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This N-hydroxysuccinimide ester of iodinated p-hydroxy-phenylpropionic acid circumvents the difficulties associated with the iodination of labile antigens and polypeptides. Conjugation of the iodinated ester to terminal amino groups of the protein is accomplished with minimal manipulation and under extremely mild conditions.\* Instructions for use included with each shipment.

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\* References: J. Rudinger and V. Ruegg, Biochem. J. **133**, 538-539 (1973)  
A.E. Bolton and W.M. Hunter, Biochem. J. **133**, 529-539 (1973)

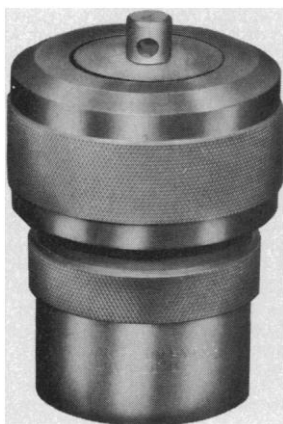


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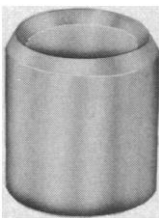
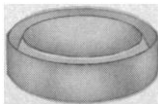
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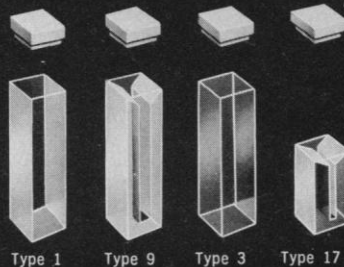
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# Personnel Placement

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.

**DISPLAY (POSITIONS OPEN, MARKET PLACE, AND SO FORTH):** \$110 per inch, minimum (1 inch is equivalent to 12 lines of 48 characters each). Ads over 1 inch billed to nearest quarter inch. No charge for Box Number. Rates net. No agency commission allowed for ads under 4 inches. No cash discount. Prepayment required for foreign advertising. Purchase orders and billing information must accompany all other advertising.

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  
Washington, D.C. 20005

Send copy for display ads, 1/6 page and larger, to:

Scherago Associates, Inc.  
11 West 42nd Street  
New York, N.Y. 10036

BLIND AD replies should be addressed as follows:

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## POSITIONS WANTED

**Biochemist/Enzymologist.** D.Sc. Over 15 years of experience in metabolic control in yeasts, red blood cells, leukemic cells, and in drug effects on brain energetics. Discovered a new biological phenomenon. Experience in teaching and guiding doctoral research; many publications. Seeks senior faculty or R & D position in academic institutions. Box 402, SCIENCE. X

**Biochemist-Chemist** (physiology), M.S., Ph.D., FAIC. Broad research interest and experience; college teaching, pharmaceuticals, hospital clinical chemist, toxicology, and cancer. Desires responsible academic, research institute, or industry. Not government. East. Publication. Box 403, SCIENCE. X

**Immunologist/Immunochemist.** Ph.D., January 1976. Experienced in tumor immunology, radioimmunoassay, enzymology, and purification procedures. Publications. Seeks postdoctoral training in the cellular aspects of the immune response to tumor cells. Prefers northeast. Available July 1976. Box 404, SCIENCE. X

**Limnologist-Aquatic Biologist.** M.S. Four years of experience in limnology, algal taxonomy and biomass, water microbiology, thermal effluents, environmental pollution. Seeking research/teaching. Box 405, SCIENCE. X

**Physician.** M.D. 1969, B.S.Ch.E. 1965, research experience. Mathematical models. Publications. Certified internist, 1973. Subspecialty neurology. Seeks research position and clinical practice. Box 406, SCIENCE. X

**Radiochemist/Radioecologist:** Ph.D. 1973, experienced in environmental radioactivity and trace metals, AAS and NAA. Publications. Seeks appointment in environmental research or health, industry, government, or academic. Box 407, SCIENCE. X

**Toxicologist.** Ph.D. Excellent academic and publication record. Experience in pesticide chemistry and biochemistry, environmental toxicology. Desires university faculty position or governmental research/administrative position. Box 408, SCIENCE. X

**Zoologist.** Ph.D. Desires teaching position. Interests include invertebrate zoology, limnology, aquatic microbiology, parasitology, embryology, comparative anatomy. Dr. Wilson, Rt. 2, Box 575, Russell Springs, Kentucky 42642. 9/19, 26

## POSITIONS WANTED

**Pathobiologist/Aquatic Science.** Ph.D. Publications. Extremely diversified background including invertebrate zoology, fisheries biology, aquatic science, histochemistry, electron microscopy, cancer biology, toxicology, and polymer chemistry. Seeks teaching or research position. C. Ruddell, 4213 El Macero Drive, Davis, California 95616. X

**Ph.D.** (expected November 1975), **air pollution.** Dissertation and experience: systems analysis of air pollution problems (including assessment of health and economic effects) and policy alternatives. Computer modeling of meteorological dispersion. Several publications. B.S., M.S.; chemical engineering. N. Nagda, 426 S. Lombard, Oak Park, Ill. 60302. X

## POSITIONS OPEN

### ANATOMIST

A position is available at the assistant professor level for an individual with demonstrated competence in teaching gross and microscopic anatomy. Excellent working conditions and fringe benefits including a progressive retirement plan. Facilities for research in the College are excellent.

