEA seeks **INSPECTION ASSISTANTS FOR SAFEGUARDS** to provide assistance to professional inspectors at duty stations and during world-wide inspections of facilities. The work is divided into two main areas of activities:

- technical support activities involving surveillance equipment (cameras, T.V., seals), measurement and sampling of nuclear materials and use of NDA equipment; and
- checking of accounting records, calculation of book inventories and related activities.

General education up to university entrance level essential. Preference will be given to candidates who either have relevant technical experience in nuclear material measurement and sampling techniques, and familiarity with plant process equipment, or to those who have practical experience in material or financial accounting and familiarity with EDP equipment.

Fixed-term contract for two years with the possibility of further extension if service satisfactory. Tax-free emoluments depending on qualifications and experience, between AS 247,440.- and AS 289,332.- per annum. Non-resident's allowance if applicable AS 26,000.- per annum.

Send Curriculum Vitae indicating your nationality quoting Vacancy Notice No. 259/82 to **Division of Personnel, International Atomic Energy Agency, P.O. Box 100, A-1400 Vienna, Austria** before 7 December 1982.

MOLECULAR & DEVELOPMENTAL NEUROBIOLOGY

YALE UNIVERSITY

Department of Biology

Yale University's Department of Biology seeks applications for an Assistant Professorship in molecular or developmental aspects of Neurobiology.

Areas of interest include, but are not limited, to: molecular, genetic or monoclonal antibody approaches to development, cloning of neuronal genes, neuroimmunology, cell surface and neuron specific molecules.

Send C.V., resume of past and present research, and the names of three referees to **Executive Secretary, Department of Biology, Yale University, P.O. Box 6666, New Haven, CT 06511**. Deadline: Feb. 1, 1983. *Yale University is an equal opportunity/affirmative action employer.*

POSITION OPEN

TERRESTRIAL ECOLOGIST: Ph.D. with flexibility to direct research studies on nutrient release and transfer from litter to soil and plants for a core staff position in a long term study of rain forest nutrient cycling.

The successful candidate will center activities at the El Verde Field Station, 20 miles East of San Juan. Expertise in statistics and experimental design, tropical experience and fluency in Spanish desirable. Send resumes, selected publications, and three letters of references to:

Dr. Laurence J. Tilly, Ph.D.
CEER/UPR, College Station
Mayaguez, Puerto Rico 00708

STARTING DATE:
January 1, 1983

CEER is an Equal Opportunity Employer

DEVELOPMENTAL THERAPEUTICS PROGRAM

The Division of Cancer Treatment, National Cancer Institute, National Institutes of Health, Public Health Service is seeking applicants for the position of Chief, Toxicology Branch to organize, plan, direct, and evaluate an Extramural Contracts Program involved in the investigation of the qualitative toxicities of potential antitumor agents and modalities in experimental animals. Research guidance provided for the development of organ specific toxicity assays and for investigations of the toxicity of second generation analogs. Toxicological assessments will be used in the preparation of investigational new drug applications. Continuous surveillance of the literature will be conducted for new developments in the field of toxicological evaluation of synthetic and natural products applicable to the needs of the Developmental Therapeutics Program.

Applicants should have advanced training at the Ph.D. level (or equivalent) in Pharmacology/Toxicology or closely related fields with extensive laboratory experience in Cytotoxic Drug Pharmacology and/or Toxicology for top consideration. Postdoctoral experience (or equivalent) in biomedical research and administration is required with

productivity being documented by publications, etc. Experience in administration of contracts preferred.

Position may be filled through Civil Service or Commissioned Corps of U.S. Public Health Service. Salary Range—\$39,689—\$57,500 depending on the qualifications of the applicant selected.

Position covered by Civil Service Requirement. Life insurance and health benefits offered. Duty Station—Silver Spring, Maryland. U.S. Citizenship required.

Submit application (Personal Qualifications Statement, SF-171) with names of three references, to: Ms. Sara Benesch, Personnel Management Branch, National Cancer Institute, Building 31, Room 3A32, National Cancer Institutes of Health, Bethesda, Maryland 20205. Applications must be received or postmarked by November 30, 1982. Call Ms. Benesch at (301) 496-6862 for further information.

NIH is an Equal Opportunity Employer.

POSITIONS OPEN

BIOPHYSICAL SCIENTIST

The Gillette Research Institute, a division of The Gillette Co., seeks a scientist to participate in research on mechanical properties of skin and biopolymers. Research involves acquisitions, analysis, and skillful interpretation of experimental data. Familiarity with computer data acquisition and analysis is desirable. The candidate must be able to communicate with other scientists. Minimum requirements: Ph.D. in one of the following disciplines: biophysics, physics, chemistry, or biochemistry. Postdoctoral experience desirable. Please send résumé to:

A. J. Schwartzbeck
Gillette Research Institute
1413 Research Boulevard
Rockville, Md. 20850

Equal Opportunity Employer, M/F

BOTANIST. The Hope College Biology Department will have an opening in botany beginning August 1983. This appointment is expected to be at the assistant professor level. Applicants should have a strong interest in undergraduate education and plan to maintain an active research program that will involve undergraduates. In addition to appropriate upper level botany courses, the applicant will have teaching responsibilities in general biology. Preference will be given to candidates with postdoctoral experience. Hope is a liberal arts college affiliated with the Reformed Church in America and has an established reputation for excellence in undergraduate science education. Qualified applicants should arrange to have an academic résumé, transcripts, a statement of teaching competencies, an outline of proposed research, and three letters of recommendation forwarded as soon as possible to: **Dr. Allen R. Brady, Chairman, Department of Biology, Holland, Mich. 49423.** Deadline for applications will be 15 January 1983. *An Equal Opportunity Employer.*

CHAIR

DEPARTMENT OF BIOLOGICAL SCIENCES UNIVERSITY OF MARYLAND BALTIMORE COUNTY (UMBC)

The Department of Biological Sciences is seeking a distinguished scientist to serve as Professor and Chair. The Department is comprised of 22 productive faculty members whose research interests range from molecular to population biology. Almost all the faculty have extramural funding. It is anticipated that additional faculty will join the Department over the next few years. Expansion into a new teaching and research facility will occur over the next year. The Department presently offers the Ph.D. in Biological Sciences, in addition to the M.S. and B.A. degrees.

Send curriculum vitae and names and addresses of at least three references to:

Dr. R. P. Burchard and Dr. F. E. Hanson
Chairmen, Search Committee
Department of Biological Sciences
University of Maryland Baltimore County
Catonsville, Maryland 21228

UMBC is an Affirmative Action/Equal Opportunity Employer.

THE AUSTRALIAN NATIONAL UNIVERSITY invites applications from suitably qualified persons for appointment to the **CHAIR OF ZOOLOGY, FACULTY OF SCIENCE**, which has remained unfilled since Professor S. A. Barnett retired at the end of 1980. It is hoped that the appointee will be available to take up duty in early 1984. No particular field of interest is specified. The normal duties of a professor are to provide leadership and to play an active role in the undergraduate and postgraduate teaching and the research activities of the department. While appointment as professor is to retiring age (65 years), the successful applicant will be expected to be head of the Department of Zoology for an initial period of some years with the possibility of appointment, following review, for a further period or periods. The University expects senior staff to be available on occasion for election as dean of faculty. The salary of a professor is A\$46,977 per annum. Current exchange rate: A\$1 = U.S.\$94. Reasonable appointment expenses. Superannuation; assistance with housing. The University reserves the right not to make an appointment or to make an appointment by invitation at any time. Before submitting applications, prospective applicants should write for further particulars to: **The Registrar, The Australian National University, P.O. Box 4, Canberra, ACT 2600, Australia**, with whom applications close on 21 January 1983.

