

to the work of the Nieuwkoop group) by a partial transformation of the ectoderm through an interaction with endoderm cells. This mechanism is thoroughly epigenetic and somewhat later in its inception and is the mechanism elected by the salamanders and their allies among the Amphibia, and probably by the mammals as well. The primordial germ cells of these groups are not characterized by a germ plasm but contain cytoplasmic structures collectively termed "nuage" that have been suggested to be related to some elements of the germ plasm.

Because the Amphibia appear to employ both mechanisms, the monograph gives interesting consideration to the possibility that the class, and perhaps the entire subphylum Vertebrata, has a diphyletic origin. A problem with such interpretations lies in the rudimentary state of our knowledge of the origin of the primordial germ cells in the fish and reptiles. We have confidence in our understanding of critical events in amphibian and bird development, but the possibility cannot yet be excluded that similar variation in the history of the primordial germ cells occurs in the other vertebrate groups; the need for further research into this question is clearly signaled in the book. Moreover, the book limits its compass to the Chordata, and differences similar to those reviewed in it may also be found within the invertebrate groups. Such differences may represent divergences along the main lines of evolution of all principal animal groups.

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Reproductive Biology

The Spermatozoon. Maturation, Motility, Surface Properties and Comparative Aspects. Proceedings of a symposium, Boston and Woods Hole, Mass., May 1978. DON W. FAWCETT and J. MICHAEL BEDFORD, Eds. Urban and Schwarzenberg, Baltimore, 1979. xvi, 442 pp., illus. \$49.

Spermatozoa are one of the most highly differentiated cell types. They are specialized to perform one short act: the fusion with an ovum, which restores the diploid genome and activates embryonic development. Until recently, our knowledge of the membrane ultrastructure and biochemistry of sperm has been scant. Most of the significant recent work on sperm physiology, biochemistry, and ultrastructure has been compiled in this

very readable and beautifully illustrated volume. The book will be a major reference in reproductive biology for years to come.

The book is a collection of 40 papers presented at the third international symposium on the spermatozoon. The papers are divided into six major sections, on maturation, motility, surface properties, comparative aspects, isolation of germ cells, and quantitation of sperm motility. There are 333 figures, many of which are excellent high-resolution electron micrographs, illustrating the intricacies of sperm anatomy. In a paper on the basis of flagellar motility (P. Satir) the appearance of the dynein arms of the axoneme (p. 86) neatly demonstrates the value of the technique of reinforcement of the image of a periodically repeating structure. A companion paper devoted to the ultrastructure of the axoneme (R. W. Linck) presents beautiful negatively stained images showing the radial spoke triplets (p. 101). The distribution and patterning of intramembraneous particles on sperm flagellar membranes (D. S. Friend *et al.*), as visualized by freeze-fracture (pp. 160–165), are most impressive. A paper on the morphology of urodelian sperm (B. Picheral) presents one of the most extensive studies of amphibian sperm yet accomplished.

The quality of the art work in the book is consistently excellent. It is amply demonstrated in a paper on the evolution of the acrosome complex (B. Baccetti), where illustrations of such fantastic sperm as those belonging to the diplopod *Packyulus* (p. 317) appear. The quality of the printing and the general layout, organization, and balance of content are all without fault. In fact, the only detracting feature is that the subject index is rather short.

Sperm-egg recognition, adhesion, and fusion are processes that must be mediated by macromolecular components on the cell membranes. Many laboratories are currently attempting to isolate these important molecules from both invertebrate and vertebrate spermatozoa. For this reason, the section on surface properties, the major section of the book, is timely and of considerable importance. Mammalian sperm taken from the testis or the caput portion of the epididymis are incapable of fertilization. Only those sperm that have passed from the caput to the caudal portion of the epididymis can fertilize eggs. G. L. Nicolson and R. Yanagimachi review their work demonstrating that as sperm pass from caput to caudal portions, the lectin binding specificity changes. This shows that new glycoproteins, which may be in-

timately involved in capacitation and the acrosome reaction, must appear on the sperm membrane during epididymal maturation. Another paper (C. F. Millette) describes the appearance of membrane antigens during mouse spermatogenesis. A third paper (M. G. O'Rand) is concerned with antigenic changes occurring during the still mysterious process of sperm capacitation.

The surprising finding that sperm membrane components persist on the surface of both sea urchin and hamster eggs as distinct patches is described, along with a novel method of labeling sperm using ¹²⁵I-labeled diiodofluorescein-isothiocyanate (C. A. Gabel *et al.*). A paper (G. B. Doohar) on the serological analysis of T/t antigens (surface antigens) on mouse sperm is also included. Useful methodology, such as the isolations of components of rat sperm (H. I. Calvin), the perforatorium of rat sperm (G. E. Olsen), and mitochondria from bovine sperm (V. Pallini), is presented.

This is a welcome and refreshing treatise. One hopes it may stimulate young investigators to enter this field of research.

VICTOR D. VACQUIER

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Books Received

Acoustic Tumors. William F. House and Charles M. Luetje, Eds. University Park Press, Baltimore, 1979. Two volumes. illus. Vol. 1, Diagnosis. xviii, 298 pp. \$29.50. Vol. 2, Management. xvi, 280 pp. \$19.50.

Additive and Cancellative Interacting Particle Systems. David Griffeth. Springer-Verlag, New York, 1979. vi, 108 pp. Paper, \$9. Lecture Notes in Mathematics, vol. 724.

Adjuvant Therapies and Markers of Post-Surgical Minimal Residual Disease II. Adjuvant Therapies of the Various Primary Tumors. Papers from a meeting, Paris, June 1978. G. Bonadonna, G. Mathé, and S. E. Salmon, Eds. Springer-Verlag, New York, 1979. xii, 468 pp., illus. \$53.90. Recent Results in Cancer Research, 68.

Birth Defects Compendium. Daniel Bergsma, Ed. Published for the National Foundation—March of Dimes by Liss, New York, ed. 2, 1979. xxxviii, 1184 pp., illus. \$50.

Biting Off the Bracelet. A Study of Children in Hospitals. Ann Hill Beuf. University of Pennsylvania Press, Philadelphia, 1979. x, 164 pp. \$9.95.

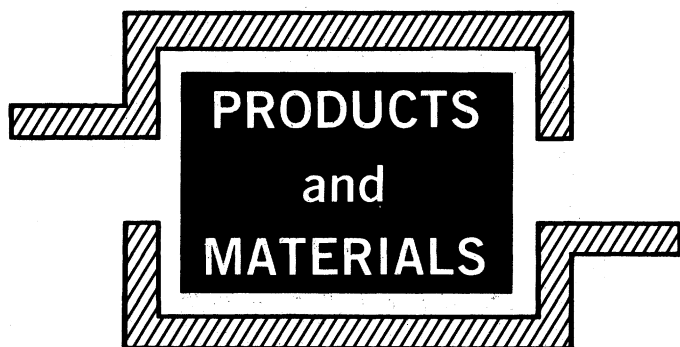
Brain, Environment, and Social Psychology. J. K. Chadwick-Jones, Irmgard I. Lenzer, James A. Darley, and Kenneth A. Hill. University Park Press, Baltimore, 1979. xii, 202 pp., illus. Paper, \$8.95.

Captivity and Behavior. Primates in Breeding Colonies, Laboratories, and Zoos. Papers from a symposium, Seattle, Wash., 1977. J. (Continued on page 1495)

BOOKS RECEIVED

(Continued from page 1461)

- Erwin, Terry L. Maple, and G. Mitchell, Eds. Van Nostrand Reinhold, New York, 1979. x, 286 pp., illus. + plates. \$22.50. Van Nostrand Reinhold Primate Behavior and Development Series.
- Chemical Reactor Analysis and Design.** Gilbert F. Froment and Kenneth B. Bischoff. Wiley, New York, 1979. xl, 766 pp., illus. \$29.95.
- Chemistry and Application of Phenolic Resins.** A. Knop and W. Scheib. Springer-Verlag, New York, 1979. xiv, 270 pp., illus. \$53.90. Polymers, 3.
- Chemistry and Physics of Carbon.** A Series of Advances. Vol. 15. Philip L. Walker, Jr., and Peter A. Thrower, Eds. Dekker, New York, 1979. xiv, 300 pp., illus. \$36.50.
- Developmental Pragmatics.** Elinor Ochs and Bambi B. Schieffelin, Eds. Academic Press, New York, 1979. xvi, 438 pp. \$29.50.
- Dictionary of Drying.** Carl W. Hall. Dekker, New York, 1979. vi, 350 pp., illus. \$39.75.
- Digital Circuits and Microcomputers.** D. E. Johnson, J. L. Hilburn, and P. M. Julich. Prentice-Hall, Englewood Cliffs, N.J., 1979. xii, 292 pp., illus. \$16.95.
- Directory of Scientific Directories.** Compiled by J. Burckett. Hodgson (Longman), Harlow, Essex, England, ed. 3, 1979. xii, 650 pp. £30.
- DNA. Replication and Recombination.** Papers from a symposium, Cold Spring Harbor, New York. Cold Spring Harbor Laboratory, Cold Spring Harbor, N.Y., 1979. Two volumes. xlii, 1388 pp., illus. \$120. Cold Spring Harbor Symposia on Quantitative Biology, vol. 43.
- Elements of Electronic Instrumentation and Measurement.** Joseph J. Carr. Reston (Prentice-Hall), Reston, Va., 1979. xiv, 508 pp., illus. \$17.95.
- Elongational Flows.** Aspects of the Behavior of Model Elasticoviscous Fluids. C. J. S. Petrie. Fearon-Pitman, Belmont, Calif., 1979. xiv, 254 pp., illus. Paper, \$17.50. Research Notes in Mathematics, 29.
- The Emergence of Symbols.** Cognition and Communication in Infancy. Elizabeth Bates with the collaboration of Laura Benigni and six others. Academic Press, New York, 1979. xvi, 388 pp. \$29.50. Language, Thought, and Culture.
- Farmers in the Forest.** Economic Development and Marginal Agriculture in Northern Thailand. Papers from a conference, Chiang Mai, Thailand, Jan. 1970. Peter Kunstadler, E. C. Chapman, and Sanga Sabhasri, Eds. Published for the East-West Center by University Press of Hawaii, Honolulu, 1978. xiv, 402 pp., illus. \$24.
- The First Year of Life.** The Collaborative Perinatal Project of the National Institute of Neurological and Communicative Disorders and Stroke. Janet B. Hardy, Joseph S. Drage, and Esther C. Jackson. Johns Hopkins University Press, Baltimore, 1979. xxii, 338 pp., illus. \$25.
- Food Microscopy.** J. G. Vaughan, Ed. Academic Press, New York, 1979. xvi, 652 pp., illus. \$61.25. Food Science and Technology.
- Graph Theory and Related Topics.** Proceedings of a conference, Waterloo, Ontario, Canada, July 1977. J. A. Bondy and U. S. R. Murty, Eds. Academic Press, New York, 1979. xxxiv, 372 pp., illus. \$40.
- Growth Policies and the International Order.** Lincoln Gordon. McGraw-Hill, New York, 1979. xviii, 184 pp. Paper, \$6.95. 1980s Project Studies/Council on Foreign Relations Studies.
- Handbook of Electronics Calculations for Engineers and Technicians.** Milton Kaufman and Arthur H. Seidman, Eds. McGraw-Hill, New York, 1979. Various pages, illus. \$24.50.
- Handbook of Modern Electrical Wiring.** John E. Traister. Reston (Prentice-Hall), Reston, Va., 1979. xvi, 302 pp., illus. \$15.95.
- Information Linkage between Applied Mathematics and Industry.** Proceedings of a workshop, Monterey, Calif., Feb. 1978. Peter C. C. Wang, Arthur L. Schoenstadt, Bert I. Rusak, and Craig Comstock, Eds. Academic Press, New York, 1979. xiv, 662 pp., illus. \$35.
- Inner Balance.** The Power of Holistic Healing. Elliott M. Goldway, Ed. Prentice-Hall, Englewood Cliffs, N.J., 1979. xxiv, 360 pp., illus. Cloth, \$13.95; paper, \$5.95.
- Integrated Circuit Fabrication Technology.** Andrew Veronis. Reston (Prentice-Hall), Reston, Va., 1979. xii, 194 pp., illus. \$17.95.
- Integrated Science for Health Students.** T. Randall Lankford. Reston (Prentice-Hall), Reston, Va., ed. 2, 1979. x, 662 pp., illus. \$18.95.
- Knowledge and Cosmos.** Development and Decline of the Medieval Perspective. Robert K. DeKosky. University Press of America, Washington, D.C., 1979. xii, 326 pp., illus. Cloth, \$16.50; paper, \$11.50.
- Land Application of Wastes.** Vol. 1. Raymond C. Loehr, William J. Jewell, Joseph D. Novak, William W. Clarkson, and Gerald S. Friedman. Van Nostrand Reinhold, New York, 1979. xxiv, 308 pp., illus. \$19.95. Van Nostrand Reinhold Environmental Engineering Series.
- LANDSAT II over New Zealand.** Monitoring Our Resources from Space. P. J. Ellis, I. L. Thomas, and M. J. McDonnell, Eds. New Zealand Department of Scientific and Industrial Research, Wellington, 1978. 450 pp., illus. \$NZ20. DSIR Bulletin 221.
- Language as Social Semiotic.** The Social Interpretation of Language and Meaning. M. A. K. Halliday. University Park Press, Baltimore, 1979. viii, 256 pp., illus. \$22.50.
- Metallurgy of Superconducting Materials.** Thomas Luhman and David Dew-Hughes, Eds. Academic Press, New York, 1979. xxii, 458 pp., illus. \$49.50. Treatise on Materials Science and Technology, vol. 14.
- Metals Joining Manual.** M. M. Schwartz. McGraw-Hill, New York, 1979. Various pages, illus. \$22.50.
- Methods in Cancer Research.** Vol. 18, Oncodevelopmental Antigens. William H. Fishman and Harris Busch, Eds., Academic Press, New York, 1979. xxii, 410 pp., illus. \$31.
- Methods in Enzymology.** Sidney P. Colowick and Nathan O. Kaplan, Eds. vol. 55, Biomembranes, Part F: Bioenergetics-Oxidative Phosphorylation. Sidney Fleischer and Lester Packer, Eds. Academic Press, New York, 1979. xxx, 896 pp., illus. \$55.
- Methods of Biobehavioral Research.** E. A. Serafetinides, Ed. Grune and Stratton, New York, 1979. xiv, 218 pp. \$19.50. Seminars in Psychiatry.
- Nonlinear Methods of Spectral Analysis.** S. Haykin, Ed. Springer-Verlag, New York, 1979. xii, 248 pp., illus. \$49. Topics in Applied Physics, vol. 34.
- Nonlinear Plasma Dynamics at Laser Irradiation.** Heinrich Hora. Springer-Verlag, New York, 1979. viii, 242 pp., illus. Paper, \$12.50. Lecture Notes in Physics, vol. 102.
- Optical Properties of Inhomogeneous Materials.** Applications to Geology, Astronomy, Chemistry, and Engineering. Walter G. Egan and Theodore W. Hilgeman. Academic Press, New York, 1979. xiv, 236 pp., illus. \$27.50.
- Physiological Aspects of Anaesthetics and Inert Gases.** A. G. Macdonald and K. T. Wann. Academic Press, New York, 1978. xii, 308 pp., illus. Cloth.
- The Plastically Crystalline State.** (Orientationally-Disordered Crystals.) John N. Sherwood, Ed. Wiley-Interscience, New York, 1979. xxvi, 384 pp., illus. \$48.95.
- Pleneurethic.** Way of Life, System of Therapeutics. Richard Bangs Collier. Exposition Press, Hicksville, N.Y., 1979. x, 276 pp., illus. \$10.
- Pods.** Wildflowers and Weeds in Their Final Beauty. Great Lakes Region, Northeastern United States and Adjacent Canada. Jane Embertson. Scribner, New York, 1979. iv, 186 pp., illus. \$14.95.
- Prenatal Diagnosis.** Proceedings of a conference, Munich, Apr. 1978. Jan-Diether Mucken, Sabine Stengel-Rutkowski, and Eberhard Schwinger, Eds. Ferdinand Enke, Stuttgart, 1979 (distributor, PSG, Littleton, Mass.). xxviii, 388 pp., illus. Paper, \$49.
- Principles and Applications of Electrochemistry.** D. R. Crow. Chapman and Hall, London, and Halsted (Wiley), New York, ed. 2, 1979. xii, 232 pp., illus. Paper, \$14.95. Chapman and Hall Chemistry Textbook Series.
- Responding to Drinking Problems.** Stan Shaw, Alan Cartwright, Terry Spratley, and Judith Harwin. University Park Press, Baltimore, 1978. 270 pp. \$24.50.
- Retrospective Technology Assessment—1976.** Papers from a conference, Champion, Pa., Dec. 1976. Joel A. Tarr, Ed. San Francisco Press, San Francisco, 1977. x, 326 pp., illus. \$15.50.
- Robustness in Statistics.** Proceedings of a workshop, Research Triangle Park, N.C., Apr. 1978. Robert L. Launer and Graham N. Wilkinson, Eds. Academic Press, New York, 1979. xvi, 296 pp., illus. \$18.50.
- Roots of Modern Mormonism.** Mark P. Leone. Harvard University Press, Cambridge, Mass., 1979. xvi, 250 pp. \$15.
- Science and Government Report International Almanac, 1978–1979.** Daniel S. Greenberg and Anne D. Norman, Eds. Science and Government Report, Washington, D.C., 1979. xii, 368 pp. \$75.
- Secular Trends in Human Growth, Maturation, and Development.** Alex F. Roche, Ed. Published for the Society for Research in Child Development by University of Chicago Press, Chicago, 1979. viii, 120 pp., illus. Paper, \$7. Monographs of the Society for Research in Child Development, vol. 44, Nos. 3–4 (Serial No. 179).
- The Selected Papers of Margaret S. Mahler, M.D.** Aronson, New York, 1979. Two volumes. Vol. 1, Infantile Psychosis and Early Contributions. xxiv, 306 pp. Vol. 2, Separation-Individuation. vi, 264 pp. \$40.
- Selective Bronchography and Bronchial Brushing.** F. Pinet, M. Amiel, A. Rubet, and J.-C. Froment. Translated from the French edition (Paris, 1979). Springer-Verlag, New York, 1979. xii, 264 pp., illus. \$99.
- Track of the Grizzly.** Frank C. Craighead, Jr. Sierra Club Books, San Francisco, 1979. x, 262 pp., illus. + plates. \$10.95.
- Troubleshooting Solid-State Circuits and Systems.** Wallace Waner. Reston (Prentice-Hall), Reston, Va., 1979. x, 342 pp., illus. \$18.95.