Send curriculum vitae to: **Office of the Associate Dean, College of Osteopathic Medicine and Surgery, 3200 Grand, Des Moines, Iowa 50312.**

*An Equal Opportunity Employer*

### ASSISTANT ENTOMOLOGIST APPLIED RESEARCH

Full-time research, Washington State University, with headquarters at the Irrigated Agricultural Research and Extension Center, Prosser, Washington. Ph.D. in entomology required, and evidence of adequate training in statistics or applied mathematics to conduct field plot investigations. Ecology and computer utilization knowledge and training in crop production areas desired. Present emphasis envisioned for insect and mite pests of grain crops, field and sweet corn, alfalfa and grass hay production, edible seed legumes. Collaboration with other agricultural disciplines is expected. Applications can be received until 31 October 1975 and the position will be filled as soon thereafter as possible. Send résumé or request for more detailed information to: **Robert F. Harwood, Chairman, Department of Entomology, Washington State University, Pullman, Wash. 99163.**

*An Affirmative Action/Equal Opportunity Employer*

**ASSISTANT PROFESSOR IN PHYSICAL CHEMISTRY:** The Department of Chemistry at Yale University is seeking applications for appointments to our faculty at the level of assistant professor in experimental physical chemistry. We are particularly interested in candidates in areas of condensed phases, such as light scattering, polymers, surface studies, or modern analytical methods. *Yale has an active Affirmative Action Program and we are especially interested in minority group or female candidates who meet the above criteria.* Candidates should request referees to write and should send a curriculum vitae, a list of publications, brief summaries of predoctoral research, and a brief outline of proposed research projects to the **Chairman, Department of Chemistry, Yale University, New Haven, Connecticut 06520.** Applications should be sent promptly, preferably by 30 November 1975, to assure consideration.

**ATMOSPHERIC PHYSICIST** for design, testing of cloud physics experimental equipment. Ph.D. and experience in generation, dispersion, collection of aerosols required. Engineering experience preferred. Application deadline: 15 October 1975. Send résumé to: **Mrs. Twyla Harrison, Desert Research Institute, University of Nevada System, Building 3700, Room 121, Stead Campus, Reno, Nevada 89507. Equal Opportunity/Affirmative Action Employer.**

### DEAN OF GRADUATE COLLEGE UNIVERSITY OF ILLINOIS AT THE MEDICAL CENTER

**Responsibilities:** Provides administrative leadership for graduate programs in the Health Sciences; administers central research resources and facilities; promotes advancement of research for students and faculty; chairs the Campus Research Board.

**Qualifications:** A Ph.D. or other doctoral degree with achievements and broad experience in research, graduate education, and administration.

Submit nominations and curriculum vitae to: **Dr. Sheldon Dray, Chairman of Search Committee, Head of Department of Microbiology, University of Illinois at the Medical Center, Chicago, Illinois 60612.**

*An Equal Opportunity/Affirmative Action Employer*

## POSITIONS OPEN

The Department of Radiological Sciences of the University of California, College of Medicine, Irvine, invites applications for the position of **CHIEF OF THE DIVISION OF URORADIOLOGY.** This appointment will be at professorial level.

Candidates for this position must have extensive experience in the subspecialty of uroradiology and should be able to provide documented evidence of original contributions to the field, an extensive bibliography, and evidence of research expertise. The duties of this position will include responsibility for the interpretation of all uroradiologic examinations and for consultation with other physicians—maintenance and development of sophisticated teaching programs in uroradiology at undergraduate, graduate, and postgraduate levels—the development of a fellowship program and institution of both basic and applied research protocols in the field of uroradiology.

*Applications from all qualified candidates are welcome; minorities and women are encouraged to apply.* Interested qualified persons should apply to the address below including a curriculum vitae, an autobiographical letter, and reprints of publications in the last 5 years.

**Eric N. C. Milne, M.D., F.R.C.R.**  
Professor and Chairperson  
Department of Radiological Sciences  
University of California, Irvine  
College of Medicine  
Irvine, California 92664

The Department of Radiological Sciences invites applications for the position of **CHIEF OF ANGIOGRAPHIC SERVICES** at the University of California, College of Medicine, Irvine. This appointment will be at senior assistant or associate professor level.

In addition to competence in general radiology, candidates must have specialized training and extensive experience in angiography and must be well versed in the latest superselective catheterization techniques, in the use of sophisticated imaging methodology (including magnification), and in the use of "interventional" (therapeutic) angiography. The successful candidate must have a bibliography which documents original contributions to the field and superior abilities as a researcher.

The duties of this position include responsibility for the clinical angiographic service, including the carrying out and interpretation of angiographic procedures and consultation—developing a teaching program at advanced level for graduate and postgraduate students—initiating basic and applied research protocols, and developing a fellowship program in angiography. The candidate should be willing to engage in collaborative ongoing research in medical imaging with the Departments of Engineering and Physics and previous experience in training in engineering or electronics would be an asset.

*Applications for all qualified candidates are welcome; minorities and women are encouraged to apply.* Interested qualified persons should apply to the address below including a curriculum vitae, an autobiographical letter, and copies of reprints within the last 5 years.

**Eric N. C. Milne, M.D., F.R.C.R.**  
Professor and Chairperson  
Department of Radiological Sciences  
University of California, Irvine  
College of Medicine  
Irvine, California 92664

The Department of Radiological Sciences at the University of California, College of Medicine, Irvine, invites applications for a position in **DIAGNOSTIC RADIOLOGY.** Candidates must be qualified radiologists with demonstrated evidence of clinical and academic ability and must have a specific interest in emergency and trauma radiology. The appointment will be at assistant professorial level and the duties will include direction of the emergency radiological service, film-reporting, and teaching at both graduate and undergraduate levels. The successful candidate will be expected to engage in research and preference will be given to persons with proven research ability. *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, an autobiographical letter, and copies of any publications.

