

## LETTERS

(Continued from page 330)

7. R. C. Axtmann, "Chemical aspects of the environmental impact of geothermal power," paper IV-2 presented at the Second United Nations Symposium on the Development and Use of Geothermal Resources, San Francisco, Calif., May 1975.
8. H. P. Rothbaum and B. H. Anderton, "Removal of silica and arsenic from geothermal discharge waters by precipitation of useful calcium silicates" *ibid.*, paper IV-13.
9. Japan Geothermal Energy Association, *Geothermics* 3, 122 (1974).

## Citation Analysis Studies

Citation analysis reflects the real world of science, not a fantasyland where all scientists' work is equally valuable, where there is no scientific elite and no mediocrity, or where scientific results are directly proportional to money spent.

It is ironic that Nicholas Wade, in his otherwise excellent article on citation analysis (*News and Comment*, 2 May, p. 429), neglected to cite any of the relevant literature. It is equally ironic—and significant—that subsequent critics of citation analysis (*Letters*, 13 June, p. 1064) ignore the wealth of published information on citation analysis (1), in which each of their points has already been assessed.

Those who read this literature will find that citation analysis is not without its pitfalls, but that anomalies or abuses have a very small effect. Statistical routines have been developed to deal with derogatory and self-citations, multiple authorships, the stature of the journal in which an article appears, and unusual techniques papers. In addition, a confidence statement appropriate to statistical indicators is usually included in citation analyses.

Original, informed criticism of citation analysis is welcome.

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## References

1. D. J. de Solla Price, *Science* **149**, 510 (1965); A. E. Bayer and J. Folger, *Sociol. Educ.* **39**, 382 (1966); J. Margolis, *Science* **155**, 1213 (1967); C. R. Myers, *Am. Psychol.* **25**, 1041 (1970); A. M. Hall, *The Use and Value of Citations—A State of the Art Report* (Report R70/4, Institution of Electrical Engineers, London, 1970); W. O. Hagstrom, *Sociol. Educ.* **44**, 375 (1971); J. P. Martino, *IEEE (Inst. Electr. Electron. Eng.) Trans. Eng. Manage.* **EM-18**, 146 (1971); A. J. Meadows and J. G. O'Connor, *Sci. Stud.* **1**, 95 (1971); J. R. Cole and S. Cole, *Social Stratification in Science* (Univ. of Chicago Press, Chicago, 1973); A. J. Meadows, *Communication in Science* (Butterworths, London, 1974); J. R. Cole and S. Cole, *Science* **183**, 32 (1974); H. Small and B. C. Griffith, *Sci. Stud.* **4**, 17 (1974); B. C. Griffith, S. Dey, J. Stonehill, *ibid.*, p. 339; J. A. Virgo, thesis, Graduate Library School, University of Chicago (1974).

# TIAA CREF

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These days, when it's more important than ever to squeeze the most from every dollar, it makes more sense than ever for college employees and other eligible persons to look to TIAA for the new life insurance they need. By the way, TIAA policies include the unique "Cost of Living" provision to help prevent inflation from nibbling away the purchasing power of the death protection.

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Age at Issue	25	30	35	40
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ELIGIBILITY to apply for TIAA policies is limited to employees of colleges, universities, and certain other nonprofit educational institutions that qualify for TIAA. If you are eligible, complete and send the coupon so we can mail the Life Insurance Guide and a personal illustration of TIAA policies issued at your age. TIAA is nonprofit and employs no agents.

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# Personnel Placement

Only those employers who will not discriminate on the basis of race, sex, religion, age, color, or national origin should submit Personnel Placement advertising.

**POSITIONS WANTED:** 40¢ per word; use of Box Number counts as 10 additional words. Minimum charge \$10. Prepayment required. This rate applies to individuals only; personnel agencies and companies take display rate for all advertising.

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COPY for ads must reach SCIENCE by Wednesday, 3-1/2 weeks before issue date (Friday of each week) requested. Send copy for all positions wanted ads and display ads under 5 inches to:

SCIENCE, Room 207  
1515 Massachusetts Ave., NW  
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New York, N.Y. 10036

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1515 Massachusetts Ave., NW  
Washington, D.C. 20005

## POSITIONS WANTED

**Biochemist.** Ph.D. 1970. Three years postdoctoral (NIH and university). Ten years of professional experience. Experience in enzymology, protein, polysaccharide, cell biology. Seeking research position. Dr. T. Kaizu, Meiji-yakudai 35-23 Nozawa-1 Setagayaku, Tokyo, Japan. X

**Biochemist.** Ph.D. Six years of broad research experience with 40 publications on enzymology, oxygenase, protein chemistry, cytochrome, protein-lipid interactions. Seeks biomedical or basic research position in academia, industry, hospital, government. Box 336, SCIENCE. X

**Biochemist.** Ph.D. 1964. Broad industrial and academic experience in pharmacokinetics, metabolism, radioimmunoassays, protein chemistry, supervisory, contracts, proposals, publications. Interested in responsible position in government or industry. Box 304, SCIENCE. X

**Biochemist.** Ph.D. 1959. Ten years nutrition, neurochemistry, cancer, reproductive biology research, and medical school teaching. Many publications. Seeks teaching or any junior research post for retraining after 5 years of nonbiomedical employment. Box 338, SCIENCE. X

**Biologist.** Ph.D. botany/zoology. Publications. Experience in phytoplankton/zooplankton dynamics as indicators of water quality. Postdoctorate experience in algal systematics. Seeks position in related field, including research or teaching. Box 337, SCIENCE. 8/1, 22

**Electron Microscopist** in experimental pathology and cancer. Ph.D. 1958, 6 years' experience in tissue culture virology, recent interest in chemical induction of pancreatic tumor and related studies. Seeks permanent hospital, research institution, or university position. Box 339, SCIENCE. 8/1, 8

**Electron Microscopist.** B.S. Four years' experience in wide variety of EM, x-ray, light microscopy methods with biological materials. Seeks responsible position on active research staff. Box 340, SCIENCE. X

## POSITIONS WANTED

**Unemployed Microbiologist.** Need work soon, must eat! Ph.D. 1970 from major and midwest university; 5 years of research and teaching experience; some industry work. Seven publications in good journals. Eligible for U.S. government positions at GS-12. 515-292-7487 evenings or write Box 294, SCIENCE. X

**Physical Chemist,** recent Ph.D. Publications: inorganic synthesis, x-ray diffraction, calorimetry. Industrial and tutoring experience. Box 341, SCIENCE.

