

RESEARCH NEWS

(Continued from page 1152)

spheres, but the sole product was methane (100 percent selectivity).

A major difficulty in interpreting the results of all homogeneous catalyst experiments is identification of the active catalytic species. Spectroscopic measurements can determine whether certain species are present, but lengthy and complicated studies of reaction mechanisms, in which the intermediate species of what may be a multiple-step reaction are sorted out for each step, are needed to unequivocally identify the catalyst entity. Metal clusters are no exception to this difficulty and are further complicated by the tendency of some clusters to fragment into mononuclear complexes under reaction conditions. It is difficult to prove that catalysis is not due to unobserved but very active complexes of this type present in unobservably small concentrations. A second worry is that microscopic specks of pure metal in the form of a colloidal suspension could also be the active (in this case heterogeneous) species.

From the point of view of the engineer interested in an efficient, economical process, perhaps it does not matter what the active species is, so long as one knows what starting materials to use. Researchers find this an unsatisfactory attitude. Muetterties and his colleagues, for example, have found in their studies of nickel clusters that they do indeed fragment. But careful identification of intermediate species led to the conclusion that it was the polynuclear not the mononuclear species that was active. Laser light scattering experiments indicated the absence of suspended particles.

John Shapley and his associates at the University of Illinois prefer to minimize the fragmentation problem as much as possible. They are, therefore, concentrating on the use of third-row transition metals (rhenium, osmium, and iridium). Shapley believes that the metal-metal bonds between these elements are strong enough to resist fragmentation, whereas the bonds between metals such as the first-row transition elements are much weaker and thus subject to easy rupturing.

At the University of Alabama, Tuscaloosa, Charles Pittman and Robert Ryan are trying to build clusters that cannot fragment without completely destroying the complex, thus ensuring that no mononuclear complexes could exist. The Alabama researchers have begun experiments with a first-row transition metal (cobalt) and have synthesized the polynuclear complex $\text{Co}_4(\text{CO})_8(\mu^2\text{-CO})_2(\mu_4\text{-PC}_6\text{H}_5)_2$, which is said to behave in this way. With this structure, they have observed the catalysis of several hydrocarbon reactions involving the breaking and re-forming of carbon-carbon and carbon-hydrogen bonds.

Because so much catalysis research occurs in industrial laboratories and is therefore frequently proprietary, it is difficult to judge how soon metal cluster catalysts will appear in operating chemical plants or how large their impact will be. From all accounts, however, industrial activity, if not feverish, is certainly widespread. Thus, as access to inexpensive raw materials becomes more restricted in the years ahead, if a way exists to make clusters work, it will likely be found.—ARTHUR L. ROBINSON

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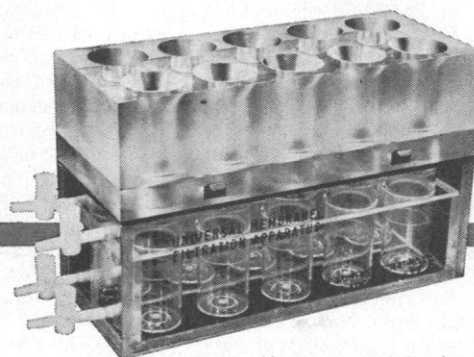


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POSITIONS WANTED

Ph.D. Animal Nutritionist, 1976. Research experience in protein nutrition, amino acid metabolism, gluconeogenesis (in vitro), glucose and VFA metabolism (in vivo radiotracer techniques) in ruminants. Strong background in metabolic regulation and rumen microbiology. Publications. Seeks research, research/teaching position. H.-R. Spies, Department of Dairy Science, University of Illinois, Urbana, Illinois 61801. X

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Biomedical Quantum Electronic Engineer. Internationally known for three basic discoveries and six significant inventions. Seeks \$3 per hour or more laboratory opportunity for collaborative research in a university environment. Would share unpublished original research which furthering could lead to a Nobel Prize. Box 533, SCIENCE. X

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Publications Director, highly experienced, imaginative, seeks challenging position. Broad background in scientific research, publishing, and management. College text author, M.S. level education. Box 524, SCIENCE. 12/10, 17

POSITIONS OPEN

ANALYTICAL CHEMIST. The University of Colorado at Boulder expects to fill a tenure-track position starting in September 1977, probably at the assistant professor level. This will be a joint appointment in the Department of Chemistry and the Cooperative Institute for Research in Environmental Sciences (CIRES). Candidates should have a Ph.D. degree in some area of analytical chemistry; preference will be given to candidates in areas other than separations since other faculty specialize in that area. Candidates must have demonstrated an interest in atmospheric science, and have the intention of developing their research programs within this area. Teaching duties will include general chemistry, analytical chemistry, and the supervision of graduate research students. Applicants should submit curriculum vitae, a summary of plans for research, and undergraduate and graduate transcripts, and should arrange for letters of recommendation from three persons familiar with the applicant's qualifications. Deadline for receipt of completed applications is 31 January 1977. Materials should be sent to **Professor A. W. Castleman, Jr., Department of Chemistry, University of Colorado, Boulder, Colorado 80309.** An Equal Opportunity/Affirmative Action Employer.

ANATOMISTS

Three assistant professors, Ph.D. or M.D., with postdoctoral research and teaching experience and ability to develop independent research programs; with research interests in cell biology (developmental biology or neurobiology); and with teaching interests in gross anatomy or microscopic anatomy or neuroanatomy. Send curriculum vitae to **Dr. G. Gordon Robertson, Department of Anatomy, University of Tennessee Center for The Health Sciences, Memphis, Tennessee 38163.**

Equal Opportunity, M/F/Affirmative Action Employer

ANATOMIST

Applications are invited for a faculty position as an assistant professor in the Department of Anatomy at Wayne State University School of Medicine. Applicants should be able to teach gross anatomy and neuroanatomy and be interested in carrying out a productive research program, preferably in neuroanatomy. Candidates should send their curriculum vitae and names of three references to **Dr. Harry Maisel, Department of Anatomy, Wayne State University School of Medicine, 540 East Canfield, Detroit, Michigan 48201.** An Equal Opportunity/Affirmative Action Employer.

ANESTHESIOLOGIST. Will be responsible as a member of a team for the anesthesia program of the Veterinary Medical Teaching Hospital. Will participate in the teaching program designated for professional students in the D.V.M. curriculum. Specific duties include: presentation of class lectures, clinical teaching, operation of the anesthesia service for both clinics, share supervision and control of all anesthesia and monitoring equipment. Support of other team members will allow the incumbent time for scholarly research, self-improvement and extension activities. D.V.M. degree required with special training and/or experience in anesthesiology. Board eligibility or certification is highly desirable but not required. Salary, faculty rank, and title are dependent upon the applicant's background and qualifications. Send curriculum vitae, personal bibliography, and reference to **Dr. A. de Lahunta, Director, Veterinary Medical Teaching Hospital, New York State College of Veterinary Medicine, Cornell University, Ithaca, N.Y. 14853.** An Equal Opportunity Employer.

ASSISTANT PROFESSOR. The Department of Microbiology and Immunology, University of Washington, is inviting applications for an assistant professorship. The candidate will be expected to teach in our educational program in general microbiology and carry on an active program in research. A broad interest in and knowledge of microbiology at the organismal level is required in addition to an interest in teaching and demonstrated excellence in research. The position, which will be a 12-month appointment, will be available 1 July 1977; salary is dependent on the qualifications of the applicant. Qualified individuals should submit a curriculum vitae, representative reprints, and the names of three references to **James T. Staley, Ph.D., Chairman, Search Committee, Department of Microbiology and Immunology, School of Medicine, University of Washington, Seattle, Wash. 98195.** An Equal Opportunity/Affirmative Action Employer.

POSITIONS OPEN

ANIMAL BEHAVIOR. Assistant professor, Department of Psychology, Washington University, to pursue active quantitative research in animal behavior, to teach and supervise undergraduate and graduate students in animal behavior, and to interact in a larger neurobiological research community. Combined biology-psychology background desirable. Position available September 1977; apply before 1 February 1977. Send curriculum vitae and references to **Professor T. T. Sandel, Chairman, Department of Psychology, Washington University, St. Louis, Mo. 63130.** An Equal Opportunity/Affirmative Action Employer.

ANIMAL PHYSIOLOGIST. The Biology Department of Hope College will have an opening in animal physiology in August 1977, which is expected to be filled at the assistant professor level. Hope College is a liberal arts college which has maintained a strong tradition in science involving both teaching and research. Applicants must be committed to undergraduate education and to an active research program that will involve undergraduates. Primary teaching responsibility will be an upper level course in organismal physiology and participation in the introductory biology courses. Qualified applicants should arrange to have a résumé, transcripts, statement of teaching competencies and interests, an outline of proposed research, and three letters of recommendation forwarded to: **Biology Search Committee, Department of Biology, Hope College, Holland, Michigan 49423.** An Equal Opportunity Employer.

ASSISTANT PROFESSOR OF BIOLOGY. Position to be filled by 20 January 1977 to teach anatomy and physiology. The candidate is expected to hold the Ph.D. degree and have background in one or more other areas such as biochemistry, developmental biology, or vertebrate zoology. Salary negotiable. Applicants should send curriculum vitae and arrange for three letters of reference to arrive by 24 December 1976 to: **Dr. Aubrey Thomas, Chairman, Department of Biology, Merrimack College, North Andover, Mass. 01845.** An Equal Opportunity Employer.