**Eric N. C. Milne, M.B., Ch.B., F.R.C.R.**  
Professor and Chairperson  
Department of Radiological Sciences  
University of California, Irvine  
College of Medicine  
Irvine, California 92664

## POSITIONS OPEN

The University of Delaware is seeking candidates for an opening at the **ASSISTANT PROFESSOR** level in the Chemistry Department. The candidate will be expected to develop innovative research in bio-inorganic chemistry. Demonstrated abilities in both research and teaching are required.

Postdoctoral training and x-ray crystallographic experience is highly desirable. Candidates should submit curriculum vitae, bibliography, a résumé of future research plans, and the names of three references to:

**Dr. D. B. Wetlafer, Chairman**  
Chemistry Department, 1005 Brown Lab  
University of Delaware  
Newark, Delaware 19711

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

**CELL BIOLOGIST.** Mayo Foundation seeks an immunologist with Ph.D. or M.D. degree. Candidate must have ability to do independent research in tumor immunology, tissue culture, and protein chemistry in myeloma patients. Publication, development of grant-supported research program encouraged. Send curriculum vitae, bibliography, and names of three referees to **Box 410, SCIENCE.** Mayo Foundation is an Equal Opportunity/Affirmative Action Employer.

## DIRECTOR OF LABORATORY ANIMAL RESOURCES

The University of Texas Health Science Center at San Antonio seeks candidates for the position of Director of Laboratory Animal Resources. Director will have responsibility for providing laboratory animals for the research and teaching programs of the Medical School, Dental School, and Graduate School.

Qualifications include experience in managing laboratory animal services for a medical or other professional school and ability to work with diverse departments and researchers. D.V.M. degree desirable.

Applicants are invited to submit a résumé of education and professional experience to **Dr. Ralph Goldsmith, Search Committee Chairman, The University of Texas Health Science Center, 7703 Floyd Curl Drive, San Antonio, Texas 78284.**

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## POSITIONS OPEN

### DIRECTOR OF VIROLOGY PROGRAM

The Hamilton District Program in Laboratory Medicine invites applications from medically qualified scientists experienced in the laboratory and clinical diagnosis of virus diseases and with related research interests. The position is a senior one, carrying an appointment in the Faculty of Health Sciences, McMaster University, appropriate to qualifications and experience. The Program serves the hospitals and medical community of Hamilton and District, participates in the teaching programs of the Medical School, and is open to expansion.

Apply to:

**Dr. I. O. Stewart**  
Co-ordinator for Microbiology/Infectious Disease  
Department of Laboratory Medicine  
Hamilton General Hospital  
237 Barton Street East  
Hamilton, Ontario L8L 2X2  
Canada

**EXTENSION LIVESTOCK SPECIALIST (FEEDLOT NUTRITION AND MANAGEMENT).** Applications are invited from persons with a Ph.D. degree in ruminant nutrition. Responsibilities include conducting educational programs to assist cattle feeders and agribusiness representatives. Position is 100 percent extension or 75 percent, 25 percent research. Apply with résumé to **Dr. S. A. Ewing, Head, Department of Animal Science, Iowa State University, Ames, Iowa 50010.** Affirmative Action/Equal Opportunity Employer

### FACULTY POSITIONS IN PHYSIOLOGY

Two positions available January or August 1976 for applicants preferably with postdoctoral experience. Research interests in neurophysiology (including neuroendocrinology and neurochemistry), transport, muscle, behavioral, or environmental physiology desired; other qualified candidates will be considered. At least one position will be filled by someone qualified to teach organismic or comparative physiology. Send curriculum vitae and names and addresses of three references to: **P. J. Megrew, Department of Zoology, University of Iowa, Iowa City, Iowa 52242.**

*An Equal Opportunity Employer*

## POSITIONS OPEN

### UNIVERSITY OF ALBERTA DEPARTMENT OF MICROBIOLOGY

Applications are invited for faculty position, **assistant professor** (base salary, \$15,184). Candidates should have Ph.D. degree with strong background in biochemistry. Successful candidate will be responsible for teaching at both undergraduate and graduate levels, for the development of an independent research program, and for supervision of graduate students. Closing date 31 December 1975. Send curriculum vitae and names of three references to: **Dr. D. W. S. Westlake, Professor and Chairman, Department of Microbiology, Faculty of Science, Edmonton, Alberta, Canada.**

### CHALLENGING POSITIONS FOR BIOMEDICAL SUBJECT SPECIALISTS

Scientists with M.D., Ph.D., or M.S. and broad interest, training, and experience in biochemistry, immunology, virology, carcinogenesis, cancer therapy, and other cancer research areas are invited to send a complete curriculum vitae, including a full list of biomedical courses taken, publications, and names of references to the following address if they are interested in a career as biomedical information specialists. Send complete curriculum vitae to **Dr. W. R. Foster, Smithsonian Science Information Exchange, Room 300, 1730 M St., NW, Washington, D.C. 20036.**

### Division of Genetics Department of Biochemistry and Biophysics University of California, San Francisco San Francisco, California 94143

Applications are invited for two full-time faculty positions from qualified applicants with training and interests in the areas of somatic cell genetics, developmental genetics, and the molecular genetics of eukaryotic organisms. Applicants should submit their curriculum vitae, list of publications, description of research interests, and the names, addresses, and telephone numbers of three references, by 1 November 1975 to: **Genetics Search Committee, Department of Biochemistry and Biophysics, address above.** The University of California is an Equal Opportunity Employer and particularly encourages applications from women and minority candidates.