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Newly offered instrumentation, apparatus, and laboratory materials of interest to researchers in all disciplines in academic, industrial, and government organizations are featured in this space. Emphasis is given to purpose, chief characteristics, and availability of products and materials. Endorsement by *Science* or AAAS is not implied. Additional information may be obtained from the manufacturers or suppliers named by circling the appropriate number on the Reader Service Card (on pages 1418A and 1494E) and placing it in the mailbox. Postage is free.

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Literature

Radiochemicals includes labeled compounds, radionuclides, LSC fluors and chemicals, and custom services among a complete line of products for nuclear chemistry. New England Nuclear. Circle 815.

Microprocessor Products are the subjects of *Preview*, which discusses new products for users of analytical, control, and data-processing apparatus. Intel. Circle 816.

New Titles features the offerings of this publisher of texts, handbooks, and reference materials for the scientist. CRC Press. Circle 817.

Chromatography Supplies describes accessories apparatus, columns, fittings, packings, syringes, and much more. L. C. Circle 818.

Life Science Literature Search offers an audiovisual program for on-line examination of pertinent data bases. Science Media. Circle 819.

Analytical Instruments is a miniguide to precision instruments for spectroscopic research. Bausch & Lomb. Circle 820.

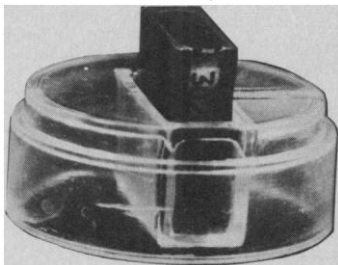
Incubator is devoted to modular, benchtop models 3029/3039 with self-diagnostics. Forma Scientific. Circle 821.

Laboratory Materials has sections on densitometry, electrophoresis, enzymology, spectrophotometry, immunology, and others. Helena Laboratories. Circle 822.

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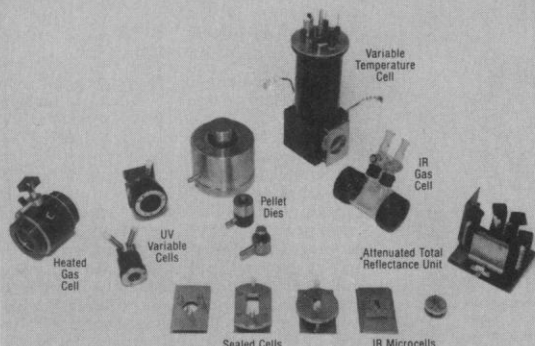
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Microbiologist, M.S. (two), University of Wisconsin, managing and teaching microbiology and biochemistry college laboratories; industrial microbiology; 20 years of experience. Available July 1980. F. Rudert, Box 4693, Pittsburgh, Pennsylvania 15206. X

Physiological Psychologist/Neuroscientist/Vision Scientist. Ph.D. 1971. Additional training in experimental (including experimental design/analysis/methodology), sensory, and comparative psychology. Publications, grants, research, teaching experience. Fundable vision neuroscience research program/laboratory. Currently nontenured research faculty in medical specialty department. Seeks position involving teaching, research, administration, or combination; entry level or higher. Available immediately. Box 79, SCIENCE. X

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UTMB Substation
Box 146
Galveston, Texas 77550

Deadline for receipt of applications is 1 June 1980. The University of Texas Medical Branch is an Equal Opportunity Employer, M/F/H.

Anti-Viral Therapeutics Ph.D.

Leading pharmaceutical manufacturing company has exceptionally fine opening at the senior scientist level. This individual will initiate a screen for the evaluation of anti-viral drugs. The candidate we seek will have in vitro assay experience with medically important DNA viruses and demonstrated leadership capabilities. Interferon assay experience would be most desirable.

We offer a generous starting salary based on background and qualifications plus a comprehensive program of employee benefits.

Résumés should be sent to: **Manager of Personnel Administration, Schering-Plough Research Center, 60 Orange Street, Bloomfield, N.J. 07003.**



Schering-Plough

We Are An Equal Opportunity Employer M/F

POSITIONS OPEN

ANATOMY: TENURE-TRACK POSITION

The Departments of Anatomy and Psychology and the Neurobiology Program at Duke University invite applications from persons with a Ph.D., who have at least 2 years of postdoctoral experience and who are qualified to teach neuroanatomy to medical students. Evidence of a strong research commitment and an interest in graduate training is essential. A research program in morphology and physiology at the single-cell level is highly desirable. Appointment to begin 1 July 1980. Send curriculum vitae, three letters of recommendation, and a letter describing research and teaching interests to:

William C. Hall, Ph.D.
Chairman, Search Committee
Department of Anatomy
Box 3011
Duke University Medical Center
Durham, N.C. 27710

Deadline for applications: 15 May 1980.

An Equal Opportunity/Affirmative Action Employer

The Department of Plant Pathology and Crop Physiology, Louisiana State University Agricultural Experiment Station, is seeking applicants for three research positions (salary open, with opportunity to participate in the graduate program), as follows:

ASSISTANT PROFESSOR. Research in soybean physiology. Ph.D. with emphasis in plant physiology required. Available immediately. Application deadline: 15 April 1980 or until suitable applicant is identified.

ASSISTANT PROFESSOR. Research in sugarcane pathology. Ph.D. in plant pathology required. Available 1 July 1980. Application deadline: 1 May 1980 or until suitable applicant is identified.

ASSISTANT PROFESSOR. Research in soybean nematology. Ph.D. in plant pathology with emphasis in nematology required. Available 1 June 1980. Application deadline: 1 May 1980 or until suitable applicant is identified.

Send résumé, transcripts, and letters of recommendation to: **W. J. Martin, Head, Department of Plant Pathology and Crop Physiology, Louisiana State University, Baton Rouge, La. 70803.**

An Equal Opportunity/Affirmative Action Employer

ASSISTANT PROFESSOR, BIOPSYCHOLOGY PROGRAM

Rutgers College has two tenure-track openings for assistant professors in biopsychology. For one position a research competence in brain chemistry and behavior is preferred (see *Science*, 22 February 1980, p. 917). Specialty is open for the other position, but candidate's research should be concerned with the relationship between brain mechanisms and behavior at the neurophysiological, neurohormonal, or genetic level. Ph.D. required. Candidates would be expected to develop an active research program and participate in graduate and undergraduate teaching.

Applicants should send curriculum vitae, three letters of recommendation, and a summary of research plans to: **Dr. Charles Flaherty, Department of Psychology, Rutgers College, Busch Campus, New Brunswick, New Jersey 08903.**

Rutgers University is an Equal Opportunity/Affirmative Action Employer.

ASSISTANT PROFESSOR OF GENETICS (MOLECULAR)

Texas A & M University invites applications for a 12-month, tenure-track position in molecular genetics which will be available 1 September 1980. Applicants should have demonstrated ability to continue or develop an independent research program and work in collaboration with molecular biologists, geneticists, and plant physiologists in a basic research program ultimately oriented toward the directed genetic manipulation of higher plants. Applications are encouraged from qualified persons with either prokaryotic or eukaryotic background. Applicants should have postdoctoral experience and a strong interest in graduate education. Responsibilities will include research and teaching of a graduate course in the area of expertise and participation in the teaching of an introductory course in genetics. Please send curriculum vitae, a statement of research and teaching interest, and the names of three references to: **Dr. James Wild, Genetics Section, Department of Plant Sciences, Texas A & M University, College Station, Texas 77843. Telephone: 713-845-7311.** These materials should be received before 2 May 1980. Texas A & M University is an Equal Opportunity/Affirmative Action Employer.

POSITIONS OPEN

ASSISTANT PROFESSOR: ANATOMY. Applicants should have a strong background in cell biology, especially cellular neurobiology, with postdoctoral research experience and demonstrated independent research ability. Teaching experience in gross anatomy desirable. Submit curriculum vitae before 30 April 1980 to: **Dr. G. D. Pappas, Head, Department of Anatomy, University of Illinois, College of Medicine, P.O. Box 6998, Chicago, Ill. 60680.**

The University of Illinois is an Equal Opportunity/Affirmative Action Employer and encourages applications from women and minorities.

ASSISTANT OR ASSOCIATE PROFESSOR

The Department of Chemistry, University of Maryland, College Park, invites applications for a tenure-track position for its Biochemistry Division. We seek someone who has demonstrated an outstanding ability in research, and who will enthusiastically contribute to the teaching of undergraduate and graduate students. Candidates whose research deals with biochemical and/or biophysical explorations of macromolecules or membrane phenomena will be of special interest.

Send curriculum vitae, three letters of reference, and research plans by 1 May 1980 to:

Dr. C. E. Holmlund
Department of Chemistry
University of Maryland
College Park, Md. 20742

Equal Opportunity/Affirmative Action Employer

The Department of Genetics and Cell Biology at the University of Minnesota is inviting applications for a faculty position in the area of **EUKARYOTIC GENE EXPRESSION**. The position will be available in fall 1980, and will be filled at the **ASSISTANT PROFESSOR** level. Applicants should have postdoctoral research experience and be familiar with modern biochemical techniques of chromosome and nucleic acid analysis. They should have demonstrated ability to conduct independent research and to secure extramural research funding. Among the teaching responsibilities associated with the position is an undergraduate course in animal biology. Applicant screening will begin 31 March 1980 and continue until the position is filled. Curriculum vitae, undergraduate and graduate transcripts, a description of research and academic interests, and four letters of reference should be forwarded to: **Dr. Walter Sauerbier, Head, Department of Genetics and Cell Biology, 250 BioScience Center, University of Minnesota, 1445 Gortner Avenue, St. Paul, Minn. 55108.**

The University of Minnesota is an Equal Opportunity Educator and Employer.

ASSISTANT PROFESSOR, HUMAN STRUCTURE AND FUNCTION. The Department of Biological and Allied Health Sciences is seeking an individual to teach human structure and function for medical technology and allied health students. Opportunity exists to teach upper-division and graduate courses in one specialty. The appointment will be at the rank of assistant professor and is a tenure-track position. Ph.D. is required. Send covering letter, résumé, transcripts, and three letters of recommendation by 30 April to: **E. Palmer, Campus Personnel, FAIRLEIGH DICKINSON UNIVERSITY, 285 Madison Avenue, Madison, N.J. 07940.** *An Equal Opportunity/Affirmative Action Employer, M/F.*

ASSISTANT PROFESSOR/SOIL PHYSICS. University of Wisconsin-Madison. Ph.D. in soil science specializing in soil physics required. Basic physics and mathematics preparation should provide theoretical competence for research on transport of fluids, solutes, and heat in soils. The appointee will be expected to develop research programs (70 percent) and supervise graduate training in these areas. Teaching duties (30 percent) include an intermediate-, upper-level course in soil physics, and a graduate-level seminar. Qualified applicants should send résumé, transcripts, and other pertinent information and arrange to have at least three letters of recommendation sent to: **Dennis R. Keeney, Chairman, Department of Soil Science, University of Wisconsin-Madison, Madison, Wis. 53706; telephone: 608-263-3753.** Applications will be accepted through 12 April 1980, or until a suitable candidate has been hired. The starting date is 15 April 1980. *The University of Wisconsin is an Equal Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

ASSISTANT PROFESSOR, IMMUNOCHEMISTRY. The Department of Microbiology, State University of New York, Upstate Medical Center, invites applications for a tenure-track position with a negotiable starting date. Applicants must have a Ph.D. or equivalent degree, preferably with postdoctoral training or experience, evidence of productivity in original research in immunochemistry, and demonstrated success or potential in generating outside research support. Candidate is expected to share responsibility for teaching immunology to medical students, to offer formal graduate instruction in immunochemistry, to train predoctoral and postdoctoral fellows, to offer consultation to colleagues, and to participate in the meetings of an interinstitutional consortium of immunologists. Salary is based upon experience and is for a 12-month period. Applications with curriculum vitae, list of publications, a statement of research interests and support, and the names of three references should be sent to: **Dr. George G. Holz, Jr., Department of Microbiology, State University of New York, Upstate Medical Center, Syracuse, New York 13210.** *An Equal Opportunity/Affirmative Action Employer.*