ASSISTANT PROFESSOR OF BIOLOGICAL CHEMISTRY AND DIRECTOR OF RESEARCH COMPUTER FACILITY. Responsibility for operation and further development of Research Computer Facility serving multiple users; opportunity to develop new programs; graduate level teaching. Ph.D. with relevant experience required. Position open 1 January 1977. Send résumé and two letters of recommendation to **Dr. Eugene A. Davidson, Department of Biological Chemistry, The Milton S. Hershey Medical Center, The Pennsylvania State University, Hershey, Pa. 17033.**

An Equal Opportunity Employer

ASSISTANT PROFESSOR OF NEUROSCIENCE

The University of California, Los Angeles, invites applications or nominations for a position of assistant professor of neuroscience. This appointment will be sponsored jointly between the Brain Research Institute and an appropriate basic science department in the School of Medicine. The appointment committee is seeking a scientist of recognized accomplishment and outstanding promise in the field of cellular neurobiology, one area of particular interest being neuroimmunology. The appointee will join the newly established Ahmanson Laboratory of the Brain Research Institute. Applications for nominations should be submitted with a curriculum vitae, bibliography, and names of potential references to: **Director, Brain Research Institute, UCLA School of Medicine, Los Angeles, California 90024.** All applications and inquiries will be treated confidentially within the limits of the law. *UCLA is an Equal Opportunity Employer. Candidates will be considered without regard to race, color, religion, sex, or national origin.* All applications must be received by 31 December 1976.

BACTERIOLOGIST

A research position will be available in January 1977 for a Ph.D. bacteriologist with experience in developing analytical methods for bacterial detection. Initial studies will involve the experimental evaluation of a novel, rapid technique for detection of coliforms. Prior research or academic interest in enzymology and fluorescence techniques is a decided plus factor. Please submit résumés to:

Personnel Manager
ARK Research
55 Rome Street
Farmingdale, N.Y. 11735

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POSITIONS OPEN

ASSISTANT AND/OR ASSOCIATE PROFESSOR(S) OF PHYSIOLOGY. The Department of Physiology and Biophysics has one or two positions available for which applications are invited. Candidates should have completed their M.D. or Ph.D. (medical physiology) at least 2 years prior to application and demonstrated scientific capabilities in their area of interest. To be considered, individuals must have displayed an ability to effectively teach in other areas of human physiology in a medical school setting. Preference will be given to candidates with research experience in renal physiology, although applicants with expertise in other fields will also be considered. To apply please send curriculum vitae, bibliography, and names of three references to: **Chairman, Search Committee, Department of Physiology and Biophysics, Hahnemann Medical College and Hospital, 235 North 15 Street, Philadelphia, Pennsylvania 19102.** An Equal Opportunity/Affirmative Action Employer. All applications must be completed by 31 January 1977.

ASSISTANT PROFESSOR OF SYSTEMATIC BOTANY

The Division of Biological Sciences at Cornell University seeks an assistant professor to teach undergraduate and graduate courses in vascular plant systematics and to develop a program of research in that area, commencing July 1977. The appointment will be in the L. H. Bailey Hortorium with a joint appointment in the Section of Ecology and Systematics. A Ph.D. is required. Applicants should possess a field orientation and knowledge of contemporary methods in systematics.

Curriculum vitae with a statement of research interests and needs, description of teaching experience, transcripts, and three letters of recommendation should be sent to: **Dr. David M. Bates, L. H. Bailey Hortorium, 467 Mann Library Building, Cornell University, Ithaca, New York 14853.** Deadline for receipt of applications is 15 January 1977.

Cornell University is an Equal Opportunity/Affirmative Action Employer.

BIOLOGY LECTURER

A full-time lectureship in biology is available for the academic year 1977-1978 with renewal possible. 1 July starting date preferable. Ph.D. and teaching experience required. Responsibility will be the organization and teaching of introductory undergraduate laboratory courses (afternoon, evening). Applicants should send a curriculum vitae, names and addresses of three references, and a one-page letter outlining their views on laboratory teaching. Send application before 1 January 1977 to: **Department of Biological Sciences, Box 908, Columbia University, New York, N.Y. 10027.** An Equal Opportunity/Affirmative Action Employer.

The Department of Psychology, Princeton University, anticipates an opening in the area of **COGNITIVE PSYCHOLOGY** at the level of full professor. Candidates for this position must have a demonstrated record of scientific accomplishment and teaching at both the undergraduate and graduate levels. Specific areas of research interest include cognitive development, information processing, memory, and language behavior. Outstanding candidates will, of course, be considered regardless of specific areas of interest.

Nominations and applications should be sent to **Professor Ronald Kinchla, Chairman, Cognitive Search Committee, Department of Psychology, Green Hall, Princeton University, Princeton, New Jersey 08540.** We are an Equal Opportunity Employer with a vigorous commitment to Affirmative Action.

NEUROANATOMIST

The Department of Psychology invites applications for an anticipated faculty position at the assistant professor level for the fall 1977. We are interested in a candidate who uses neuroanatomy as a tool for studying function or behavior. The candidate should be prepared to teach courses in vertebrate neuroanatomy at the undergraduate and graduate levels as part of Princeton University's interdepartmental doctoral program in neuroscience. The Department of Psychology currently has five full-time faculty members whose major interest is in neuroscience and behavior. Send curriculum vitae and three letters of recommendation to **Chairperson, Neuroscience Search Committee, Department of Psychology, Princeton University, Princeton, N.J. 08540.** Princeton University is an Equal Opportunity Employer with a vigorous Affirmative Action Program.

POSITIONS OPEN

BIOCHEMISTRY POSTDOCTORAL POSITION beginning immediately. Interaction of peptides, hormones, and neurotransmitters with membrane-bound proteins of the central nervous system. Send full curriculum vitae to: **Professor Jay A. Glasel, Department of Biochemistry, University of Connecticut Health Center, Farmington, Conn. 06032.** An Equal Opportunity Employer, M/F.

CELLULAR IMMUNOLOGISTS

The Department of Microbiology and the Los Angeles County-University of Southern California Comprehensive Cancer Center have two positions at the assistant professor level. Candidates should have postdoctoral experience and the ability to develop self-sustained research programs in basic cellular/tumor immunology. Funds are available to assist in the initiation of such research programs.

Send curriculum vitae, with complete bibliography and names of three references, by 15 December 1976 to **Jeffrey A. Frelinger, Department of Microbiology, University of Southern California School of Medicine, Los Angeles, Calif. 90033.**

An Affirmative Action/Equal Opportunity Employer

The University of California, Irvine, College of Medicine is seeking a **CHAIRMAN** for the Department of Pharmacology. Candidates must be eligible for appointment to the rank of professor. Candidates must have demonstrated excellence in biomedical research and teaching and should preferably have administrative experience. *Applications from all qualified candidates are welcome; minorities and women are encouraged to apply.* Send curriculum vitae, before 31 January 1977, to **Paul S. Sypherd, Chairman of the Search Committee, Department of Medical Microbiology, University of California, Irvine, California 92717.**

CHIEF LIBRARIAN

The Albert Einstein College of Medicine is seeking candidates for the position of chief librarian of its D. Samuel Gottesman Library. Qualifications: broad administrative experience in a medical school library or regional library center; M.L.S. degree. Send résumé, professional references to: **Edward J. Hehre, M.D., Department of Microbiology and Immunology, Albert Einstein College of Medicine, 1300 Morris Park Avenue, Bronx, N.Y. 10461.** An Equal Opportunity/Affirmative Action Employer.

COMPARATIVE IMMUNOLOGIST Department of Biology Tulane University

Applications by 15 February 1977 are invited for this position which will be available August 1977. The position will be filled at the assistant professor level. Candidates should be enthusiastic teachers and will be expected to develop and maintain a strong research program. The appointee will be expected to teach undergraduate courses in cellular and molecular biology and a graduate course in his or her field of specialization.

Applicants should send their curriculum vitae and a statement of their research interests to **Dr. Milton Fingerman, Chairman, Search Committee, Department of Biology, Tulane University, New Orleans, Louisiana 70118.** Applicants should also have three letters of recommendation sent directly to the chairman of the Search Committee.

Tulane University is an Equal Opportunity/Affirmative Action Employer.

VASCULAR PLANT TAXONOMIST. The Department of Biology, Tulane University, invites application for the position of assistant professor. Applicants should hold the Ph.D. degree and be versed in field and herbarium techniques associated with plant taxonomy. A demonstrated ability to teach and conduct research as evidenced by previous positions (teaching assistantships, instructorship, and so forth) and publications is preferred. A potential ability to attract extramural funds for research is important, and an interest in neotropical and subtropical research is desirable. Duties will include teaching undergraduate and graduate courses in plant taxonomy and plant geography, curating the herbarium of over 75,000 specimens, and conducting and directing research in plant taxonomy. Send curriculum vitae and request three letters of recommendation be sent to:

**A. L. Welden, Chairman, Selection Committee
Department of Biology
Tulane University
New Orleans, Louisiana 70118**

Closing date: 15 February 1977.
Tulane University is an Affirmative Action/Equal Opportunity Employer.

POSITIONS OPEN

ASSOCIATE DEAN FOR FACULTY PERSONNEL AND RESEARCH. The College of Liberal Arts at Idaho State University seeks a competent and skilled interdisciplinary professional with proven abilities for instructionally related grantsmanship and an excellent teaching record. \$20,000 top salary for 12 months beginning 1 July. Natural scientist preferred. Send current curriculum vitae and letter of application without delay to: **Robert V. Edington, Dean of Liberal Arts, Idaho State University, Pocatello, Idaho 83209.** Closing date: 28 January 1977. More complete information available on request. An Equal Opportunity/Affirmative Action Employer.