POSITIONS OPEN

CHAIRPERSON DEPARTMENT OF BIOLOGICAL SCIENCES

Applications are invited for a position of department chairperson starting July–August 1983. The candidate is expected to provide leadership in teaching, research, and grant acquisition. The department has 14 faculty members and awards the B.S. and M.S. degrees. For more information, send a letter of inquiry by 1 December 1982 to:

Chairman, Search and Screen Committee
Department of Biological Sciences
Indiana University–Purdue
University at Fort Wayne
2101 Coliseum Boulevard, East
Fort Wayne, Indiana 46805

An Affirmative Action/Equal Opportunity Employer

The **DEPARTMENT OF CHEMISTRY** of the University of Chicago invites applications from outstanding individuals for **faculty positions in any branch of chemistry**. Some emphasis will be given to structural inorganic and synthetic organic chemistry. Only persons with exceptional promise and accomplishment in research should apply. Qualified applicants should submit curriculum vitae, a list of publications, and a succinct outline of research to be undertaken, and should arrange for three letters of recommendation to be sent to: **Professor John C. Light, Chairman, Department of Chemistry, The University of Chicago, 5735 South Ellis Avenue, Chicago, Illinois 60637.** *An Equal Opportunity/Affirmative Action Employer.*

COMPARATIVE ANATOMIST OR MORPHOLOGIST

The Department of Environmental, Population and Organic Biology, University of Colorado, Boulder, anticipates a tenure-track opening at the assistant professor level beginning fall 1983.

We seek an outstanding Ph.D. comparative anatomist or morphologist who specializes in **ICHTHYOLOGY** or **HERPETOLOGY** and has a strong evolutionary, ecological, or functional perspective.

Submit only curriculum vitae, statement of career goals, and the names of four references to: **Search Committee, c/o Dr. Michael C. Grant, Department of EPO Biology, University of Colorado, Boulder, Boulder, Colorado 80309.**

Starting salary: \$19,000 to \$23,000; closing date for applications: 15 December 1982. *The University of Colorado, Boulder, is an Equal Opportunity/Affirmative Action Employer.*

DEAN, FACULTY OF NATURAL SCIENCES. College of Arts and Sciences, University of Hawaii at Manoa, Honolulu, Hawaii. Nominations and applications are invited for the position of dean of the Faculty of Natural Sciences. The faculty offers graduate and undergraduate programs in biology, botany, chemistry, general science, geology and geophysics, information and computer sciences, mathematics, meteorology, microbiology, oceanography, physics and astronomy, and zoology. A candidate should have an earned doctorate in one of the listed fields, experience as a department chairman or equivalent, and a strong record of teaching and research. Salary: minimum \$43,438; midpoint \$54,300. Interested parties should write to this address for detailed information on requirements before 7 January 1983:

C. S. Ramage, Chairman
Natural Sciences Dean Search Committee
University of Hawaii at Manoa
2525 Correa Road
Honolulu, Hawaii 96822
Telephone: 808-948-8775

An Equal Opportunity/Affirmative Action Employer

FACULTY POSITIONS

The Department of Microbiology, College of Medicine, University of California, Irvine, has openings for two assistant (or possibly associate) professors in the tenure-track series. Individuals with research interests and experience in the control of gene expression in microorganisms, viruses, cultured animal cells, or the immune response are invited to apply. Preference will be given to those using recombinant DNA methods in their research. Teaching duties will include courses presented to graduate and medical students. Send curriculum vitae and three letters of reference to: **Chairman, Microbiology Search Committee, Department of Microbiology, University of California, Irvine, Calif. 92717.** *An Affirmative Action/Equal Opportunity Employer.*

POSITIONS OPEN

DEAN, COLLEGE OF DENTISTRY University of Florida

The College of Dentistry is one of six health professional colleges in the J. Hillis Miller Health Center located on the campus of the University of Florida, Gainesville. The University is seeking the best qualified person to serve as dean of the College of Dentistry. Qualifications: earned doctorate degree, demonstrated leadership and administrative abilities, with demonstrated excellence in research and/or teaching. The salary for this position is commensurate with qualifications. Applications (with curriculum vitae) or nominations should be sent by 15 January 1983 to:

K. F. Finger, Ph.D.
Associate Vice President for Health Affairs
Chairman, Search Committee
Box J-14, J. Hillis Miller Health Center
University of Florida
Gainesville, Florida 32610

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

ECOLOGIST

The Division of Biology at Kansas State University (KSU) has a tenure-earning position available at the assistant professor level effective 1 September 1983. Although broadly defined, we are particularly interested in biologists adept in mathematical treatments of population or community ecology of plants, terrestrial invertebrates, or soil microorganisms. Individuals with postdoctoral experience and an ability to take advantage of research opportunities on our 3487-hectare Konza Prairie Research Natural Area will be given special consideration. The successful applicant will be expected to establish a vigorous research program and to participate in undergraduate and graduate teaching. Candidates should apply by 31 December 1982 by submitting curriculum vitae, three letters of reference, and a brief description of future research plans to:

Dr. Terry C. Johnson
Division of Biology
Kansas State University
Manhattan, Kan. 66506

KSU is an Equal Opportunity/Affirmative Action Employer.

EUKARYOTIC CELL GENETICIST

The School of Life and Health Sciences at the University of Delaware is seeking a eukaryotic cell geneticist with postdoctoral training. Desirable areas of training include molecular genetics or somatic cell genetics. Preference will be given to candidates with research experience utilizing recombinant DNA techniques. This is a tenure-track position and is expected to be filled at the assistant professor rank. The successful candidate will be expected to teach an advanced course in his/her area of interest and an undergraduate course in human genetics. Applicants should have proved his or her excellence in experiential, a statement of research plans, and three letters of recommendation to: **Dr. Milton H. Stetson, Associate Director for Graduate Programs and Research, School of Life and Health Sciences, University of Delaware, Newark, Del. 19711.** The closing date for applications is 15 January 1983. *The University of Delaware is an Affirmative Action/Equal Opportunity Employer.*

The Department of Aeronautics and Astronautics, Stanford University, seeks an outstanding person for appointment to a regular **FACULTY POSITION** in the field of **EXPERIMENTAL STRUCTURES**. Salary and rank will be commensurate with experience and qualifications. The successful candidate should have proved his or her excellence in experimental research on the application of modern materials to lightweight structure, with emphasis on advanced composites. The position will offer the opportunity to develop and improve departmental structures laboratories and to interact with outside research organizations. A candidate should have interest in teaching. Industrial experience is also desirable.

In addition to guiding the research of advanced-degree students, responsibilities will include regularly scheduled graduate courses related to the specialty and occasional mechanics courses for undergraduate engineering students. *Stanford is an Affirmative Action Employer and welcomes applications from women and minority candidates.*

Inquiries should be made expeditiously to the chairman of the search committee: **Professor N. J. Hoff, Durand 355B, Department of Aeronautics and Astronautics, Stanford University, Stanford, California 94305.** Telephone: 415-497-2441.

DIRECTOR OF THORACIC SURGERY RESEARCH PROGRAM

Allegheny-Singer Research Corporation, a non-profit research organization, affiliated with Allegheny General Hospital, a 726-bed teaching and referral hospital in Pittsburgh, PA, is seeking qualified candidates with an MD or PhD for the position of Director of Thoracic Surgery Research Laboratory. Proven research experience is essential. Interest in clinical and preclinical research in myocardial preservation, and myocardial revascularization would be desirable.

The Director will serve as liaison between the Thoracic Surgery Research Laboratory, and other medical speciality research groups including Aging, Cardiology and Hypertension. The Director will also have responsibility for promoting research collaboration with other research organizations involved in medical and graduate/resident education.

Please send curriculum vitae and three references to: George J. Magovern, MD, Director, Thoracic Surgery Research Program, or for further information you may telephone, (412) 359-3715 or (412) 359-3597.

**ALLEGHENY-SINGER
RESEARCH CORPORATION**
Director, Department of Surgery
Allegheny General Hospital
320 E. North Avenue
Pittsburgh, PA 15212

*An Equal Opportunity
Employer M/F/H*

HOFFMANN-LA ROCHE

Senior Scientist Immunology

Hoffmann-La Roche, one of the world's leaders in the pharmaceutical industry, has a career opportunity in its Immunopharmacology Department.

Responsibilities include the operation of a creative, product-oriented research laboratory committed to the production, isolation and biological characterization of lymphokines; and collaboration on other drug discovery programs.

Qualifications: Ph.D. in immunology, expertise in cellular immunology or immunopharmacology; 3-6 years postdoctoral experience including biochemistry and protein purification.

Roche offers an outstanding compensation package, including an attractive bonus, and an environment that encourages professional growth.