# Analytical-Medical Microbiologist

The Merck, Sharp & Dohme Research Laboratories is seeking a Microbiologist with at least a Masters Degree and three years experience in Analytical Microbiology. The experience should be Medical Microbiology, with knowledge of standard methods of sensitivity testing. Familiarity with statistical methods of analysis as used in microbiological assays is desirable but not required. The successful candidate will supervise four or five technicians and will be encouraged to further modernize the laboratory with the latest equipment in the field.

This Division of Merck & Co. is known as one of the finest medical research organizations in the world. Knowledge and products are developed for both human and animal health. This position provides a professional environment, competitive salaries and excellent fringe benefits. The New Jersey location is in the New York Metropolitan area. If you are interested, please reply in confidence including salary requirements to: William T. Jackson, Employment Supervisor.

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# Numerical Modeler

Argonne National Laboratory has a new appointment for a professional with strong capabilities for modifying existing numerical models for surface thermal discharges, to make them suitable for modeling shallow-water submerged thermal discharges. The position is in our Great Lakes Research Group, and offers the opportunity to participate in the verification of specific three-dimensional models with experimental data, and to improve the models as a result.

Experienced investigators are encouraged to apply. Qualifications should include:

- Ph.D. or equivalent in an applicable field (mathematics, physics with strong minor in mathematics, or others.)
- Familiarity with the solution of partial differential equations by finite-differencing and related techniques.
- Working knowledge of numerical modeling methods for problems in fluid mechanics, heat transfer and/or thermodynamics.

Write to: **Mr. R. A. Johns, Dept. 100B, Argonne National Laboratory, 9700 South Cass Avenue, Argonne, Illinois 60439.**



U of C. AUA-USERDA

## ARGONNE NATIONAL LABORATORY

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## POSITIONS OPEN

**ECOLOGIST (MARINE).** The National Oceanic and Atmospheric Administration, U.S. Department of Commerce, announces one vacancy in the competitive service in the Marine Environmental Protection Office of the Associate Administrator for Marine Resources, Rockville, Md. Entrance level salary is \$18,463 or \$21,816 per annum depending upon experience and level of the Civil Service rating. Incumbent will monitor NOAA programs established to assess the effects of offshore oil and gas development on the marine environment, will act as liaison with federal and private sector organizations in this field, and will serve as an expert in marine and estuarine ecology and effects of pollutants on the associated ecosystem.

**Qualifications:** Bachelor's degree or equivalent experience in marine ecology, marine biology, environmental chemistry, or a related field, and additionally 3 years of progressive professional experience in the above fields. (Graduate education may be substituted for some of this experience.) Additional information may be obtained by contacting **Dr. J. Frank Hebard on 301-496-8963**. Applications (SF-171) should be submitted to the **Personnel Division, AD411, 6001 Executive Boulevard, National Oceanic and Atmospheric Administration, Rockville, Md. 20852, Attention: Miss Barrett.** The Department of Commerce is an Equal Opportunity Employer.

### EXECUTIVE DIRECTOR HUNTSMAN MARINE LABORATORY ST. ANDREWS, NEW BRUNSWICK CANADA

Applications are invited for the above position.

Founded in 1970, the HML is a consortium of 21 universities and several government and private sector agencies. Primary aim is the promotion of teaching and research in the marine sciences. The HML also undertakes contract research, with one of the programs in this area being conducted under the name of the North American Salmon Research Centre.

Salary and starting date negotiable, but hopefully the position should be filled by 1 July 1976 at the latest.

Applicants should submit a curriculum vitae and references to: **Dr. J. M. Anderson, Chairman, Search Committee, Huntsman Marine Laboratory, St. Andrews, New Brunswick, Canada.**

### DEPARTMENT OF KINESIOLOGY

An appointment of a physician with research interest in any aspect of human physiology, bioengineering, prosthetics of human factors is offered in the Department of Kinesiology at Simon Fraser University. The appointee will be required to work in an interdisciplinary environment with biochemists, engineers, work physiologists, or biomechanics faculty in a department which has growing graduate and undergraduate degree programs.

For suitably qualified applicants the possibility exists of a joint appointment with the Computing Science Department. Appointment will be made at either the assistant or associate professor level. Salary negotiable. Applications together with three references to be sent to:

**T. Calvert, Chairman  
Kinesiology Department  
Simon Fraser University  
Burnaby, B.C., V5A 1S6  
Canada**

### UNIVERSITY OF OTAGO Dunedin, New Zealand LECTURER OR SENIOR LECTURER IN NUTRITION

Applications are invited for the position of Lecturer or Senior Lecturer in the Department of Nutrition, Faculty of Home Science, University of Otago.

**Salary:** Lecturer: \$NZ7,861 to \$NZ9,912 per annum, Senior Lecturer: \$NZ10,081 to \$NZ12,817 per annum with a bar at \$NZ11,792 per annum.

**Note:** \$NZ100 equals approximately £57 sterling; \$US132.

Applicants should be graduates in a discipline related to human nutrition, including science with specialization in biochemistry, physiology, or nutrition; or in a health science with an interest in nutrition.

Further particulars are available from the **Secretary-General, Association of Commonwealth Universities (Appointments), 36 Gordon Square, London, WC1H 0PF, England**, or from **D. W. Girvan, Registrar, University of Otago, P.O. Box 56, Dunedin, New Zealand.**

Applications quoting reference number A.75/51 close in New Zealand and London on 30 September 1975.

