

orbit if the binary is wide, and in a wide binary tidal effects are less effective in circularizing the orbit. Possible ways out of this difficulty are suggested by Blandford and DeCampli and by van den Heuvel, who also discusses the multifarious ways nature may make pulsars.

Thanks are due to the authors, the editors, and the scientific organizing committee of IAU Symposium No. 95, who have laid before us a feast of facts, ideas, and speculations on a subject that continues to delight and amaze.

D. Q. LAMB

*Harvard-Smithsonian Center for Astrophysics, Cambridge, Massachusetts 02138*

## Books Received

**Advances in Electrochemistry and Electrochemical Engineering.** Vol. 12. Heinz Gerischer and Charles W. Tobias. Eds. Wiley-Interscience, New York, 1981. xiv, 362 pp., illus. \$39.50.

**Aerial Photography and Image Interpretation for Resource Management.** David P. Paine. Wiley, New York, 1981. xii, 572 pp., illus., + plates. \$29.95.

**Algebra and Trigonometry with Applications.** Mustafa A. Munem and David J. Foulis. Worth, New York, 1981. xiv, 590 pp., illus. \$19.95.

**America Now.** The Anthropology of a Changing Culture. Marvin Harris. Simon and Schuster, New York, 1981. 208 pp. \$12.95.

**Animal Migration.** Papers from a symposium, Lancaster, England, Dec. 1979. D. J. Aidley, Ed. Cambridge University Press, New York, 1981. viii, 264 pp., illus. Cloth, \$39.95; paper, \$19.95. Society for Experimental Biology Seminar Series, 13.

**Animal Rights and Human Morality.** Bernard E. Rollin. Prometheus Books, Buffalo, N.Y., 1981. xii, 182 pp., illus. \$17.95; paper, \$9.95.

**Animal Societies and Evolution.** Readings from *Scientific American*. Introduction by Howard To-poff. Freeman, San Francisco, 1981. x, 106 pp., illus. Cloth, \$15.95; paper, \$7.95.

**Animals of the Tidal Marsh.** Franklin C. Daiber. Van Nostrand Reinhold, New York, 1981. x, 422 pp., illus. \$19.95.

**Applied Geotechnology.** A Text for Students and Engineers on Rock Excavations and Related Topics. A. Roberts. Pergamon, New York, 1981. xvi, 344 pp., illus. Cloth, \$50; paper, \$25.

**Aquatic Biota of Tropical South America.** Being a Compilation of Taxonomic Bibliographies for the Fauna and Flora of Inland Waters of the Tropical Portion of South America. Stuart H. Hurlbert, Gilberto Rodriguez, and Newton Dias dos Santos, Eds. San Diego State University Department of Biology, San Diego, Calif., 1981. Part 1, Arthropoda. xiv, 324 pp., illus. \$14. Part 2, Anarthropoda. xii, 298 pp., illus. \$12.

**Assessing Changing Food Consumption Patterns.** National Academy Press, Washington, D.C. 1981. x, 284 pp., illus. \$16.

**Asthma and Emotion.** Abraham Stern. Gardner Press, New York, 1981. xvi, 164 pp., illus. \$17.50.

**Astronomy.** Dinah L. Moché. Star maps by George Lovi. Wiley, New York, ed. 2, 1981. xvi, 284 pp., illus. Paper, \$7.95. Self-Teaching Guides.

**Brain Neurotransmitters and Receptors in Aging and Age-Related Disorders.** Papers from a symposium, Houston, Oct. 1980. S. J. Enna, T. Samorajski, and Bernard Beer, Eds. Raven, New York, 1981. xiv, 278 pp., illus. \$32. Aging Series, vol. 17.

**Calcium and cAMP as Synaptic Messengers.** Howard Rasmussen. Wiley-Interscience, New York, 1981. xiv, 370 pp., illus. \$39.50.

**Cancer.** The Misguided Cell. David M. Prescott and Abraham S. Flexer. Sinauer, Sunderland, Mass., 1982. vi, 314 pp., illus. Paper, \$12.95 (cloth edition: Scribner, New York; \$17.95).