**Physicist/Biochemist,** Ph.D. Experience and interests: physics techniques applied to biochemistry. Desires research position. Résumé, bibliography, references. Box 342, SCIENCE. X

**Plant Physiologist:** Ph.D. 1975. Broad background in plant science and biochemistry. Teaching experience. Five publications: isoenzymes/plant cell cultures/peroxidase. Seeking teaching or research position. Box 343, SCIENCE. X

**Plant Physiologist,** Ph.D., research experience with plant growth regulators and water stress. Publications. Teaching experience in biology and botany. Desires academic or industrial position. Box 344, SCIENCE. 8/1, 8

**Psychologist,** Ph.D., experimental, August 1975. Ten publications, six papers. Research experience: learning, motivation, physiological, perception. Some teaching. Seeks academic position. Box 345, SCIENCE. X

**Conscientious Research Assistant:** B.A. chemistry. Seeks immediate research assistantship or high level technician position. Experience: 1 year clinical chemistry (hospital), 2 years mycology research (biochemical assays), 4 years virology research (in vivo and in vitro). Will relocate. S. Weiner, 35 Edgewater Drive, Apt. 34, Coral Gables, Florida 33133. X

## POSITIONS OPEN

**ANATOMISTS.** Openings are available for anatomists who are competent to teach one or more of the following: gross, microscopic, neuro- and developmental anatomy. Junior and senior positions depending on qualifications, including research productivity and promise, of applicant. Send curriculum vitae to **Dr. Charles R. Noback, Department of Anatomy, College of Physicians and Surgeons, Columbia University, 630 West 168 Street, New York, N.Y. 10032.**

*An Equal Opportunity/Affirmative Action Employer.*

**ANIMAL PHYSIOLOGIST:** Assistant professor. Recent Ph.D. to teach introductory human physiology, animal physiology, or upper-level undergraduate/graduate courses in area of own physiologic specialty; direct M.Sc. and Ph.D. students and develop independent research program of high quality. Curriculum vitae, statement of research interests, reprints, and names of three referees should be sent to: **Dr. H. D. McCurdy, Head, Department of Biology, University of Windsor, Windsor, Ontario, N9B 3P4, Canada.**

**ASSISTANT PROFESSORS**—Two positions available starting 1 September 1975, in the Department of Pathobiology, College of Veterinary Medicine. The duties include primarily research and graduate teaching. The positions call for a **Virologist** and an **Immunopathologist**. Candidates for both positions should have a D.V.M. degree, and advanced training in their discipline, with documented research productivity. The individuals must be capable of interacting productively with other scientists in a team approach to research on the virology, immunology, and pathogenesis of persistent virus infections. Apply with résumé to **Dr. Tim Crawford, Department of Pathobiology, Washington State University, Pullman, Wash. 99163.** *An Equal Opportunity Employer. Minorities and women are encouraged to apply.* Application review begins 15 August 1975.

## ASSISTANT RESEARCH SCIENTIST

Ph.D. to study *Drosophila* differentiation in vitro with molecular biology techniques. Salary about \$14,000, start approximately 1 September 1975. Submit curriculum vitae, bibliography, two letters of reference, and brief statement of career goals to **Dr. Robert Secoff, Head, Department of Developmental Biology, City of Hope National Medical Center, Duarte, Calif. 91010.** *An Equal Opportunity/Affirmative Action Employer.*

## POSITIONS OPEN

**ARTHROPOD SYSTEMATIST:** Available immediately, assistant or associate professor rank, joint appointment in the Departments of Biological Sciences and Entomology. The successful applicant must be a highly motivated person with a Ph.D. in entomology or zoology, and be capable of interacting positively with a diverse group of basic and applied scientists. The applicant must have a successful and sustained interest in research and be conversant with agriculture. Teaching responsibilities are general biology and upper-division entomology. Strong systematic orientation with peripheral expertise in some area of arthropod biology not overlapping with present faculty is desirable. Salary commensurate with experience. Inquiries or applications including experience, professional résumé, pertinent publications, and three letters of recommendation should be sent to: **Dr. David E. Foster, Department of Entomology, Texas Tech University, Lubbock, Texas 79409.**

*Closing date: 15 October 1975. Texas Tech University is an Equal Opportunity/Affirmative Action Employer.*

## UNIVERSITY OF MICHIGAN PEDIATRICS AND COMMUNICABLE DISEASE Associate or Assistant Professor

Position available in the Department of Pediatrics and Communicable Disease, University of Michigan Medical School. Subspecialty Board-eligible M.D. in neonatal-perinatal medicine for faculty position in neonatology. Research interest in regional perinatal education necessary. Support is for a 3-year period only. The University does not provide a commitment beyond that period. Code #1700DO. Send résumé to **Box 348, SCIENCE.** *A Nondiscriminatory Affirmative Action Employer.*

## ASSISTANT PROFESSORS

The Faculty of the Department of Cell and Developmental Biology of the University of Arizona invites applications for appointments at the **Assistant Professor** level. One appointment will be available 1 January 1976 and the other in September 1976. The appointees will be expected to establish vigorous research programs and participate in a departmentally administered course. Applicants should have demonstrated originality, competence and productivity at the postdoctoral level. Appointments will be made from applicants with experience and interest in any of the following areas: (i) mammalian cell genetics; (ii) animal virus genetics; (iii) assembly of subcellular structures; (iv) molecular fine structure.

A curriculum vitae, bibliography, short (less than 500 words) description of prospective research program, two recent research publications, and names of three references should be sent to the **Chairman, Faculty Search Committee, Department of Cell and Developmental Biology, College of Liberal Arts, University of Arizona, Tucson, Arizona 85721.** *An Equal Opportunity/Affirmative Action Employer.*

Ph.D. **Biochemist/Physiologist.** Research position available at instructor level.

**Qualifications:** Postdoctoral experience; good background in kinetics and statistics; experience in bone metabolism. Salary dependent upon qualifications. *Female and minority candidates are encouraged to apply.*

For information write: **D. J. Baylink, M.D., Seattle VA Hospital, Seattle, Wash. 98108.**

## CHAIRPERSON DEPARTMENT OF BIOCHEMISTRY

For the University of Health Sciences/The Chicago Medical School. **Qualifications:** should possess strong credentials in teaching experience and have demonstrated competence in research and administration. **Organization:** a private, nonprofit, nongovernmental, coeducational university and *An Equal Opportunity/Affirmative Action Employer.* Application: send curriculum vitae to **Richard A. Albach, Ph.D., Department of Microbiology, University of Health Sciences/The Chicago Medical School, 2020 West Ogden Avenue, Chicago, Illinois 60612.**

## CHAIRPERSON DEPARTMENT OF ANATOMY

Applications are invited for this position at the Chicago College of Osteopathic Medicine. Send curriculum vitae and a list of references to: **Dr. A. D. Alexander, Chairman, Anatomy Search Committee, Chicago College of Osteopathic Medicine, 1122 East 53 Street, Chicago, Illinois 60615.** *An Equal Opportunity Employer*

## POSITIONS OPEN

### BIostatistician for Cancer Center

Appointment at associate professor level or higher for biostatistician to head biostatistical and biomathematical supports to Cancer Center that emphasizes both basic and clinical research. Must have outstanding credentials in statistics, be of principal investigator caliber in own research, have good evidence for working productively with both clinical and laboratory researchers, have evidence for interests and some experience in cancer-related research, and be able to direct work in data processing and computer analysis. Apply by 7 August to: **Dr. Carol M. Newton, Professor and Chairman, Department of Biomathematics, School of Medicine, University of California, Los Angeles, California 90024.**

Applications are invited for a **CHAIRPERSON** of the Department of Physiology at **DUKE UNIVERSITY MEDICAL CENTER.**

The University is seeking candidates with a strong academic background and a broad understanding of teaching and research in Physiology. Candidates should also have administrative experience and a demonstrated interest in organizing and developing interdisciplinary teaching and research programs.