CLINICAL MICROBIOLOGY ASSOCIATE DIRECTOR

In accordance with the University principles of fair-practice employment, the Department of Pathology of the University of Pennsylvania School of Medicine invites applications for associate director of the Microbiology Laboratories at the Hospital of the University of Pennsylvania. The director of the Microbiology Laboratories is seeking an associate to share administrative and teaching responsibilities. The laboratories are full-service laboratories lacking only diagnostic virology services. Minimum qualifications are a Ph.D. or M.D. with specialty training in clinical microbiology, ability to conduct an ongoing research program, and a desire to teach. Preference will be given to candidates possessing an M.D. degree with training in pathology. Send curriculum vitae to:

**Dr. John C. McKittrick
Director, Microbiology Section
Division of Laboratory Medicine
Hospital of the University of Pennsylvania
714 Maloney Building/G1
Philadelphia, Pennsylvania 19104**

An Equal Opportunity/Affirmative Action Employer

COORDINATOR/DIRECTOR OF A PROGRAMME IN PHARMACOLOGY

McMaster University Faculty of Health Sciences is seeking a scientist of broad vision to provide dynamic leadership for a programme in pharmacology.

The University Health Sciences Centre serves as the academic focus for five general hospitals in the Hamilton region serving a population of some 500,000 with referrals from an area in excess of 1.5 million. The faculty has a number of original features in education and research and has attempted to reflect its approaches to health care in its organizational framework and partnership with the community. The school has established a broad programme in pharmacology embracing interests from a wide range of departments and reflecting the many interests and disciplines which bear on the effects of drug usage in man in the broadest sense. This programme now comprises a core membership of some seven faculty (from clinical and nonclinical departments) with looser affiliation of a considerably larger number of faculty. The programme at present includes individuals with interests in autonomic pharmacology, the pharmacology of smooth muscle, drug metabolism and toxicity, and the effects of drugs on clinical problems such as thromboembolism. In addition the programme is served by a central Drug Analysis Laboratory equipped with GC-MS and data processing.

The programme is expected to provide a focus for the study of drug effects in man ranging from molecular mechanism to complex societal problems.

Please address enquiries to **Dr. J. F. Mustard, Dean, Faculty of Health Sciences, McMaster University, Hamilton, Ontario, L8S 4J9.**

ECOLOGY AND EVOLUTION AT STONY BROOK. Two positions are anticipated, starting September 1977. **Theoretical ecologist** with a solid mathematical background to teach a graduate course in theoretical ecology and assist with other undergraduate and graduate courses. A **population geneticist-evolutionist** to teach population genetics at the graduate level, and evolution at the undergraduate or graduate level. We will consider persons with theoretical, laboratory, or field interests. For both positions applicants must be active researchers, willing to participate in the instruction of a large graduate student body in a research-oriented department. One of the appointments may be made at the associate professor level. Applicants should send curriculum vitae including a description of research interest and names of four references to: **Robert R. Sokal, Acting Chairman, Department of Ecology and Evolution, State University of New York at Stony Brook, Stony Brook, New York 11794.** An Equal Opportunity/Affirmative Action Employer.

POSITIONS OPEN

Starting in the fall 1977, Indiana University-Bloomington, will have an opening for a person to serve as half-time **COORDINATOR OF WOMEN'S STUDIES AND HALF-TIME MEMBER OF THE PSYCHOLOGY DEPARTMENT**. After 3 years in this joint appointment, the incumbent would assume a full-time appointment in the Psychology Department. Although a senior person is preferred, rank and area of specialization in psychology are open. A Ph.D. degree in psychology is required. A strong interest and some experience in women's studies are essential. Salary in competitive. Minorities and women are encouraged to apply. Please send curriculum vitae and a list of at least three references to **Dr. Irving J. Saltzman, Psychology Department, Indiana University, Bloomington, Indiana 47401**, before 15 January 1977. *Indiana University is an Equal Opportunity/Affirmative Action Employer.*

CASE WESTERN RESERVE UNIVERSITY CASE INSTITUTE OF TECHNOLOGY DEAN OF STUDENT AFFAIRS

Nominations and applications are sought for the position of dean of student affairs for Case Institute of Technology (science and engineering). The dean's office assumes responsibility for the admissions of undergraduate students to Case Institute of Technology and establishing and administering undergraduate student services, activities and regulations to the end that broad educational objectives are served.

Applications and nominees should have an awareness of the undergraduate collegiate environment and promote programs and activities designed to enhance the quality of undergraduate student life.

Inquiries and applications should be addressed to:

Professor Ronald Cibald
Chairman Search Advisory Committee
White Building
Case Western Reserve University
Cleveland, Ohio 44106

Application deadline is 1 February 1977.
Case Western Reserve University is an Equal Opportunity/Affirmative Action Employer.

UNIVERSITY OF MARYLAND DEAN, COLLEGE OF ENGINEERING

Nominations and applications are invited for the position of Dean of the College of Engineering. The College consists of six academic departments: aerospace, chemical, civil, electrical, fire protection, and mechanical. The College offers B.S., M.S., and Ph.D. degrees in the academic departments. In addition there are graduate degree programs in nuclear engineering and engineering materials.

Desired qualifications: Ph.D. or equivalent in an engineering discipline, a significant record of engineering research and professional activity, and substantial academic and administrative experience. The appointment will be effective 1 July 1977. Applicants should qualify for an academic appointment with tenure in the relevant department. The salary will be commensurate with qualifications.

Applications should be received before 15 February 1977 to receive full consideration. Applicants should submit a complete résumé with references to: **Dr. Alex J. Dragt, Chairman, Dean Search Committee, Division of Mathematical, Physical Sciences, and Engineering, University of Maryland, College Park, Maryland 20742.**

The University of Maryland actively subscribes to a policy of Equal Educational and Employment Opportunity. The University of Maryland is required by Title IX of the Education Amendments of 1972 not to discriminate on the basis of sex in admission, treatment of students, or employment.

CANCER RESEARCH PROGRAM DIRECTOR. Senior cancer research scientist to direct Cancer Research Program of Oklahoma Medical Research Foundation, a sponsoring institution of Oklahoma Cancer Center. Established close working relationships with University of Oklahoma Health Sciences Center and other Oklahoma Health Center institutions. Responsibility for evaluation and development of existing and new clinical and laboratory research components, including small group and larger collaborative programs. Should be capable of assuming a major scientific role in further development of Oklahoma Cancer Center. Salary negotiable with excellent fringe benefits. *Equal Opportunity/Affirmative Action Employer.* Send curriculum vitae and letter of interest to **Chairman, Cancer Director Search Committee, Oklahoma Medical Research Foundation, 825 Northeast 13th Street, Oklahoma City, Oklahoma 73104.**

POSITIONS OPEN

DIRECTOR, CENTER FOR QUANTITATIVE SCIENCE IN FORESTRY, FISHERIES, AND WILDLIFE, UNIVERSITY OF WASHINGTON. The Center for Quantitative Science is an intercollege academic unit managed jointly by the Colleges of Fisheries and Forest Resources. While its regular members hold appointments in one or both of these colleges, the Center has working relations and affiliations with other academic units. The Center offers programs in the application of statistics, mathematics, operations research, and computer sciences primarily, though not exclusively, to the two parent colleges. Interdisciplinary research and teaching are directed toward quantitative representation of terrestrial and aquatic ecosystem processes and the quantitative biological, technological, and economic aspects of renewable resource management and decision-making, population dynamics, and mass and energy transport in ecosystems. The director's position requires a person qualified for the rank of full professor with an outstanding record of research and teaching in some areas appropriate to the responsibilities of the Center and its sponsoring colleges and with administrative capability. Inquiries and applications with curriculum vitae, bibliography, and statement of interests should be sent prior to 1 February 1977 to: **Professor David P. Thomas, College of Forest Resources AR-10, University of Washington, Seattle, Wash. 98195.**

An Equal Opportunity Employer

EXPERIMENTAL PSYCHOLOGIST, ASSISTANT PROFESSOR, beginning September 1977. The Department of Psychology at the University of Minnesota is seeking a new or recent Ph.D. with a primary interest in perception, information processing, or cognition. A secondary interest in the other two areas is preferred. The anticipated teaching responsibilities are: (i) an advanced level course in perception; (ii) an introductory course in cognition/information processing; and (iii) a graduate seminar in the candidate's area of specialization. The candidate must be capable of maintaining a strong research program. Salary is competitive. *The University of Minnesota is an Equal Opportunity Employer. Women and minority candidates are encouraged to apply.* Send curriculum vitae, three letters of reference, and a statement (maximum two pages) of long-term research interests to: **Dr. David LaBerge, Elliott Hall, 75 East River Road, University of Minnesota, Minneapolis, Minnesota 55455**, by 1 February 1977.

FACULTY POSITION VERTEBRATE BIOLOGIST/ECOLOGIST

The Department of Biology at the University of Colorado at Colorado Springs invites applications for a faculty position available for fall 1977. Rank is open; however, preference will be given to candidates with five or more years of academic teaching and research. The successful candidate will be expected to teach courses in vertebrate embryology-histology, comparative anatomy, human anatomy and physiology, and to participate in the general biology program, as well as have an active research program.

Interested candidates should provide a curriculum vitae, the names of three scientists familiar with their work, and a statement of their present and future research plans. Applications, to be received no later than 4 weeks from the date of appearance of this notice, should be sent to: **Dr. J. H. Eley, Chairman, Biology Search Committee, University of Colorado, Colorado Springs, Colorado 80907.**

The University of Colorado is an Equal Opportunity Employer.