Only responses including present salary will be acknowledged. **Please send resume to Mrs. Eleanor M. Malone, Position EB, Employment Department.**



**HOFFMANN-
LA ROCHE INC.**
Nutley, NJ 07110

*Products that matter
from people who care*

An Equal Opportunity Employer

NATIONAL INSTITUTES OF HEALTH PUBLIC HEALTH SERVICE DEPARTMENT OF HEALTH AND HUMAN SERVICES

OPENING DATE: November 1, 1982/CLOSING DATE: November 30, 1982

(All applications must be post marked before closing date)

ASSOCIATE DIRECTOR, COMMUNICATIVE DISORDERS
NATIONAL INSTITUTE OF NEUROLOGICAL AND COMMUNICATIVE DISORDERS AND STROKE

The National Institutes of Health invites nomination and applications for the position of Associate Director, Communicative Disorders, National Institute of Neurological and Communicative Disorders and Stroke (NINCDS). This Institute conducts, fosters, and supports research and research training on the causes, prevention, diagnosis, and treatment of neurological, sensory, communicative, and muscle disorders. The Institute's efforts cover the spectrum of basic, applied, and developmental research. Programs under the responsibility of this position encompass intramural laboratory research and extramural (grants and contracts) activities in communicative disorders.

This is a Civil Service position in the Senior Executive Service (SES), with a salary range from \$54,755 to \$61,300 per annum (currently limited to \$58,500) depending on qualifications. 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 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 Administrator, GS-601, or equivalent combination of experience and training, which demonstrates a broad knowledge and understanding of major public health problems; and (2) have research experience and knowledge of research programs related to communicative disorders. In addition, candidates must meet the following managerial/executive qualifications: experience in the leadership/management or a basic or clinical research program, demonstrating competence to assume leadership responsibilities in: (1) assuring that national and agency goals and priorities are considered in carrying out the

functions and responsibilities of the organization; (2) establishing and maintaining relationships with key individuals and groups outside the organization; (3) directing and guiding programs and projects, including long-term and short-term planning and establishing objectives and priorities; (4) establishing procedures for the development and defense of the organization's budget, and allocating fiscal and personnel resources to support program implementation; (5) developing processes and overseeing activities to assure the fair and equitable employment of qualified persons, and implementing EEO/Affirmative Action objectives; (6) developing and implementing procedures for monitoring program performances, including periodic analysis and evaluation.

Candidates who meet the mandatory requirements will be further evaluated by the Search Committee on the following factors: managerial/ executive qualifications in excess of mandatory level; scientific reputation/peer recognition; advanced training and education in communicative disorders; and honors and awards indicative of outstanding contributions in the field of communicative disorders, and the degree to which they exceed the minimally qualified level of the mandatory managerial/executive qualifications.

Applications (Personal Qualifications Statement, SF-171) are to be sent to Helen Price, Personnel Specialist, Building 31, Room 8A25, NINCDS, National Institutes of Health, Bethesda, Maryland 20205. For further information contact Helen Price on (301) 496-6334. A current curriculum vitae and bibliography must accompany all applications. Applications of women, members of minority groups and handicapped individuals are especially solicited.

NIH is an Equal Opportunity Employer.

POSITIONS OPEN

ELECTRON MICROSCOPY TECHNICIAN

Position available immediately for an individual with TEM experience to participate in the planning and execution of research projects. Proficiency in sectioning tissues and use of the electron microscope is required. Experience in autoradiography, immunofluorescence, and tissue culture will be helpful. Send résumé and the names of three individuals who can provide references to:

Dr. Marilyn Gist Farquhar
Section of Cell Biology
Yale University School of Medicine
P.O. Box 3333, 333 Cedar Street
New Haven, Conn. 06510

Affirmative Action/Equal Opportunity Employer

FACULTY POSITION CELLULAR IMMUNOBIOLOGY UNIT OF THE TUMOR INSTITUTE UNIVERSITY OF ALABAMA IN BIRMINGHAM

An academic appointment is open immediately for a molecular biologist (Ph.D. or M.D.) working on lymphocyte differentiation. This is primarily a research position with a group working on cell differentiation as related to immunology and oncology. Salary, academic rank, departmental affiliation, and teaching responsibilities will depend upon appointee's expertise. Send curriculum vitae, selected reprints, and names of three references to: **Dr. Max D. Cooper, University of Alabama in Birmingham, University Station—224 T.L., Birmingham, Alabama 35294.**

An Equal Opportunity/Affirmative Action Employer

FACULTY POSITION IN IMMUNOGENETICS for an assistant professor with training and research experience studying either the major histocompatibility complex, lymphocyte differentiation, or transplantation using genetic, molecular cloning, or gene transfer approaches. Applicant must possess a doctoral degree with postdoctoral experience and must be able to develop an independent research program. Responsibilities include participation in the departmental teaching of medical, dental, and/or graduate students, as well as development of a new graduate course in the field of interest. Applicants should submit curriculum vitae, list of publications, a brief expose of current and future research interests, and names of at least three references. The deadline for receipt of applications is 15 January 1983. Complete applications should be sent to: **Randolph Wall, Ph.D., Professor, or Jack G. Stevens, D.V.M., Ph.D., Professor and Chairman, Department of Microbiology and Immunology, UCLA School of Medicine, University of California at Los Angeles, Los Angeles, Calif. 90024. UCLA is an Equal Opportunity/Affirmative Action Employer.**

UNIVERSITY OF CALIFORNIA FARM ADVISOR—IRRIGATION/VEGETABLE CROPS

Location: Monterey County

Cooperative Extension career position to conduct an education and applied research program. Teach farm community/public the latest findings of water use/conservation and of horticultural science through meetings, newsletters, other mass media. Assure Affirmative Action in development and delivery of programs. M.S. is preferred in vegetable crops with strong additional training in irrigation science. B.S. is required. Contact: **Cooperative Extension Personnel, 331 University Hall, University of California, Berkeley, Calif. 94720. Telephone: 415-642-9300, extension 40. Closes: 3 January 1983. Refer to number 8215. Affirmative Action/Equal Opportunity Employer, M/H/F.**

UNIVERSITY OF CALIFORNIA Farm Advisor—Agronomy/Range Location: Los Angeles County (Headquarters: Antelope Valley Office)

Cooperative Extension career position to plan, implement, and evaluate educational program in field crops, range management, tree and vegetable crops in Los Angeles and San Bernardino Counties. Assure Affirmative Action in development and delivery of programs. A master's degree in plant science and related experience is preferred. A B.S. degree is required. Contact: **Cooperative Extension Personnel, 331 University Hall, University of California, Berkeley, Calif. 94720. Telephone: 415-642-9300, extension 40. Closes 14 January 1983. Refer to number 8216. Affirmative Action/Equal Opportunity Employer, M/H/F.**

POSITIONS OPEN



Executive Vice Chancellor The University of Kansas Medical Center

The University of Kansas is seeking an Executive Vice Chancellor for the University's Medical Center. The Executive Vice Chancellor reports directly to the Chancellor and is the principal academic and administrative officer for a center which consists of Schools of Medicine, Nursing, and Allied Health and a major teaching hospital of 565 beds (with authorization to expand to 782 beds). The University of Kansas Medical Center also has a variety of graduate programs and administers the state's health care outreach program.

Nominees and applicants must have an earned doctorate and significant administrative experience in academic and health sciences settings. Nominations and applications should be sent by December 15 to:

Richard von Ende
Executive Secretary of the University
The University of Kansas
Lawrence, Kansas 66045

An Equal Opportunity/Affirmative Action Employer. Applications are sought from all qualified people regardless of race, religion, color, sex, disability, veteran status, national origin, age, or ancestry.

GEOLOGY POSITION AVAILABLE

Colby College is seeking a geologist to join the faculty in a tenure-track position for the fall semester 1983. Preference will be given to a person who has strong interests and training in geophysics and global tectonics, structural geology, and the applications of quantitative methods of geology. A joint appointment with teaching responsibilities in geology and physics is possible. Applicants should have a Ph.D. degree. A strong interest in undergraduate teaching and in research is essential. Applicants should respond with a résumé, transcripts, a description of research interests, and three letters of recommendation by 1 March 1983, addressed to: **Professor Donald Allen, Chairman, Geology Department, Colby College, Waterville, Maine 04901.**

Colby College is an Affirmative Action/Equal Opportunity Employer.