Applicants should submit a curriculum vitae, list of publications, and the names of three references to **Dr. Robert L. Hill, Chairman, Department of Biochemistry, Duke University Medical Center, Durham, North Carolina 27710.**

*Duke University is an Affirmative Action/Equal Opportunity Employer. Women and minority candidates are encouraged to apply.*

### CHANCELLOR UNIVERSITY OF ALASKA, FAIRBANKS

The Chancellor is the chief administrative officer of the Fairbanks campus of the University of Alaska's statewide system of nine campus units. Stressing those unique educational resources of the arctic and subarctic as the northernmost American university, the Fairbanks campus and its newly established community college branch enroll 3845 full- and part-time students. Several national and internationally known research institutes are integral parts of the University. Faculty number 312, and the physical plant is mostly less than 15 years old. Degrees offered range from associate to doctoral, the latter mostly in the field of geophysics, biology, and oceanography. Candidates are desired who have demonstrated a high degree of productive scholarship; administrative ability; sensitivity in student, faculty, and community relations; and who possess a strong commitment to the development of a quality public university which emphasizes those specialties unique to its physical, biological, and cultural environment. An earned doctorate is required.

Applications should be sent to:

**Office of the President  
University of Alaska  
Fairbanks, Alaska 99701**

Applications should include current curriculum vitae, evidence of qualities specified, and the names of at least three references. Closing date for applications is 15 August 1975.

*An Equal Opportunity/Affirmative Action Employer*

### ELECTRON MICROSCOPIST

Position in West Germany for ambitious young M.D. or Ph.D. to supervise electron micrographic studies related to ongoing collaborative program project in lung transplantation. Knowledge of German not required. Opportunity for independent research as well as continuation of present projects guarantees excellent academic productivity with many chances for senior authorship. Guidance and assistance from experienced pulmonary electron microscopist (Professor B. Blümcke) will be available. Unlimited facilities and American technical assistance. Friendly atmosphere in English speaking laboratory at Institute of Pathology, Medical School of Essen. Salary according to qualifications up to \$1,500 per month, plus transportation to and from U.S. Six-week paid vacation per year. Contact **Dr. F. J. Veith, Montefiore Hospital, 111 East 210 Street, New York, N.Y. 10467**, or **Dr. S. Blümcke, 42 Essen Rellinghausen, Kantorie 45, West Germany.**

## POSITIONS OPEN

### DIRECTOR, LONGITUDINAL (NORMATIVE) AGING STUDY

Applicant should be an M.D. or Ph.D. in biomedical science, preferably with expertise in interdisciplinary aging research involving longitudinal method. The Normative Aging Study is a large-scale study of non-pathological aspects of aging, which was initiated in 1963 and is located at the independent Veterans Administration Outpatient Clinic in Boston. The position permits the incumbent to conduct his own research as well as direct the research of both medical and behavioral scientists. The primary focus of the study is on the biomedical aspects of aging with a strong emphasis on the psychosocial components to yield a coherent explanatory framework. The position also involves academic and teaching responsibilities, and integration with the broader ambulatory patient care mission of the Clinic. Send curriculum vitae and three references to **Chairman of Search Committee for Director of Normative Aging Study, c/o Associate Chief of Staff for Research, VA Outpatient Clinic, 17 Court Street, Boston, Massachusetts 02108. An Equal Opportunity/Affirmative Action Employer.**

### DIRECTOR Lake Superior Basin Studies Center University of Minnesota, Duluth

The Director of the Center will be responsible for administering and coordinating the program of the Center, managing the Center's office and staff, assisting investigators to obtain research support, coordinating the Center's program with those of other state and federal agencies and keeping the public informed of the Center's activities. Three to 5 years of research administration and a Ph.D. are desired.

*The University of Minnesota is an Equal Opportunity/Affirmative Action Employer.* Address correspondence to: **Dr. Robert L. Heller, Associate Provost, 515 Administration Building, University of Minnesota, Duluth, Duluth, Minnesota 55812.** Salary is open. Applications will be received through 15 September 1975.

### FACULTY POSITION

A position is available at the **Professor or Associate Professor** level for an individual with major interest and experience in electron microscopy as applied to immunology and/or microbiology. Send curriculum vitae and names of three references to **Appointments Committee, Department of Immunology and Microbiology, 540 East Canfield, Detroit, Michigan 48201. An Equal Opportunity Employer.**

**FACULTY POSITION, Assistant Professor, Department of Biochemistry and Pharmacology, Tufts University School of Medicine, Boston, Mass. 02111.** Neuropharmacologist with postdoctoral experience to pursue fundamental research program and to participate in teaching pharmacology to medical, dental, and graduate students. Contact **Dr. Henry G. Mautner, Chairman, Tufts University is an Equal Opportunity/Affirmative Action Employer.**

### University of California, Berkeley Assistant Professor of Entomology FOREST ENTOMOLOGY

Position available 1 July 1975. Teaching and research in forest entomology and forest pest management. Ph.D. required. Knowledge of insect and forest ecology and pest management practices essential. Preference given to candidates with some blend of biological, mathematical, and computer skills. Send curriculum vitae, all official transcripts, names and addresses of three references, and copies of any publications or manuscripts to: **Dr. Evert I. Schlinger, Chairman, Division of Entomology and Parasitology, University of California, Berkeley, California 94720. The University of California is an Equal Opportunity/Affirmative Action Employer.** Women and minority candidates are urged to apply.

### University of California, Berkeley Assistant Professor of Entomology URBAN PEST MANAGEMENT

Position available now. Teaching and research in pest management, with emphasis on integrated control of pests of plants in the urban environment. Expertise in management of arthropods affecting plants is required. Training of experience in quantitative ecology is essential. Ph.D. required. Send curriculum vitae, all official transcripts, names and addresses of three references, and copies of any publications or manuscripts to: **Dr. Evert I. Schlinger, Chairman, Division of Entomology and Parasitology, University of California, Berkeley, California 94720. The University of California is an Equal Opportunity/Affirmative Action Employer.** Women and minority candidates are urged to apply.

## POSITIONS OPEN

**EXPERIMENTAL PSYCHOLOGIST.** Postdoctoral research associate. Experience in operant conditioning, behavioral pharmacology, use of drugs as behavioral research tools. Publications. Send curriculum vitae to **F. C. Clark, Department of Psychology, University of Mississippi, University, Miss. 38677. An Equal Opportunity, Affirmative Action Employer.**

### FACULTY POSITION IN NEUROPHARMACOLOGY

The Department of Pharmacology, University of Colorado School of Medicine, is seeking a neuropharmacologist, with demonstrated competence in teaching and research in central nervous system pharmacology. Preference will be given to individuals who are familiar with electrophysiological, morphological and neurochemical techniques. Rank and salary are open and will be determined by qualifications and accomplishments of applicant. Inquiries, which should include curriculum vitae, list of publications, and references, should be addressed to **Dr. Norman Weiner, Professor and Chairman, Department of Pharmacology, University of Colorado School of Medicine, Denver, Colorado 80220.**

*An Affirmative Action/Equal Opportunity Employer.*

### HEAD, DEPARTMENT OF BIOLOGICAL SCIENCES

The Department of Biological Sciences, University of Idaho, seeks a Head effective 1 July 1976. The department has 19 faculty members and responsibilities in teaching, research, and service appropriate to a publicly supported university. Candidates must have a Ph.D. in biology, botany, or zoology, a strong publication record, a dedication to excellence in teaching and continuing research, and successful administrative experience. Send qualifications including curriculum vitae and three letters of reference to: **Dr. A. W. Rourke, Department of Biological Sciences, University of Idaho, Moscow, Idaho 83843.**

The closing date is 16 October 1975 and may be extended until suitable applicant applies. *The University of Idaho is an EEO/AA employer.*