HISTORIAN OF SCIENCE-CHEMIST, September 1977, permanent position at 4-year liberal arts college. Requires participating in interdisciplinary general education program as historian of science, preferably ancient and medieval periods. Formal training in history of science required. Also teach beginning chemistry and one advanced chemistry course. Experience and excellence in teaching important. Contact **Dr. Paul Curtis, Eisenhower College, Seneca Falls, New York 13148**, for application information. *An Equal Opportunity Employer.*

ORGANIC CHEMIST, September 1977, permanent teaching position. Introductory and advanced organic chemistry, biochemistry, in interdisciplinary 4-year liberal arts curriculum emphasizing excellent teaching. Contact **Dr. Paul Curtis, Eisenhower College, Seneca Falls, New York 13148**, for application information. *An Equal Opportunity Employer.*

POSITIONS OPEN

GEOCHEMISTRY

The University of Western Ontario, London, Canada, has a position at the assistant professor level for a geochemist as of 1 July 1977. The applicant must be a Ph.D. with experience in x-rf and atomic absorption techniques of analysis and must have experience with mass spectrometers. Teaching duties will be in geochemistry and mineralogy.

Applicants should send a curriculum vitae and the names of three referees to **W. S. Fyfe, Chairman, Department of Geology, University of Western Ontario, London, Ontario, Canada, N6A 5B7.** The closing date for applications is 1 January 1977.

UNIVERSITY OF REDLANDS GEOLOGISTS

Two positions available to teach geology in a small, undergraduate, liberal arts college. Starting date is 1 September 1977.

- 1) To teach physical geology, mineralogy, tectonics, petrography, and related courses. Assistant professor level. Some teaching experience preferred.
- 2) To teach historical geology, paleontology, stratigraphy, sedimentary petrology, and related courses. Some commercial experience in petroleum geology is desired. Teaching experience is necessary. Rank and salary open.

Both positions include supervision of collections. For additional information and application materials write to:

Dr. G. O. Gates, Dean
Division of Natural Sciences
University of Redlands
Redlands, California 92373

Applications close 17 January 1977.

An Equal Opportunity/Affirmative Action Employer

HEAD, UNIVERSITY PROGRAMS OFFICE. Oak Ridge Associated Universities. In a private non-profit association of 45 leading universities conducting research and education programs in energy, health, and the environment, the University Programs Office is responsible for planning, developing, and managing programs that make the technology, resources and facilities of selected government laboratories available to the academic community and bring to these research facilities a steady infusion of fresh scientific manpower. Current programs include faculty and student research participation, traveling lectures, and laboratory-graduate participation. Candidates should have an earned doctorate with experience, preferably in management, education, and research. Send application to: **Personnel Department, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge, Tenn. 37830.** *An Equal Opportunity Employer.*

HYDROLOGIST, UTAH

The Department of Geology and Geophysics, University of Utah, invites applications for a faculty position of junior rank in the area of groundwater hydrology, opening 1 July 1977. We seek a talented individual who is interested in joining a dynamic, growing department located in an area offering outstanding opportunities for groundwater research. Send inquiries to **Stanley H. Ward, Chairman, Department of Geology and Geophysics, University of Utah, Salt Lake City, Utah 84112.** *The University of Utah is an Equal Opportunity Employer.*

MARINE ECOLOGIST

The Department of Zoology, University of California, Berkeley, invites applications for a staff position at the assistant professor level. We are seeking a quantitative ecologist with research and teaching interests in marine populations and communities. The person chosen will be expected to teach a course in marine ecology, contribute to the teaching of general ecology or general biology, and develop an active graduate teaching and research program. Applicants should send a curriculum vitae, names of three references, a summary of teaching experience and research interests, and a list of any publications to **Marine Ecologist Search Committee, Department of Zoology, University of California, Berkeley, Calif. 94720.** The review of applications will begin 15 January 1977. (Note: This opening is contingent upon final budgetary approval.) *The University of California is an Equal Opportunity/Affirmative Action Employer. Minority and women candidates are encouraged to apply.*

POSITIONS OPEN

IMMUNOLOGIST/IMMUNOCHEMIST—A full-time faculty position at the level of professor or associate professor. Candidates must have a Ph.D., M.D., or equivalent degree, have an established research program in some aspect of medicine, immunology and/or immunochemistry, and experience in the training of young scientists. Duties will include teaching of graduate and medical students. This position offers an opportunity for a scientist to play a major role in the further development of active and ongoing research training programs in immunology of this department and institution. Send curriculum vitae and references to: **Dr. Gerald D. Shockman, M.D., Professor and Chairman, Department of Microbiology and Immunology, Temple University School of Medicine, 3400 North Broad Street, Philadelphia, Pa. 19140.** An Equal Opportunity/Affirmative Action Employer.

INSECT PHYSIOLOGIST CORNELL UNIVERSITY

Applications invited for position which carries responsibility for teaching senior/graduate course and developing research program. Prefer to fill at assistant professor level. Consideration given to associate rank in cases of exceptional qualifications and experience. Send curriculum vitae and names of five references to **Dr. E. H. Smith, Department of Entomology, Cornell University, Ithaca, N.Y. 14853.** Deadline for receipt of applications is 1 March 1977. *Cornell University is an Equal Opportunity/Affirmative Action Employer.*

INVERTEBRATE PALEONTOLOGIST

Applications are invited for a faculty position at the assistant professor level in invertebrate paleontology in the Department of Paleontology, University of California, Berkeley. The department is interested primarily in a teacher with a research program in marine paleoecology, and especially in an individual whose research emphasis is in the Mesozoic or Cenozoic. Interested individuals are requested to send a complete résumé and a statement of both teaching and research objectives and to have sent letters of recommendation from at least three persons qualified to evaluate their background and experience to: **Chairman, Department of Paleontology, University of California, Berkeley, California 94720.** Review of applications will commence 1 February 1977. *The University of California is an Equal Opportunity Employer. Women and minority candidates are encouraged to apply.*

MICROBIOLOGIST AND A MICROBIAL CYTOLOGIST

The Department of Microbiology invites applications for two faculty appointments beginning September 1977 at the assistant professor level.

A MICROBIOLOGIST: The principal duties of this appointment will be to teach undergraduates in public health microbiology and pathogenic microbiology for undergraduate and graduate students. A research program is expected.

A MICROBIAL CYTOLOGIST: The duties of this appointment will be to teach microbial cytology and ultra-structure at the undergraduate and graduate level. An electron microscope facility including a Phillips 200 TEM, and AMR10000A SEM, and an AMR electron microprobe are available in a separate building on a shared basis with other departments. A secondary teaching interest and research commitments are essential.

Applications from all qualified candidates are welcome. Applications, which must include a biographical résumé and copies of publications, should be sent to: **Galen E. Jones, Professor and Chairman, Department of Microbiology, University of New Hampshire, Durham, N.H. 03824,** before 15 February 1977. *The University is an Affirmative Action/Equal Opportunity Employer.*

MICROBIOLOGIST

The Department of Biology of Dalhousie University has a vacancy for an assistant professor specializing in microbiology. Preference will be given to a person interested in ecological aspects of the subject. Duties include teaching undergraduate and graduate courses in microbiology, and conducting a vigorous research program. Applicants must have a Ph.D., and preferably postdoctoral experience. Send résumé and names of three referees to **Dr. R. G. Brown, Department of Biology, Dalhousie University, Halifax, N.S., Canada B3H 4J1.** Starting date 1 July 1977 (subject to budget allocation). Salary according to experience.

POSITIONS OPEN

The Colorado College is seeking a **MICROBIOLOGIST-CELL BIOLOGIST** with a molecular orientation for a 1-year appointment. Ph.D. required. Applicants should be interested in teaching introductory and advanced biology courses in a liberal arts setting. Interested persons should send a curriculum vitae, copies of publications, and arrange to have three letters of reference sent by 1 February 1977 to: **Jack L. Carter, Chairman, Department of Biology, The Colorado College, Colorado Springs, Colorado 80003.**

An Equal Opportunity/Affirmative Action Employer

MICROBIOLOGY LAB MANAGER

To supervise a team of technicians doing biological and chemical tests on mutant microorganisms. Advanced degree in microbiology with considerable lab experience required. Proved supervisory experience desired. Knowledge of analytical techniques valuable. Salary open. Small Berkeley research firm offers excellent benefits. Please send résumé to: **Cetus Corporation, 600 Bancroft Way, Berkeley, Calif. 94710.** An Equal Opportunity Employer, M/F.

NUCLEAR MEDICINE—The Department of Radiology invites applications for the position of **assistant professor or associate professor** in the Division of Nuclear Medicine at the Ohio State University Hospitals, Columbus, Ohio.

Applicants should be board-certified and thoroughly trained, preferably in a University Center, in the use of radionuclides, and must have demonstrated evidence of clinical expertise. A portion of time in this position will be devoted to teaching medical students, residents, and to research—applicants must therefore have had prior training in the fundamentals of research methodology. To ensure that the successful candidate will be able to work closely with the medical imaging team, preference will be given to applicants with training in diagnostic radiology.

Applications from all qualified candidates are welcome; minorities and women are encouraged to apply.

If you are interested in this position, please write to the address below including a curriculum vitae and an autobiographical letter.