ASSISTANT PROFESSOR OF MEDICINE CLINICAL EPIDEMIOLOGY AND GERONTOLOGY UNIVERSITY OF VERMONT

Full-time position in medicine. Responsibilities: research into clinical, psychosocial, or biological aspects of aging using epidemiological, biometric, or demographic approaches; active teaching and curriculum design at undergraduate level; and some primary and consultative patient care. Should be ABIM-certified and have research skills/experience in clinical epidemiology. Send curriculum vitae and inquiries by 15 April to: **Dr. William A. Tinsdale, Director, Gerontology Unit, Fletcher House 322, Mary Fletcher Unit, Burlington, Vermont 05401.** *An Affirmative Action Employer*

ASSISTANT OR ASSOCIATE PROFESSOR OF MICROBIOLOGY, September 1980; a tenure-track, 2-year appointment. Ph.D., publications and teaching ability. Research in soil/water microbiology, graduate research supervision, sharing teaching in microbiology and conducting a course in microbial biochemistry in alternate years. Apply before 1 June 1980. Send résumé and names and addresses of three references to: **Professor D. Racusen, Department of Microbiology and Biochemistry, University of Vermont, Burlington, Vermont 05405.** *An Affirmative Action/Equal Opportunity Employer.*

University of Virginia School of Medicine Division of Neuropathology

Opening for **ASSISTANT PROFESSOR OF NEUROPATHOLOGY** available 1 July 1981, to share diagnostic responsibilities for neurosurgical and autopsy material, for medical student teaching, and for the training of residents and fellows in newly developing Division of Neuropathology, under the direction of **Dr. Lucien J. Rubinstein** and **Dr. Mary M. Herman.** Active research program and 2 to 3 years of previous approved training in neuropathology are necessary. Applications with curriculum vitae and names of three references should be sent to: **Dr. T. W. Tillack, Chairman, Department of Pathology, Box 214, University of Virginia Medical Center, Charlottesville, Va. 22908.**

An Equal Opportunity/Affirmative Action Employer

NATIONAL SCIENCE FOUNDATION DIVISION OF EARTH SCIENCES

The National Science Foundation (NSF), Division of Earth Sciences, is seeking qualified applicants for **ASSOCIATE PROGRAM DIRECTOR, Geology Program.** This position is exempted from the competitive civil service, EC-13 to EC-14 (equivalent to GS-13/14, salary range of \$29,375 to \$45,126 per annum), and will be filled on permanent or rotational basis. A Ph.D. in geology is desirable. Equivalent research and experience in the administration of large multidisciplinary research programs may be substituted for the degree. A broad general knowledge of geological research and familiarity with the U.S. scientific community are also required. Applicants should submit a statement of interest and résumé or SF-171, Personal Qualifications Statement, to: **The National Science Foundation, Personnel Management Branch, Room 212, 1800 G Street, NW, Washington, D.C. 20550.** Attention: **E. Paul Broglio.** Closing date: 30 May 1980. For further information, **telephone: 202-632-4107.** *NSF is an Equal Opportunity Employer.*

POSITIONS OPEN

ASSISTANT PROFESSOR DEPARTMENT OF ORTHOPAEDIC SURGERY UNIVERSITY OF PENNSYLVANIA

Applications are being accepted for a full-time faculty position at the assistant professor level. Qualifications required are: Board-certification/eligibility, training in basic research, special interest in sports medicine, and willingness to spend up to one-third time in basic or clinical research. Excellent facilities, salary, and fringe benefits. For further information, please contact: **Carl T. Brighton, M.D., Ph.D., Department of Orthopaedic Surgery, 3400 Spruce Street, Philadelphia, Pa. 19104; telephone: 215-662-3350.** *An Equal Opportunity/Affirmative Action Employer.*

ASSISTANT PROFESSOR, PHYSIOLOGY, beginning 1 August 1980. Continuing appointment possible for successful candidate with Ph.D. and commitment to excellence in teaching intermediate physiology and some advanced topics to preclinical students. Previous teaching experience and an interest in conducting research are desirable. Applications deadline: 15 April 1980. Please send complete curriculum vitae with publications and names and addresses of references to: **Dr. Grace Jacobs, Basic Sciences Search Committee, Northwestern College of Chiropractic, 1834 South Mississippi River Boulevard, St. Paul, Minn. 55116.** *An Equal Opportunity/Affirmative Action Employer.*

Genentech, Inc., a rapidly growing, research-oriented company, is looking for a highly qualified individual as **DIRECTOR OF MOLECULAR BIOLOGY.** Candidates should have a Ph.D. and a minimum of 3 to 4 years of postdoctoral experience in molecular biology with emphasis on recombinant DNA research. A minimum of 1 year of research management experience is a must.

Genentech is situated on the San Francisco peninsula and provides a stimulating working environment with competitive salaries and fringe benefits.

Please send résumé and a list of three references to:

Genentech, Inc.
460 Point San Bruno Boulevard
South San Francisco, California 94080

UNIVERSITY OF HAWAII AT MANOA, HAWAII INSTITUTE OF TROPICAL AGRICULTURE AND HUMAN RESOURCES (HITAHR). POSITIONS WILL WORK AS MANAGEMENT TEAM.

- 1) ASSISTANT DIRECTOR, HITAHR** (for agricultural and applied social sciences research)—Works with department chairpersons on disciplinary research performed by academic departments; also coordinates international programs.
- 2) ASSISTANT DIRECTOR, HITAHR** (for agricultural and resource development)—Works with program leaders on cross-departmental R & D projects designed to promote agricultural production, community development, and family life in Hawaii and other tropical areas, especially the Pacific Asian region.
- 3) ASSISTANT DIRECTOR, HITAHR** (for cooperative education services)—Works with county administrators on cooperative education programs and services in the counties and throughout the state.

Requirements: Ph.D. or equivalent from an accredited institution in a biological or applied social science; at least 3 years of administrative experience in departmental research, interdisciplinary R & D, or cooperative education programs respectively; demonstrated management skills; ability to exercise independent judgment in arriving at decisions and recommendations and to allocate and use resources effectively.

Desirable qualifications: experience in land-grant system; knowledge of organizational development concepts, program management systems, and program needs in the state of Hawaii.

Salary range: \$26,652 to \$39,288.

Application: send application letter, résumé, and arrange to have three letters of reference sent to: **Director, HITAHR, College of Tropical Agriculture and Human Resources, 3050 Maile Way, Honolulu, Hawaii 96822.**

Closing date: 30 April 1980.

Equal Opportunity/Affirmative Action Employer

POSITIONS OPEN

ASSOCIATE LABORATORY DIRECTOR FOR LIVER RESEARCH PROGRAM at Cleveland Clinic Foundation (CCF). Joint appointment in medicine and basic science departments for Ph.D. with potential for tenure equivalency. Position requires leadership capability and offers independence potential to a person with strong background in protein biochemistry including familiarity with current techniques in immunochemistry and cell biology. Send replies to: **GI Research Unit, CCF, 9500 Euclid Avenue, Cleveland, Ohio 44106.**

BIOCHEMISTS AND PROTEIN CHEMISTS

Highly motivated individuals with a B.S. or M.S. in biochemistry or protein chemistry are invited to apply for several technical support positions in protein purification and characterization at Genentech, Inc. Genentech is a rapidly growing, research-oriented company which is a leader in developing the applications of molecular biology. Applicants should have at least 2 to 3 years of research experience in one of the following research areas: column chromatography, ultrafiltration, countercurrent distribution, large-scale protein isolation; analytical biochemical techniques, such as SDS-gel electrophoresis, HPLC, or isoelectric focusing.

Genentech is situated on the San Francisco peninsula and provides a stimulating working environment with competitive salaries and excellent fringe benefits. Please send a résumé and list of three references to:

GENENTECH, INC.
460 Point San Bruno Boulevard
South San Francisco
California 94080

Equal Opportunity Employer, M/F/H

BIOLOGIST: botany/microbiology, tenurable position, fall 1980. Assistant professor; Ph.D. required. Applicants with expertise in biology of vascular and nonvascular plants, microbiology and plant or cell physiology, and interest in assuming responsibility for botanical and microbial aspects of quality undergraduate education in biology at a church-related liberal arts college should submit curriculum vitae and three references by 14 April 1980 to: **Provost, Whitworth College, Spokane, Wash. 99251. Equal Opportunity/Title IX/Section 504 Employer.**

BIOLOGIST—THE CLAREMONT COLLEGES

Assistant professor, beginning 1 September 1980. Teaching duties include: human or mammalian physiology, with endocrinology, neurobiology, or animal behavior desirable, plus introductory level teaching. Research encouraged. Small liberal arts colleges. Application deadline: 11 April 1980. Send statement of interests, curriculum vitae, and three letters of recommendation to: **Dr. C. Robert Feldmeth, Joint Science Department, The Claremont Colleges, Claremont, California 91711. An Equal Opportunity/Affirmative Action Employer.**

EMPORIA STATE UNIVERSITY DIVISION OF BIOLOGICAL SCIENCES

Applications are invited for either a **lecturer position or an instructor or assistant professor position** on a 2-year term appointment in **BOTANY** (nontenure-track), to begin 17 August 1980. Applicants must have the Ph.D. and be a field-oriented plant scientist highly qualified in the general areas of ecology, physiology, and soils-plant associations. Undergraduate teaching duties include introductory and human biology. The successful candidate will be expected to develop a course concerned with ecological and physiological interactions between soils and plants and to supervise graduate and undergraduate research in plant ecology and related subjects.

Forward applications and curriculum vitae and arrange to have three letters of reference sent directly to: **Dr. John Ransom, Division of Biological Sciences, Emporia State University, Emporia, Kans. 66801.** Closing date for applications is 15 April 1980.

POSITIONS OPEN

THE UNIVERSITY OF TORONTO DEPARTMENT OF BOTANY

Applications are invited for a faculty position in the Department of Botany as a **flowering plant systematist and vascular plant herbarium curator**. The appointment will be granted on a 3-year contractually limited basis. The successful candidate will normally have a Ph.D. and a significant research record, together with experience in the teaching of taxonomy and as a curator of an herbarium. The appointment will be at the assistant professor level, at a starting salary of not less than \$17,400, dependent upon experience. Further particulars can be obtained from: **Professor T. C. Hutchinson, Chairman, Department of Botany, University of Toronto, Toronto, Ontario, Canada M5S 1A1**, to whom all applications and the names and addresses of three referees should be sent before 1 May 1980.

BOTANIST with Ph.D. wanted for a small, church-related, liberal arts college in eastern North Carolina. Preference will be given to candidates in the field of ecology. Teaching responsibilities will also include participation in team-taught introductory courses in biology for majors and general science courses for nonmajors as well as individual courses in ecology, plant physiology and anatomy, and plant systematics. Position begins 1 September 1980. Please submit curriculum vitae and three letters of reference by 15 April 1980 to: **Dr. David Wetmore, Division Chairman, St. Andrews Presbyterian College, Laurinburg, North Carolina 28552. An Equal Opportunity Employer.**

A **CELL BIOLOGIST** is required in the Molecular Pharmacology Department for a project concerned with chemically induced neoplastic transformation and mutation in mammalian cells in culture. Experience of tissue-culture methodology and other cell biological procedures would be advantageous. Knowledge of German is not necessary. The salary is approximately DM 3,700 (BAT IIa). The appointment is to begin as soon as possible. Applications to: **Professor Dr. Oesch, Department of Pharmacology, University of Mainz, Obere Zahlbacher Strasse 67, 6500 Mainz, West-Germany.**

CHAIRMAN DEPARTMENT OF RADIOLOGY GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE

The school is searching for a professor and chairman of the Department of Radiology who will also serve as Chief of the Radiology Service at Georgetown University Hospital. Applicants should be certified or Board-eligible in radiology with appropriate clinical competence as well as appropriate teaching, research, and administrative skills. *Georgetown University is an Affirmative Action/Equal Opportunity Institution in employment and admissions.* Letters from interested persons or proposals for the position should be addressed to:

John F. Potter, M.D.
Chairman, Radiology Search Committee
Georgetown University Hospital
3800 Reservoir Road, NW
Washington, D.C. 20007

University of Bristol

MELVILLE WILLS CHAIR IN BOTANY

The University invites applications for the Melville Wills Chair in Botany which will become vacant on 1 April 1980, on the appointment of Professor D. C. Smith, F.R.S., to the Sibthorpe Chair of Rural Economy at the University of Oxford. An appointment will be made to the chair and the headship of the department. In due course the professor will also be expected to succeed Professor B. K. Follett, professor of zoology, as the director of biological studies on a rotational basis.

Candidates are invited to submit applications, including the names of three referees, not later than 1 May 1980, to: **The Registrar and Secretary, The University, Senate House, Bristol, BS8 1TH, England**, from whom further particulars may be obtained.

POSITIONS OPEN

CHAIRMEN—PHARMACOLOGY, MICROBIOLOGY/IMMUNOLOGY. The School of Medicine at Morehouse College invites applications from individuals with medical school experience at the associate professor level or above. Candidates are expected to have compiled a record of excellence in teaching and research, and should have administrative ability. Please send curriculum vitae and three references to the attention of: **K. E. Wallace, Office of Academic Affairs, School of Medicine at Morehouse College, 830 Westview Drive, SW, Atlanta, Ga. 30314. An Equal Opportunity Employer.**

ANATOMY CHAIRPERSON

Applications and nominations are invited for the position of professor and chairperson, Department of Anatomy, University of Miami School of Medicine. Candidates with a distinguished record of research and teaching in anatomy or cell biology are encouraged to apply. Inquiries, accompanied by curriculum vitae, should be sent to:

Dr. David Wilson
University of Miami School of Medicine
P.O. Box 016430
Miami, Fla. 33101

Equal Opportunity/Affirmative Action Employer

CHAIRMAN DEPARTMENT OF ANATOMY GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE

The school is conducting a search for qualified candidates for a professor and chairman of the Department of Anatomy. Applicants should have demonstrated competence in teaching research and administration. *Georgetown University is an Affirmative Action/Equal Opportunity Institution in employment and admissions.* Letters from interested persons or proposals for the position should be addressed to:

Frank G. Standaert, M.D.
Chairman, Anatomy Search Committee
Georgetown University School of Medicine
3900 Reservoir Road, NW
Washington, D.C. 20007

UNIVERSITY OF CALIFORNIA SANTA BARBARA CHEMICAL OCEANOGRAPHER

An academic position in chemical oceanography at the assistant research level is available immediately with the Marine Science Institute. Full salary covered for at least 1 year; thereafter, one-half of the salary must come from extramural sources. Primarily research, but some teaching in marine sciences curriculum. Ph.D. applicants should send curriculum vitae, list of publications, and summary of research interests before 15 May to: **Director, Marine Science Institute, University of California, Santa Barbara, Calif. 93106. The University of California is an Equal Opportunity/Affirmative Action Employer.**

CLINICAL CHEMIST. Doctoral degree and experience in general clinical chemistry, toxicology, and endocrinology is required for position as assistant head of Clinical Chemistry Laboratory, with a faculty appointment in the Department of Pathology. Responsibilities will be for service work within the Clinical Laboratories, teaching residents and graduate students, and the performing of research. *Applicants will be reviewed without regard to race, color, sex, or creed. We encourage applications from women and minorities. The University of California is an Equal Opportunity Employer.* Send curriculum vitae to: **Denis O. Rodgerson, Ph.D., Professor of Pathology, Center for the Health Sciences, University of California, Los Angeles, Calif. 90024.**

BIRZEIT UNIVERSITY, FACULTY OPENINGS, 1980-1981. An independent Arab University in the Israeli-occupied West Bank of Jordan has the following faculty openings for the academic year 1980-1981: **Experimental physics, general science** (requires diversified background, earth sciences, chemistry, physics). **Biochemistry, botany, chemistry.** English is the basic language of instruction and candidate should have a Ph.D. or a master's degree with experience. Starting annual salary for Ph.D. is 3446.4 Jordanian dinars (current exchange rate: 1 J.D. = \$3.35). Optional summer teaching extra. Fringe benefits include relocation allowance. Transportation provided. All applications should include résumé and be addressed to: **Dean, Faculty of Science, Birzeit University, West Bank, Via Israel.**

**CHIEF, SCIENCE AND
TECHNOLOGY DIVISION
THE LIBRARY OF CONGRESS
Research Services**

**Physical Science Administrator
PL 313, \$47,889 to \$50,112**

QUALIFICATIONS: Acknowledged scholarly competence in a major field of science or technology sufficient to merit national recognition as an authority in the field. Administrative, managerial, and supervisory ability to direct an extensive and vigorous program of reference and research services in the field of science and technology, and the development of the collections of the Library of Congress. Strong leadership and human relations skills and the demonstrated ability to communicate effectively with staff, managers, and user clientele at all levels. Ability to project and imbue a strong service-oriented philosophy. Minimum of a bachelor's degree in physical science, engineering, mathematics, or a related discipline which includes at least 24 semester hours in physical science, and 3 years of specialized library experience or research experience, 1 year of which must have been at the GS-15 level in the federal service or at a comparable level of difficulty outside the federal service. A graduate degree in physical science or library science may be substituted for 2 years of the required experience.