### HEAD, DEPARTMENT OF GEOGRAPHY

Applications are invited for a person to head a faculty of 16 beginning August 1976 or earlier. Desired qualifications include the doctorate, an established research reputation, concern for innovative teaching, and academic administrative experience. Salary open. Send curriculum vitae and names of five references to **Eugene Giles, Chairman, Geography Head Search Committee, Department of Anthropology, University of Illinois at Urbana-Champaign, Urbana, Ill. 61801.** Application deadline is 31 October 1975. *An Equal Opportunity/Affirmative Action Employer.*

**IMMUNOLOGIST.** Associate Professor. Individual must have proven outstanding research contributions in the area of cellular immunology. Background and research interests preferred: cell culture, metabolism of nucleic acids, proteins, and cyclic nucleotides. Present research area preferred is the regulation of antibody synthesis. The candidate should have also have a broad background in molecular biology and an interest in biological regulatory mechanisms. The candidate should demonstrate an existing vigorous research program. The successful candidate would be expected to participate in the instruction of medical students, undergraduate and graduate students, and would also be expected to direct the research of graduate students and postdoctoral fellows. Ph.D. required. Postdoctoral experience strongly preferred. *Applications from qualified applicants are welcome: minorities and women are encouraged to apply.* The application deadline is 8 September 1975. Applications consisting of curriculum vitae and the names of three references should be sent to:

**Dr. Paul S. Sypherd  
Department of Medical Microbiology  
University of California, Irvine  
Irvine, California 92664**

### MARINE PHYSIOLOGIST

Two research scientist positions are available in our Marine Research Laboratory at Sequim, Washington. Applicants should have an advanced academic degree and experience in the study of the effects of pollutants on marine organisms. Background in oil chemistry and analytical techniques is also desired. Send résumé to **E. P. Galbraith, Manager-Employment, Pacific Northwest Laboratory, Division of Battelle Memorial Institute, P.O. Box 999, Richland, Washington 99352. An Equal Opportunity Employer.**

## POSITIONS OPEN

### INSTRUCTOR Department of Anesthesiology

The University of Michigan Medical School is seeking M.D., Board-certified or qualified in anesthesiology. Prefer experience in didactic and clinical instruction of residents and medical students in anesthesia. Code #1100H0. Send résumé to **Box 347, SCIENCE**.  
*A Nondiscriminatory, Affirmative Action Employer.*

### UNIVERSITY OF SOUTH ALABAMA Coordinate College for Health Professions Department of Medical Technology

Applications are invited for permanent faculty members in medical technology. Candidates should have teaching experience and be certified by the ASCP/MT. Send curriculum vitae to: **Chairman, Department of Medical Technology, Coordinate College for Health Professions, University of South Alabama, Mobile, Alabama 36688. An Equal Opportunity Employer (M/F).**

**MICROBIOLOGIST:** Faculty appointment for microbiologist to teach and carry out research in the area of molecular mechanisms responsible for pathogenesis of bacterial diseases. An original and productive investigator is required; knowledge of infectious diseases is desirable. Faculty rank and salary dependent upon training and experience. Applicants send curriculum vitae and names of three references to **Dr. Harold S. Ginsberg, Department of Microbiology, College of Physicians and Surgeons, Columbia University, 630 West 168 St., New York, N.Y. 10032. Columbia University is an Equal Opportunity/Affirmative Action Employer.**

**NEUROANATOMIST.** We have an opening for an Assistant Professor to carry on research and teaching in neuroanatomy beginning in fall of 1975 or as soon thereafter as possible. Although we are particularly interested in someone with a strong research program in fine structure of the CNS (with emphasis on cell biology), good researchers in other important areas of modern neuroanatomy will also be considered. We will give preference to individuals who have had a post-doctoral fellowship (preferably for at least 2 years) in a good lab. The primary teaching responsibility will be in the neuroanatomy course given to first-year medical students. If you are interested please send curriculum vitae (including bibliography) and a paragraph summarizing your research plans. Also please arrange for three letters of recommendation to be sent. **Dr. A. Kent Christensen, Chairman, Department of Anatomy, Temple University School of Medicine, 3420 North Broad St., Phila., Pa. 19140. Affirmative Action, Equal Opportunity Employer.**

### NEUROCHEMIST/BIOCHEMICAL NEUROPHARMACOLOGIST

Research associate positions immediately available to work on biochemical mechanisms of tolerance and physical dependence on drugs of abuse. Especially functions of neuronal and glial cells. Salary \$10,000 to \$12,000. Reply, including curriculum vitae and references to: **Dr. I. K. Ho, Department of Pharmacology and Toxicology, The University of Mississippi Medical Center, Jackson, Miss. 39216.**

*The University of Mississippi Medical Center is an Equal Opportunity Employer. Male/Female.*

### PHARMACOLOGY/TOXICOLOGY/ BIOCHEMISTRY POSTDOCTORAL POSITION

Opening for a postdoctoral position to study cyanide poisoning and its antagonism. Applicant should submit a curriculum vitae to **Dr. James Way, 105 College Hall, Washington State University, Pullman, Wash. 99163. Washington State University is an Equal Employment Opportunity/Affirmative Action Employer.** Application review will begin 30 August 1975.

### PHYSICIAN WANTED

Physician, internist or surgeon, with strong interest in preventive medicine and epidemiology for faculty position. The department has two internists, a Ph.D. biostatistician-epidemiologist, five epidemiology trained registered nurses, and research associates. Major interests are in epidemiology, genetics, and cancer control. Excellent opportunity for growth in research, teaching, and service. Fringe benefits and community are outstanding. Send curriculum vitae to **Henry T. Lynch, M.D., Chairman, Department of Preventive Medicine and Public Health, Creighton University School of Medicine, Omaha, Nebraska 68178. Telephone: 402-536-2942.**

## POSITIONS OPEN

### Union Internationale Contre le Cancer International Union Against Cancer



The International Union Against Cancer is compiling an

### INTERNATIONAL DIRECTORY OF SPECIALIZED CANCER RESEARCH AND TREATMENT ESTABLISHMENTS

The Directory will include four major categories of organizations:

1. **Comprehensive cancer centres;**
2. **Cancer research institutes;**
3. **University departments or biomedical research centres which are engaged in a structured programme of cancer research;**
4. **Hospitals or other medical establishments having a SEPARATE, identifiable organizational department or unit devoted to, and specialized in, the diagnosis and comprehensive, multidisciplinary treatment of all cancer patients or of cancer of a given site or sites.**

Information Collection Sheets have been sent to the Directors of establishments in these categories that have been brought to our attention.

If your establishment falls into one of these categories and you have not received a copy of the Information Collection Sheet, you can ensure you appear in the Directory by writing immediately to:

**International Directory Project  
International Union Against Cancer  
3, rue du Conseil-Général  
1205 Geneva, Switzerland.**

### NEUROBIOLOGIST

We seek applications for a full-time research position from individuals broadly trained in neurobiology with demonstrated expertise in neuro-behavior, brain biochemistry, and neurophysiology. Applicants should be at least 3 to 4 years beyond the Ph.D. and have post-doctoral training preferably independent research experience in one or more of the above disciplines. We are looking for an interdisciplinary-oriented neurobiologist whose research can interface across several areas in a long-term Program Project dealing with Maternal Protein Restriction and Mental Retardation. Candidates must have interest to collaborate in team research programs and ability to head the neuro-behavioral section of the Project. Please send curriculum vitae and brief description of research experience to: **Ashton Gibbons, Ph.D., Director of Personnel, Worcester Foundation for Experimental Biology, 222 Maple Avenue, Shrewsbury, Mass. 01545.**

*An Equal Opportunity/Affirmative Action Employer*

**TWO POSTDOCTORAL APPOINTMENTS** are available for studies on molecular aspects of pathogenesis of diseases caused by *Treponema pallidum*, *Neisseria gonorrhoea*, *Chlamydia trachomatis*, herpesvirus, and cytomegalovirus. These appointments are supported by a Veneral Disease Training Grant from NIH. Stipend levels are \$10,000 to \$13,200 per year, depending on experience. Send curriculum vitae and two letters of reference to **Department of Bacteriology and Immunology, School of Medicine, University of North Carolina, Chapel Hill, N.C. 27514.**

*The University of North Carolina is an Equal Opportunity/Affirmative Action Employer. Applications from women and minority candidates are welcome.*

Applications are invited for **Postdoctoral Appointments** available immediately to participate in research on: (i) Cardiac muscle: whole muscle and tissue culture, biochemical regulation of energy utilization, biophysical control of contraction. (ii) Muscle membrane-enzymology and cyclic nucleotide metabolism.