Marc R. Tetelman, M.D.
Acting Director
Division of Nuclear Medicine
Ohio State University Hospitals
410 West 10th Avenue
Columbus, Ohio 43210

OCEANOGRAPHER

Oceanography department has faculty position open at assistant professor level; some preference will be given to candidates with strong interest in both research and teaching in areas of marine geochemistry and marine food chain dynamics. Address inquiries to **Search Committee, Department of Oceanography, Florida State University, Tallahassee, Florida 32306.** *Florida State University is an Equal Opportunity/Affirmative Action Employer.*

PH.D. to supervise studies in genetics of transplant antigens and immunology of marrow transplantation with emphasis on transplantation tolerance. Good experience with animal models. **Division of Oncology, University of Washington, Seattle, Washington 98195.**

PLANT PHYSIOLOGIST/ PLANT BIOCHEMIST

Department of Plant Sciences, University of California, Riverside, announces a position at the assistant professor level, available 1 July 1977. Primarily research with some teaching. Plant scientist with strong training in biochemistry and with a research commitment to the use of plant cell culture techniques for crop improvement. Candidates with extensive training in plant molecular biology or hormonal control of plant growth and development are encouraged to apply, but consideration is not restricted to these areas. Ph.D. required; postdoctoral experience preferred, but all qualified candidates will be considered. Expected to teach an upper division course in plant physiology, a graduate course in area of specialization, and to direct graduate students. Eleven-month appointment in the Agricultural Experiment Station. Send curriculum vitae and official transcripts and arrange to have at least three letters of recommendation sent to: **Dr. R. T. Leonard, Search Committee Chairman, Department of Plant Sciences, University of California, Riverside, Calif. 92502.** Application deadline: 15 February 1977.

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POSITIONS OPEN

PHYCOLOGIST

Work with bioengineering group on mass culture of algae for waste treatment, energy, and fertilizer production. Research program includes physiology (nitrogen fixation, heterotrophy, and so forth) of oxidation pond algae. Position requires Ph.D degree and/or research publications on blue-green algae physiology. Position available now. Salary \$16,600 to \$18,300 per annum.

Apply to: **Professor W. J. Oswald, Sanitary Engineering Research Laboratory, Richmond Field Station, University of California, Berkeley, Calif. 94720.**

The University of California is an Equal Opportunity/Affirmative Action Employer. Women and minorities are urged to apply.

PHYSIOLOGICAL PSYCHOLOGY. The Department of Psychology at the University of California, San Diego, seeks an assistant professor with strong, substantive interest in the domain of information processing, preferably someone who is actively doing research on physiological mechanisms relevant to sensation, perception, or cognition. The candidate should be interested in interacting with the faculty in the area of human information processing and should be able to teach undergraduate and graduate courses on the physiological mechanisms of information processing systems.

Send résumé, reprints, and three letters of reference to: **Department of Psychology, C-009; University of California, San Diego, La Jolla, California 92093.** Deadline for receipt of the application is 31 January 1977. *The University of California, San Diego is an Affirmative Action/Equal Opportunity Employer. Qualified women, minorities, and handicapped individuals are encouraged to apply.*

PLANT ECOLOGIST with broad training in botany and ecology sought to teach core course in general ecology, participate in non-major general biology course, and develop an advanced undergraduate course in area of specialization. Development of an active research program expected. Appointment at rank of assistant professor commencing September 1977. Send curriculum vitae, transcripts, and three letters of recommendation before 1 February 1977 to **Dr. Robert L. Simpson, Chairman, Biology Department, Rider College, Lawrenceville, New Jersey 08648.** *Rider College is an Equal Opportunity/Affirmative Action/M/F Employer.*

POSTDOCTORAL (U.S. citizen or permanent resident) to work on transfer RNA isoelectric characterization in developing brain cells and a role of transfer RNA methylation as a determinant of neuronal specificity. NIMH support for 2 years. Apply to: **O. Z. Sellinger, Director, Laboratory of Neurochemistry, Mental Health Research Institute, University of Michigan, Ann Arbor, Michigan 48109.**

POSTDOCTORAL FELLOW

Postdoctoral research position available immediately to study regulation of transcription and involvement of RNA synthesis in DNA replication. Strong background in biochemistry or molecular biology required. Please send résumé to **Dr. Lucia Rothman-Denes, Department of Biophysics and Theoretical Biology, The University of Chicago, 920 East 58th Street, Chicago, Illinois 60637.** *From the time of its original charter, the principle of the University of Chicago has been to appoint scholars without regard to race, color, religion, sex, or national origin.*

POSTDOCTORAL POSITION at the Johns Hopkins University School of Medicine. Available immediately. Neurophysiological and neuroanatomical studies of the postnatal ontogeny of cardiovascular control systems. Applicants should have a strong background in the neurosciences and be familiar with modern techniques in either neurophysiology or neuroanatomy. Applicants should send their curriculum vitae and bibliography to: **Dr. Lawrence Schramm, The Johns Hopkins University School of Medicine, 223 Traylor Building, 1721 East Madison Street, Baltimore, Maryland 21205.**

POSTDOCTORAL POSITION

For biochemical studies on xanthine dehydrogenase from *Drosophila*. Experience in protein purification and characterization required. Salary \$10,500 for the first year. Position renewable. Send curriculum vitae and a list of three personal references to **Dr. E. P. M. Candido, Department of Biochemistry, University of British Columbia, Vancouver, British Columbia, Canada V6T 1W5.** *The University of British Columbia is an Equal Opportunity Employer.*

VICE-CHANCELLOR FOR ACADEMIC AFFAIRS

The University of California, San Francisco, a major health sciences campus, invites applicants for the position of vice-chancellor for academic affairs. This position is the senior vice-chancellor on campus and represents the chancellor in his absence. Specific responsibilities and functions include:

- Chairing the Academic Planning Board of the campus
- All personnel actions relating to academic appointees
- Administration of the academic affirmative action program for the campus
- Compliance with HEW regulations relative to (i) use of human beings as experimental subjects; (ii) use of radioactively labeled drugs or biological compounds; and (iii) experiments involving recombinant DNA
- Coordination of campus learning resource facilities and programs
- Several campus services, including the Office of Admission and the Registrar, the library, the Communication Office for Research and Teaching, the animal care facility and the Research and Development Laboratory

Applicants should have teaching and research experience, enabling them to understand the unique problems of academic appointments and promotions, and the management experience necessary to administer the many organizations which report to the Vice-Chancellor for Academic Affairs. Appointment will be effective 1 July 1977. Filing deadline: 31 December 1976. Please send résumé in confidence to **Jere E. Goyan, Chairperson, Search Committee, c/o School of Pharmacy, University of California, San Francisco Campus, Third and Parnassus Avenue, San Francisco, Calif. 94143. An Affirmative Action Employer, M/F.**

FACULTY POSITIONS OPEN COLLEGE OF MEDICINE KING FAISAL UNIVERSITY DAMMAM, SAUDI ARABIA

Applications are now invited from qualified men and women in these pre-medical and preclinical subjects:

Chemistry	Biochemistry
Biology	Physiology
Physics	Embryology
Anatomy	Pathology
Community Medicine	Biostatistics
Histology	Epidemiology

Doctorate or similar degree required. M.D. degree receives higher salary. Language of instruction is English. Positions are available immediately and for 1977-78.

Salary ranges (approximate):

Professor: \$23,000 to \$25,344.
Associate professor: \$18,423 to \$22,272.
Assistant professor: \$13,824 to \$25,492.
Free, furnished accommodation is provided.
Incomes not subject to Saudi Arabian income tax.

Send requests for application forms and information to:

Dr. Mohammed T. Altorki, M.D., MRCP
Dean of the Medical Faculty
King Faisal University
c/o Mr. Ghazi Abdul Jawad
Saudi Arabian Educational Mission
2223 West Loop South, Suite 400
Houston, Texas 77027

IBM Thomas J. Watson Research Center

environmental sciences

The IBM Thomas J. Watson Research Center is now inviting applications for appointment as Wallace J. Eckert Visiting Scientist in Environmental Sciences for the academic year of 1977 - 78.

Although the program is specifically intended for persons on sabbatical leave from universities and governmental laboratories, applications from any scientist prepared to carry out independent research will be seriously considered. The Visiting Scientist will normally be appointed for a period of one year. The primary responsibility of the Visiting Scientist will be to pursue a research program of his own choice at the Thomas J. Watson Research Center. A stipend will be paid and certain relocation expenses will be reimbursed.

The Wallace J. Eckert Visiting Scientist will join the General Sciences Department at the Research Center. Present departmental activities in environmental sciences include mathematical modelling of population dynamics, statistical analysis of ecosystems, stochastic hydrology, geomorphology of drainage basins, numerical taxonomy, and medical decision processes. Applicants for the environmental sciences appointment are not limited to these fields.

Those interested in applying for this post should send a letter, curriculum vitae, and a choice of supporting material (but not to include any formal research proposals) to Dr. S. L. Hantler, Manager, Corporate Ph. D. Program by January 1, 1977.