Submit Personal Qualifications Statement, Standard Form 171, or résumé to:

**The Library of Congress
Recruitment and Placement Office (RM)
Washington, D.C. 20540**

Deadline for receipt of applications is: 17 April 1980.

Civil Service status not required. *Equal Opportunity Employer.*

LB80-999

Chemist PhD

The Merck Sharp & Dohme Research Laboratories is seeking a PhD who is skilled in modern techniques of separation identification and quantitation of trace amounts of xenobiotics and metabolites. Experience in drug metabolism or natural product isolation desirable. Strong chemical background and publication record important.

Salary and benefits are highly competitive. We're located in Rahway, New Jersey, about 25 miles south of New York City. Send resume to S. R. Jenkins, Merck & Co., Inc., P.O. Box 2000, Rahway, NJ 07065.



MERCK & CO., INC.

*An equal opportunity employer,
m/f*

SOLAR ENERGY RESEARCH

DIRECTOR

**SOLAR ENERGY RESEARCH CENTRE
UNIVERSITY OF QUEENSLAND**

Salary: approximate range of A\$25,000 to A\$30,000, negotiable.

The Council of the Solar Energy Research Centre is looking for an experienced scientist to develop a high-quality, financially sound Research Centre at the University of Queensland in Brisbane.

The geographical location of Queensland makes it an ideal state to exploit the benefits of solar energy. The council, established by the senate of the university, is determined to develop a centre of outstanding technical excellence in this field.

The council has an allocation of land on the campus and a building which was completed late in 1979 at a cost of \$100,000. Equipment already on site has a value of approximately \$200,000.

Solar energy research has been proceeding for some years in various departments on the campus; the council has now been set up to provide a strong coordinating and initiating force.

The director will be responsible to the council for the administration of the centre, for the coordination of all activities in solar research, and for the development of the centre as a financially self-supporting technical centre of excellence.

Applicants should forward details of qualifications and experience to: **The Staff Officer, University of Queensland, St. Lucia, Brisbane, Queensland, Australia.** Quote reference number 10980.

CELL BIOLOGIST

The Upjohn Company has a visiting scientist position available for a two-year assignment as a Cell Biologist participating in an expanding program on human gene cloning. Requirements include a Ph.D. in Biology, Biochemistry or Molecular Biology; evidence of high motivation and proven work experience with skills in modern cell biology; and preference for applicants with experience in tissue culture and clonal selection of mammalian cells. Attractive salary and excellent comprehensive benefits. Send resume in confidence to:

**Kent S. Morgan
The Upjohn Company
7171 Portage Rd.
Kalamazoo, MI 49001**

Upjohn

An Equal Opportunity Employer M/F

CSIRO POSTDOCTORAL RESEARCH FELLOW DIVISION OF ENVIRONMENTAL MECHANICS CANBERRA, ACT, AUSTRALIA

CSIRO has a broad charter for research into primary and secondary industry areas. The organization has approximately 7000 employees, 2400 of whom are research and professional scientists, located in divisions and sections throughout Australia.

FIELD: Micrometeorology over complex terrain.

GENERAL: Research in the division is centered on processes of heat and mass transfer in the natural environment. Transport of energy, water, salts, and gases in the soil-plant-atmosphere system are explored. The division has 26 staff members at present including 10 research scientists, working in the areas of soil physics, solar radiation, fluid mechanics, micrometeorology, and physical aspects of plant physiology. The division is well equipped and has facilities for computing, mobile laboratories for field studies, and experimental field site, and a large boundary layer wind tunnel.

Research within the micrometeorology programme is concentrated on the problems of momentum, heat and mass transfer over irregular and spatially variable surfaces, above and within crop canopies, and in the wakes of obstacles. Parallel and complementary investigations are conducted in the field and in the wind tunnel.

DUTIES: The appointee will participate in theoretical and experimental studies of the characteristics of turbulent wind structure, and the transport of heat and moisture above sloping and hilly terrain, having particular regard to the influence of thermal instability and stable stratification on the mechanisms involved.

SALARY: Research scientist: A\$16,632 to A\$20,387. In exceptional circumstances an appointment may be offered at a higher level of salary.

TENURE: A fixed term appointment of 3 years is envisaged.

APPLICATIONS: Stating full personal and professional details, the names of at least two professional referees, and quoting reference number 416/043 should reach:

**The Chief
CSIRO Division of Environmental Mechanics
P.O. Box 821
Canberra City, ACT, 2601
Australia**

by 18 April 1980.

POSITIONS OPEN

ENVIRONMENTAL RADIOCHEMIST. An opening is anticipated for a **research assistant professor** with doctoral degree and experience in chemical, instrumental, and statistical analyses. Responsibilities will include development and performance of quality control assays of radioactivity in biological and environmental media as well as participation in graduate-level teaching and research. Salary level commensurate with qualifications. Send résumé to: **David Gur, Sc.D., Department of Radiation Health, Graduate School of Public Health, University of Pittsburgh, Pittsburgh, Pa. 15261. University of Pittsburgh is an Affirmative Action/Equal Opportunity Employer.**

ENVIRONMENTAL STUDIES

Trinity University, a liberal arts institution with about 200 faculty, invites applications for a 1-year term appointment as **ASSISTANT PROFESSOR** which is expected to arise in the Department of Environmental Studies beginning 15 August 1980. The program leads to a B.A. degree in environmental studies and features topics in population, environmental degradation, resource depletion, and social stress. Most of the courses in the department are multi-disciplinary in nature rather than modifications of courses from the classical disciplines. Requirements include a Ph.D. in either social or natural science, plus a willingness to develop both laboratory and recitation courses. Apply to: **Dr. L. Espey, Acting Chairman, Environmental Studies Department, Trinity University, 715 Stadium Drive, San Antonio, Texas 78284. An Equal Opportunity/Affirmative Action Employer.**

FACULTY POSITION—PHARMACOLOGY UNIVERSITY OF CINCINNATI COLLEGE OF PHARMACY

Rank of assistant professor for a full-time, tenureable, academic year appointment. Teaching responsibilities include undergraduate nursing pharmacology and the development of graduate-level courses in pharmacology. The successful candidate will be expected to establish an independent and productive research program. Requires a Ph.D. in pharmacology with a B.S. from an accredited college of pharmacy preferred. Salary commensurate with experience.

Submit a letter of application, résumé, and three references to: **Dr. A. C. Glasser, Dean, College of Pharmacy, University of Cincinnati-Medical Center, Health Professions Building, Mail Location No. 4, Cincinnati, Ohio 45267.**

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

FACULTY POSITIONS IN PHYSICAL OCEANOGRAPHY

The College of Marine Studies, University of Delaware, invites applications for two academic faculty positions in physical oceanography available from September 1980.

Candidates with academic and research interests in continental margin and estuarine circulation dynamics are sought. Preference will be given to a field experimentalist and to a numerical modeler with demonstrated expertise. An interest in teaching graduate courses and advising graduate students is required. Rank and salary will be commensurate with qualifications.

Application deadline is 15 May 1980. Send curriculum vitae, bibliography, list of research and teaching interests, and names of three professional references to:

**Dr. Jin Wu, Chairman
Physical Oceanography Search Committee
College of Marine Studies
University of Delaware
Newark, Del. 19711**

The University of Delaware is an Equal Opportunity Employer which encourages applications from qualified minority groups and women.

FACULTY POSITION: BOTANY/ECOLOGY

The College of New Rochelle seeks a person to teach undergraduate courses in botany, environmental biology and general biology, and to participate in the department's research seminar. Research facilities are available. Position open September 1980; assistant professorship; Ph.D. required. Please send a letter of application, curriculum vitae, and the names and addresses of three references to: **Dr. Robert B. Reggio, Chairman, Department of Biological Sciences, College of New Rochelle, New Rochelle, New York 10801. Application deadline: 15 April 1980.**

An Equal Opportunity/Affirmative Action Employer

POSITIONS OPEN

FACULTY POSITION IN PATHOLOGY. The Department of Pathology at University of California, Los Angeles (UCLA) School of Medicine invites applications for the position of **ASSISTANT PROFESSOR**. Candidates must be Board-eligible or Board-certified in anatomic pathology or anatomic and clinical pathology and must have an active interest in research. *Qualified women and minority candidates are encouraged to apply.* Send curriculum vitae, publication list, brief résumé of research program, and names of four referees to: **Julien L. Van Lancker, M.D., Department of Pathology, UCLA School of Medicine, Los Angeles, California 90024. An Equal Opportunity/Affirmative Action Employer.**

The Department of Geological Sciences of Columbia University seeks applicants for **FACULTY POSITIONS** with qualifications in one or more of the following areas: seismology, marine geophysics, fluid dynamics, petrology, rare-gas geochemistry, biostratigraphy, metallogenesis, and sedimentology. Rank and salary dependent on qualifications. Duties will include teaching of graduate and undergraduate courses and participation in other programs of the department. It is anticipated that the appointees will carry out research at Lamont-Doherty Geological Observatory. Qualified candidates should submit curriculum vitae and the names of three referees to: **Dr. Wallace Broecker, Lamont-Doherty Geological Observatory, Palisades, N.Y. 10964 by 30 April 1980. Columbia University is an Equal Opportunity Employer.**

TWO FACULTY POSITIONS UNIVERSITY OF CALIFORNIA, BERKELEY

In a newly formed Department of Plant and Soil Biology in the College of Natural Resources. (i) **MICROBIOLOGIST/BIOCHEMIST.** Tenure appointment at professor/associate professor level with undergraduate and graduate teaching responsibilities; applicants are expected to have an established research program in the area of microbial/plant biochemistry. (ii) **ENZYMOLOGIST.** Tenure-track appointment at assistant professor level. To develop and teach a laboratory course in plant biochemistry/bioenergetics with other graduate and undergraduate teaching responsibilities to be determined. The appointee is expected to have postdoctoral experience and to develop a research program in the area of plant or microbial enzymology. Both positions carry 11-month appointment and require a Ph.D. in an appropriate field. Application deadline: 1 May 1980.

Send résumé (with statement of future research plans) and names of five references to: **Bob B. Buchanan, Department of Cell Physiology, 313 Hilgard Hall, University of California, Berkeley, Calif. 94720.**

The University of California is an Affirmative Action Employer.

The University of Nevada, Las Vegas, Department of Geoscience, invites applications for a tenure-track faculty position in **IGNEOUS PETROLOGY/GEOCHEMISTRY** available 1 September 1980. Applicants must have a Ph.D. in geology with specialty in igneous petrology, petrography, geochemistry. Expertise in the geology of metallic ore deposits and x-ray analysis is also desirable. The department is strongly committed to field applications and does not presently maintain high pressure-high temperature facilities. Duties include teaching at the undergraduate level with time available for research. Salary dependent on qualifications and experience. Rank: assistant to associate level. Send résumé and five letters of recommendation to: **David L. Weide, Chairman, Department of Geoscience, University of Nevada, Las Vegas, Nevada, 89154. Telephone: 702-739-3262. Closing date for application is 28 April 1980. An Equal Opportunity/Affirmative Action Employer.**

MEDICAL BIOCHEMIST, CARDIOVASCULAR PHYSIOLOGIST, CLINICAL PSYCHOLOGIST (licensed). Three tenure-track faculty positions available July 1980 in a free-standing member institution of the Oklahoma State System for Higher Education, dedicated to training students for the doctor of osteopathy (D.O.) degree. Ph.D. required. Prefer experience in teaching and curriculum planning in the organ systems approach to medical education. Demonstrated capability in research desired. Rank and salary negotiable. Application deadline: 30 April 1980.

Send curriculum vitae and a list of three references to: **Robert C. Ritter, Ph.D., Chairman, Department of Interdisciplinary Sciences, The Oklahoma College of Osteopathic Medicine and Surgery, P.O. Box 2280, Tulsa, Okla. 74101. An Equal Opportunity/Affirmative Action Employer.**

POSITIONS OPEN

CLINICAL ENGINEERING DIRECTOR

Director of Clinical Engineering, faculty position, Department of Biomedical Engineering at Case Western Reserve University. The position is at the assistant or associate professor level. Applicant should have strong interest in clinical and biomedical instrumentation. Approximately 50 percent time will be required to direct a well-established academic Clinical Engineering Program. This involves advising students, supervising clinical engineering projects, arranging and directing internships in hospitals, teaching clinical engineering courses, and administering the program. It is anticipated that the remaining 50 percent time will be spent in research and/or other academic activities. Send résumé to: **Robert Plonsey, Chairman, Department of Biomedical Engineering, Case Western Reserve University, Cleveland, Ohio 44106. The University is an Equal Opportunity/Affirmative Action Employer.**

DEVELOPMENTAL BIOLOGIST. Split teaching/postdoctoral position. One year, possibly two. Teach graduate course in biochemical development and experimental laboratory course. Research in area of membrane cell biology or recombinant DNA. Available 15 August 1980. Send curriculum vitae and names of three referees to: **Dr. Dale B. Bonar, Department of Zoology, University of Maryland, College Park, Md. 20742 by 30 April for best consideration. An Affirmative Action/Equal Opportunity Employer.**

INSTRUCTOR, GENETICS AND DEVELOPMENT. Coordination and supervision of laboratories in an undergraduate core course in genetics and development. Experience with *Drosophila* culture necessary; experience with sea urchin, frog, chick embryos desirable. M.S. degree required. Send curriculum vitae and three letters of reference to: **Dr. Dale B. Bonar, Department of Zoology, University of Maryland, College Park, Md. 20742 by 30 April for best consideration. An Affirmative Action/Equal Opportunity Employer.**

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL

Position available immediately at the **INSTRUCTOR-ASSISTANT PROFESSOR** level in the Department of Surgery. Duties will include patient care, teaching, clinical and laboratory research. Necessary qualifications: graduation from an approved medical school; Board-eligibility in orthopaedic surgery; commitment to a career in academic surgery with a specialized clinical and investigative interest. Microsurgical experience desirable. Reply to: **Box 74, SCIENCE. Code 200H0. A nondiscriminatory, Affirmative Action Employer.**

LABORATORY MICROBIOLOGY FELLOW

The University of California, Irvine, Department of Pathology, is recruiting a 1- or 2-year laboratory microbiology fellowship position at the clinical instructor level. Required: M.D., Board-eligibility in anatomic and/or clinical pathology. Position consists of 50 percent clinical laboratory work and 50 percent research. Postresidency training in diagnostic bacteriology, mycology, serology, parasitology, and virology. Research in the areas of molecular pathology and viral oncology is available for interested candidates. *All qualified candidates welcome; minorities and women encouraged to apply.* Send curriculum vitae and three references to: **Luis M. de la Maza, M.D., Ph.D., Director, Division of Microbiology, University of California Medical Center, Orange, California 92668 by 28 April 1980.**

An Equal Opportunity Employer

MARINE ECOLOGIST—Position with southeastern environmental consulting firm. M.S. required, field research in intertidal organisms of the United States. Recommend publications in marine mammals and birds. Requires extensive travel, possible near-future transfer to Seattle. Salary: \$17,200. Send résumé, reprints, and references to:
Box 75, SCIENCE.