Submit inquiries with curriculum vitae to **Bernard C. Abbott or M. Michael Appleman, Department of Biological Sciences, University of Southern California, Los Angeles, Calif. 90007. Telephone: 213-746-2929.**  
*An Equal Opportunity/Affirmative Action Employer*

### POSTDOCTORAL—GENETICS

Postdoctoral fellowships in human and medical genetics available to U.S. citizens or permanent residents with Ph.D. or M.D. degrees who plan academic careers in human/medical genetics. Available August 1975. Write to **Dr. W. Angus Muir, Division of Human Genetics, Department of Medicine, University Hospitals, 2065 Adelber Road, Cleveland, Ohio 44106.**

### PHYSICAL SCIENTIST

The U.S. Agency for International Development, Department of State, has need for a **Physical Scientist, GS-13**, to assist in the formulation of programs and policies in the field of energy in the developing countries. Duties include strengthening developing country capabilities in the assessment, selection, and adaptation of alternative energy techniques; monitoring and communicating major results of U.S. energy, research and development; and designing and managing selected technical assistance projects in the energy field. Location is Washington, D.C. but some foreign travel is required.

**Qualifications:** A minimum of a bachelor's degree (graduate degree preferred) in engineering or one of the physical sciences and a minimum of 3 years in the assessment of energy technology as described above. Experience in the design or application of small energy sources is desirable.

**Salary:** \$21,816 to \$28,359 depending on previous experience. U.S. citizenship is required.

**How to apply:** Send a complete résumé, including salary history, or a Personal Qualifications Statement (SF-171) to **James J. Redfern, Professional Recruitment, Office of Personnel and Manpower, U.S. Agency for International Development, Washington, D.C. 20523.**

*AID is an Equal Opportunity Employer*

**POSTDOCTORAL FELLOW OR RESEARCH ASSOCIATE.** Ph.D. to participate in active laboratory with experimental programs on: (i) unit recording during behavior; (ii) effects of angiotensin on sensitive sites in the brain. Skills in any of the following would be appropriate: neurophysiology, neurobehavior, histochemistry, immunoassay, TEM. Salary \$10,000 to \$12,000 per year. Appointment for 1 year beginning 1 September 1975. Send curriculum vitae to **Dr. M. I. Phillips, Acting Head, Department of Physiology and Biophysics, University of Iowa, Iowa City, Iowa 52242. The University of Iowa is an Equal Opportunity Employer.**

**TWO ASSOCIATE POSITIONS.** Two associate positions available of 1-year duration. Salary \$12,000 per year. Associates have faculty status and will be expected to teach in physiology courses and engage in research. Additional faculty positions of 1-year duration available with salary and rank commensurate with background and experience. Begin 1 September 1975. Qualifications: Ph.D. and ability to teach. Please state research interests. Send curriculum vitae to **Dr. M. I. Phillips, Acting Head, Department of Physiology and Biophysics, University of Iowa, Iowa City, Iowa 52242. The University of Iowa is an Equal Opportunity Employer.**

## POSITIONS OPEN

### POSTDOCTORAL NATIONAL RESEARCH SERVICE AWARDS

**POSTDOCTORAL POSITIONS** are available on or before 1 September 1975 for studies on trace elements in prenatal and perinatal development and connective tissue metabolism. Stipends start at \$10,000. Applications are invited from individuals with D.D.S., M.D., D.V.M., or Ph.D. degrees in one of the biological sciences.

Send résumé and two letters of recommendation to the Program Director, Dr. Lucille S. Hurley, or Dr. Robert B. Rucker, Department of Nutrition, University of California, Davis, California 95616. An Equal Opportunity Employer.

### POSTDOCTORAL POSITIONS

Study of subcellular mechanisms of hormone action in normal reproductive tissue and breast cancer. Candidates must be U.S. citizens. Preference will be given to applicants with backgrounds in eukaryotic gene function or cyclic nucleotide action. Send curriculum vitae and names of three references to:

Dr. William L. McGuire  
University of Texas Health Science Center  
7703 Floyd Curl Drive  
San Antonio, Texas 78284

### POSTDOCTORAL POSITION

Position available in the dynamics of combustion to study the process of fire and extinguishment. Both experimental and theoretical work are involved. Must be able to use advanced mathematical methods on problems of multicomponent fluid dynamics, and heat transfer in analyzing experimental results. Contact: Professor H. W. Emmons, Division of Engineering and Applied Physics, Harvard University, Cambridge, Massachusetts 02138. An Equal Opportunity/Affirmative Action Employer.

**POSTDOCTORAL POSITIONS.** Two positions open immediately. One involves structure-function studies of human erythrocyte membranes. The other is concerned with studies of the mechanism of unfolding of small globular proteins. Various physical and chemical methods will be utilized, including scanning calorimetry, fluorescence, magnetic resonance, rapid kinetic techniques. Prior training or experience in either biochemistry or physical chemistry is desirable. Salary is \$9,500 to \$11,000. Send references and résumé to John F. Brands, Department of Chemistry, University of Massachusetts, Amherst, Mass. 01002.

### POSTDOCTORAL POSITION

Applications are invited for a fellowship to investigate the biochemical structure of neurotropic subviral agents. Applicants should have a strong background in molecular virology and preferably electron microscopy. Salary \$10,000. Send applications with names of references to Dr. Stanley Pursiner, Department of Neurology, M-794, University of California, San Francisco 94143.

### POSTDOCTORAL POSITION

Immediate opening at Tree Genetics Laboratory for recent Ph.D. with strong background in plant biochemistry and cell culture to study morphogenesis of coniferous tree species with possibility that this might lead to a faculty position.

Please send résumé and three letters of recommendation to Dr. T. Y. Cheng, Department of Chemistry, Oregon Graduate Center, 19600 N.W. Walker Road, Beaverton, Oregon 97005.

*We are an Equal Opportunity Employer.*

### POSTDOCTORAL RESEARCH ASSOCIATES IN CANCER BIOLOGY

Positions are available for recent graduates (Ph.D.) interested in: tumor immunobiology, cell kinetics and control processes in hematopoiesis, macrophage function, and biochemical actions of anticancer agents. Box 346, SCIENCE.

### POSTDOCTORAL RESEARCH ASSOCIATE

Available immediately for Ph.D. in biochemistry. Three-year appointment planned. Starting salary approximately \$13,000. To isolate, purify, and characterize enzymes effecting the synthesis of carotenes. Send curriculum vitae and letters of recommendation to John W. Porter, Department of Physiological Chemistry, University of Wisconsin, Madison, Wisconsin 53706.