## POSITIONS OPEN

### CHEMIST-BIOCHEMIST

Dynamic midwestern radiopharmaceutical manufacturer seeks Ph.D. with 2 to 5 years of experience for a position in R & D. Must have working knowledge in radiolabeling—T-3, T-4, and steroids; experience with TL, column and liquid-liquid chromatography, familiarity with organic synthesis and RIA procedures desirable.

Competitive salary, benefits, and opportunities. **Box 409, SCIENCE.**

### MICROBIOLOGY DEPARTMENT HEAD CHAIRPERSON

Administrative and leadership capabilities plus teaching/research background. Interested persons contact **Dr. J. L. Fryer, Department of Microbiology, Nash Hall, Oregon State University, Corvallis, Ore. 97331.** Closing date: 1 November 1975. *Oregon State University is an Affirmative Action Employer and encourages applications from qualified females and minorities.*

**MOLECULAR VIROLOGIST**—The recently appointed chairman of this Department wishes to assemble a group interested in cell-virus interactions. One appointment, to commence June 1976 or soon thereafter, will be made at the assistant professor level of an individual with expertise in molecular virology with special interest in nucleic acids. Candidates having suitable credentials, preferably with at least 2 years of postdoctoral experience in the designated field, should submit by 1 November 1975 a curriculum vitae, pertinent reprints, and three names of individuals who can provide testimonials to: **Dr. N. R. StC. Sinclair, M.D., Ph.D., Acting Chairman, Department of Bacteriology and Immunology, University of Western Ontario, London, Ontario N6A 5C1, Canada.**

### NUCLEAR PHARMACIST THE UNIVERSITY OF MICHIGAN MEDICAL CENTER

B.S. in pharmacy or Pharmacy D degree. Experience in nuclear pharmacy for combined clinical service/academic position or radiopharmaceutical development service/academic position.

Send curriculum vitae and references to:

**Ms. Stephanie MacKinney  
Employment Representative  
University of Michigan Hospital, Room A6004  
1405 E. Ann Street  
Ann Arbor, Michigan 48104  
Telephone: 313-764-3175**

*A Nondiscriminatory, Affirmative Action Employer*

### POPULATION AND/OR QUANTITATIVE GENETICIST

The Department of Genetics, University of Alberta, invites applications for a position of Assistant or Associate Professor, available 1 July 1976.

The applicant should demonstrate accomplished research in theoretical population and/or quantitative genetics, and be able to teach introductory genetics and population, quantitative, and biometrical genetics at a more advanced level.

Submit a letter of application with curriculum vitae, description of current research interests, list of publications, and names of three potential referees to: **R. C. von Borstel, Chairman, Department of Genetics, University of Alberta, Edmonton, Alberta, Canada T6G 2E9.**

Applications received after 15 December 1975 will be considered only if no well-qualified candidate has been found by that date.

### POSTDOCTORAL BIOCHEMIST

Interested in enzymology and the neurosciences. Research opportunity in medical school department of large medical center.

### ALSO POSITION FOR: POSTDOCTORAL BIOCHEMIST

for a research laboratory study of complex carbohydrates in nervous tissue. Send curriculum vitae to: **Miss M. Kerans, Personnel Department, N.Y.U. MEDICAL CENTER, 587 First Ave., New York, N.Y. 10016.** *An Equal Opportunity/Affirmative Action Employer M/F.*

## POSITIONS OPEN

### Ph.D. DEVELOPMENTAL BIOLOGIST

Developmental biologist sought for September 1976 to teach undergraduate courses in molecular aspects of development and embryology. Must also be responsible for operating our small, transmission electron microscope facility. Rank and salary are open and depend upon qualifications and experience. Send résumé, transcripts, and letters from three referees by 15 January to: **Dr. William R. Healy, Department of Biology, College of the Holy Cross, Worcester, Massachusetts 01610.** *The College of the Holy Cross is an Equal Opportunity/Affirmative Action Employer.*

Department in large midwestern university has several openings in **ONCOLOGY RESEARCH PROGRAM.** Interested in persons with expertise in antigen isolation and characterization, enzymology, and tumor immunology. Appointments will be commensurate with experience at either postdoctoral or faculty level. **Box 374, SCIENCE.**

### POSTDOCTORAL APPOINTEE

A postdoctoral appointment is available in the Division of Biological and Medical Research, Argonne National Laboratory, with a multidisciplinary research group working on problems of toxic metals. Emphasis is on compounds of plutonium, lead, and so forth; effects of physicochemical state on gross and microscopic tissue distribution and pathological effects; development of therapeutic removal procedures. The appointment is restricted to applicants with less than 3 years of postdoctoral experience. Candidates with background in biochemistry, mammalian physiology, radiation biology, or pharmacology are invited to send résumés to: **Mr. R. A. Johns, Professional Placement, Department 100-A, Argonne National Laboratory, 9700 South Cass Avenue, Argonne, Illinois 60439.** *An Equal Opportunity Employer, M/F*

**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.*

**POSTDOCTORAL POSITION:** Immediate opening. Study of biochemistry, physiology, and control mechanisms in nitrogen fixation. Possible collaboration with other staff in a large laboratory emphasizing nitrogen fixation and photosynthesis research. Send résumé to **Dr. Donald L. Keister, Charles F. Kettering Research Laboratory, Yellow Springs, Ohio 45387.**

### POSTDOCTORAL POSITION IN BIOCHEMISTRY

Position available for study of biochemistry related to the kidney, including membrane transport, renal compensatory growth, and enzyme regulation during aging. Joint appointment in biochemistry and medicine. Send curriculum vitae and date available to: **Dr. L. Lowenstein, Research Building, Room 212, Boston University School of Medicine, 15 Stoughton St., Boston, Mass. 02118.**