UNIVERSITY OF DELAWARE DEPARTMENT OF GEOLOGY

The Department of Geology at the University of Delaware invites applications for the professional position of **laboratory and field coordinator**. This position requires a master's degree in geology plus one year of experience or a bachelor's degree in geology plus 2 to 4 years of professional experience. Duties of the position include teaching and coordinating general geology laboratories, demonstration and operation of laboratory and field equipment (including vibracore), and procurement and maintenance of laboratory and field material. Interested persons should send a current résumé and names and addresses of three referees by 1 December 1982 to:

Professor F. M. Swain
Chairman, Search Committee
Department of Geology
University of Delaware
Newark, Del. 19711

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

INTERNATIONAL RELATIONS SCIENTIFIC EXCHANGE OFFICER: CHINA

Nonprofit international organization seeks senior staff officer to coordinate science and engineering exchanges with China. Candidate must have a Ph.D. or equivalent in China studies or science and at least 4 years of administrative experience, preferably with international science programs. Recent firsthand experience in China and detailed knowledge of Chinese science and technology institutions and personnel preferable. Salary commensurate with experience and qualifications. Submit résumé to: **MB, P.O. Box 57140, Washington, D.C. 20037. An Equal Opportunity Employer.**

POSITIONS OPEN

HEAD, DIVISION OF ENVIRONMENTAL AND INDUSTRIAL HYGIENE AND SAFETY. The Department of Environmental Health, University of Cincinnati, is seeking a qualified scientist to direct a well established research and graduate training program in environmental and industrial hygiene and safety. Engineering, physical science, and/or analytical chemistry background preferred. Unique opportunity for energetic and creative person in rapidly advancing field. Send curriculum vitae, bibliography, and description of experience and research interests as well as three references to: **Dr. Ernest C. Foulkes, Chairman, Search Committee, Department of Environmental Health (56), University of Cincinnati Medical Center, Cincinnati, Ohio 45267; telephone: 513-872-5769. An Equal Opportunity/Affirmative Action Employer.**

IMMUNOLOGIST

The Division of Biology at Kansas State University has a tenure-earning position available at the assistant or associate professor level effective 1 September 1983. Applications are invited from outstanding candidates in the immunological sciences, including the areas of mechanisms of autoimmunity, biochemical mediators of the immune system, mechanisms of host resistance, regulation of the immune response, and immunochemistry. The successful applicant will be expected to establish a vigorous and creative research program and to participate in graduate and undergraduate teaching. Postdoctoral experience will be required. Candidates should apply by 17 December 1982. Submit curriculum vitae, three letters of reference, and a brief description of future research plans to:

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

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

The University of Michigan Medical School, Department of Internal Medicine, Division of Infectious Diseases, has an academic position available for an **INFECTIOUS DISEASE SUBSPECIALIST** with interest in clinical research (experimental therapeutics, molecular biology, urology, bacteriology, and immunology). The program has seven faculty with University Hospital, Veterans Administration, and Wayne County General Hospital components. Position available 1 April 1982. Please send curriculum vitae and letter outlining clinical and research interests to: **Robert Fekety, M.D., Division of Infectious Diseases, University of Michigan Medical School, R6024 Kresge II, Ann Arbor, Michigan 48109. The University of Michigan is a nondiscriminatory, Affirmative Action Employer.**

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.**

PHARMACOLOGY, ASSISTANT PROFESSOR

The Department of Pharmacology at the University of Rochester invites applications for two faculty positions at the rank of assistant professor. Applicants should have a Ph.D. in pharmacology or a closely related field, and M.D., or both, postdoctoral research training, the potential to attract research support and to establish an independent research program, and an interest in professional and graduate education. Individuals with research interests in the areas of neuropharmacology, cardiovascular pharmacology, autonomic pharmacology, immunopharmacology, and inflammation, and who apply the techniques of modern biochemistry and molecular biology to pharmacological investigations are sought in particular. Applicants should forward curriculum vitae, a list of publications, three letters of reference, and a summary of current and future research interests to: **Dr. M. W. Anders, Department of Pharmacology, School of Medicine and Dentistry, University of Rochester, 601 Elmwood Avenue, Rochester, N.Y. 14642. An Equal Opportunity Employer, M/F.**

SEARCH CONTINUED

VICE PRESIDENT FOR GRADUATE EDUCATION & RESEARCH THE UNIVERSITY OF CONNECTICUT

The University of Connecticut invites applications and nominations for the position of Vice President for Graduate Education and Research to begin as soon as possible.

The responsibilities of the position include oversight of the University Research Foundation, and of the Graduate School with master's and doctoral programs in most fields. The incumbent is one of five vice presidents reporting to the president. We are looking for a mature and articulate scholar in any academic field with strong research interests and achievements, with experience in administration, and with the ability to stimulate external funding from industry as well as from Federal and foundation sources.

Salary is negotiable, and will be commensurate with experience and professional standing. Applications and nominations should be sent by January 1, 1983. The names of referees should be included, but letters of reference will be called for only in behalf of short-listed candidates. Please send these materials to

Dean Julius A. Elias, Chairman
Search Committee
Vice President for
Graduate Education & Research
U-98, Storrs, CT 06268

THE UNIVERSITY OF CONNECTICUT IS AN
AFFIRMATIVE ACTION/EQUAL OPPORTUNITY EMPLOYER

Research Scientists

Integrated Genetics, a growing biotechnology/recombinant DNA company, is seeking two highly qualified scientists to join our Research and Development staff in the Boston area. These scientists will participate in our on-going programs in the production of therapeutically active proteins and molecular diagnostic tests utilizing recombinant DNA technologies.

Molecular Geneticist

This position requires a Ph.D. and at least two years post-doctoral training. The successful candidate in this position will have extensive training in gene control in *Escherichia coli* and experience in the cloning and expression of foreign genes.

Nucleic Acid Chemist

This position requires a Ph.D. in Organic Chemistry and at least two years post-doctoral training in nucleic acid chemistry. The candidate should also have experience in Polynucleotide synthesis.

Integrated Genetics offers an attractive compensation and benefits package as well as a stimulating and rewarding research environment. Please forward your resume in confidence to: **Charlotte Gregory**.

Integrated Genetics, Inc.
51 New York Avenue
Framingham, Mass. 01701

NATIONAL INSTITUTES OF HEALTH PUBLIC HEALTH SERVICE DEPARTMENT OF HEALTH AND HUMAN SERVICES

OPENING DATE: November 1, 1982/CLOSING DATE: November 30, 1982

(All applications must be post marked before closing date)

ASSOCIATE DIRECTOR, NEUROLOGICAL DISORDERS NATIONAL INSTITUTE OF NEUROLOGICAL AND COMMUNICATIVE DISORDERS AND STROKE

The National Institutes of Health invites nomination and applications for the position of Associate Director, Neurological Disorders, National Institute of Neurological and Communicative Disorders and Stroke (NINCDS). This Institute conducts, fosters, and supports research and research training on the causes, prevention, diagnosis, and treatment of neurological, sensory, communicative, and muscle disorders. The Institute's efforts cover the spectrum of basic, applied, and developmental research. Programs under the responsibility of this position encompass intramural laboratory research and extramural (grants and contracts) activities in fundamental neurological disorders, stroke and central nervous system trauma.

This is a Civil Service position in the Senior Executive Service (SES), with a salary range from \$54,755 to \$61,300 per annum (currently limited to \$58,500) depending on qualifications. 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 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, which demonstrates a broad knowledge and understanding of major public health problems; and (2) have research experience and knowledge of research programs related to neurological disorders. In addition, candidates must meet the following managerial/executive qualifications: experience in the leadership/management or a basic or clinical research program, demonstrating competence to assume leadership responsibilities

in: (1) assuring that national and agency goals and priorities are considered in carrying out the functions and responsibilities of the organization; (2) establishing and maintaining relationships with key individuals and groups outside the organization; (3) directing and guiding programs and projects, including long-term and short-term planning and establishing objectives and priorities; (4) establishing procedures for the development and defense of the organization's budget, and allocating fiscal and personnel resources to support program implementation; (5) developing processes and overseeing activities to assure the fair and equitable employment of qualified persons, and implementing EEO/Affirmative Action objectives; (6) developing and implementing procedures for monitoring program performances, including periodic analysis and evaluation.

Candidates who meet the mandatory requirements will be further evaluated by the Search Committee on the following factors: managerial/executive qualifications in excess of mandatory level; scientific reputation/peer recognition; additional training and education in neurological disorders; and honors and awards indicative of outstanding contributions to the field of neurological disorders, and the degree to which they exceed the minimally qualified level of the mandatory managerial/executive qualifications.