## POSITIONS OPEN

### POSTDOCTORAL RESEARCH ASSOCIATE

Immediate openings in the following areas of research in our department: (i) effect of estrogen on the structure of chromatin; (ii) effect of insulin on liver plasma membrane; (iii) protein chemistry and sequence studies on glutamine aminotransferase; (iv) in vitro transcription and enzyme synthesis; (v) characterization of lysosomal phosphatase; (vi) lipoxygenase, prostaglandin synthetase and other oxygenases. \$8,000 to \$10,000 per year depending on experience. Send résumé applications with curriculum vitae, naming three references, to: Jennie R. Johannesen, Department of Biochemistry, Purdue University, West Lafayette, Ind. 47907. An Equal Opportunity/Affirmative Action Employer.

### POSTDOCTORAL RESEARCH FELLOW

Position available for recent Ph.D. or M.D. who desires training and participation in a research program in tumor virology-immunology to establish immunological relationships between human tumor membrane antigens, especially on leukemic cells, and oncornavirus antigens. Applicants should have research experience in virology or immunology. Training will be provided in other discipline. Applicants should send curriculum vitae and references to Dr. Richard Metzgar, Division of Immunology, or Dr. Dani Bolognesi, Tumor Virus Laboratory, Duke University Medical Center, Durham, N.C. 27710.

**RESEARCH ASSOCIATE** position available, starting 1 October 1975 for Ph.D. with 2 to 3 years of postdoctoral training in cellular immunology, tissue culture, and immunochemistry. Send curriculum vitae to

Dr. Marvin Fishman  
Department of Immunology  
St. Jude Children's Research Hospital  
Memphis, Tennessee 38101

# ETH Zürich

**PROFESSOR OF PETROLOGY** at the SWISS FEDERAL INSTITUTE OF TECHNOLOGY and UNIVERSITY OF ZÜRICH, level of appointment and salary are open, depending on background and experience. The person should be familiar with modern developments in theoretical, experimental, and field petrology. In research and teaching applicant should emphasize theory (for example, classical and irreversible thermodynamics, kinetics, reaction mechanisms) and should have the capability of supervising experimental work. Applicant would be joining a well-established program in modern petrology with exceptional facilities. Applications including the relevant background material should be sent no later than 31 October 1975 to: The President of the Eidgenössische Technische Hochschule Zürich, Rämistrasse 101, CH-8006 Zuerich, Switzerland.

**REPRODUCTIVE ENDOCRINOLOGIST** in the Division of Reproduction, Institute of Comparative Medicine, Texas A & M University/Baylor College of Medicine. The position is research-oriented with some teaching and graduate education duties. The applicant will be expected to develop a research program. Applicants should have experience in the latest techniques of hormone assays; equipment to perform these assays is available. The faculty position is at the Assistant or Associate Professor level with a salary range of \$18,000 to \$21,000, depending on experience. *The Institute is an Equal Opportunity Employer* and all applicants who believe they qualify are invited to contact Dr. Stephen W. J. Seager, Institute of Comparative Medicine, Baylor College of Medicine, Houston, Texas 77025.

## POSITIONS OPEN

The University of Lethbridge offers the following employment opportunity:

**Position: POSTDOCTORAL RESEARCH FELLOW** in physiological psychology (preferably with interest in hippocampal function).

**Salary:** \$850 per month with possible stipend for associated teaching in the Department of Psychology.

**Commencement Date:** 1 September 1975.

Applications should be directed to: Dr. Ian Whishaw, Department of Psychology, The University of Lethbridge, 4401 University Drive, Lethbridge, Alberta, T1K 3M4, Canada.

### RESEARCH APPOINTMENTS

1) **Postdoctoral position.** Interest in early mammalian development, teratocarcinoma, and immunology of tumor-host interactions. Background in tumor and cellular immunology necessary.

2) **Postdoctoral position.** Interest in immunogenetics and transplantation. Experience with laboratory animals desired.

3) **Molecular biologist** with publications in virology.

Interested applicants should send curriculum vitae to Sandy D'Ambrosio, Personnel Recruiter, The Wistar Institute, 36 and Spruce Sts., Philadelphia, Pa. 19104. *Equal Opportunity/Affirmative Action Employer.*

**RESEARCH ASSOCIATE/CELLULAR IMMUNOLOGY.** Applications are invited for a postdoctoral position available immediately in cellular immunology. Areas of investigation include (i) alloimmune reactivity in transplant recipients and (ii) suppressor cell function in transplant and cancer patients. Salary \$10,000 to \$11,500 per year. Submit résumé, statement of research interests, copies of publications, and three letters of reference to Dr. Rolf F. Barth, Department of Pathology and Oncology, University of Kansas Medical Center, Kansas City, Kansas 66103, no later than 4 weeks after publication of this notice. *An Equal Opportunity Employer.*

### RESEARCH ASSISTANT

B.S./M.S.—Experience with laboratory animals and their tissues and with radioisotopic, enzymatic, and other usual biochemical laboratory procedures desirable. Perform in vitro and in vivo biochemical and physiological assays on natural and synthetic biological active compounds. Assist in basic and applied research on hormone and enzyme actions. Salary and independence commensurate with qualifications. Excellent fringe benefits. Contact: William T. Jackson, Employment Supervisor.

**Merck Institute for  
Therapeutic Research  
Rahway, New Jersey 07065**

*Equal Opportunity Employer M/F*

### RESEARCH BIOCHEMIST

B.S./M.S.—Biochemical laboratory experience desirable including animal and tissue work. Basic research on hormone action, membrane receptors, enzymes, and intermediary metabolism under guidance from senior biochemist. Salary dependent on education and experience. Excellent fringe benefits. Contact: William T. Jackson, Employment Supervisor.

**Merck Institute for  
Therapeutic Research  
Rahway, New Jersey 07065**

*Equal Opportunity Employer M/F*

### RESEARCH MICROBIOLOGIST/IMMUNOLOGIST

Person with Ph.D. or equivalent is needed immediately. Postdoctoral experience preferred. Research laboratory in the Department of Otolaryngology at The Ohio State University Hospitals. Salary range—\$14,000 to \$18,000. Send curriculum vitae and references to: Dr. David J. Lim, Director of Otolological Research Laboratories, 456 Clinic Drive, Columbus, Ohio 43210.

*An Equal Opportunity/Affirmative Action Employer*

### RESEARCH POSITION AVAILABLE IMMEDIATELY

Ph.D. for studies of tumor markers in human extracellular fluids. Training and experience in column chromatography and immunochemical techniques for isolation and characterization. Send curriculum vitae and three letters of recommendation to: Dr. Herbert Kupchik, Gastroenterology Research Lab, Mallory Institute of Pathology, 784 Massachusetts Avenue, Boston, Mass. 02118.