### POSTDOCTORAL POSITION

Ph.D. in biochemistry, or related areas, with experience or interest in the characterization and purification of hormone-sensitive adenylate cyclase from plasma membranes. Position available for 2 years from 1 September 1975. Annual salary, \$10,000. Please send letters of inquiry with curriculum vitae and names of two references to: **Dr. Roger A. Johnson, Department of Physiology, Vanderbilt University School of Medicine, Nashville, Tenn. 37232.**

### POSTDOCTORAL RESEARCH ASSOCIATE

For biochemist interested in lipid metabolism and role of unsaturated fatty acids in animal membranes. Background in enzymology needed; experience with adenylate cyclase desirable. Available February to March 1976 for 3 years. Salary \$11,000 to \$12,000. Send curriculum vitae and references to **M. A. Williams, Department of Nutritional Sciences, University of California, Berkeley, Calif. 94720.** *An Equal Opportunity/Affirmative Action Employer*

## CHIEF TOXICOLOGIST

# Mobil

MOBIL OIL CORPORATION is actively seeking a Chief Toxicologist to direct and administer the toxicology program for the corporation and its affiliates worldwide.

The qualified candidate for this position must have at least an MS degree (PhD desirable) in pharmacology or toxicology and 10 years' industrial experience as a toxicologist, with a minimum of 3 years' experience in petroleum or petrochemical industries.

This position offers an opportunity for professional growth, excellent salary and attractive benefits. For prompt, confidential consideration, send your resume, including current salary, to Mr. G. Mayer, Department 3723, 150 East 42nd Street, New York, New York 10017.

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A challenging opportunity exists within the Warner-Lambert Research Institute for an experienced Pharmacologist interested in Research & Development studies directed toward new medical products. Primary responsibility will involve the evaluation of bronchopulmonary drugs. Previous research experience in this area is desirable although not a definite requirement. Candidates should possess a PhD degree with at least five years industrial experience, part of which may include postgraduate studies. Our laboratories are located in suburban New Jersey with access to outstanding school systems, housing and recreation facilities. Company benefits are excellent and include full reimbursement for relocation expenses. Salary will be commensurate with background and qualifications. For an interview appointment please forward your curriculum vitae; **R. F. Benthien**

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## POSITIONS OPEN

**POSTDOCTORAL POSITION:** Available immediately for research on developmental and genetic regulation of enzymes in maize. Salary \$10,500. Résumé and three references to **Dr. J. G. Scandalios, Department of Genetics, North Carolina State University, Raleigh, N.C. 27607.** An Affirmative Action/Equal Opportunity Employer.

**POSTDOCTORAL TRAINEESHIPS IN CLINICAL CHEMISTRY** will become available 1 July 1976, to recent Ph.D. biochemists and chemists in a program designed to train clinical chemists for positions in research-oriented hospitals. The appointments are for 2 years, with a stipend of \$6000 to \$7000 per annum plus a dependency allowance. Interested applicants are invited to send a curriculum vitae to: **Dr. Alex Kaplan, Department of Laboratory Medicine, University of Washington, Seattle, Wash. 98195.**

### POSTDOCTORAL TRAINING IN EYE RESEARCH AT YALE

The Ophthalmology and Visual Science Department at Yale University has received an award from the National Eye Institute to support training for basic scientists in eye research. Candidates holding an M.D. or Ph.D. with backgrounds in **biochemistry** or **immunology** may request information on fellowships available immediately by writing **Dr. Ted W. Reid, Department of Ophthalmology and Visual Science, Yale University School of Medicine, New Haven, Connecticut 06510.** This program is restricted to U.S. citizens and permanent residents. An Equal Opportunity/Affirmative Action Employer.

**PRE- AND POSTDOCTORAL POSITIONS** are available for studies on the protein synthesizing system with special emphasis on ribosomes—topography, biogenesis, and function—under various conditions of growth and development. Teaching opportunities available. Reply with résumé to: **Professor Bruce H. Sells, Laboratories of Molecular Biology, Faculty of Medicine, Memorial University of Newfoundland, St. John's, Newfoundland, Canada A1C 5S7.**

The University of Minnesota Medical School invites nominations and applications for the position of **PROFESSOR AND HEAD** of the Department of Neurology. This position requires a Board-certified neurologist with substantial, demonstrated teaching, research, and administrative abilities to provide leadership in a large academic department. Inquiries, including a curriculum vitae, should be sent to **Dr. Shelley N. Chou, Chairman, Search Committee, Department of Neurosurgery, B-590 Mayo Building, University of Minnesota Medical School, Minneapolis, Minnesota 55455.** An Equal Opportunity/Affirmative Action Employer.

### PROFESSOR OF NUTRITION AND HEAD OF THE DEPARTMENT

The Harvard School of Public Health invites applications and nominations for the position of head of the Department of Nutrition. Candidates should have demonstrated competence in teaching and research and a commitment to fundamental, clinical, and public health aspects of nutrition.

*Harvard University is an Equal Opportunity Employer with an Affirmative Action Program. Qualified women and minority group members are encouraged to apply.*

A statement of interest and résumé should be sent to **Professor D. M. Hegsted, Department of Nutrition, Harvard School of Public Health, 665 Huntington Avenue, Boston, Massachusetts 02115.**

**RESEARCH ASSOCIATE POSITION** available immediately for 12 months; \$10,000 salary. M.D. or Ph.D. with experience in synthesis and degradation of proteins; to work in a project on liver regeneration. Send curriculum vitae and two references before 13 October 1975 to **Dr. Oscar Scornik, Department of Biochemistry, Dartmouth Medical School, Hanover, New Hampshire 03755.** Dartmouth Medical School is an Equal Opportunity, Affirmative Action Employer.