MARINE VERTEBRATE BIOLOGIST: Ph.D., tenure-track position, assistant professor; develop, teach undergraduate courses in appropriate specialized field of vertebrate marine biology, participate periodically in values-oriented program in liberal arts college, engage in productive, creative research. Field of interest open, should include aspects of embryology, physiology, ecology, or ethology of marine vertebrates. Send résumé, transcripts for all collegiate work, and three letters of recommendation by 21 April 1980 to: **Dr. George Reid, Eckerd College, St. Petersburg, Florida 33733. Equal Opportunity Employer.**

AUSTRALIA
NORTH BRISBANE HOSPITALS BOARD
DEPARTMENT OF PATHOLOGY
SCIENTIST (MASS SPECTROMETRIST)

Applications are invited for the above position in the Division of Chemical Pathology, Department of Pathology, North Brisbane Hospitals Board. The department provides a full pathology service for the Royal Brisbane Hospital, Royal Women's Hospital, and Royal Children's Hospital (a total of 1800 beds), and also receives referrals for tests from throughout Queensland.

The successful applicant will be responsible for the running of a Hewlett-Packard 5985B gas chromatograph/mass spectrometer with electron impact and chemical ionization, and positive and negative ion monitoring. The equipment is due to arrive in May 1980. He/she will also be responsible for the administration and running of the drug section, which will have five gas chromatographs and two high-performance liquid chromatographs, with a total of up to nine staff.

The immediate task will be to organise for urine drug monitoring of athletes during the forthcoming 1982 Commonwealth Games in Brisbane. Subsequently, the laboratory will become a referral centre for therapeutic and toxicological drug assays. In addition, the GC/MS will be used for a variety of other tasks including the investigation of genetic and other metabolic diseases. In these areas the scientist will be expected to contribute to new knowledge as well as provide a clinical service.

Applicants should possess a Ph.D. and postdoctoral experience in the field of mass spectrometry. The position carries a salary of A\$21,677 per annum, and is superannuated. Further details may be obtained from: **Dr. K. Donald, Director, Department of Pathology; telephone: 07-253-8292.**

Hours of duty will be 36 1/4 hours per week worked between 8 a.m. and 6:15 p.m. Saturday morning work may be required on a rostered basis.

Applications stating curriculum vitae and experience, citing publications, and including the names of two referees, should reach: **The Manager, North Brisbane Hospitals Board, Base Hospitals Post Office, Queensland, 4029 Australia** by 30 April 1980 (M1378).

Applications
Laboratory
Director

ISCO requires a laboratory director to be responsible for a four-person applications laboratory. This laboratory develops applications for ISCO instruments and actively participates in new product design. We are seeking a person with proven expertise in electrophoresis, HPLC, and computer applications. A good written and oral communications ability is required and a doctorate in chemistry or biochemistry is preferred.

If you have these qualifications and are looking for a change, you may be interested in this opportunity. Phone [800] 228-4250, or send resume with salary history, publications and references in confidence to:

Robert Allington, President
INSTRUMENTATION
SPECIALTIES COMPANY
 Box 5347
 Lincoln, NE 68505



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Unique growth opportunity for an individual to combine scientific expertise and marketing skills. Responsibilities are to establish effective relationships within key medical institutions, providing scientific liaison and indepth information essential to appropriate use of SK & F's products. Will also have training responsibility at the Representative, Medical Staff, and Pharmacy levels. Philadelphia based; travel approximately 50%.

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• **STAFF RESEARCH SCIENTIST**

Opportunity to apply skills in molecular genetics and recombinant DNA technology to pharmaceutical product research. Position requires PhD and post-doctoral training in molecular genetics including substantial experience in recombinant DNA technology. Prefer candidates with experience in one or more of the following specific areas: DNA sequencing; Lambda and/or "cosmid" vector systems; expression vector construction; electron microscopy; or non-E.coli host/vector systems.

• **STAFF ASSISTANT SCIENTIST**

Responsibilities will involve construction of microbial strains through recombinant DNA and classical genetic techniques, and analysis of nucleic acid molecules by physical methods including electron microscopy. Must have MS with thesis work in recombinant DNA or BS with minimum 2 years relevant experience.

In addition to excellent potential for professional recognition and career growth, we offer a competitive salary/benefits package and the opportunity to live in an attractive shore community, midway between New York and Boston.

Apply by sending your resume and brief description of research interests to: Mr. F. G. Ziegler, Pfizer Central Research, Eastern Point Road, Groton, CT 06340.



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POSITIONS OPEN

UNIVERSITY OF CALIFORNIA, BERKELEY FACULTY POSITION

SOIL MICROBIOLOGIST, in a newly formed Department of Plant and Soil Biology in the College of Natural Resources. The position is an 11-month, tenure-track appointment at the assistant professor level with teaching responsibilities in soil microbiology and soil-plant relations, and research responsibilities in soil microbiology/soil biochemistry. A Ph.D. in an appropriate field is required. Application deadline: 1 May 1980. A résumé with names of five references should be sent to: L. J. Waldron, Department of Soils and Plant Nutrition, 108 Hilgard Hall, University of California, Berkeley, Calif. 94720.

The University of California is an Affirmative Action Employer.

INTERNATIONAL DEVELOPMENT POSITIONS—Technical skills in the following disciplines are needed for a major new program in renewable energy, worldwide: agriculture, low-cost housing, small business development, renewable energy technologies.

Positions require extensive experience in development programs overseas and at least one language in addition to English. Appropriate academic credentials also required. Considerable travel. Respond in writing with salary history and present requirements to: Senior Program Staff, VITA, Inc., 3706 Rhode Island Avenue, Mt. Rainier, Md. 20822. *Equal Opportunity Employer.*

MICROBIOLOGIST. Postdoctoral position available to study the intestinal microbial flora of the cockroach. This study includes biochemical and microbial interactions, the isolation and characterization of unique procaryotes, and the attachment and localization of bacteria in the gut. Experience with fastidious anaerobes and a background in microbial physiology is desirable. Position available immediately for two or more years. Send curriculum vitae and letters of reference to: A. J. Markovetz, Department of Microbiology, University of Iowa, Iowa City, Iowa 52242. *An Affirmative Action/Equal Opportunity Employer.*

NEUROBIOLOGIST—A postdoctoral position is available in the Department of Pharmacology for a recent Ph.D. with experience in neurobiology. Ongoing computer-based electrophysiological experiments utilize primary explant tissue cultures as well as in situ preparations for the study of drug and hormone actions on single neurons in the mammalian central nervous system. The opportunity is available to learn and utilize intra- and extracellular recording in conjunction with iontophoretic (or pressure) application of drugs and histochemical techniques to understand the mechanisms of neurotransmission and neuromodulation by single identified CNS neurons in culture. Please send curriculum vitae to: Dr. Herbert M. Geller, Department of Pharmacology, COLLEGE OF MEDICINE AND DENTISTRY OF NEW JERSEY—Rutgers Medical School, P.O. Box 101, Piscataway, New Jersey 08854. *An Equal Opportunity/Affirmative Action Employer, M/F.*

Pharmaceutical Research

Due to the continuing expansion of our research efforts in the investigation of new therapeutic agents, we currently have available an attractive career opportunity at the M.S. and Ph.D. level.

DRUG METABOLISM

This position requires a degree in analytical chemistry, biochemistry, or similar discipline, with a minimum of 5 years of experience in drug metabolism and analytical instrumentation. Supervisory capabilities desirable. We offer excellent benefits and a challenging environment in which to apply your professional capabilities. Résumés should be sent to: Manager, Personnel Administration, Schering-Plough Research Center, 60 Orange Street, Bloomfield, New Jersey 07003.

 **Schering-Plough**
We Are An Equal Opportunity Employer M/F

POSITIONS OPEN

HUMAN CYTOGENETICIST. Tenure-track position available June 1980. Ph.D. required. Responsible for operation of clinical cytogenetics laboratory, undergraduate and graduate teaching, and research. Submit curriculum vitae and names of three references to: Dr. Karen M. Yarbrough, University of Southern Mississippi, Southern Station, Box 5165, Hattiesburg, Mississippi 39401. *The University of Southern Mississippi is an Equal Opportunity/Affirmative Action Employer.*

U.S. GEOLOGICAL SURVEY (USGS) ORGANIC GEOCHEMISTS/BIOGEOCHEMISTS/ SOIL SCIENTISTS

Two full-time research positions are available during 1980 at the USGS National Center in Reston, Virginia. These positions will be part of a long-term interdisciplinary CO₂/carbon cycle program. Applicants will be selected on the basis of their ability to define and execute projects in one or both of the following areas: (i) stable isotopes in plant materials, including tree rings, with emphasis on developing and evaluating techniques for determining the history of atmospheric CO₂ by studying old plant materials; and (ii) organic carbon transport to and from soils and/or freshwater and estuarine sediments, with emphasis on understanding the response of the soil carbon mass balance to anthropogenic and climatic changes.

Although the ultimate objective of the program is the assessment of global CO₂ fluxes and effects, relevant research need not have immediate global implications. Specific research activities for each position will be determined by the appointees in consultation with other USGS scientists. **Research proposals are invited.** Applicants should have Ph.D. degrees by the time of proposed employment. For each position, the type of appointment and salary will depend on the qualifications of the appointee. Anticipated starting annual salary will range from \$20,600 to \$24,700. Applicants should send a brief research proposal; a résumé of education, professional experience, and published research; and the names, addresses, and telephone numbers of three referees by 25 April 1980 to: Dr. Eric T. Sundquist, U.S. Geological Survey, 431 National Center, 12201 Sunrise Valley Drive, Reston, Va. 22092. *The USGS is an Equal Opportunity Employer.*

NATIONAL MUSEUM OF NATURAL HISTORY SMITHSONIAN INSTITUTION

THE DEPARTMENT OF PALEOBIOLOGY anticipates a tenure-track opening on the scientific staff for an invertebrate or vertebrate paleontologist, paleobotanist, or sedimentologist at the GS-11 level (\$20,611) beginning September 1980. Send curriculum vitae, copies of publications, and statement of long-term research goals to: Dr. T. R. Waller, Chairman, Search Committee, Department of Paleobiology, Smithsonian Institution, Washington, D.C. 20560. Closing date: 15 April 1980. *An Equal Opportunity Employer.*

PHOTOSYNTHESIS RESEARCH POSITION

Applications are requested for a research position associated with the School of Life Sciences at the University of Illinois, Urbana. This position will require development of a strong, independent program which complements current research at Urbana on photosynthetic mechanisms, and is expected to be filled at the assistant or associate professorial level. Position open October 1980. Send curriculum vitae, brief statement of research interests and goals, and three letters of reference by 30 April 1980 to: Photosynthesis Search Committee, Department of Botany, University of Illinois, Urbana, Illinois 61801. *The University of Illinois is an Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL POSITION IN IMMUNOLOGY

Position available for Ph.D. or M.D. with outstanding qualifications, who is interested in studying the cell biology of mononuclear phagocytes. Emphasis will be placed on macrophage-tumor cell interactions and on the regulation of macrophage differentiation. Previous experience with macrophages, cell biology, or biochemistry desirable. Opportunity offers advanced training in a progressive laboratory in an attractive university setting. Please send curriculum vitae and the names of three referees to:

D. O. Adams, M.D., Ph.D.
Departments of Pathology and Immunology
Duke University Medical Center
Durham, N.C. 27710

Duke University is an Equal Opportunity Employer.

POSITIONS OPEN

JPL PHYSICAL OCEANOGRAPHER

The Jet Propulsion Laboratory (JPL) of the California Institute of Technology invites applications for a full time position in physical oceanography. Candidates are expected to have a Ph.D. in oceanography, experience at sea, and an interest in exploring the usefulness of synthetic aperture radars for studying near surface circulation, fronts, and internal waves as part of a program applying satellite techniques for study of the ocean. Rank and salary will depend on experience.

Send résumé to:

Professional Staffing Department A72
JET PROPULSION LABORATORY
California Institute of Technology
4800 Oak Grove Drive
Pasadena, Calif. 91103

An Equal Opportunity Employer, M/F

PHYSICAL SCIENCE AND MATHEMATICS. Lake Erie College is seeking an individual with a Ph.D. and a broad background in physics, geology, or astronomy to teach undergraduate courses in the physical sciences and mathematics. This is a tenure-track position. Send curriculum vitae, transcripts, and three letters of reference by 16 April 1980 to: Dr. B. J. Gibbins, Lake Erie College, Painesville, Ohio 44077. *An Equal Opportunity/Affirmative Action Employer.*

PHYSIOLOGY/ECOLOGY/BEHAVIOR

The Department of Biology at the University of California, Riverside, invites applications for an appointment at the assistant professor level with duties to begin September 1980. We seek individuals doing active research combining animal physiology and ecology or behavior, and willing to teach in these areas at the undergraduate and graduate levels. Applications, including curriculum vitae, statement of research and teaching interests, reprints, and three letters of recommendation, should be sent by 1 May 1980, to:

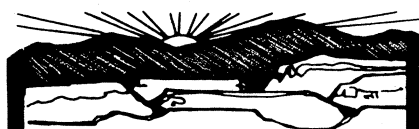
Professor R. Ruibal, Chairman
Department of Biology
University of California
Riverside, California 92521

The University of California is an Equal Opportunity/Affirmative Action Employer. Applications are invited from all qualified individuals, especially women and members of minority groups.