Applications (Personal Qualifications Statement, SF-171) are to be sent to Helen Price, Personnel Specialist, Building 31, Room 8A25, NINCDS, National Institutes of Health, Bethesda, Maryland 20205. For further information contact Helen Price on (301) 496-6334. A current curriculum vitae and bibliography must accompany all applications. Applications of women, members of minority groups and handicapped individuals are especially solicited.

THE NATIONAL INSTITUTES OF HEALTH IS AN EQUAL OPPORTUNITY EMPLOYER.

POSITIONS OPEN

MATHEMATICAL POPULATION BIOLOGY. Position at postdoctoral or junior faculty level for quantitative research in **DEMOGRAPHY, ECOLOGY, EPIDEMIOLOGY, EVOLUTION, PUBLIC HEALTH, APPLIED STOCHASTIC PROCESSES,** or other basic or health-related aspects of the study of populations. Demonstrated ability in mathematics or statistics required. Prior training or research in an empirical science, preferably biology or health-related, desired. Position starts 1982-1983 and is renewable. Send curriculum vitae, brief description of research interests and major accomplishments, and names, addresses, and telephone numbers of four references to: **Joel E. Cohen, Department of Populations, Rockefeller University, 1230 York Avenue, New York, N.Y. 10021.** An Equal Opportunity Employer.

MEDICAL DIRECTOR OF BLOOD BANK—The Department of Pathology has an opening for a physician, Board-certified or eligible in pathology or other appropriate specialty boards, and eligible for licensure in Florida. Major responsibilities include supervising the immunohematology, hemotherapy, and paternity testing services at 480-bed teaching hospital; teaching residents and medical students; and developing an independent research program. Salary and rank are commensurate with academic background and experience (assistant or associate professor) with anticipated starting date of 1 March 1983. Forward applications by deadline of 1 February 1983 to: **Juan C. Scornik, M.D., Associate Professor, Department of Pathology, Box J-275, JHMHC, University of Florida, Gainesville, Florida 32610.** An Equal Employment Opportunity/Affirmative Action Employer.

MICROBIAL MOLECULAR GENETICIST

A tenure-track assistant or associate professorship available for either January or August 1983. The Ph.D. is required with postdoctoral experience favored. The individual will be responsible for undergraduate and graduate level genetics courses and will be expected to develop an on-going research program in some aspect of microbial genetics. Send curriculum vitae, reprints, statement of research goals, transcripts, and names of three references to: **Dr. Glenn Todd, Department of Botany and Microbiology, LSE-318, Oklahoma State University, Stillwater, Oklahoma 74078.** Applications must be received by 6 December 1982, to assure consideration. An Equal Opportunity/Affirmative Action Employer.

MICROBIAL PHYSIOLOGIST—Applications are invited for a tenure-track position in microbial physiology to develop an active research program using modern molecular, biochemical, or biophysical techniques. Duties will include teaching undergraduates and developing advanced courses in specialty areas. The appointment level is open and senior scientists are encouraged to apply. A Ph.D. with a strong background in microbiology, postdoctoral experience, and the ability to conduct independent research as evidenced by publication record are required. Please submit curriculum vitae, statement of research interests, and three letters of reference by 15 January 1983 to: **Michael McInerney, Department of Botany and Microbiology, University of Oklahoma, 770 Van Vleet Oval, Norman, Okla. 73019.** The University of Oklahoma is an Equal Opportunity/Affirmative Action Employer.

NEUROBIOLOGY/ANIMAL BEHAVIOR. Biology Department seeks Ph.D. for 3-year, tenure-track appointment, September 1983. Teach courses in neurobiology, animal behavior, and/or comparative physiology, and participate in team-taught introductory courses. Active research program which can include senior undergraduates is expected. Send curriculum vitae, statement of research activities, and reference letters to: **Dr. C. Thomas Settlemyre, Biology Department, Bowdoin College, Brunswick, Maine 04011.** Deadline: 1 January 1983. Affirmative Action/Equal Opportunity Employer.

POSTDOCTORAL POSITIONS IN CARCINOGENESIS available immediately. Successful candidates will join an interdisciplinary research program emphasizing mechanisms of carcinogenesis by chemicals, radiation, and retroviruses and related areas such as molecular genetics, DNA repair, membranes, and tumor immunology. Beginning stipend is \$15,000; U.S. citizenship or permanent residency required. Persons soon to be awarded or holding recent Ph.D., M.D., or D.V.M. degrees are invited to write for information to: **Training Office, University of Tennessee—Oak Ridge Graduate School of Biomedical Sciences, Biology Division, Oak Ridge National Laboratory, Oak Ridge, Tenn. 37830.** An Equal Opportunity/Affirmative Action Employer.

POSITIONS OPEN

UNIVERSITY OF SOUTHERN CALIFORNIA (USC) MOLECULAR BIOLOGY FACULTY POSITION

The Molecular Biology Research Section of the Department of Biological Sciences at the University of Southern California invites applications for a tenure-track position at the assistant, associate, or full professor level. Candidates should have an outstanding record of research and publication and will be expected to develop a high quality, independent research program at USC in areas of molecular genetics and biochemistry. The position includes involvement in undergraduate and graduate programs; administrative responsibility is optional.

The deadline for acceptance of applications is 1 January 1983. The appointment can be effective as early as 1 September 1983. Letters of interest and curriculum vitae should be addressed as follows:

**Molecular Biology Search Committee
Ahmanson Center for Biological Research, Room 126
University Park, MC-1481
University of Southern California
Los Angeles, California 90089-1481**

PHARMACOLOGIST. Emory University has a position open at the assistant professor or associate professor rank. Candidates must have doctoral or equivalent degree; for assistant professor rank, at least 1 year of postdoctoral research experience and potential to develop an independent research program; for associate professor rank, five or more years of experience in teaching and research in pharmacology or related discipline, evidence of excellent independent research, and current grant support. Strong commitment to teaching and research is essential. Preferred research interests are neuropharmacology or cellular and molecular pharmacology. Curriculum vitae, description of career goals, proposed research program, and three letters of recommendation must be received by 15 January 1983. Address to: **Dr. Neil C. Moran, Chairman, Department of Pharmacology, Emory University, Atlanta, Ga. 30322.** An Affirmative Action/Equal Opportunity Employer.

PHARMACOLOGY/TOXICOLOGY. The School of Veterinary Medicine at the University of Wisconsin-Madison is recruiting to fill faculty positions in pharmacology and toxicology. Responsibilities will include assisting in the development and implementation of programs in instruction, research, and service. The Ph.D. and/or D.V.M. or equivalent degree is required. Salary and rank will be commensurate with experience and qualifications. Applications should include complete curriculum vitae and names and addresses of three references. Application closing date is 31 December 1982 or until filled. Apply to: **Dr. Gerald E. Bisgard, Department of Structural and Functional Sciences, School of Veterinary Medicine, 333 North Randall Avenue, Madison, Wis. 53715.** The University of Wisconsin is an Affirmative Action/Equal Opportunity Employer.

PHYSICAL ANTHROPOLOGIST—ANATOMIST

The Department of Anatomy and Neurobiology of the Washington University School of Medicine is searching for physical anthropologists with an active research program in paleontology, evolutionary biology, or primate functional anatomy. They must have real interest, as well as experience, in teaching human anatomy to medical students. Affiliation with the Department of Anthropology for research, and graduate student contact will be encouraged. All levels of appointment are available. Please submit curriculum vitae and names of three references by 15 December 1982 to:

**Dr. Roy R. Peterson, Chairman, Search Committee
Washington University School of Medicine
660 South Euclid
St. Louis, Mo. 63110**

An Affirmative Action/Equal Opportunity Employer

POSTDOCTORAL POSITION immediately available for studies on organization and regulation of the mouse urinary protein gene family. Salary: \$16,000 to \$19,000, depending upon experience. Interested applicants please send résumé and three letters of reference to:

**Dr. Eva Derman
Department of Developmental and Structural Biology
The Public Health Research Institute
of The City of New York, Inc.
455 First Avenue
New York, N.Y. 10016**

An Equal Opportunity Employer

POSITIONS OPEN

PLANT BIOCHEMIST/PHYSIOLOGIST— HERBICIDES

Zoecon is seeking a Ph.D. to investigate modes of action of proprietary chemistry and to identify potential biochemical sites of herbicide action.

There will be interaction with chemists and supervision of an evaluation program. Training in organic chemistry required and in herbicides desirable. Postdoctoral or industrial experience preferred.