*Equal Opportunity Employer*



## POSITIONS OPEN

**RESEARCH POSITION.** Seeking Ph.D. or M.D. with experience in microelectrode techniques to direct a fully equipped electrophysiology laboratory located in the Department of Cardiology. Salary commensurate with training and experience. Federal Civil Service position with fringe benefits available to qualified applicant. Send inquiries including curriculum vitae to:

Anthony N. Damato, M.D.  
U.S. Public Health Service Hospital  
Staten Island, New York 10304

## SCIENCE POSITION OPENED

A **Virologist or Immunologist**, Research Associate (Ph.D.) to join an active research team with major emphasis on viral mediated autoimmune disorders. Duties will include studies of cell mediated immunity against viruses and quantitative studies of MIF. Previous experience in viral, immunological, and tissue culture techniques are desirable. This is a 2- to 3-year appointment starting 1 September 1975 with a salary of \$12,000 to \$14,000 depending upon experience. Send curriculum vitae and letters of recommendations to **Shih-Wen Huang, M.D., Division of Pediatric Research, University of Maryland Hospital, 29 South Greene Street, Baltimore, Maryland 21201.**

**STAFF POSITION** in small primate oncornavirus research group at National Cancer Institute currently available for recent Ph.D. and/or M.D. with proven ability in mammalian somatic cell hybridization, cytogenetics, and competition radioimmunoassay. Salary range approximately \$15,000 to \$29,000 yearly depending upon experience and credentials. Also **TISSUE CULTURE TECHNICIAN** for above with master's degree, publications, and at least 5 years of experience with oncornaviruses. Salary approximately \$12,000. Send curriculum vitae and references to **Box 333, SCIENCE.**

## UNIVERSITY COLLEGE LONDON

### Department of Anatomy and Embryology

Applications are invited for at least one **SENIOR LECTURER** and one **LECTURER** from those experienced in the teaching of medical, dental and science students.

Professor G. Burnstock is now Head of the Department following the retirement of Professor J. Z. Young.

Facilities for research in the Department are outstanding.

Salary scales (under review) Senior Lecturer £4,707-£5,976; Lecturer £2,118-£4,896; plus £399 London Allowance and Threshold payments in each case.

Applications to be submitted by October 31st to the Assistant Secretary (Personnel), University College London, Gower Street, London WC1E 6BT, from whom further particulars may be obtained.

## POSITIONS OPEN

### SCIENTIFIC RESEARCH COUNCIL TECHNICAL DIRECTOR

Applications are invited for the post of **Technical Director/Executive Secretary** to the Scientific Research Council. This is a government-sponsored organization which is required to undertake, foster, and coordinate scientific research in the country and to encourage the application of the results of such research to the exploitation and development of its resources.

The Council undertakes research in its own laboratories at Kingston and also sponsors work carried out by other organizations. The fields in which there appears to be the greatest scope include chemical engineering and industrial chemistry, mineral exploitation (mainly nonmetallic), and the processing of bioresources and in food science and nutrition.

Applicants must possess a Ph.D. degree in Science or equivalent professional qualifications and have research experience. Administrative experience is an advantage. The position attracts a salary in the scale \$13,560 × 460 to \$16,440 and carries other benefits. A gratuity is awarded on the satisfactory completion of contract.

Detailed applications (four copies) with full curriculum vitae naming three references should be received not later than 15 August 1975, by the **Chairman, Scientific Research Council, P.O. Box 350, Kingston 6, Jamaica, West Indies**, from whom further particulars of the post may be obtained.

The successful applicant will be required to assume duty as soon as possible.

**VIROLOGIST—Molecular Biologist.** A full-time faculty position. Applicant must have a Ph.D. or equivalent degree and strong postdoctoral experience in molecular and/or biochemical aspects of animal viruses, and be capable of developing an independent research program, preferably dealing with some aspects of tumor viruses. Teaching duties include participation courses for medical and graduate students. Send curriculum vitae and references to **Dr. Gerald D. Shockman, Chairman, Department of Microbiology and Immunology, School of Medicine, Temple University, Philadelphia, Pa. 19140. An Equal Opportunity/Affirmative Action Employer.**

## PROGRAMS

### NEW PREDOCTORAL PROGRAM—GENETICS

Program involving multidisciplinary faculty at the University of Pennsylvania combines training activities in: (i) molecular genetics, (ii) population genetics, (iii) cell genetics, and (iv) developmental and immunogenetics. Students will receive broad training as well as in-depth mastery of a single area of genetics. Graduates will be capable of contributing to a range of research, teaching, and counseling activities.

Apply to **Dr. N. K. Kallenbach, Genetics Program, 212 Biology Building, University of Pennsylvania, Philadelphia, Pa. 19174.**

**POSTDOCTORAL TRAINING PROGRAM IN MEMBRANE PATHOLOGY** at UCLA and California Institute of Technology for those desiring basic training in membrane biochemistry and cytology, especially as they are related to the study and detection of inherited human disease. Trainees will be encouraged to engage in multidisciplinary research in laboratories at both participating institutions. For fellowships available through a NIGMS institutional award as of 1 July 1975, candidates who are U.S. citizens or permanent residents and hold an M.D. or Ph.D. may address inquiries to **C. F. Fox, Department of Bacteriology, or R. S. Sparkes, Department of Medicine, University of California, Los Angeles, Calif. 90024, or J. P. Revel, Division of Biology, California Institute of Technology, Pasadena, Calif. 91125.**

## FELLOWSHIPS

**FELLOWSHIPS IN BIOLOGICAL CHEMISTRY** and related fields pertaining to fundamental cancer research. A few pre- and postdoctoral fellowships (stipends \$4,800 and \$7,000 to \$12,000) are available each year on a competitive basis at the University of Texas System Cancer Center M. D. Anderson Hospital and the University of Texas Health Science Center at Houston. Interested candidates should send a brief curriculum vitae, statement of interests, and date available to: **Fellowship Selection Committee, c/o Dr. C. W. Haidle, Department of Biology, M. D. Anderson Hospital, Houston, Texas 77025.**

## FELLOWSHIPS

### POSTDOCTORAL TEACHING FELLOWSHIPS

The Department of Biochemical Pharmacology anticipates making one or two appointments of **post-doctoral teaching fellows** in the fall of 1975. This position will involve both formal teaching at the undergraduate level and research in collaboration with faculty members of the department. The salary is \$8,000 and the positions are available initially for 1 year. Applicants should have a Ph.D. in pharmacology and should write with curriculum vitae, names of two references, and indication of research and teaching interests to: **Dr. David J. Trigg, Professor and Chairman, Department of Biochemical Pharmacology, 224 Cary Hall, School of Pharmacy, State University of New York at Buffalo, 3435 Main Street, Buffalo, New York 14214. The University is An Equal Opportunity/Affirmative Action Employer.**

### RESEARCH FELLOWSHIPS

#### Production of Alcohol from Plant Material

Applications are called for two positions. One for a **Research Fellow** with qualifications in chemical engineering or applied chemistry to work with Professor A. L. Titchener in the Department of Chemical and Materials Engineering, University of Auckland; the other, for a **Research Fellow** with qualifications in microbiology to work with Professor A. P. Mulcock, Department of Agricultural Microbiology, Lincoln University College of Agriculture, Canterbury.

These fellowships are funded from grants made by the New Zealand Energy Research and Development Committee to promote research into the production of alcohol as a fuel or fuel additive. The work at Auckland will be concerned with the hydrolysis of wood celluloses to sugars, and the subsequent separation processes; that at Lincoln will be concerned with investigations into the production of alcohol by yeasts from farm crops and cellulose hydrolysates.

The salary will be in the range NZ\$6590 to \$8128 per annum depending on qualifications and experience. Approved assistance with travel and removal expenses will be available for overseas applicants. The appointment will be for a period of 1 year in the first instance, but it is expected that the project will continue for a minimum of 2 years.

Conditions of appointment and method of application may be obtained: (i) for the **AUCKLAND** position—from the undersigned; (ii) for the **LINCOLN** position—from the Registrar, Lincoln University College, Canterbury.