### RESEARCH ASSOCIATES

Research associate positions (two) are available for persons with a Ph.D. in biochemistry or pharmacology and who are interested in structure and function of membranes and/or metabolism of neurotransmitters and psychotropic drugs. Experience in GLC analysis is essential. Send résumé to **Eric G. Brunngraber, Ph.D., Department of Psychiatry, School of Medicine, University of Missouri-Columbia, Missouri Institute of Psychiatry, 5400 Arsenal Street, St. Louis, Missouri 63139.** Equal Opportunity Employer.

## POSITIONS OPEN

### RESEARCH ASSOCIATE

Two positions of research associate available immediately. Recent Ph.D. synthetic organic chemist interested in nucleic acid chemistry and biochemist interested in tRNA ribosome-structure/function relationships. Stipend \$9,500 to \$10,500 per annum, commensurate with applicant's experience. Send résumé and two letters of reference to **Dr. S. Chladek, Michigan Cancer Foundation, 110 E. Warren, Detroit, Michigan 48201.**

### RESEARCH SCIENTIST

Field: Marine pollution—Organic.

Duties: To conduct basic research on the biochemical effects of organochlorine pesticide and other synthetic organic pollutants and participate in a baseline study.

Qualifications: A Ph.D. degree or equivalent qualification in biochemistry or organic chemistry with proven research ability and thorough familiarity with pesticide analytical procedures including gas chromatography-mass spectrometry. Preference will be given to applicants with postdoctoral experience.

Salary: Appointment will be made within the salary range of research scientist: A\$11,653 to A\$14,446 per annum.

Applications, giving details of qualifications, experience, personal particulars, and the names of three professional referees, are invited and should be forwarded to:

**The Secretary  
Australian Institute of Marine Science  
P.O. Box 1104  
Townsville, Queensland 4810  
Australia**

Closing date: 10 October 1975.

### POSITION AVAILABLE

Statistical geneticist in the Division of Comparative Medical Genetics, Institute of Comparative Medicine, Texas A & M University/Baylor College of Medicine. The geneticists in the Division are responsible for developing a teaching program of veterinary Medical Genetics at the College of Veterinary Medicine, Texas A & M University. This individual will be expected to participate in cooperative research projects and will be encouraged to develop his/her own research projects. Applicants should be competent in statistical genetics. Experience in animal breeding and/or computer programming preferred but not required. The faculty position and salary will be commensurate with experience (salary range: \$18,000 to \$22,500). *The Institute is an Affirmative Action/Equal Opportunity Employer* and all applicants who believe they qualify are invited to contact **Dr. Joe W. Templeton, Institute of Comparative Medicine, Baylor College of Medicine, Houston, Texas 77025.**

### VETERINARY PATHOLOGIST

Independent contact research laboratory has an immediate opening for a pathologist experienced in gross and microscopic pathology of dogs, primates, and rodents. Specific experiences in toxicologic pathology desirable and Board certification preferred. Salary commensurate with experience. We are located in a very desirable area of southwestern Michigan just 10 miles from Kalamazoo, which offers excellent living conditions and cultural activities. Send detailed résumé to: **J. M. Ragen, Director, Personnel, International Research and Development Corp., Mattawan, Michigan 49071.** An Equal Opportunity Employer.

## ANNOUNCEMENTS

### ADVERTISEMENT OF SERUM PANELS

A variety of antigenic serum components have been reported to be uniquely present, or present in elevated or decreased quantities, in the serums of cancer patients, as compared to other patients or to normal individuals (for example, peptide hormones, virus antigens,  $\beta_2$  microglobulin). The National Cancer Institute is interested in evaluating assays that have potential for the immunodiagnosis of cancer. Coded serum panels are available to evaluate assays which have given preliminary indications of discrimination between cancer patients and controls. Promising results on this coded panel may provide the basis for contract support in development of the immunoassay. Preliminary data documenting a useful test and request for a coded serum panel to evaluate it should be sent to: **Immunodiagnosis Serum Panels, Building 8, Room 118, National Cancer Institute, National Institutes of Health, Bethesda, Maryland 20014.**

## PAPERS

Persons considering submitting a paper for the **25th INTERNATIONAL GEOLOGICAL CONGRESS**, Sydney, Australia, 16 to 25 August 1976, should send their synopses to the **Secretary-General, Box 1892, Canberra City, A.C.T. 2601, Australia**, by 30 September. Copies of the 2nd Circular can be obtained from the same address.

## FELLOWSHIPS

**HEMATOLOGY**, postdoctoral research fellowships available beginning July 1976. Diversified research program with large faculty and strong basic orientation designed for candidates with M.D. and/or Ph.D. degrees who plan an academic career in medicine. U.S. citizens and permanent residents. Write to: **Adel A. Yunis, M.D., Department of Medicine, University of Miami School of Medicine, P.O. Box 520875, Biscayne Annex, Miami, Fla. 33152.**

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## COURSES

### LECTURES AND COURSES THE FIFTH SUMMER COURSE IN TISSUE CULTURE 26 April to 22 May 1976 UNIVERSITY OF SASKATCHEWAN Department of Anatomy and Extension Division

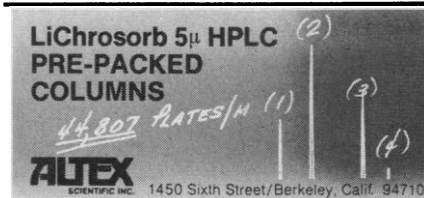
The course will introduce basic principles of mammalian and plant tissue cultures. It will include laboratory work, demonstrations, seminars, informal discussions, and lectures. It is intended primarily for graduate students and scientists. For more information write or telephone **Dr. S. Fedoroff, Department of Anatomy, University of Saskatchewan, Saskatoon, Saskatchewan S7N 0W0, Canada.** Telephone: 306-343-2661.