Send curriculum vitae, statement of relevant research, graduate transcripts, publications, and three references to: **Kathleen M. Holm, Zoecon Corporation, P.O. Box 10975, Palo Alto, Calif. 94303.** Application deadline: 15 January 1983. An Equal Opportunity Employer.

ZOECON

THE BOTANY DEPARTMENT OF DUKE UNIVERSITY seeks a **PLANT MOLECULAR BIOLOGIST** with expertise in recombinant DNA technology for a tenure-track position at the assistant professor level. The individual is expected to establish an active research program, contribute to departmental course offerings, and participate in the interdepartmental graduate program in genetics and/or cell and molecular biology. Send curriculum vitae, including transcripts, statement of research plans, reprints of representative publications, and the names of three references, to: **Dr. James N. Stedow, Chairman of the Search Committee, Department of Botany, Duke University, Durham, N.C. 27706.** Deadline: 15 December 1982. An Affirmative Action/Equal Opportunity Employer.

PLANT MOLECULAR BIOLOGIST

The Department of Botany invites applications for the position of plant molecular biologist. Applicants should be broadly trained in plant biology with specialization in the genetic regulation of vascular or nonvascular plant development. Research interests can include embryogenesis and seed formation, organelle development, and the role of hormones and light in development. The appointee will be expected to instruct at the undergraduate and graduate levels. This is a tenure-track position and applications will be considered for an appointment to be made at the assistant professor (non-tenure), associate professor, and professor (tenure) levels. Position pending budget approval.

Applicants should send curriculum vitae, bibliography with copies of publications, and a summary of research and teaching objectives, and should arrange for three letters of recommendation to be sent to:

**Chairperson, Search Committee
Department of Botany
University of California
Berkeley, Calif. 94720**

POSTDOCTORAL POSITION available to study mouse T-cell subsets, their collaboration in the immune response, and the effects of age on immune reactivity. Potential projects include study of in vivo models for T-cell ontogeny, study of idiotype in antitumor responses, and limiting dilution analysis of helper T cells. Send résumés, with names and phone numbers of references, to: **Rich Miller, Department of Pathology, Boston University Medical School, 80 East Concord Street, Boston, Mass. 02118.**

POSTDOCTORAL POSITION IN PLANT ECOLOGY to study the effects of rising atmospheric CO₂ on northern hardwood forests at the University of Michigan Biological Station, Douglas Lake. Strong background in plant physiological ecology and computer modeling desirable. Position available for minimum of 18 months starting 1983. Send curriculum vitae and three letters of reference to be received by 6 December 1982 to: **Dr. David M. Gates, The University of Michigan Biological Station, 4053 Natural Science Building, Ann Arbor, Michigan 48109.** A nondiscriminatory, Affirmative Action Employer.

POSTDOCTORAL POSITION available immediately for a recent Ph.D. in biochemistry or molecular biology. Experience in enzymology, protein chemistry, nucleic acid chemistry, or molecular genetics desirable. Laboratory studying the genetics, regulation, and enzymology of deoxyribonucleotide and DNA synthesis in phage T4 infection. Includes membrane and recombinant DNA studies. Send curriculum vitae, including three references and personal letter, to: **Dr. G. Robert Greenberg, Department of Biological Chemistry, Box 034, University of Michigan, Ann Arbor, Mich. 48109.** A nondiscriminatory, Affirmative Action Employer.



BioTechnica International, Inc.

85 Bolton St., Cambridge, Massachusetts 02140 (617) 864-0040

Assistant Scientists

BioTechnica International, Inc., a company specializing in agricultural and industrial applications of recombinant DNA technology, is seeking Assistant Scientists with several years laboratory experience. Qualified applicants must hold college degrees (B.S. or M.S.) and be familiar with the techniques of modern molecular biology including recombinant DNA techniques such as gene isolation and cloning, plasmid construction, restriction enzyme digestion, gel chromatography, and DNA sequencing. Successful applicants will provide technical assistance in fundamental and applied research concerning nucleic acids, gene expression, and growth of microorganisms. BTI offers a competitive salary and excellent benefits. Please send letter of application with resume and list of references to: **Personnel Director, BioTechnica International, Inc. 85 Bolton Street, Cambridge, MA 02140.**

CHIEF, RADIATION RESEARCH PROGRAM

Chief, Low Level Radiation Effects Branch, Radiation Research Program, Division of Cancer Treatment, National Cancer Institute.

The Low Level Radiation Effects Branch conducts, primarily through grants and contracts, a comprehensive research program on radiation carcinogenesis, mutagenesis, and other low level radiation effects. Applicants should have an advanced degree, or equivalent training, in biology or a closely-related science (e.g., radiation biology, molecular biology or biophysics) or in medicine. They should also have experience in conducting independent research and in managing a radiation research program.

This is a Civil Service career-conditional appointment under the Merit Pay System at the GM-15 level, \$46,685-57,500, depending on the qualifications of the applicant selected. The incumbent will be covered by Civil Service Retirement and will be eligible for life insurance and health benefits.

NIH is an equal opportunity employer.

Interested persons should respond by submitting an application (Personal Qualifications Statement SF-171) with names of three references, to Ms. Cynthia A. Kauff, Personnel Management Branch, National Cancer Institute, Building 31, Room 3A32, National Institutes of Health, Bethesda, Maryland 20205. Applications must be received or postmarked within 30 days of date of issue. If you need additional information, please call Ms. Kauff 301/496-6862.

PHARMACOLOGISTS Pharmaceuticals R&D

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

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

PULMONARY—To conduct animal experiments investigating the pathogenesis of emphysema. Evaluation of drug candidates for treatment of respiratory diseases. BS/MS in Biology, Physiology, or Biochemistry, with relevant lab experience a plus.

RENAL—BS/MS in biology to support Ph.D. scientists in screening of compounds. Should demonstrate good laboratory techniques and competence in isolated smooth muscle vascular preparation. Also knowledge of receptor theory.

CNS—BS/MS to work on receptor binding studies for neurochemical screening.

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



Chas. T. Brodigan

STUART PHARMACEUTICALS

division of ICI Americas Inc.
Wilmington, Delaware 19897

An Equal Opportunity Employer M/F

Scientist Recombinant DNA

Our thrust in DNA research offers impressive resources and the independence to achieve project goals.

Becton Dickinson—a pioneering health services company investing over \$43.5 million in R&D in 1981—is heavily committed to biotechnology. Our corporate Research Center in Research Triangle Park, NC is now concentrating on a variety of projects with significant potential.

We seek a scientist skilled in state-of-the-art recombinant DNA technology who will also assist in characterization of proteins expressed by genetically engineered organisms. Research will be directed toward diagnostic product development.

A PhD in Molecular Biology/Biochemistry and a record of achievement in elucidating protein structure and function are required.

We offer excellent salary and benefits including relocation expenses. For a full briefing on the projects we are involved in, send fully confidential curriculum vitae to: **Mr. F. Richard Wilson, Human Resources Department, Becton Dickinson Research Center, P.O. Box 12016, Research Triangle Park, North Carolina 27709.** An equal opportunity/affirmative action employer.

Caring for people is our business

**BECTON
DICKINSON**

POSITIONS OPEN

POPULATION BIOLOGY

Faculty position in **POPULATION BIOLOGY** at the assistant or associate professor level, leading to tenure, beginning in September 1983. Preference will be given to candidates with research background and interests in theoretical or experimental **plant population biology**, particularly population genetics and evolutionary ecology. Qualified candidates should submit curriculum vitae with a statement of research interests and should request that three letters of reference be sent to:

Population Biology Search Committee
Department of Biology
University of Rochester
Rochester, New York 14627

Closing date for applications is 15 January 1983. *The University of Rochester is an Affirmative Action/Equal Opportunity Educational Institution, M/F.*

POSTDOCTORAL POSITIONS—A limited number are open for training in cell biology, biochemistry, genetics, and virology as related to cancer. These are open to U.S. citizens or holders of permanent U.S. visas. Research conducted at the Sidney Farber Cancer Institute under the guidance of faculty members with appointments at Harvard Medical School. For further information, send a brief résumé and two letters of recommendation to: **Dr. Arthur B. Pardee, SIDNEY FARBER CANCER INSTITUTE, 44 Binney Street, Boston, Mass. 02115.** *An Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL POSITIONS available to develop and study animal models of temporal lobe epilepsy and epileptic brain damage. One position requires experience with electrophysiological techniques in the mammalian CNS. Send curriculum vitae and two reference names to: **Dr. J. Victor Nadler, Department of Pharmacology, Duke University Medical Center, Durham, North Carolina 27710.** *Duke University is an Affirmative Action/Equal Opportunity Employer.*