Applications will be accepted by the respective registrars at any time up to 13 August 1975.

D. W. Pullar, Registrar  
University of Auckland  
Private Bag  
Auckland, New Zealand

### POSTDOCTORAL FELLOWSHIPS IN ENVIRONMENTAL AFFAIRS

The Chesapeake Research Consortium is offering a limited number of postdoctoral fellowships in environmental affairs. Supported by the Rockefeller Foundation, these fellowships are intended for scholars engaged in research or public service in the environmental area who wish to be involved with comprehensive environmental problems on an interdisciplinary basis. Candidates may apply through the Consortium, a coordinating group that sponsors a number of scientific studies in the Chesapeake Bay Region. Member institutions are the Johns Hopkins University, the University of Maryland, the Smithsonian Institution, and the Virginia Institute of Marine Science. Applications for fellowships to be awarded this fall must be received by 15 August. For further information contact:

Dr. Theodore Chamberlain, Director  
Chesapeake Research Consortium, Inc.  
100 Whitehead Hall  
The Johns Hopkins University  
Baltimore, Maryland 21218

## MARKET PLACE

**ELECTRON MICROSCOPE USED:**  
Siemens Model 1, Hitachi Models HU12, 11B, HS-6, RCA Models 3F, JEOL Models JEM-7, JEM-30, JEM-50. Priced from \$2,000-\$15,000. For details contact JEOL U.S.A. INC. 617/391-7240 Mr. Robert Santorelli.

## DIRECTOR OF VIRAL ONCOLOGY

Unusual opportunity to provide scientific leadership to an ongoing, multi-faceted program of research in viral oncology and to conduct a personally directed research project in his/her area of expertise. Will be closely associated with colleagues in immunobiology and chemical carcinogenesis. Excellent laboratory facilities, a good scientific library, an extensive experimental animal farm and other related support activities are available.

Candidates should have a doctorate degree in one of the biomedical sciences and a minimum of 10 years' subsequent experience. Evidence must be presented of research originality and productivity.

The successful candidate will be offered a liberal salary, attractive benefits and relocation expenses.

Letters of application, accompanied by a comprehensive curriculum vitae, complete bibliography, and three references will be accepted until Sept. 5, 1975.

All correspondence should be addressed to:

**Dr. Robert E. Stevenson**  
**Chairman, Search Committee**  
**Litton Bionetics, Inc.**  
**Frederick Cancer Research Center**  
**Post Office Box B**  
**Frederick, Maryland 21701**

An Equal Opportunity Employer, M/F

## CANCER IMMUNOBIOLOGISTS

**RESEARCH SCIENTISTS IN IMMUNOLOGY AND BIOLOGY OF NEOPLASIA.** Applications are invited from individuals desiring a research staff position within a new basic research program dedicated to a multidisciplinary approach to fundamental problems of cancer. Areas under current investigation include: cell differentiation and growth; immunobiology of viral, chemical and physical carcinogenesis; biology of cancer metastasis; and host tumor interaction. Salary commensurate with experience. Qualified M.D., D.V.M. and/or Ph.D.

**POSTDOCTORAL RESEARCH POSITIONS IN IMMUNOLOGY AND BIOLOGY OF NEOPLASIA ARE NOW AVAILABLE**, in a new Basic Research Multidisciplinary Program. Qualified M.D., D.V.M. and/or Ph.D.

Send resume with three references to:

**Dr. M.G. Hanna, Jr.**  
**Director, Basic Research**  
**Litton Bionetics Inc.**  
**Frederick Cancer Research Center**  
**P.O. Box B**  
**Frederick, Maryland 21701**

An Equal Opportunity Employer, M/F

# A U S T R A L I A

## PUBLIC SERVICE OF VICTORIA DEPARTMENT OF AGRICULTURE CHEMIST

Yearly Salary: Aust. \$13,923      Approx. US \$18,680

### Duties:

To assist in the operation and supervision of the Marine Chemistry Section; to be a specialist in analysis of seawater for a wide variety of nutrients, trace metals, organic materials and other constituents and in interpretation of resulting data; other duties as directed.

### Qualifications:

An approved degree or diploma in Science with chemistry as a major or an equivalent qualification with training in Oceanography; an appropriate higher degree desirable; appropriate experience in analytical chemistry and staff supervision; ability to work with a multidisciplinary environmental team.

## MINISTRY FOR CONSERVATION MARINE STUDIES CO-ORDINATOR

Yearly Salary: Aust. \$16,229      Approx. US \$21,770.

### Duties:

To assist in the direction and co-ordination of marine and related investigations conducted in major co-ordinated environmental studies. To maintain liaison with governmental, university and other research groups participating in such studies, particularly those groups engaged in marine biology and chemistry investigations. To evaluate the results obtained by research groups participating in environmental studies and to prepare reports and recommendations.

### Qualifications:

An approved degree in Science or an equivalent qualification; appropriate training and experience in the marine biological or marine chemical fields and preferably a higher degree. Experience in multidisciplinary investigations desirable and preferably to have demonstrated the capacity to co-ordinate the activities of inter-disciplinary research groups. Relevant experience in the interpretation of data and preferably to be familiar with mathematical modelling techniques.

**SEPARATE** Applications in writing stating age, qualifications and experience to reach the Secretary, Public Service Board, 3rd Floor, 1 Treasury Place, Melbourne. 3002, by Aug. 29th.



The factory, 1889



Pleased users, 1975

## Glass Photographic Plates

### Still making them. Need any?

Bill Miller, the man at right above, has not been the easiest customer to please. Never made much money on him, but he sure has brought out the best in us. Just retired from Hale Observatories, where they use a plate camera with a 200-inch aperture to take pictures for an odd reason: mere curiosity about how the universe is constructed.

In an observatory as in a toothpick factory (or photographic materials factory), one must quit dwelling on the ultimate purpose of the work and get on with it, despite conditions that prevail. At most observatories, these include the fiscal status of old, one-of-a-kind peripheral equipment that still handles glass plates satisfactorily and could be adapted to film only at the expense of much time away from the work fighting off other claims on the necessary funds. Compared with this, dimensional stability is a lesser reason astronomers want us to continue coating emulsions for them on glass.

Demand for astronomical emulsions, urgent though minuscule, has not slackened despite the triumphs of radio astronomy, x-ray astronomy, and electronic detectors for what lies between those domains. The deficiencies of the photographic emulsion in temporal resolution might have to take the blame for delaying acquaint-

tance with pulsars, but in spatial resolution and breadth of view the advantages of direct photography still hold. Truth to tell, emulsion technology has not stood still. Some things we have learned in recent years about making the most of weak trickles of photons on silver halide have, in effect, tripled the apertures of the world's telescopes.

\* \* \* \*

Photographic emulsions on glass also serve the needs of mask-making for integrated circuits (very tiny images, very big business), of mapping from aerial photography (flatness), of transmission electron micrography (no outgassing from the base), of holography (rigidity), and of sundry other scientific, technical, and artistic endeavors on equipment designed in simpler times and still working just fine.

*If this brings all sorts of questions to mind, please do not ask them before carefully studying Kodak Publication No. P-140, "Characteristics of KODAK Plates for Scientific and Technical Applications," available on request from Dept. 412-L, Kodak, Rochester, N.Y. 14650. Perhaps you should also request Kodak Publication No. P-29, "KODAK 16 mm, 35 mm, and 70 mm Films." Film does have its advantages. There was a good reason we changed our name the day before Christmas of 1889.*