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POSITIONS OPEN

POSTDOCTORAL POSITION: Research on regulation of liver and brain pyruvate dehydrogenase complexes. Effect of hormones and other modulators on regulatory enzymes. Studies on steady state interconversion of active and inactive forms. Send curriculum vitae, including names of references, to **Dr. Thomas Roche, Department of Biochemistry, Kansas State University, Manhattan, Kansas 66506. An Equal Opportunity/Affirmative Action Employer.**

TWO POSTDOCTORAL POSITIONS open in NIH-funded training program on eye research to work in the areas of (i) ultrastructure and histochemistry of normal and abnormal extraocular muscle with Dr. J. Davidowitz and B. R. Pachter, and (ii) rhodopsin regeneration, vitamin A metabolism, and related enzymology in the eye with Dr. C. David Bridges. Requirements are Ph.D., M.D., or equivalent. Minimum of 2 years in program. Starting salary \$10,000 to \$13,000. Write, sending curriculum vitae to: **Training Program, Dr. J. A. Zadunaisky, Director, Department of Ophthalmology, New York University Medical Center, 550 First Avenue, New York, N.Y. 10016.**

POSTDOCTORALS (TWO)—DNA BIOCHEMISTRY AND GENETICS. Available immediately, minimum of \$10,000 per year. One involves research on enzymology of DNA replication and DNA restriction and modification (P. Modrich). The other concerns regulation of gene expression in *Escherichia coli* using DNA cloning and in vitro transcription and translation (R. Greene). Reply, with curriculum vitae and the names of three references, to: **Dr. Paul Modrich or Dr. Ronald Greene, Department of Biochemistry, Duke University Medical Center, Durham, N.C. 27710. Equal Opportunity/Affirmative Action Employer.**

POSTDOCTORAL FELLOW

Biochemist, cell biologist, or molecular biologist. Immediate opening for basic research on steroid hormone interaction and enzyme induction in target tissues of clinical importance. Tissue culture experience desirable. Well-equipped and financed group in New York City medical school, Department of Medicine. Send résumé and names of three references to **Box 535, SCIENCE.**

POSTDOCTORAL POSITION immediately available for research on fetal and tissue antigens and immune responses to these antigens, including autoimmunity. Previous relevant Ph.D.-level research experience required. No telephone inquiries. Send curriculum vitae, including names of references, to **Dr. George J. Friou, Director, Clinical Immunology and Rheumatic Disease Section, University of Southern California School of Medicine, 2025 Zonal Avenue, Los Angeles, California 90033. An Equal Opportunity/Affirmative Action Employer.**

POSTDOCTORAL POSITION: Immediate opening for recent Ph.D. with strong background in microbial genetics and enzymology. Research deals with biochemical genetics of bacteria with particular emphasis on gene-enzyme interactions and gene expression. Please send curriculum vitae and references to: **Dr. J. S. Gots, Department of Microbiology, School of Medicine, University of Pennsylvania, Philadelphia, Pa. 19174. Equal Opportunity/Affirmative Action Employer.**

PREDOCTORAL POSITIONS in oncology, immunology, microbiology, virology, molecular, and cellular biology. Available: July to September 1977. Prerequisites: U.S. citizenship, B-plus average, high GRE scores. Inquiries to: **Dr. Sheldon Dray, Head, Department of Microbiology, University of Illinois Medical Center, P.O. Box 6998, Chicago, Illinois 60680. The University of Illinois is an Equal Opportunity/Affirmative Action Employer.**

RESEARCH ASSOCIATE. Ph.D. with 2 to 5 years of experience in the following: fluorescence quenching, stop-flow, flash photolysis, radioimmunoassay development, purification of human coagulation factors II, IX, X, thrombin. Isolation of intermediates and by-products of the human factor II activation pathway, fractionation of antibodies into sub-unit chains. Must have supervisory experience to lead three or four research technicians. Please forward résumé to **Director of Personnel, Sidney Farber Cancer Institute, 35 Binney Street, Boston, Mass. 02115. An Equal Opportunity/Affirmative Action Employer.**

POSITIONS OPEN

POSTDOCTORAL/RESEARCH ASSOCIATE

Position available January 1977. To seek correlations between radiation and drug-induced DNA damage and repair in normal brain and brain tumors and the loss of either tumor cell clonogenic capacity or normal brain function. Experience in tumor biology, neurobiology, biochemistry, cell culture, centrifugation, biometry, and the handling of radiation sources and isotopes desirable. Send inquiries and curriculum vitae to: **Dr. K. T. Wheeler, Box 704, Cancer Center, University of Rochester, 260 Crittenden Boulevard, Rochester, New York 14642. An Equal Opportunity Employer, M/F**

PROFESSOR AND CHAIRPERSON, Department of Physical Education and Dance, including elective, undergraduate through graduate professional preparation programs. Doctorate or equivalent degree with administrative ability and strong teaching, service, and research. Deadline 1 February 1977. Send application letter and curriculum vitae to **George E. Stelmach, Department of Physical Education and Dance, 2000 Observatory Drive, University of Wisconsin, Madison, Wisconsin 53706. An Equal Opportunity/Affirmative Action Employer.**

PROFESSOR AND CHAIRMAN OF BOTANY

Professorship available for fall 1977. Experienced person with strong research and teaching record. Field of interest should be in biochemistry, biophysics, plant physiology, or other experimentally oriented aspects of molecular biology involving plant materials. Appointee will be expected to aid in designing an elementary biology course and to initiate revisions leading to an integrated biology department. Candidate should have breadth appropriate to a fine liberal arts college. Scholarly distinction, enthusiastic teaching ability, and capability for further professional growth are essential. Deadline: 15 January 1977. Send curriculum vitae and at least three letters of reference to: **Search Committee, Department of Botany, Pomona College, Claremont, California 91711. An Equal Opportunity/Affirmative Action Employer**

RESEARCH ASSOCIATE position available in 1977 in laboratory equipped for voltage clamp of *Myxococcus* giant axons and frog myelinated nerve; micro-electrode recordings from frog spinal motoneurons and/or invertebrate neurons; pharmacology of conduction in demyelinated nerve; or other electrophysiological problems. Starting date and salary negotiable. Send curriculum vitae, names of references, and a description of problems of interest and required facilities to **Dr. C. L. Schauf, Department of Physiology, Rush College of Health Sciences, Rush-Presbyterian-St. Lukes Medical Center, 1753 West Congress Parkway, Chicago, Illinois 60612. An Equal Opportunity/Affirmative Action Employer.**

RESEARCH ASSOCIATE

To study primate retinal physiology with electrophysiological techniques. Applicants should be recent Ph.D.'s. Those with a strong background in visual science will be given preference. Candidates will be expected to partake in the development of particular studies and assume responsibility for a laboratory computer facility.

Interested candidates should send curriculum vitae and names of three references to: **Dr. William Bar-on, Electronics and Bioengineering Laboratory, Stanford Research Institute, 333 Ravenswood Avenue, Menlo Park, Calif. 94025. An Equal Opportunity Employer.**

VISUAL PHYSIOLOGIST

Ophthalmology program seeking visual physiologist with expertise in visual psychophysics and electrophysiology. Individual must have at least 3 years of academic experience following postdoctoral training, and be able to interrelate with clinical research programs in ophthalmology. Please state background and salary requirements.

Please address inquiries to **George W. Weinstein, M.D., Professor and Head, Division of Ophthalmology, The University of Texas Health Science Center at San Antonio, San Antonio, Texas 78284.** Kindly respond prior to 15 December 1976. *The University of Texas Health Science Center at San Antonio is an Equal Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

Duke University Medical Center is inviting applications for the position of **RESEARCH ASSISTANT PROFESSOR OF UROLOGY.** Applicants should hold an M.D. degree and have a record of experience in basic laboratory research. Complete residency training with Board certification/eligibility in general surgery and/or urology is required. Interest and demonstrated ability in areas of urinary physiology, renal transplantation, and other fundamental and clinical investigative areas is desirable. *Duke University is an Equal Opportunity/Affirmative Action Employer.* Reply to: **Chief of Urology, Post Office Box 3707, Duke University Medical Center, Durham, North Carolina 27710.**

RESEARCH ASSOCIATE—Skill in computer programming combined with training in theoretical physics, chemistry, or engineering science for theoretical analysis of light scattering by particles and biological cells. **M. Kerker, Clarkson College of Technology, Potsdam, New York 13676.**

RESEARCH DIRECTOR HEALTH SERVICES

Immediate opening. New position M.D. or Ph.D. Develop and administer new Health Services Research and Development Center at large NP VA hospital. Conduct research in the organization and delivery of health services. Joint appointment with the Johns Hopkins University HSR & D Center. Salary negotiable. Send résumé to **Dr. William P. Paré, VA Hospital, Perry Point, Md. 21902. An Equal Employment Opportunity Employer.**

The Australian National University invites applications for the post of **RESEARCH FELLOW** in the Human Genetics Group (Head: Dr. R. L. Kirk). Applicants should have a Ph.D. degree or its equivalent (and/or a medical qualification) and proven ability to initiate and carry out research of a high level and have an interest in immunogenetics, theoretical or practical population genetics, protein structure and function. Tenure: research fellow normally 3 years in the first instance with possibility of reappointment to 5 years. Reasonable travel expenses and assistance with housing for an appointee from outside Canberra. Superannuation benefits are available. Salary in accordance with qualifications and experience within the range \$13,552 to \$17,876. Exchange rate A\$1 : U.S.\$1.23 : £0.75. Applications close with the undersigned 31 December 1976.

Academic Registrar, Australian National University, P.O. Box 4, Canberra, A.C.T. 2600, Australia.

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TERRESTRIAL ECOLOGIST—M.S. or Ph.D. in applied terrestrial ecology, business oriented with experience in environmental assessment and impact projections. Starting salary \$16,000 to \$20,000 per year. Mail résumés and cover letter to **B. Blanchet, Environmental Science and Engineering, Inc., P.O. Box 13454, University Station, Gainesville, Florida 32601.** No telephone calls please.

GRADUATE STUDY

GRADUATE STUDY

The Department of Biological Sciences, in cooperation with the basic science faculty of the University of Maryland at Baltimore, provides graduate education toward the M.S. and Ph.D. in the areas of molecular biology and biochemistry; genetics; and cell developmental, organismic, and population biology.