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

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

POSTDOCTORAL POSITION—OREGON. Available immediately to join active research group studying the influences of diet and hypolipidemic drugs on lipid/lipoprotein metabolism. Ph.D. in biochemistry or M.D. required. Please forward résumé to:

D. Roger Illingworth, M.D., Ph.D.
Department of Medicine, L465
Oregon Health Sciences University
Portland, Oregon 97201
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POSTDOCTORAL POSITION available immediately for recent Ph.D. to study the effect of age on protein synthesis. Experience in the area of cell-free protein synthesis is desirable. Send curriculum vitae and names of three references to: **Dr. Morton Rothstein, Department of Biological Sciences, State University of New York at Buffalo, Buffalo, N.Y. 14260.** *An Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL POSITION available for Ph.D. or M.D. in the area of experimental cancer chemotherapy. Research will involve the development of a model of human osteosarcoma in mice, and the elucidation of determinants of intrinsic sensitivity to chemotherapeutic agents. This will include studies of drug metabolism, biochemical parameters, and developmental therapeutics in vivo. Candidates should have experience in biochemistry or pharmacology. Send curriculum vitae and three letters of reference to: **Dr. Janet A. Houghton, Division of Biochemical and Clinical Pharmacology, St. Jude Children's Research Hospital, 332 North Lauderdale, Memphis, Tenn. 38101.** *An Equal Opportunity Employer.*

POSTDOCTORAL POSITION available immediately for qualified individual to study chromosome structure with Dr. C. C. Lin and Dr. J. B. Rattner. Experience in electron microscopy, cell fusion, cytogenetics, and molecular biology techniques useful. Please send curriculum vitae and names of references to: **Dr. J. B. Rattner, Assistant Professor of Anatomy, The University of Calgary, Calgary, Alberta, Canada T2N 4N1.**

POSITIONS OPEN

POSTDOCTORAL POSITION available 1 January 1983 to examine the chromatin structure of ribosomal RNA genes. Specific proteins with unique properties have been identified in a pure fraction of rDNA chromatin; the significance of these proteins both in the conformation of ribosomal genes in vivo and in gene action is the subject of the project. Send curriculum vitae to: **Dr. Robert M. Grainger, Department of Biology, Gilmer Hall, University of Virginia, Charlottesville, Va. 22901.**

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CMC and HMC invite applications for a new joint professorship, effective July 1983. The Luce Professor will teach two interdisciplinary courses dealing with the impact of evolving computing, data processing, and telecommunications technology on the structure, operation, and values of our society; supervise two clinic projects involving the solution of real world problems in the management of technology; conduct research; and organize an occasional public event.

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Send inquiries to: **Dean Colin Wright, Luce Search Committee, Bauer 225, Claremont McKenna College, Claremont, California 91711.** *Equal Opportunity/Affirmative Action Employer.*

PROTEIN BIOCHEMIST/COMPLEMENT RESEARCH—Postdoctoral position available which provides an opportunity to acquire experience in complement biochemistry. Project will involve physical and chemical characterization of the eighth component of human complement with emphasis on sequence determination. Opportunity to participate in other ongoing projects related to structure and function of complement will also be provided [*J. Biol. Chem.* **255**, 11997 and **256**, 3258]. Excellent funding and instrumentation are available, including a staffed sequence facility. Some experience in protein/peptide purification and characterization is desirable. First year salary: \$16,000. Send curriculum vitae with summary of research experience and names of three references to: **James M. Sodetz, Ph.D., Department of Chemistry, University of South Carolina, Columbia, S.C. 29208.** *Affirmative Action/Equal Opportunity Employer.*

RESEARCH ASSOCIATE with Ph.D. degree wanted to run laboratory dealing with amino acid and hormone measurements for clinical investigative studies in diabetes, exercise, and nutrition.

Contact:

Philip Felig, M.D.
Yale University School of Medicine
333 Cedar Street
New Haven, Conn. 06510

RESEARCH MANAGER

The College of Veterinary Medicine, Mississippi State University, is seeking a research manager. This position will report to the director of the Research Program. Responsibilities will include experimental design and biological statistical analysis of research projects. Also, the position will assist the director in day-to-day operations management of the program. This position will work with other College program managers.

Applicants should possess a master's degree in a biological, statistical field (or related area). Strong skills in experimental design and biological statistics is desired. Appropriate research, hospital and/or administration experience is desirable and may be substituted in lieu of degree.

Letters of application should include a current résumé along with the names of three references and should be sent to:

C. Ray Hayes, Coordinator
Support Staff and Budget
College of Veterinary Medicine
Drawer V
Mississippi State, Miss. 39762

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POSITIONS OPEN

RESEARCH ASSOCIATE. Position for a Ph.D. in physiology available December 1982 to study central nervous system control of water and electrolyte metabolism. Background in neurophysiological techniques, catecholamine assays, or metabolism studies desirable. Opportunity for teaching in medical physiology course. Send curriculum vitae and names of references to:

Dr. John R. Thornborough
Sophie Davis School of Biomedical Education
The City College of New York
138th Street and Convent Avenue
Science Building—Room J909
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RESEARCH ASSOCIATE. Ph.D. to participate in experimental cancer chemotherapy studies involving laser excitation (flow cytometry), clonogenic assays, antibodies, and nude mice xenografts. Excellent laboratory facilities and opportunities for professional advancement. Send curriculum vitae and letters of reference to: **Dr. A. Krishan, Cancer Center R-71, P.O. Box 016960, Miami, Fla. 33101.**

STAFF SCIENTIST, NUCLEIC ACID CHEMISTRY. Applications at the research assistant professor level are invited for a person with considerable background in nucleic acid chemistry to study an unusual DNA in lymphocytes. Ph.D. in biochemistry or related area. Salary commensurate with experience. Applications together with curriculum vitae, research experience and interests, and the names of three references should be sent to: **Dr. Phyllis R. Strauss, Department of Biology, Northeastern University, 360 Huntington Avenue, Boston, Mass. 02115.** *An Equal Opportunity/Affirmative Action/Title IX University.*

SYSTEMATIC HERPETOLOGY. Applications are invited for a 1-year research fellowship in systematic herpetology. Applicant must have received Ph.D. Stipend: \$17,000 plus \$1,000 for expenses; starts on or about 1 February 1983. Submit résumé, including list of publications; description of research to be undertaken, including the desirability of working at the Academy; graduate transcripts if Ph.D. received in past 5 years; names, addresses, and telephone numbers of three references to: **Director of Administration, CALIFORNIA ACADEMY OF SCIENCES, Golden Gate Park, San Francisco, Calif. 94118.** Telephone: 415-221-5100. Closing date: 31 December 1982.

ZOOLOGY—EVOLUTION. A tenure-track position at the assistant professor level will be available beginning September 1983. Teaching responsibilities include zoology, introductory biology, an advanced course in evolution, and a seminar. While this is primarily a teaching position, research is encouraged and expected. Send curriculum vitae, three letters of reference, transcripts, and a statement of research and teaching experience by 1 January 1983 to: **Dr. Glen G. Wurst, Biology Department, Allegheny College, Meadville, Pa. 16335.** *Equal Opportunity Employer.*

DEPARTMENT OF ZOOLOGY UNIVERSITY OF CALIFORNIA, DAVIS

LECTURER. Applications are invited for the position of visiting lecturer in zoology for September 1983. The salary range is \$18,552 to \$20,304. Teaching responsibilities will include a one-quarter, lower-division course in **physiology**, a one-quarter beginning course in **general biology**, and one of the following: a one-quarter lower-division course in **general zoology**, or a one-quarter lower-division course in **physiology** for non-science students, or a section of a one-quarter upper-division course in **developmental biology**. The position includes the opportunity to conduct research in the fields of **cell biology**, **developmental biology**, or **neurobiology** in the laboratory of one of the professorial faculty. The appointment is for 1 year, with the possibility of renewal for a total of 4 years. Persons wishing to apply should send curriculum vitae, reprints of published work, a description of research program and future plans, a summary of teaching experience and capabilities including evaluations, if available, and three letters of recommendation to: **Dr. Peter B. Armstrong, Chairman, Search Committee, Department of Zoology, University of California, Davis, Calif. 95616.** Final date for receipt of applications is 10 December 1982.