PLANT ECOLOGY POSTDOCTORAL available immediately for botanist trained in physiological ecology or environmental physiology. Research objectives will be to determine kinetics of inorganic nitrogen uptake, nitrogen allocation patterns, and construct verified nitrogen budgets of C₄ grasses to be integrated into a model of grazing ecology in tropical grasslands. Salary approximately \$12,500 with continuation beyond 1 year by mutual agreement. Send curriculum vitae and have letters of reference sent to: Professor S. J. McNaughton, Biological Research Laboratories, 130 College Place, Syracuse, N.Y. 13210. *Syracuse University is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL FELLOW to study structural dynamics of myosin and actin in solution, in gels, and in contractile cells. Salary: \$14,000 to \$16,000. Knowledge of protein chemistry required. Opportunity to learn photon correlation spectroscopy. Send résumé to: Dr. F. D. Carlson, Department of Biophysics, The Johns Hopkins University, Baltimore, Maryland 21218. *Equal Opportunity Employer, M/F.*

POSTDOCTORAL FELLOW (a recent Ph.D.) and **RESEARCH ASSOCIATE** (staff) position available immediately through NIH-supported research grant. Postdoctoral stipend: \$15,500, and starting salary for research associate: \$19,000, plus benefits. Experience in protein chemistry and nucleic acid enzymology to study the structure and function relationship of DNA polymerases. Send résumé, together with names of three references, to: Dr. M. J. Modak, Memorial Sloan Kettering Cancer Center, 1275 York Avenue, New York, N.Y. 10021.



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Los Alamos Scientific Laboratory, a leading national scientific laboratory engaged in Weapons and Energy Systems R&D, seeks a mature professional to assume responsibility for the management and technical leadership of the Life Sciences Division, which has a total staff of approximately 170 people, including 90 professional scientists. The Division has a broad range of basic research and programmatic efforts in the life sciences, which addresses the fundamental health and environmental issues in the development of energy technology, and utilizes state-of-the-art techniques in biochemistry, biophysics, cellular and molecular biology, genetics, toxicology and environmental sciences. Successful candidate must have significant research accomplishments in the life sciences; ability to initiate and develop new research programs; and ability to work effectively with DOE and Laboratory management personnel. A Ph.D. or M.D./Ph.D. in one of the life sciences or an equivalent combination of formal education and relevant professional experience is required.

The Laboratory is a multi-faceted national research and development facility operated by the University of California for the Department of Energy. We provide excellent working conditions and benefits such as 24 days' annual vacation. Our location in the mountains of northern New Mexico offers a pleasing lifestyle in a setting of great natural beauty — ample recreational activities; a pollution-free environment; casual, uncrowded living; a superior school system; and low taxes.

Please send resume, in complete confidence, to:

R. Lynn Wilson
Employment Manager, DIV 80-EE
Los Alamos Scientific Laboratory
P.O. Box 1663
Los Alamos, New Mexico 87545

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University of California



**LOS ALAMOS
SCIENTIFIC LABORATORY**

RESEARCH PHARMACOLOGY

The National Institutes of Health, Public Health Service has a senior research position concerning mechanistic aspects of xenobiotic metabolism and toxicity in marine species. This is a permanent (GS-13—\$29,375) position and only U.S. citizens are eligible. The successful candidate will be assigned to the NIEHS Marine Program located at the C. V. Whitney Laboratory for Experimental Marine Biology and Medicine (of the University of Florida) near St. Augustine, Florida. The scientist will be a member of the Comparative Pharmacology and Physiology Section of the Laboratory of Pharmacology.

The successful candidate must have a Ph.D. degree in pharmacology, biochemistry (with emphasis on pharmacology) or a closely related field (medicinal or pharmaceutical chemistry) or an M.D. Extensive post-doctoral experience and training (at least four years) are required and the individual must already be established as an independent scientist. Research productivity in the area of xenobiotic metabolism must be documented by publications, etc. Membership in a relevant national professional society (e.g., American Society for Pharmacology and Experimental Therapeutics or Society of Toxicology) is also required. Previous experience with aquatic species would be an advantage, but is not a prerequisite. This position has been identified for inclusion in the Merit Pay System. The successful applicant may be required to serve a one year probationary period.

Please send curriculum vitae, bibliography and 3 letters of recommendation from those who best know your qualifications by May 22, 1980 to: Ms. Barbara Gowan, Laboratory of Pharmacology, National Institute of Environmental Health Sciences, P.O. Box 12233, Research Triangle Park, NC 27709. We especially encourage applications from minorities, handicapped and women for this position. An Equal Opportunity Employer.

NATIONAL INSTITUTES OF HEALTH

CANCER EXPERT

The National Institutes of Health, Public Health Service, Division of Cancer Treatment, National Cancer Institute, is seeking applicants for an "Expert Position" to develop and manage a contract program devoted to the use of human tumor stem cells for screening new potential antitumor drugs. Fundamental studies have indicated that human tumor stem cell assays may provide models for drug screening with greater clinical predictive value for treatment of specific human cancers. The objective of this project is to determine the feasibility of using such models for the screening of approximately 1,000 materials per year. In addition to developing and managing this new contract project, the successful applicant will be expected to manage the ongoing contract-based *in vitro* screening program involving measurement of cytotoxicity to KB, L1210, or P388 cells; the latter assays are used primarily as bioassays for following the activity of natural products through the process of fractionation to isolate the active material.

Applicants must have an M.D. degree or Ph.D. in a related field of study or equivalent training and must have attained highly professional laboratory experience in the development and use of cell culture techniques. Supervisory and managerial experience is desirable.

The position of "Expert" has a duration of 2 years, with the possibility of being extended for an additional period. The responsibilities and pay are equivalent to that of a Section Head. The salary range will be \$29,375—\$35,000, depending on experience and experience of the individual selected for the position.

Interested persons should respond to Dr. Vincent T. Oliverio, Associate Director, Developmental Therapeutics Program, DCT, NCI, Blair Building, Room 5A03, 8300 Colesville Road, Silver Spring, Maryland 20910. Please include a complete curriculum vitae. It would be appreciated if persons active in this field of research, and who know individuals who may be qualified, interested, and available would transmit this notice appropriately. An Equal Opportunity Employer.

NATIONAL INSTITUTES OF HEALTH

POSITIONS OPEN

POSTDOCTORAL POSITIONS in bioanalytical and environmental chemistry. Research involves development of new methodology: (i) for sequencing proteins and neuropeptides at the picomole level, and (ii) for analysis of toxic substances in industrial wastes. Both projects utilize positive and negative CIMS plus CID techniques on a new triple quadrupole mass spectrometer. Apply to: **Professor Donald F. Hunt, Department of Chemistry, University of Virginia, Charlottesville, Va. 22901. An Equal Opportunity Employer.**

POSTDOCTORAL POSITION for Ph.D. in electrophysiology and/or membrane biophysics available 1 July 1980 or later. Position for investigating membrane electrical properties of rat and human myotubes in tissue culture with emphasis on membrane properties, effects of nerve and human muscle disease. Many collaborative opportunities are available. **Michael Merickel, Ph.D., Department of Neurology, Baylor College of Medicine, Houston, Texas 77030.**

POSTDOCTORAL POSITION available. Studies of (Na + K)-ATPase. Work involves chemical modification, biophysical measurements (fluorescence probes) and rapid reactions. Salary: \$13,000 for 1 year with possibility of renewal. Send curriculum vitae, publications, and names of three references to: **Dr. Marcia S. Flashner, Department of Pharmacology, State University of New York, Upstate Medical Center, Syracuse, N.Y. 13210. An Equal Opportunity/Affirmative Action Employer.**

POSTDOCTORAL POSITION—Research position available. Applicant must have a strong desire to work on immunochemistry and immunovirology of murine mammary tumor virus. Experience with the techniques of immunofluorescence, immunoprecipitation of cell/viral lysates with specific antibody, quantification of antigens by RIA, column chromatography for the purification of antigen, and tissue culture will be an advantage. Salary negotiable. To apply, send curriculum vitae and names of three references to: **Dr. N. Sarkar, MEMORIAL SLOAN-KETTERING CANCER CENTER, 1275 York Avenue, New York, N.Y. 10021. An Equal Opportunity Employer, M/F.**

POSTDOCTORAL POSITION in male reproductive virology is immediately available at McGill University. Experience desired in tissue culture, steroid biochemistry, protein purification and/or animal surgery. Send résumé and letters of recommendation to: **Dr. B. Robaire, Department of Obstetrics and Gynecology, Royal Victoria Hospital, 687 Pine Avenue West, Montréal, Québec, Canada H3A 1A1.**

POSTDOCTORAL POSITION IN BIOCHEMISTRY. To study protein chemistry or physical biochemistry of protein-membrane interactions relating to blood coagulation. Other approaches include NMR and enzyme kinetics. Starting date: any time after 1 May 1980. Salary: \$13,500 or higher, depending on experience. Send curriculum vitae and three letters of reference to: **Dr. Gary Nelsestuen, Department of Biochemistry, University of Minnesota, 1479 Gortner Avenue, St. Paul, Minn. 55108. An Equal Opportunity/Affirmative Action Employer.**

DEPARTMENT OF BIOLOGY
FUNGAL PARASITES OF NEMATODE CYSTS
POSTDOCTORAL POSITION available 1 April 1980. The position (to carry out a quantitative analysis of fungi associated with golden nematode cysts) is initially for 1 year and renewable for a second year. The second year will involve large-scale growth and evaluation of selected fungi as biocontrol agents of the golden nematode under controlled quarantine greenhouse conditions. Initial salary: \$12,900 (\$14,100 after 1 September 1980). Send curriculum vitae and names of three references to: **Dr. R. A. Nolan, Department of Biology, Memorial University of Newfoundland, St. John's, Newfoundland, Canada A1B 3X9.**

POSTDOCTORAL POSITION for research on aging and ovarian function. A background in reproductive physiology and experience in tissue culture, histology/histochemistry and/or electron microscopy desirable. Available September 1980: salary: \$11,000 to \$12,000 per year. Send curriculum vitae and names of three references to: **Dr. John J. Peluso, Department of Biology, Loyola University of Chicago, 6525 North Sheridan Road, Chicago, Ill. 60626. Telephone: 312-274-3000, extension 108.**

Equal Opportunity/Affirmative Action Employer

1506

POSITIONS OPEN

POSTDOCTORAL POSITION IN CHEMICAL CARCINOGENESIS available for research on mechanism of action of nitrosamines. Experience in enzymology or drug metabolism desirable. Salary from \$13,100, depending on experience. Send curriculum vitae and references to: **Dr. Michael C. Archer, Department of Medical Biophysics, University of Toronto, 500 Sherbourne Street, Toronto, Ontario, Canada M4X 1K9.**

POSTDOCTORAL POSITION available 1 May 1980 at the **Marine Biological Laboratory (MBL)** to study: (i) biochemistry of rotary axostyles in protozoans, (ii) molecular organization of shearing membranes in this cell, (iii) electrophysiology and nervous control of ctenophore mechanoreceptors, OR (iv) Ca^{2+} -regulation of beat direction in comb plate cilia. Position available for 2 years; starting salary: \$14,000. Send curriculum vitae, area of interest, description of research experience, and three letters of reference to: **Dr. Sidney L. Tamm, Associate Professor of Biology, Boston University Marine Program, MBL, Woods Hole, Mass. 02543. Boston University is an Equal Opportunity/Affirmative Action Employer.**

POSTDOCTORAL RESEARCH ASSOCIATE position available for EM study of mammalian muscle spindles. Experience desired in skeletal muscle ultrastructure. Salary dependent upon qualifications. Send résumé and names of three references to: **Dr. Jan Kucera, Neurology Department, Boston University School of Medicine, 750 Harrison Avenue, Boston, Mass. 02118.**

PROFESSOR AND CHAIRPERSON DEPARTMENT OF ZOOLOGY UNIVERSITY OF MASSACHUSETTS/AMHERST

Applications are invited from senior faculty who meet the following selection criteria: extensive academic experience, a record of scholarly achievement, an ambitious ongoing research program, extramural research support, demonstrated leadership ability, and administrative competence. The department consists of 29 faculty, with 71 graduate students in its M.S./Ph.D. programs. There are more than 100 other life scientists on the campus and in the four neighboring colleges. The university has an enrollment of 23,000 students, and is located in a picturesque area of western Massachusetts. The appointment is to become effective on 1 September 1980 or 1 February 1981. Send curriculum vitae and the names and addresses of several references no later than 16 April 1980 to: **E. Brooks, Department of Zoology, University of Massachusetts, Amherst, Mass. 01003. An Affirmative Action/Equal Opportunity Employer.**

DEPARTMENT OF ANATOMY AND NEUROBIOLOGY WASHINGTON UNIVERSITY SCHOOL OF MEDICINE

Searching for **PROFESSOR AND HEAD** of Department of Anatomy and Neurobiology at Washington University School of Medicine, St. Louis, Missouri. Research accomplishments particularly important. If interested, please send curriculum vitae and complete bibliography to:

**M. Kenton King, Dean
Washington University School of Medicine
660 South Euclid Avenue—Box 8106
St. Louis, Missouri 63110
Equal Opportunity Employer**

PROFESSORSHIP DEPARTMENT OF MOLECULAR BIOLOGY UNIVERSITY OF GENEVA

Applications should be made before 30 April 1980 to and information may be obtained from:

Secretariat de la Faculté des Sciences, Université de Genève, quai Ernest-Ansermet 20, CH-1211, Genève 4, Switzerland.

The lectures are given in French, though a period of adjustment can be granted.

PROJECT COORDINATOR: M.S./Ph.D. limnologist needed to coordinate research on natural and urbanizing lakes and rivers. Will also participate in laboratory analyses.

CHEMIST I: B.S./M.S. chemist required to perform common surface water chemical analyses, 10 percent field work.

Send curriculum vitae and names of three references to: **Applied Environmental Services, 990 North Barfield Drive, Marco Island, Fla. 33937.**

POSITIONS OPEN

PROFESSOR OF HYDROLOGY

Tenure-track position in quantitative surface-water hydrology available in the Department of Hydrology and Water Resources, University of Arizona. Starting date negotiable but could be as soon as August 1980. First priority given to candidates qualified for full professorship who are also qualified and willing to serve as department head, but other candidates will be considered. Academic or professional credentials at the Ph.D. level required. *Equal Opportunity/Affirmative Action Employer.* Interested persons should write for further information to: **Professor Stanley N. Davis, Chairman, Search Committee, Department of Hydrology and Water Resources, University of Arizona, Tucson, Arizona 85721.**

QUANTITATIVE GENETICIST/ PLANT BREEDER

The Department of Botany and Plant Sciences, University of California, Riverside, announces a position at the assistant professor level, with both an Experiment Station and academic title, available 1 July 1980. The position is a tenure-track, 11-month appointment in the College of Natural and Agricultural Sciences and in the Agricultural Experiment Station. A Ph.D. is required; postdoctoral experience is preferred, but all qualified candidates will be considered. The appointee must have a strong background in quantitative genetics and a commitment to breeding programs in annual or tree crops important to California. Must be able to interact with plant physiologists, plant pathologists, entomologists, and so forth. The appointee is expected to teach a graduate-level course in advanced plant breeding and an upper division course (to be determined). Must be willing to serve as major professor to M.S. and Ph.D. students.

Send curriculum vitae and official transcripts, and arrange to have at least three letters of recommendation sent to: **Dr. Giles Waines, Search Committee Chairman, Department of Botany and Plant Sciences, University of California, Riverside, Calif. 92521.** Application deadline is 2 May 1980, or later if a suitable applicant has not been selected.

An Affirmative Action/Equal Opportunity Employer

RESEARCH ASSOCIATE IN NEUROBIOLOGY. Studies center on synaptic structure-function correlation. Experience in one or more of the following techniques desirable: EM autoradiography, cellular neurophysiology, cell culture, immunocytochemistry. Send résumé to: **Dr. G. D. Pappas, Head, Department of Anatomy, University of Illinois, College of Medicine, P.O. Box 6998, Chicago, Illinois 60680.**

The University of Illinois is an Equal Opportunity/Affirmative Action Employer and encourages applications from women and minorities.