TEACHING ASSISTANTSHIPS and MINORITY STUDENT FELLOWSHIPS are available for qualified applicants. For details write to **Dr. R. P. Burckard, Department of Biological Sciences, University of Maryland Baltimore County, Catonsville, Maryland 21228.**

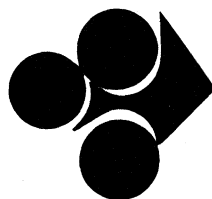
PHYSICIANS (MULTIPLE OPENINGS)—Food and Drug Administration/Bureau of Drugs. (Equal Opportunity Employer.) Immediate career Civil Service openings for physicians to evaluate clinical data of new drugs. Physicians function as leaders of multidiscipline teams reviewing New Drug Applications (NDAs) and Notices of Claimed Investigational Exemption for New Drugs (INDs). They participate in formulating policy and developing standards and guidelines for the study of new drugs. Positions are available in most specialties with most immediate needs in fields of Cardiology, Gastroenterology, Rheumatology, Anesthesiology, Pulmonary-Allergy, OB/GYN, and Infectious Diseases. The positions require judgment, ability to plan and organize work, effectiveness in writing, speaking, and interpersonal skills. Security, good salary (\$33,126 to \$37,800 per year), comprehensive fringe benefits, ongoing contacts with professional colleagues and provision for maintaining clinical expertise. Positions are available in the U.S. Civil Service system or the Commissioned Corps of the Public Health Service. Candidates must be U.S. citizens, graduates of U.S. or Canadian Medical Schools with a degree of Doctor of Medicine or Doctor of Osteopathy from a school approved by the Bureau of Professional Education Committee on Colleges of the American Osteopathic Association. A full, unrestricted, and permanent license to practice in a State, District of Columbia, Puerto Rico, or a territory of the U.S. is desirable. Graduates from foreign medical schools, or medical schools not listed as approved by the American Medical Association, may show comparability in medical education with approved schools in one of the following ways:

1. Permanent and full or unrestricted license to practice medicine in a State, the District of Columbia, Puerto Rico, or a territory of the U.S., or
2. At least one year as an active duty commissioned medical officer in the U.S. Armed Services or Public Health Service, or
3. Certification in a specialty by an American Specialty Board, or
4. Permanent certification by the Education Council for Foreign Medical Graduates in its American Medical Qualifying Examination or eligibility in the full examination of the National Board of Medical Examiners.

Send resume to:

FDA Personnel (Mr. Stephen Tobias)
Room 4B-44
5600 Fishers Lane
Rockville, Maryland 20852

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To obtain a description of the program and application procedures, write to:

Coordinator
Mass Media Intern Program
AAAS, 8th Floor
1776 Massachusetts Ave., N.W.
Washington, D.C. 20036

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UNIVERSITY OF WESTERN AUSTRALIA Perth FOREST ECOLOGY

Applications are invited for the following appointment:

TEMPORARY LECTURER IN FOREST ECOLOGY, Department of Botany. This position is sponsored by Alcoa of Australia Ltd., through the Alcoa Foundation, and Western Collieries Ltd. Applicants should have broadly based interests in plant ecology, preferably in relation to forested areas. Duties will be teaching general plant ecology to undergraduate students, supervising honours and postgraduate research programmes in forest ecology, and developing special research projects on disturbed forest areas. Would-be candidates may write to the Head of the Department of Botany, Professor J. S. Pate, for further information. The salary offered is that of the first or second point in the University Lecturer's scale, i.e. \$A13552 p.a. or \$A14187 p.a. The position will be subject to review every two years and if performance is satisfactory appointment will continue to a maximum of six years.

An appointee from within Australia will be entitled to fares for self and fully dependent spouse and from elsewhere to appointment expenses of up to \$A1700. Applications in duplicate stating full personal particulars, qualifications and experience should reach the Staffing Officer, University of Western Australia, Nedlands, Western Australia, 6009, by **15 January 1977**. Candidates should request three referees to write immediately to the Staffing Officer.

Conditions of appointment available from the Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H 0PF.

CALL FOR PAPERS

**6th AIRAPT INTERNATIONAL
High Pressure Conference**
(Static Compression and Shock Waves)
University of Colorado
Boulder, Colorado
25 to 29 July 1977

Areas of interest:

Mechanical Properties and Industrial Applications
High Pressure in Energy Resource Recovery
Material Synthesis Under Pressure
Metrology and Instrumentation
High Pressure Molecular and Chemical Applications
Applications to Physical Systems
Geophysical/Geological Applications (including Planetary Interiors)

Sponsor: Association International for Research and Advancement of High Pressure Technology—AIRAPT. (K. D. Timmerhaus, Chairman, Engineering Research Center, AD 1-25, University of Colorado, Boulder, Colorado 80309.)

Deadline for abstracts: 15 January 1977.

CONFERENCE

**CONFERENCE ON DIAGNOSTIC
IMMUNOLOGY**
31 JULY TO 5 AUGUST 1977
NEW ENGLAND COLLEGE
HENNIKER, NEW HAMPSHIRE

The conference, which is sponsored by the Engineering Foundation, will focus on two major themes:

- 1) The application of immunological techniques to the diagnosis of disease, and
- 2) Progress in new immunological techniques.

Sessions will be divided into eight major topics of interest including hormones, infectious diseases, immunologically mediated diseases, and cancer immunology. The symposium is primarily reserved for invited principal contributors. However, sessions have been set aside for unsolicited papers. English will be the language used for all presentations. The symposium will be limited to 150 participants. Selection of participants will be based on their participation in the conference and on maintenance of a balance for both industry and the academic community. For registration information contact the Engineering Foundation, 345 East 47 Street, New York, New York 10017. For any technical information please write: Dr. Herman Friedman, Department of Microbiology, Albert Einstein Medical Center, Philadelphia, Pennsylvania 19141.

TRAINEESHIPS

POSTDOCTORAL TRAINEESHIPS (NIH): Starting dates in 1977 for M.D.'s or Ph.D.'s to study the biology of trauma and chronic stress, especially in the context of burn injury. Excellent clinical and laboratory facilities, multidisciplinary staff. Joint appointments at Massachusetts General Hospital, Harvard Medical School, and the Shriners Burns Institute. U.S. citizen or resident visa. Write for details or send curriculum vitae to: Research Training Director, Shriners Burns Institute, 50 Blossom Street, Boston, Mass. 02114.

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**HARVARD UNIVERSITY
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Seeks a very limited number of highly qualified candidates from scientific fields who would like to pursue a public service career. The program provides training enabling graduates to address a wide variety of public policy questions. The core of the program consists of courses in economics, quantitative and analytic methods, and political analysis. Applicants should have strong academic backgrounds and be able to demonstrate an interest in a public service career.

For further information or application forms write to: Harvey Brooks, Ph.D., Benjamin Pierce Professor of Technology and Public Policy, Division of Engineering and Applied Physics, Pierce Hall 217, Harvard University, Cambridge, Massachusetts 02138.

PROGRAMS

GRADUATE STUDIES: Northwestern University Department of Pharmacology offers Ph.D. programs in molecular, physiological, morphological, and clinical aspects of pharmacology. Faculty interests include molecular pharmacology; pharmacokinetics, metabolism, and biochemical and electrophysiologic mechanisms of action of cardioactive agents; structural and physiologic bases of neurotransmission; relationships between contractile and metabolic events in smooth muscle; environmental toxicology; and pharmacology of bone. Instrumentation and specialized techniques include EM, FT-NMR, GC-MS, HPLC, intracellular microelectrode recording, and tissue culture. Stipends begin at \$3600. Supported by NIH training grant. For further information contact Dr. George T. Okita, Department of Pharmacology, Northwestern University Medical School, Chicago, Illinois 60611.

FELLOWSHIPS

POSTDOCTORAL FELLOWSHIP available in research program studying biochemical abnormalities determined by specific human cancer genes. A position in clinical genetic research may also be available. Applicants must be U.S. citizens or permanent residents. Address inquiries to: Dr. Michael Swift, Biological Sciences Research Center, University of North Carolina, Chapel Hill, N.C. 27514. *University of North Carolina is an Affirmative Action Employer.*

SMITHSONIAN FELLOWSHIPS

Predocutorial/postdoctoral fellowships in **anthropology, biology, and earth sciences.** Tenable at Smithsonian's museum, laboratory, field, and research facilities for 6 to 12 months. Deadline: 15 January 1977. Contact: Academic Studies, SI 356, Smithsonian Institution, Washington, D.C. 20560. *The Smithsonian admits investigators of any race, color, sex, national, or ethnic origin.*

Applications are invited for a **FELLOWSHIP** studying the subunit structure and evolution of tobacco fraction 1 protein. A Ph.D. degree in plant physiology or biochemistry is required. Preference will be given to applicants who have experience relevant to the subject. *University of Maryland Baltimore County is an Affirmative Action/Equal Opportunity Employer.* Send applications to: Dr. S. D. Kung, Department of Biological Sciences, University of Maryland Baltimore County, Catonsville, Maryland 21228.

POSTDOCTORAL RESEARCH FELLOWSHIP for recent graduate with Ph.D. preferably in biochemistry to study the mechanisms of action of mammalian collagenases with emphasis on structure-function relationships. Position available immediately. Inquiries and résumés should be addressed to Dr. A. Z. Eisen, Division of Dermatology, Department of Medicine, Box 8123, Washington University School of Medicine, St. Louis, Missouri 63110. *An Equal Opportunity Employer*

POSTDOCTORAL FELLOWSHIP is available in endocrine research. The area of particular concern involves the mechanism of action of ACTH on the adrenal cortex and the role of calcium, prostaglandins, and cyclic nucleotides in this process. Some background in radioimmunoassay techniques and/or phospholipid analysis would be desirable. Send résumé and references to: Dr. Ronald P. Rubin, Department of Pharmacology, Medical College of Virginia, Richmond, Va. 23298.