## PROGRAMS

### CARDIOVASCULAR DISEASE PREVENTION TRAINING PROGRAM

Traineeships available to M.D.'s and Ph.D.'s. Choice of three major tracks of study: biostatistics and cardiovascular epidemiology, behavioral science, or nutrition. Emphasis on interdisciplinary research experience but course work is included, up to 3 years. Stipends begin at \$10,000 per year. Starting date negotiable. Send curriculum vitae and names of three references to: **John W. Farquhar, M.D., Director, Stanford Heart Disease Prevention Program, Stanford University Medical School, Room M-027, Stanford, Calif. 94305.**

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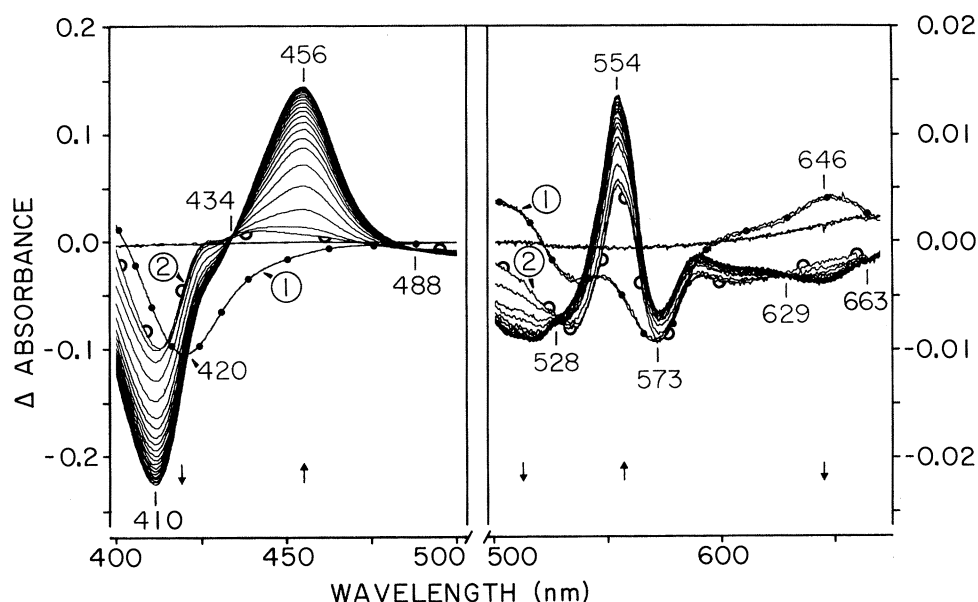
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# Automatic Repetitive Scanning of Difference Spectra

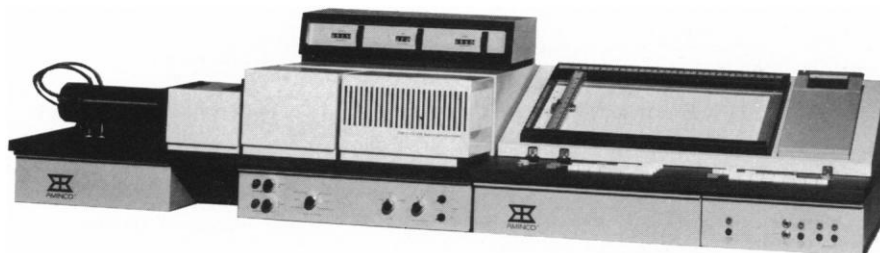


Repetitive scanning of the difference spectra of hepatic microsomal pigments during the oxidative metabolism of benzphetamine. Microsomes were diluted to a final concentration of 2 mg protein per ml ( $5 \mu\text{M}$  cytochrome P-450) in oxygenated 0.05 M Tris-chloride buffer, pH 7.4, containing 0.15 M KCl, 0.01 M  $\text{MgCl}_2$ , and an NADPH generating system (8 mM sodium isocitrate and 0.25 units of isocitric acid dehydrogenase per ml). A 6-ml sample of this suspension was equally divided into two cuvettes. After establishing a baseline of equal light absorbance, *d*-benzphetamine ( $50 \mu\text{M}$  final concentration) was added to the contents of the sample cuvette. Curve 1 demonstrates the spectral perturbation resulting

from substrate interaction with oxidized cytochrome P-450. Metabolism of benzphetamine was initiated by the addition of NADPH ( $400 \mu\text{M}$  final concentration) to the sample cuvette. The changes with time of the difference spectrum were determined by repetitive scanning at a speed of 10 nm/s with a rate of 2 cycles/min over a period of 10 min. Separate experiments were performed for the Soret and the visible region of the spectrum. The first scans recorded are labeled 2 and the direction of the absorbance changes is indicated by arrows. (Arch. Biochem. Biophysics, **167**, 270-286 (1975), copyright, Academic Press, Inc. reprinted with permission)

The curves above illustrate cytochrome P-450 research being conducted using the DW-2 UV-Vis Spectrophotometer. Operating in the Split Beam Mode, a single monochromatic light beam is alternately passed through reference and sample cuvettes, and a difference spectrum is recorded.

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