**Cancer Chemotherapy 1981.** The EORTC Cancer Chemotherapy Annual 3. H. M. Pinedo, Ed. Excerpta Medica, Amsterdam, 1981 (U.S. distributor, Elsevier North-Holland, New York). xiv, 504 pp., illus. \$70.25.

**Cannabis in Costa Rica.** A Study of Chronic Marijuana Use. William E. Carter, Ed. Institute for the Study of Human Issues, Philadelphia, 1981. xiv, 332 pp. \$17.50.

**Capitalism and Legal Change.** An African Transformation. Francis G. Snyder. Academic Press, New York, 1981. xvi, 334 pp., illus. \$29.50. Studies on Law and Social Control.

**Carbon Cycle Modelling.** Papers from a workshop, La Jolla, Calif., Mar. 1979. Bert Bolin, Ed. Published for the Scientific Committee on Problems of the Environment of the ICSU by Wiley, New York, 1981. xiv, 390 pp., illus. \$44.95. SCOPE 16.

**Catalysis and Chemical Processes.** R. Pearce and W. R. Patterson, Eds. Halsted (Wiley), New York, 1981. xx, 348 pp., illus. \$69.95.

**Cell and Muscle Motility.** Vol. 1. Robert M. Dowben and Jerry W. Shay, Eds. Plenum, New York, 1981. xiv, 400 pp., illus. \$39.50.

**Cell Death in Biology and Pathology.** I. D. Bowen and R. A. Lockshin, Eds. Chapman and Hall, London, 1981 (U.S. distributor, Methuen, New York). xviii, 494 pp., illus. \$65.

**The Cell Nucleus.** Vol. 9, Nuclear Particles, Part B. Harris Busch, Ed. Academic Press, New York, 1981. xxii, 372 pp., illus. \$49.50.

**Cellular Responses to Molecular Modulators.** Proceedings of a symposium, Miami, Jan. 1981. Lee W. Mozes, Julius Schultz, Walter A. Scott, and Rudolf Werner, Eds. Academic Press, New York, 1981. xxii, 558 pp., illus. \$45. Miami Winter Symposia, vol. 18.

**Characterization, Treatment and Use of Sewage Sludge.** Proceedings of a symposium, Vienna, Oct. 1980. P. L. Hermite and H. Ott, Eds. Reidel, Boston, 1981 (distributor, Kluwer Boston, Hingham, Mass.). xviii, 804 pp., illus. \$87.

**Cholinergic Mechanisms.** Phylogenetic Aspects, Central and Peripheral Synapses, and Clinical Significance. Proceedings of a symposium, Florence, Mar. 1980. Giancarlo Pepeu and Herbert Ladinsky, Eds. Plenum, New York, 1981. xx, 990 pp., illus. \$95. Advances in Behavioral Biology, vol. 25.

**Les Difficultés de la Quantification et de la Mesure.** Papers from a meeting, Dijon, Maloigne, Paris, 1981. 294 pp., illus. Paper, 80 F. Recherches Interdisciplinaires.

**Diffraction Physics.** John M. Cowley. North-Holland, Amsterdam, 1981 (U.S. distributor, Elsevier North-Holland, New York), ed. 2, 1981. xiv, 430 pp., illus. \$65.75.

**DNA, Chromatin and Chromosomes.** E. Morton Bradbury, Norman Maclean, and Harry R. Matthews. Halsted (Wiley), New York, 1981. xviii, 282 pp., illus. Paper, \$24.95.

**Drug Dependence and Alcoholism.** Vol. 1, Biomedical Issues. Proceedings of a conference, Seattle, Apr. 1978. Arnold J. Schechter, Ed. Plenum, New York, 1981. xxx, 1342 pp., illus. \$39.75.

**Drug Development, Regulatory Assessment, and Postmarketing Surveillance.** Proceedings of an institute, Erice, Italy, Oct. 1980. William M. Wardell and Giampaolo Velo, Eds. Plenum, New York, 1981. x, 356 pp., illus. \$45. NATO Advanced Study Institutes Series A, vol. 39.