**POSTDOCTORAL (Ph.D. or M.D.) RESEARCH
TRAINING FELLOWSHIP
IN THE SEXUALLY
TRANSMISSIBLE DISEASES AVAILABLE**

The Venereal Diseases Research Fund of the American Social Health Association invites immediate application for postdoctoral research training fellowships in the sexually transmissible diseases. Two such fellowships will be awarded as early in 1977 as possible. Each fellowship is for 1 year. The level of fellowship support is \$12,500, plus \$1,000 for supplies. The final date for receipt of application is 15 January 1977. Awards will be announced by 1 March 1977.

Interested fellows or sponsors can obtain additional information and applications from the Venereal Diseases Research Fund, 260 Sheridan Avenue, Palo Alto, Calif. 94306. Telephone: 415-321-5134.

FELLOWSHIPS

**PRE- AND POSTDOCTORAL TRAINING
OPPORTUNITIES AT THE
UNIVERSITY OF ALABAMA
MEDICAL CENTER**

Research fellowships at the predoctoral (\$5,100 and up) and postdoctoral (\$10,000 and up) levels are available commencing during the summer 1977 under preceptors from the Departments of Biochemistry, Medicine, Microbiology, Pediatrics, Pathology, and Surgery. Areas and preceptors represented in NIH-supported training programs include:

Animal Virology: Alford, Bishop, Compans, Francis, Hunter, Lebowitz, Reynolds, Stagno.

Allergic and Immunologic Diseases: Ball, Bennett, Cooper, Lawton, Lee, Habeeb, Holley, Nagasawa, Niedermeier, Schrohenloher, Stroud, Tomana, Volanakis.

Connective Tissues: Baker, Butler, Miller, Montes, Niemann, Roden, Thompson.

Molecular Cell Biology and Genetics: Bastia, Bugg, Curtiss, Finley, Frazer, Gauthier, Lebowitz, Rozen, Schutzbach, Shiota, Suddath, Yelding.

Immunology and Cell Membranes: Acton, Balch, Bennett, Cooper, Ghanta, Hiramoto, Johnson, Lammon, Lawton, Mole, Segrest.

Infectious Diseases and Host Defense: Avent, Bobo, Cassell, Cobbs, Derrick, Dillon, Dismukes, Griffin, McGhee, Mestecky, Polt.

Individuals interested should send a letter describing their research interests to the **Training Office, Department of Microbiology, Box 11 DSB, University of Alabama in Birmingham, Birmingham, Alabama 35294.** *An Equal Opportunity/Affirmative Action Employer.*

A **POSTDOCTORAL FELLOWSHIP IN TUMOR IMMUNOLOGY** is available immediately in an ongoing investigation of cellular and humoral immunity in mice accompanying successful chemotherapy. Experience in *in vitro* and *in vivo* immunological techniques for cell-mediated immunity is required. Send curriculum vitae and two letters of reference to Dr. M. N. Teller, Sloan-Kettering Institute for Cancer Research, 145 Boston Post Road, Rye, New York 10580.

POSTDOCTORAL TRAINEE. Fellowship for recent Ph.D. with background in biochemistry and organic chemistry. Experience with different chromatographic and related instrumental techniques, also organic synthesis desirable. Participate in diversified program on hereditary and acquired metabolic disorders. Send curriculum vitae, graduate and undergraduate transcripts, lists of publications and abstracts, names of three U.S. professional references to Dr. K. N. F. Shaw, Medical Genetics Division, Children's Hospital, P.O. Box 54700, Los Angeles, Calif. 90054. *Equal Opportunity Employer.*

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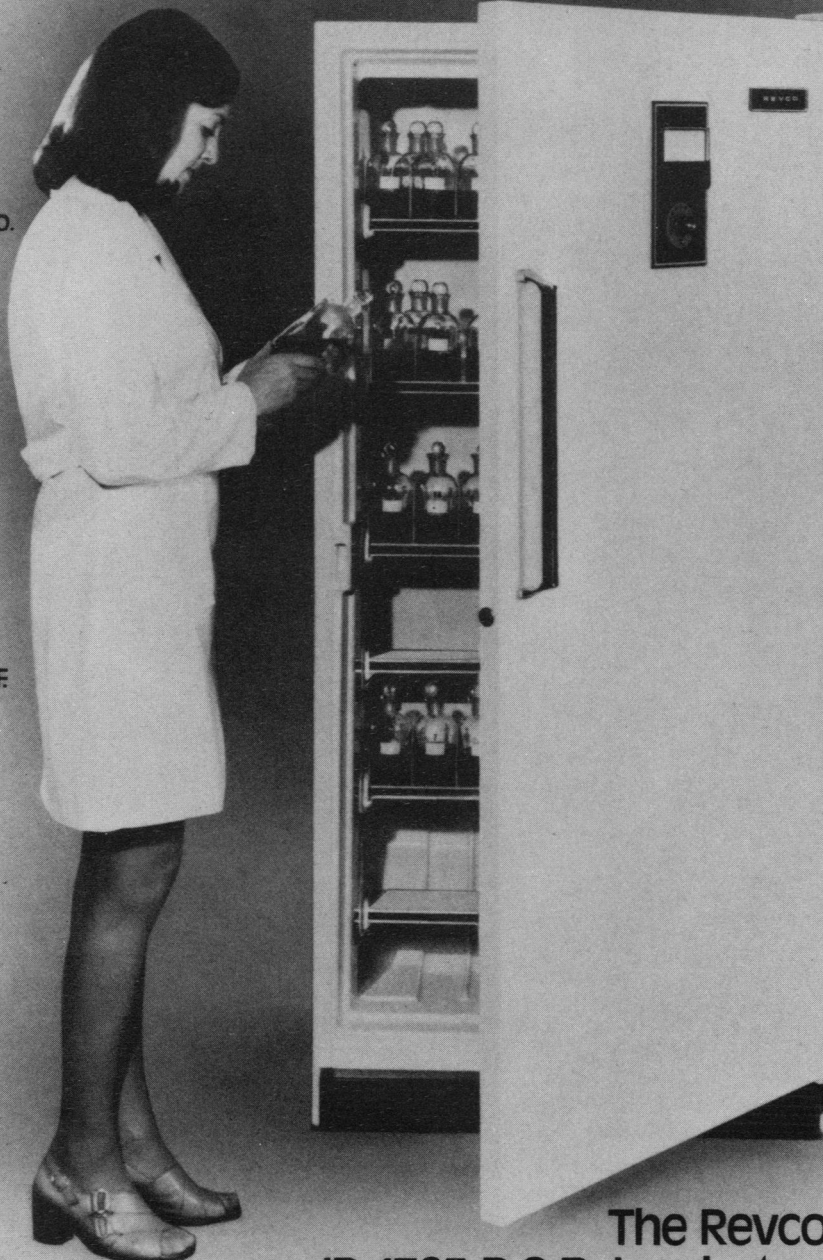
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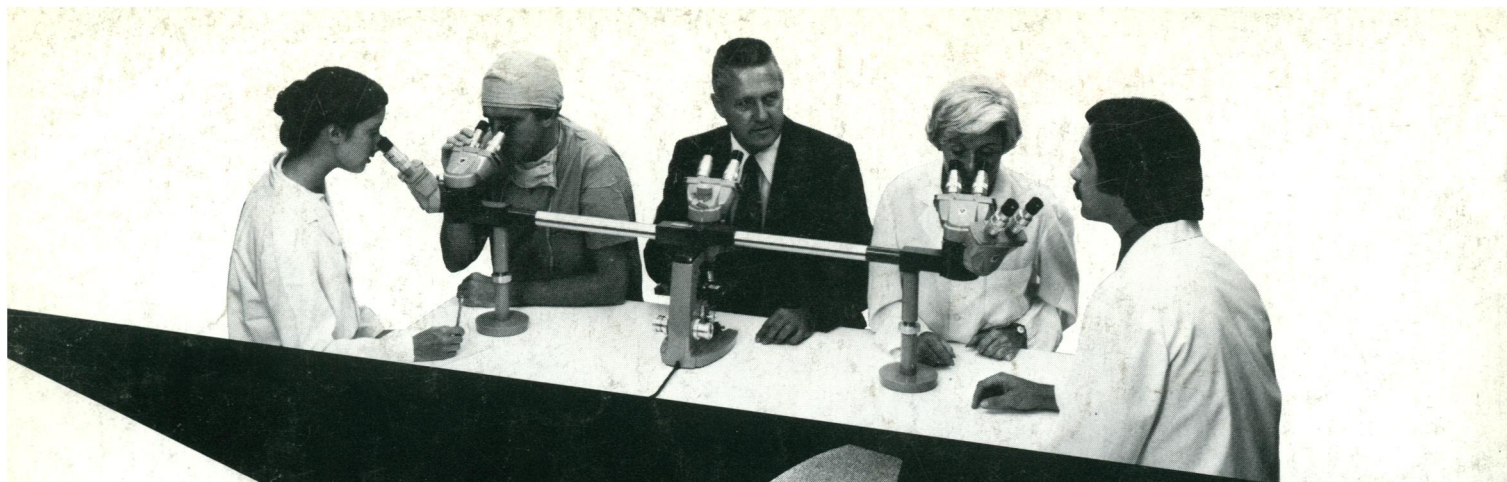
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