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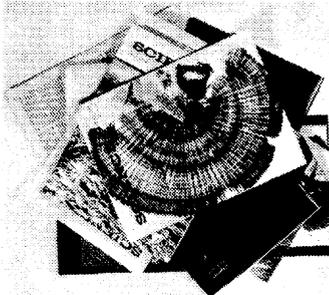
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ASSISTANT/ASSOCIATE PROFESSOR OF PHARMACOLOGY. Ohio University invites applications for a tenure track position in the College of Osteopathic Medicine and the Program of Physiology & Pharmacology in the Department of Zoology and Biomedical Sciences. Applicants should have a Ph.D. in Pharmacology and a strong commitment to excellence in teaching. Responsibilities include the teaching of pharmacology to osteopathic medical students and to graduate students, and the development of a viable research program.

Preference will be given to candidates with training and expertise in **Molecular Pharmacology**. Collaborative opportunities exist in several areas including: **biochemical pharmacology, endocrinology, cellular and developmental neurobiology, biochemistry, and cardiovascular, renal, neural and exercise physiology.**

Ohio University is located in picturesque southeastern Ohio in a small, quiet university town. Salaries are competitive and cost of living, including housing, is moderate. Recreational opportunities abound in many nearby state and federal parks.

Letters of application, curriculum vitae including teaching credentials, a brief description of proposed research program, and names of 3 references must be received by **14 December, 1982**. Address to: **Huzoor - Akbar, Chairperson, Pharmacology Search Committee, Ohio University, College of Osteopathic Medicine, Irvine Hall, Athens, Ohio 45701**. Ohio University is an Affirmative Action/Equal Opportunity Employer.



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RESEARCH AND TECHNICAL POSITIONS. A biotechnology company in the greater Sacramento area of northern California is seeking professional and technical staff in the areas of physical and organic chemistry, molecular biology, entomology-parasitology, immunology, and microbiology. Professional level applicants should have a doctoral degree and postdoctoral training. Applicants for technical positions should have a bachelor's degree or equivalent. Salary commensurate with experience. *An Equal Opportunity Employer.* Send résumé to: Personnel Manager, P.O. Box 1227, West Sacramento, Calif. 95691-1227.

CONFERENCE

MEETING ANNOUNCEMENT "ACTIN-MEMBRANE INTERACTION"

An international conference to be held at the University of North Carolina, Chapel Hill, from 10 to 13 April 1983. Organized by Keith Burrige (University of North Carolina) and Vann Bennett (Johns Hopkins University, Baltimore, Md.) and hosted by the Department of Anatomy and Laboratories for Cell Biology, School of Medicine, University of North Carolina, Chapel Hill.

Topics will include specialized regions of actin-membrane attachment, such as the brush border, adhesion plaques, and myotendinous junction, as well as proteins that may be involved in attachment such as spectrin, ankyrin, and vinculin, and the interaction of these components with the cell surface.

Speakers include: D. Branton, J. Condeelis, S. Craig, J. Feramisco, B. Geiger, S. Goodman, J. Heuser, K. Jacobson, B. Jockusch, E. Lazarides, S. Lin, V. Marchesi, P. Matsudaira, M. Mooseker, T. Pollard, J. Schlessinger, M. Schliwa, M. Sheetz, J. Spudich, J. Trotter, W. Webb, K. Weber, and A. Weeds.

For further information on registration and abstracts, contact: Mrs. T. Dinse, Department of Anatomy, University of North Carolina at Chapel Hill, 108 Swing Building 217H, Chapel Hill, N.C. 27514; telephone: 919-966-3026.

Abstract deadline: 10 February 1983.

TRAINEESHIPS

POSTDOCTORAL TRAINEESHIPS available in immunogenetics and immunochemistry at Washington University School of Medicine. Ongoing projects include: **Murine system:** structural study of normal and mutant Ia antigens, expression of Ia in subsets of normal cells, cloned T cells, and hybridomas, and role of carbohydrate in Ia function. **Human system:** Structure of HLA Class I and II antigens, molecular interactions in Class II subunits, and the structural basis of HLA-disease associations. Applicants with training in immunology and/or biochemistry preferred. Send curriculum vitae to: Dr. Susan Cullen and Dr. Benjamin Schwartz, Box 8045, Washington University School of Medicine, St. Louis, Mo. 63110. *An Equal Opportunity Employer.*

PROGRAM

EIGHTH SUMMER PROGRAM IN METHODS OF IMMUNOLOGIC RESEARCH AND DIAGNOSIS. Offered by The Ernest Witelsky Center for Immunology of the State University of New York at Buffalo, June 1983. Choice of a 3-week program for tyros comprised of elementary and advanced technologies or a 2-week program offering only advanced procedures. Both consist of combinations of core and elective practical laboratory exercises allowing participants personally to carry out techniques at the bench and include demonstrations, lectures, and discussions. Open to postdoctoral level, supervisory senior technologists, and graduate students beyond the master's level. Contact: James F. Mohn, M.D., Director, The Ernest Witelsky Center for Immunology, 210 Sherman Hall, Buffalo, New York 14214. Telephone: 716-831-2848. Inquiries should be received by 15 January 1983.

PROGRAM

POSTDOCTORAL TRAINING PROGRAM IN SLOW INFECTIONS

Applications are invited for advanced training in research in the molecular biology and immunology of slow infections. Preceptors and their areas of research include: (i) Stanley Prusiner, isolation and chemical structure of the scrapie agent; (ii) Daniel Stites, immunobiology of scrapie infection; (iii) Ashley Haase, molecular pathogenesis of slow infections caused by measles and visna viruses, and the role of viruses in chronic diseases of humans; and (iv) Michel Brahic, demyelination induced by Theiler's virus infection. Candidates should be U.S. citizens or permanent residents committed to a research career; hold a Ph.D., M.D., or D.V.M. degree, and have experience in biochemistry, immunology, virology, medicine, or neurology. Appointments, beginning immediately, are for 3 years with a salary ranging from \$13,480 to \$18,780. Applications should include a short summary of research interests and background, curriculum vitae, and two letters of reference. Address to: Stanley Prusiner, Neurology, M-794, University of California, San Francisco, Calif. 94143. *The University of California, San Francisco, is an Affirmative Action/Equal Opportunity Employer.*

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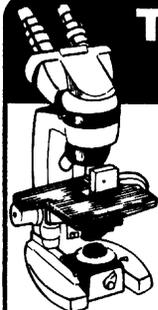


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1-6. *Science* is published weekly on Friday except the last week in December, at 1515 Massachusetts Avenue, NW, Washington, D.C. 20005. Date of filing: 26 October 1982. This is also the address of the publisher and the editor, who are respectively, William D. Carey and Philip H. Abelson. There is no managing editor.

7. The owner is American Association for the Advancement of Science, 1515 Massachusetts Avenue, NW, Washington, D.C. 20005. Stockholders: None.

8. Known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities: None.

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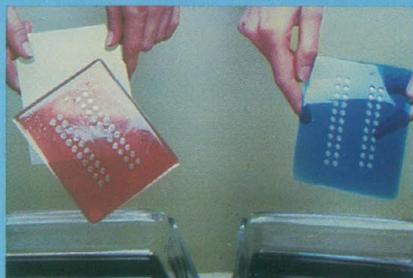
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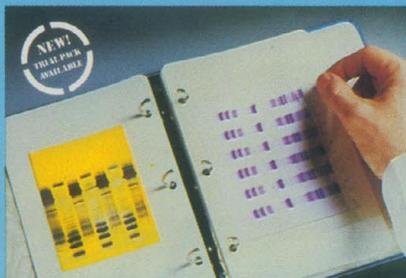
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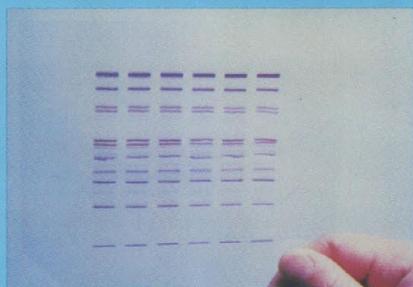
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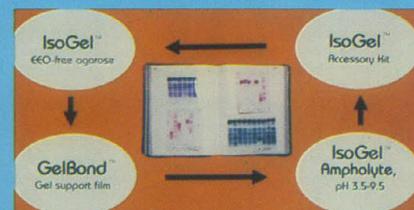
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