RESEARCH ASSOCIATE opening available July 1980. Qualifications: B.S. degree; ability to co-operate and interact with laboratory personnel; interest and ability in pursuing ongoing laboratory projects on molecular aspects of chromosome structure and function; elemental knowledge of typing, or photographic darkroom experience, or bookkeeping, or care of laboratory animals desirable. Salary: \$8,000 to \$10,000, depending on experience and background. Send applications to: **Yean Chool, Department of Biology, Indiana University, Bloomington, Indiana 47401.**

MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT) RESEARCH SCIENTIST

MIT RESEARCH SCIENTIST/WETLAND ECOLOGIST. MIT's Civil Engineering Department is seeking an individual to fill the position of wetland ecologist. Must be familiar with the vegetation and general characteristics of wetlands, and be experienced in ecological field methods. Must be willing and able to conduct field work in the eastern Massachusetts area throughout the year, working alone or as part of a team. Requires a bachelor's degree in an environmentally related field. A master's degree or higher and a commitment to research are highly desirable, as is experience with chemical analysis. Please submit résumé to: **MIT Personnel Office, 400 Main Street, Cambridge, Mass. 02139. Attention: Job Number R80-73. MIT is an Equal Opportunity/Affirmative Action Employer.**

HEALTH SCIENTIST ADMINISTRATOR

The National Caries Program, National Institute of Dental Research, in Bethesda, Maryland seeks a nutritional biochemist to guide and monitor the scientific and technical aspects of a research contract program on dietary factors and dental caries. Emphasis is being placed on the influence of dietary components, the possibility of dietary modification, and the development of substitutes for cariogenic sweeteners.

Applicants must have a Ph.D. or equivalent in the life or physical sciences; several years' post-doctoral research experience in which the applicant independently conducted research in nutritional biochemistry; plus at least one year of experience in research program administration. Experience in dentally related research would be advantageous. This career position is at the GS-13 or 14 grade level of the Civil Service general schedule (salary range \$29,375 to \$45,126 per annum) depending upon the qualifications of the candidate. Applicants must have or obtain a Civil Service rating.

Submit current resume and/or SF-171 by April 25, 1980, to: Dr. John Townsley, Chief, Caries Research Grants and Contracts Branch, NIDR, National Institutes of Health, Public Health Service, Westwood Building, 5333 Westbard Avenue, Bethesda, MD 20205. An Equal Opportunity Employer.

**NATIONAL INSTITUTES
OF HEALTH**

Section Head

Department of Biological Research in the Research & Development Division of G. D. Searle & Co., has an immediately available position in Cardiovascular Research. The Cardiovascular Section constitutes the largest preclinical research effort at Searle and includes research efforts in hypertension, arrhythmia, fluid retention, platelet dysfunction and atherosclerosis. The section is composed of approximately 30 people. The successful candidate will be responsible for scientific leadership and direction and budgetary and resource management of the section. The section head will also act as co-chairperson of the interdisciplinary Cardiovascular and Renal Disease Research Committee which is responsible for research direction and planning in the area. A doctoral degree in Pharmacology or Physiology with experience in a managerial position is required. Industrial experience is preferred.

Send curriculum vitae, including salary history, in confidence to:

Denise Hansen

Research & Development Division

G. D. Searle & Co.

P. O. Box 5110
Chicago, IL 60680

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Senior Research Toxicologist

USV Laboratories, a major international pharmaceutical company, located in Westchester County, has an immediate opening for a Senior Research Toxicologist in our new, ultra modern toxicology laboratories and animal facilities. This position, in our expanding R&D area, reports to the newly established Department of Drug Safety and Evaluation.

Responsibilities will include planning of research programs, interpretation of research studies, and motivating and directing subordinates toward the achievement of research goals. Additionally this person will be expected to participate in and provide leadership in the design, implementation and interpretation of a variety of toxicological studies.

Qualified candidates will have a PhD in Pharmacology, Toxicology or related area with a minimum of 4 years industrial experience in toxicology testing, preferably in a pharmaceutical or chemical company.

Salary is commensurate with experience plus an excellent benefits package. For confidential consideration, please send resume with salary requirements to:

Manager of Professional Staffing

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Staff Research Scientist

PLANT GENETICS DEPARTMENT

The Plant Genetics Department of Pfizer Central Research is looking for a creative individual to participate in a multidisciplinary research effort to identify variants in plants or cell cultures with improved agronomic properties. This department provides basic research support for the maize and soybean breeding programs of Pfizer Genetics, Inc.

Applicants should have strong formal training in plant biology, tissue culture and genetics. Experience with breeding methods, protoplast procedures, somatic cell genetics, molecular biology or ion transport for crop species, particularly field crops, is also desirable. PhD required and post-doctoral experience preferred.

In addition to an exceptional opportunity for professional recognition and growth, we offer a comprehensive salary/benefits package and attractive Connecticut shore living. Please send resume and brief description of research interests to: **Mr. F. G. Ziegler, Pfizer Central Research, Eastern Point Road, Groton, CT 06340.**

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POSITIONS OPEN

RESEARCH ASSOCIATE

Ph.D. or equivalent with training in recombinant DNA techniques and nucleic acid biochemistry to work on research related to regulation of expression of genes in eukaryotic cells and eukaryotic cell differentiation primarily using erythropoietic cell models. Salary negotiable. Position available immediately. Send résumés to:

Deputy Director for Administration
Cancer Center/Institute of Cancer Research
Columbia University
701 West 168 Street
New York, New York 10032

An Equal Opportunity/Affirmative Action Employer

RESEARCH ASSOCIATE—Neurobiological chemistry. B.S. degree and minimum of 3 years of experience; \$12,500 to \$14,500. Applicant should have a working knowledge of cholinergic and noradrenergic biochemistry. He or she should have demonstrated skill in radioisotopic assays for choline and carnitine acetyltransferase, tyrosine hydroxylase, dopamine-hydroxylase enzyme activities. Quality control is essential. The applicant should also be familiar with radioligand binding assays including dyhydroalprenolol and quinuclidinyl benzilate. Experience in protein purification, ion exchange chromatography, and gel filtration.

Applicants should have experience in handling small animals as a surgical assistant. Applicant should have experience in training others in these techniques. Applicants should send a résumé and names of two references to the following: **Robert Roskoski, Jr., Department of Biochemistry, Louisiana State University Medical Center, 1542 Tulane Avenue, New Orleans, Louisiana 70112.**

Louisiana State University Medical Center is an Equal Opportunity/Affirmative Action Employer.

RESEARCH ASSOCIATE IN SYNAPTIC NEUROPHYSIOLOGY. A postdoctoral position is open now or this summer/fall for a neurophysiologist interested in functional plasticity of the neuromuscular junction with altered usage and aging. Microelectrode experience essential; computer knowledge desirable. Send curriculum vitae and references to: **Dr. Norman Robbins, Department of Anatomy, Case Western Reserve University, Cleveland, Ohio 44106.**

An Equal Opportunity/Affirmative Action Employer.

RESEARCH ASSOCIATE POSITIONS (two) in biomechanics beginning 15 June 1980. Candidates should have Ph.D. in mechanical engineering, mechanics, or biology. Substantial background in orthopaedic bioengineering, connective tissue mechanics, or human joint mechanics is desirable. Candidates must be experienced in pursuing collaborative interdisciplinary research and supervising technicians. The candidate will be required to design experimental apparatus, develop computer models, analyze and interpret experimental results on connective tissue properties. Salary ranges from \$18,000 to \$21,000, depending on experience.

Please send résumé and three letters of reference to: **Dr. Van C. Mow, Department of Mechanical Engineering, Rensselaer Polytechnic Institute, Troy, New York 12181** before 15 May 1980. *An Equal Opportunity/Affirmative Action Employer.*

STABLE ISOTOPE GEOCHEMIST DEPARTMENT OF GEOLOGY AND GEOPHYSICS UNIVERSITY OF MINNESOTA

The faculty of the Department of Geology and Geophysics is seeking applicants for a new, **tenure-track, assistant professor** position in the academic year 1980 in the general field of stable isotope geochemistry to complement an already strong geochemistry program. The successful candidate will be aided in establishing a laboratory facility, and is expected to pursue independent research and teach appropriate undergraduate and graduate courses. Existing faculty have active research programs in the isotopic systematics of Rb/Sr, REE, noble gases, and U, Th and their decay products; and productive interactions are possible between the new position and one or more ongoing programs in geo- and cosmochemistry, geo- and cosmochronology, economic geology, paleoclimatology, paleoecology, sedimentology, hydrology, mineralogy, petrology, geophysics, and so forth.

Send curriculum vitae, relevant reprints, research interests, and the names of three references by 31 May 1980 to: **E. Calvin Alexander, Jr., Department of Geology and Geophysics, University of Minnesota, 310 Pillsbury Drive, SE, Minneapolis, Minn. 55455.** *An Equal Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

RESEARCH DEVELOPMENT AND RESEARCH ON EFFECTS OF ATMOSPHERIC DEPOSITION ON ECOSYSTEMS

This position is for a Ph.D. in a natural science who has a record of research support and publication on the effects of atmospheric deposition on ecosystems. A broad knowledge of the ecology and biogeochemistry of and relationships between terrestrial and freshwater ecosystems is required. This person is expected to identify, stimulate, and provide leadership in the development of new research programs, and integrate his or her activities into the ongoing programs in this field at the University of Maine at Orono (UMO). This person may teach one specialty course per year, and may guide graduate student research. Additionally, the position will involve partial administration of ongoing programs in this field at UMO. Departmental affiliation will be determined by the candidate's particular specialization. This is a 2- or 3-year appointment on an academic year (9-month) basis. We hope to fill this position by 1 July 1980. The salary is negotiable. The successful candidate may raise additional salary (2½ months per year). Funds are available for travel, pilot research studies, and research development. Applicants should forward curriculum vitae, three letters of reference, transcripts (if the Ph.D. was received in the last 5 years), and one copy of publications related to the goals of this position. Applications close on 21 April 1980. Forward information to: **Professor Stephan A. Norton, Department of Geological Sciences, University of Maine, Orono, Maine 04469.**

RESEARCH PROFESSOR DEPARTMENT OF MICROBIOLOGY UNIVERSITY OF GEORGIA

Applications and nominations are invited for the position of research professor of microbiology. Applicants must have an internationally recognized research program in microbial physiology or related area as evidenced by publications, grant support, and honors. Candidates must have substantial academic experience commensurate with the level of professor and must have the interest and drive to continue to vigorously pursue research. The successful candidate should actively interact with graduate students, postdoctorals, and faculty members to initiate and stimulate their research endeavors and to strengthen all efforts of the department. The Department of Microbiology belongs to the Biology Division of Franklin College of Arts and Sciences. Within the college and the division, integration of research and teaching is encouraged. This has led to truly interdepartmental research programs and it is expected that the successful candidate would be aligned with this approach. The position will be filled during the 1980-1981 academic year. Applications, containing curriculum vitae, list of publications, and names of references, should be postmarked no later than 1 June 1980, and should be addressed to: **Dr. Lars G. Ljungdahl, Chairman of Search Committee, Department of Biochemistry, University of Georgia, Athens, Georgia 30602.**

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

Teaching/Research Associates (Postdoctoral) UNIFORMED SERVICES UNIVERSITY (USUHS)

Postdoctoral fellowships are available in the Department of Biochemistry. Activities include medical and graduate student instruction and research programs in immunochemistry, nucleic acid enzymology, protein-nucleic acid interactions, eukaryotic molecular biology, and membrane biochemistry. Doctoral degree required. Send curriculum vitae including names of three references to:

**Dr. Lucy M. S. Chang, Biochemistry
Uniformed Services Department of the
Health Sciences
4301 Jones Bridge Road
Bethesda, Md. 20014**

The USUHS is an Equal Employment Opportunity Agency.

The Ohio State University College of Medicine, Department of Medical Microbiology, invites applications for a tenure-track position in the area of **VIRAL IMMUNOLOGY.** Minimum requirement is a Ph.D. degree with postdoctoral training, particularly in the area of herpesviruses. Rank and salary will depend on qualifications. Send curriculum vitae and three letters of recommendation to: **Ronald Glaser, Ph.D., Department of Medical Microbiology, The Ohio State University, 333 West 10th Avenue, Columbus, Ohio 43210.** *Ohio State University is an Equal Opportunity Employer.*

POSITIONS OPEN

AUSTRALIA UNIVERSITY OF MELBOURNE RESEARCH FELLOW/GRADUATE RESEARCH ASSISTANT in the DEPARTMENT OF PHYSICAL CHEMISTRY

Applicants for this position should have a Ph.D. in colloid and surface science or general physical chemistry. Experience in areas of wetting, adhesion, rheology, flotation will be preferred.

The appointee will undertake energy-related research, sponsored by the National Energy Research, Development and Demonstration Council, on the colloid and surface chemistry of oil-water-solid systems.

The appointment is for 1 year in the first instance, but may be extended to 2 years.

Salary within the range research fellow grade 1: A\$14,673 to A\$16,809 per annum; graduate research assistant: A\$9,497 to A\$15,590 per annum.

Further information, including details of application procedure and conditions of appointment, are available from the staff officer. Applications referring to position number 600 560 should be addressed to the staff officer and close on 11 April 1980.

All applications for appointments should be addressed to: **Staff Officer, University of Melbourne, Parkville, 3052 Victoria, Australia.**

SENIOR ANALYTICAL- ENVIRONMENTAL CHEMIST

The Ames Laboratory, which is operated by Iowa State Department (ISU) for the U.S. Department of Energy, has an opening for a senior analytical-environmental chemist. Applicants should have an established reputation in the analytical-environmental sciences. The individual selected will serve as scientific collaborator, supervisor, and administrator of programs involving basic research on advanced analytical methodologies, the identification, quantitation, movement, transformation, and dispersion of hazardous pollutants in the environment, assessment of environmental data bases in terms of potential health and environmental impacts of effluents or by-products from advanced energy-generating processes, and planning and coordination of efforts at other federal agencies, universities, national laboratories, and private institutions. Effective oral and written communication skills are essential. Ph.D. degree preferred but not required.

ISU campus location. Possible faculty affiliation dependent on academic and professional experience and on approval by cognizant faculty departments. Salary offered will depend on credentials offered by qualified applicants. Attractive fringe benefits. Interested applicants should send their résumé and salary requirements in confidence to:

**C. Roberg, Personnel Manager
Ames Laboratory
Iowa State University
Ames, Iowa 50011**

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SENIOR SCIENTIST INSTITUTE OF CHEMICAL ANALYSIS NORTHEASTERN UNIVERSITY

Senior staff research position with potential for long-term appointment. Collaborative and independent research expected. Background in analytical chemistry, biochemistry, or organic chemistry is desirable. Salary commensurate with experience. Send résumé, a brief outline of research plans, and a sample of representative reprints to: **Dr. B. L. Karger, 341 Mugar Hall, Northeastern University, 360 Huntington Avenue, Boston, Mass. 02115.** *An Equal Opportunity/Affirmative Action/Title IX University.*

STAFF POSITION OPENING available for experienced molecular biologist with an interest in the murine mammary tumor virus. An individual with research experience in nucleic acid biochemistry and some knowledge of mouse genetics will be preferred. Salary negotiable, depending on experience. To apply, send curriculum vitae, including names of three references, to: **Dr. N. Sarkar, MEMORIAL SLOAN-KETTERING CANCER CENTER, 1275 York Avenue, New York, N.Y. 10021.** *An Equal Opportunity Employer, M/F.*

MOLECULAR BIOLOGISTS

Openings are available at New England Biolabs' new laboratory in Beverly, Massachusetts, USA.

Ph.D. level: Experience in cloning eukaryotic DNA, *in vitro* translation and other recombinant DNA techniques is essential.

MS or BS level: Minimum of two years experience in the isolation and purification of proteins, enzymology and quantitative biochemistry.

New England Biolabs, Inc. is a small group of microbiologists and molecular biologists involved in the production of restriction endonucleases and other enzymes useful for DNA research. New programs are being initiated to use genetic engineering for the production of proteins applicable to world health problems.

Send curriculum vitae to N.E. Biolabs, Inc., 283 Cabot Street, Beverly, MA 01915, USA.



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2114	A2'p5'A2'p5'A2'p5'A Tetramer "Core"	5 units \$40.00	5x5 units \$160.00
2120	pA2'p5'A2'p5'A2'p5'A Tetramer 5'-phosphate	2 units \$50.00	5 units \$100.00
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Biomedical Scientist

San Francisco Bay Area

The Lawrence Livermore Laboratory has an outstanding career opportunity for an experienced Biomedical Researcher to supervise and maintain a biological laboratory. The successful candidate will organize and conduct experiments to evaluate effects of chemotherapy agents *in vitro*, prepare cells for flow cytometry, perform liquid scintillation counting, and high pressure liquid chromatography. We desire several years' experience in a laboratory environment, and familiarity with tissue culture techniques, autoradiography, liquid scintillation counting and optical microscopy. Your experience with flow cytometry is especially applicable. An M.S. degree in biology or biochemistry, or equivalent is required.

The Laboratory is an applied science R&D facility operated by the University of California for the U.S. Department of Energy and located in a rural suburb of the San Francisco Bay Area.

Interested and qualified candidates are invited to submit their resumes in strict confidence to: Ted Wilson, Employment Division, LAWRENCE LIVERMORE LABORATORY, P.O. Box 808, Dept. KSC-030, Livermore, CA 94550. U.S. Citizenship Required. An Equal Opportunity Employer M/F.



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POSITIONS OPEN

RESEARCH ASSOCIATE. Two positions are open in the Laboratory for Experimental Oncology: (i) for enzyme purification from mammalian tissues; and (ii) for studies on elucidation of mechanisms of gene expression and transcription and translation of messages in normal and cancer cells. Applicants with Ph.D. in biochemistry or chemistry who have demonstrated productivity should send curriculum vitae and three references by 11 April 1980 to: **Dr. George Weber, Professor and Director, Laboratory for Experimental Oncology, Indiana University School of Medicine, Indianapolis, Ind. 46223.**

An Equal Opportunity/Affirmative Action Employer

TOXICOLOGIST (Reproductive Toxicology and Teratology) BUSHY RUN RESEARCH CENTER CARNEGIE-MELLON UNIVERSITY

The Bushy Run Research Center of Carnegie-Mellon University is currently seeking a Ph.D. toxicologist (or a person with equivalent experience) who has performed scientific studies in reproductive toxicology and teratology, and has had relevant professional publications. The person will plan and coordinate the activities pursuant to the conduct and reporting of reproductive studies involving industrial chemicals. Experience with multiple species and multigeneration reproductive studies is essential. Send résumé and references to: **A. R. Ryrholm, Administrative Director, Bushy Run Research Center, Carnegie-Mellon University, 4400 Fifth Avenue, Pittsburgh, Pa. 15213.** Salary will be commensurate with training and experience.

Carnegie-Mellon University is an Equal Opportunity Employer.

VETERINARY PATHOLOGISTS

The Collaborative Radiological Health Laboratory (CRHL) and the Department of Pathology, Colorado State University, seek veterinary pathologists interested in research in an academic setting within a college of veterinary medicine. The CRHL is a multidisciplinary research group studying the long-term effects of low-level radiation in beagle dogs. Primary duties involve evaluation of a variety of diseases in a large canine population. Applicants should have a D.V.M. with advanced training in pathology, preferably with ACVP certification. Application deadline: 30 April 1980, or until positions are filled. Rank, salaries, and starting dates are negotiable. *Colorado State University is an Equal Opportunity/Title IX Employer; Equal Opportunity Office, 314 Student Services Building.* Contact: **Stephen A. Benjamin, Director, CRHL, Department of Pathology, College of Veterinary Medicine and Biomedical Sciences, Colorado State University, Fort Collins, Colorado 80523.**

REWARD

REWARD of up to \$1000 will be paid for information about the fate of or leading to the recovery of notes on the Peneid/Sergestid Crustaceans written by Martin D. Burkenroad during the 1930's and probably carried with him to several scientific institutions before lost. If you have any information, please contact: **Martin D. Burkenroad, c/o Department of Geology, San Diego Natural History Museum, P.O. Box 1390, San Diego, Calif. 92112.**

SYMPOSIUM

HAMSTER IMMUNE RESPONSES: IMMUNE RESPONSIVENESS AND EXPERIMENTAL MODELS OF INFECTIOUS AND ONCOLOGIC DISEASES

University of Texas Health Science Center at Dallas, Dallas, Texas, 3 to 5 June 1980. The program will consider the following topics: hamster immune responses and immunogenetics; immunity to non-viral pathogens; immunity to infection with viral agents; oncogenesis and tumor immunity. The symposium is sponsored and supported by the National Institutes of Health. The symposium is open to all, with program participation by invitation only. For information contact: **J. Wayne Strelein, Professor of Cell Biology and Internal Medicine, Southwestern Medical School, University of Texas Health Science Center, 5323 Harry Hines Boulevard, Dallas, Texas 75235. Telephone: 214-688-2228.**

COURSE

QUANTITATIVE METHODS IN HUMAN GENETICS ANALYSIS UNIVERSITY OF CHICAGO 23 to 25 JUNE 1980

Robert Elston and K. K. Namboodiri will offer a 3-day short course on new methods of path analysis and segregation analysis for multifactorial and major-gene models of human variation. Sessions will include computer laboratory.

Write: **R. D. Bock, 5835 South Kimbark Avenue, Chicago, Ill. 60637.**

FELLOWSHIPS

TOXICOLOGY PREDOCTORAL AND POSTDOCTORAL FELLOWSHIPS

Postdoctoral fellowships for Ph.D. training in environmental toxicology are available for entry of students into the program in September 1980. These are sponsored by the National Institute of Environmental Health Sciences. Several fellowships also are available in the closely related area of industrial toxicology, sponsored by the National Institute of Occupational Safety and Health. Postdoctoral fellowships also are available from 1 July 1980, sponsored by the National Institute of Environmental Health Sciences. Major areas of research are heavy metal toxicology; renal, pulmonary, and neurobehavioral toxicology; and genetic toxicology, including teratology. The Department of Environmental Health offers a good training environment, having strong research programs in the allied areas of epidemiology and biostatistics, occupational medicine, and industrial hygiene. Send letters of inquiry to: **Dr. Paul B. Hammond, Department of Environmental Health, University of Cincinnati, Kettering Laboratory, 3223 Eden Avenue, Cincinnati, Ohio 45267.** *An Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL POSITIONS

Positions are available at the postdoctoral level at Brown University under NRSA training program and from research grants to work with: **M. Czech, A. Dahlberg, J. Fain, P. Galletti, G. Johnson, W. Oh, and R. Schwartz.** The major areas of research training are: mechanism of insulin action on fat cell membranes, mode of hormone action on liver and fat cells, implantable beta cell culture devices, role of insulin in the development of glucose control during maturation, regulation of protein synthesis, role of phosphatidylinositol turnover in hormone action, and reconstitution of adenylate cyclase. Contact: **Dr. John N. Fain, Brown University, Box G, Providence, Rhode Island 02912.**

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POSTDOCTORAL FELLOWSHIPS

Available for research in the area of somatic cell genetics with emphasis on cell hybridization, molecular cloning, and genetic engineering. Send curriculum vitae to: **Dr. Jean-Paul Thirion, Department of Microbiology, Centre Hospitalier Universitaire, Sherbrooke, Quebec, Canada J1H 5N4.**

POSTDOCTORAL FELLOWSHIPS IMMUNOBIOLOGY OF AGING— IMMUNE REGULATION

Postdoctoral fellowships are available in a collaborative program on the immunobiology of aging sponsored by the Sloan-Kettering Institute and Cornell University Medical College. Postdoctoral fellowships are also available at Cornell University Medical College for studies on the regulation and the ontogeny of the immune response in man and experimental animals. Applicants for either program should send curriculum vitae to: **Dr. Gregory W. Siskind or Dr. Marc E. Weksler, Cornell University Medical College, 1300 York Avenue, New York, N.Y. 10021.**

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POSTDOCTORAL FELLOWSHIPS open on NIMH Neurobehavioral Sciences Training Grant. Send curriculum vitae and three letters of reference before 1 May 1980 to: **Dr. Lewis Seiden, Program Director, Neuro-Behavioral Sciences Research Training Program, Department of Pharmacological and Physiological Sciences, The University of Chicago, 947 East 58 Street, Chicago, Ill. 60637.**

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FELLOWSHIPS

POSTDOCTORAL FELLOWSHIPS IN ZOOLOGY—The Department of Zoology at the University of Florida announces two postdoctoral research positions for September 1980. The 1-year appointments (\$14,000 for 12 months) may be renewable for a second year. Special consideration will be given to candidates with research interests in **comparative, ecological, and evolutionary biology.** The department will provide a list of faculty and their recent publications upon request. Candidates should submit three letters of recommendation, curriculum vitae, abstract of dissertation, and a proposal of their intended research, which includes a statement of the appropriateness of the University of Florida as a site for this research. Direct inquiries and submit applications to: **Dr. Frank G. Nordlie, Chairman, Postdoctoral Search Committee, Department of Zoology, University of Florida, Gainesville, Fla. 32611; telephone: 904-392-2499.** We will begin reviewing applications on 15 April 1980.

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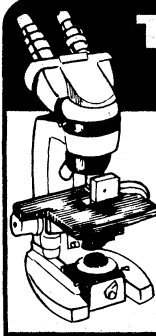
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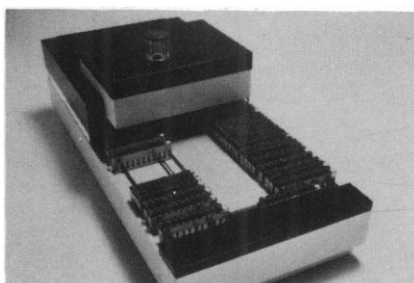
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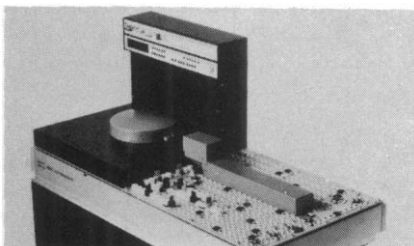
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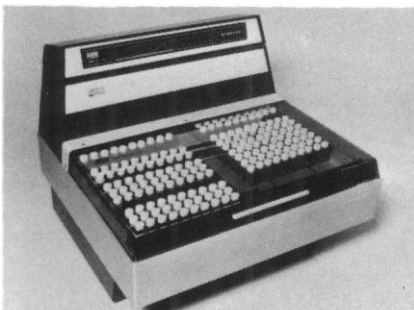
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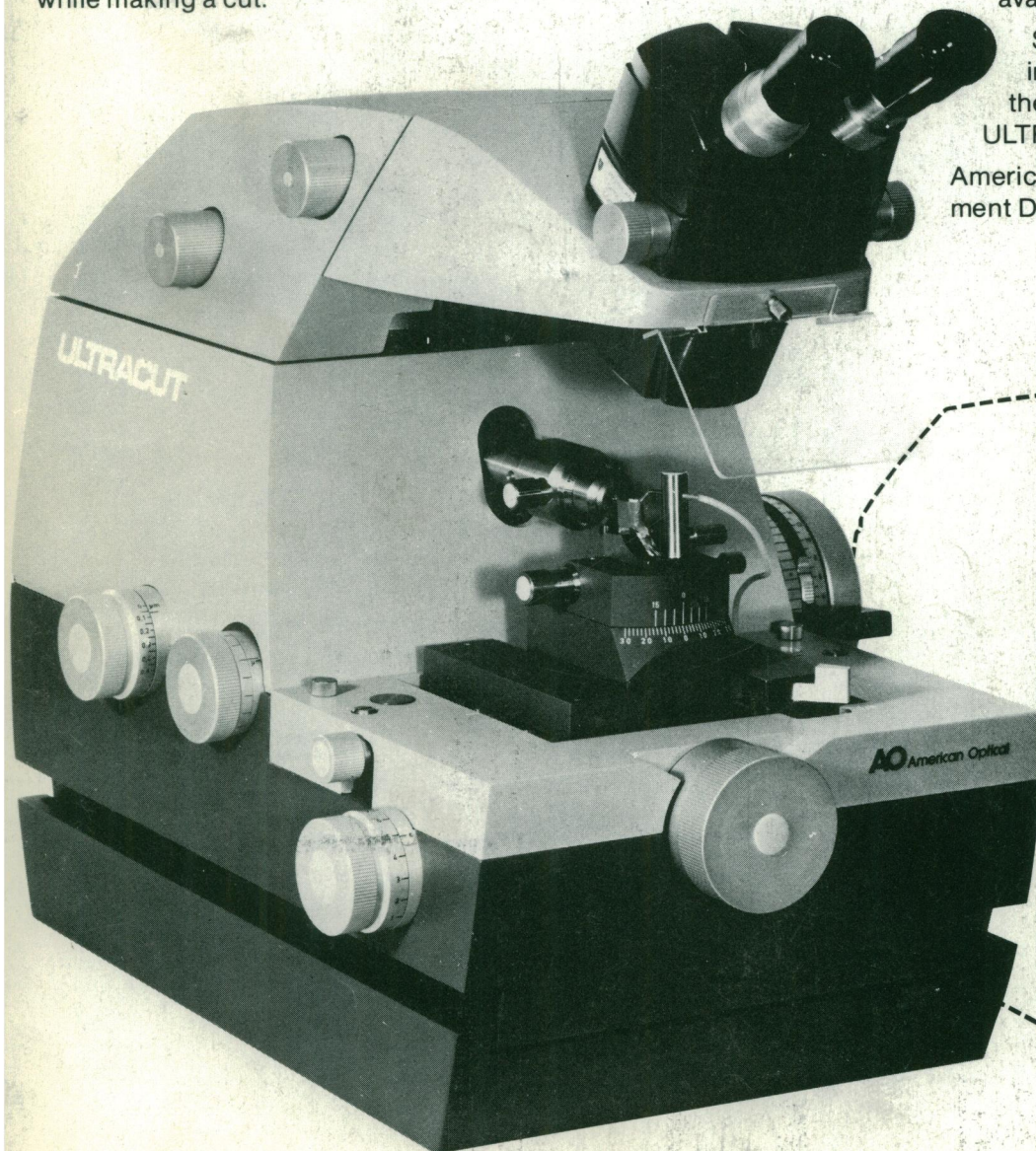
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