**The Eastern Bering Sea Shelf.** Oceanography and Resources. Donald W. Hood and John A. Calder, Eds. National Oceanic and Atmospheric Administration, Washington, D.C., 1981 (distributor, University of Washington Press, Seattle). Two volumes. xxviii, 1340 pp., illus. Each volume, \$65.

**Handbook of Contemporary Developments in World Ecology.** Edward J. Kormondy and J. Frank McCormick, Eds. Greenwood Press, Westport, Conn., 1981. xxviii, 776 pp., illus. \$65.

**Handbook of Marine Mammals.** Sam H. Ridgway and Richard J. Harrison, Eds. Academic Press, New York, 1981. Two volumes. Vol. 1, The Walrus, Sea Lions, Fur Seals and Sea Otter. xiv, 236 pp., illus. \$35.50. Vol. 2, Seals. xvi, 360 pp., illus. \$48.50.

**Handbook of Materials Testing Reactors and Associated Hot Laboratories in the European Community.** Nuclear Science and Technology. Peter von der Hart and Heinz Röttger, Eds. Reidel, Boston, ed. 2, 1981 (distributor, Kluwer Boston, Hingham, Mass.). viii, 152 pp., illus. \$24.

**Histological Typing of Endocrine Tumours.** E. D. Williams in collaboration with R. E. Siebenmann and L. H. Sobin. World Health Organization, Geneva, 1980 (U.S. distributor, WHO Publications Centre USA, Albany, N.Y.). 70 pp., + plates. \$29. International Histological Classification of Tumours, No. 23.

**A History of the British Gas Industry.** Trevor I. Williams. Oxford University Press, New York, 1981. xviii, 304 pp., + plates. \$49.

**Hominid Sites.** Their Geologic Settings. Papers from a symposium, San Francisco, Jan. 1980. George Rapp, Jr., and Carl F. Vondra, Eds. Published for the American Association for the Advancement of Science by Westview, Boulder, Colo., 1981. xviii, 310 pp., illus. \$26.50. AAAS Selected Symposia Series, 63.

**Homo erectus.** Papers in Honor of Davidson Black. Papers from a symposium, Cedar Glen, Ontario, Oct. 1976. Becky A. Sigmon and Jerome S. Cybulski, Eds. University of Toronto Press, Buffa-

lo, N.Y., 1981. xiv, 272 pp., illus. \$30. Symposia of the Canadian Association for Physical Anthropology, vol. 1.

**Human Hemoglobins and Hemoglobinopathies.** A Review to 1981. Rose G. Schneider, Samuel Charache, Walter A. Schroeder, and Eleanor Porter, Eds. University of Texas Medical Branch, Galveston, 1981. xiv, 504 pp., illus. Paper, \$20. Texas Reports on Biology and Medicine, vol. 40.

**Human Nutrition.** Clinical and Biochemical Aspects. Proceedings of a conference, Portsmouth, N.H., 1980. Philip J. Garry and Virginia S. Marcum, Eds. American Association for Clinical Chemistry, Washington, D.C., 1981. xxviii, 422 pp., illus. \$35.

**Hydrocarbon Thermal Isomerizations.** Joseph J. Gajewski. Academic Press, New York, 1981. x, 444 pp., illus. \$45. Organic Chemistry.

**The Lymphokines.** Biochemistry and Biological Activity. John W. Hadden and William E. Stewart II. Humana, Clifton, N.J., 1981. xvi, 438 pp., illus. \$59.50. Contemporary Immunology.

**The Maine Agricultural Experiment Station.** A Bountiful Alliance of Science and Husbandry. David C. Smith. University of Maine Life Sciences and Agriculture Experimental Station, Orono, 1980. xvi, 292 pp., illus. \$10.

**The Mathematical Papers of Isaac Newton.** Vol. 8, 1697-1722. D. T. Whiteside, Ed. Cambridge University Press, New York, 1981. lvi, 704 pp., illus., + plates. \$195.

**Mathematical Perspectives.** Essays on Mathematics and Its Historical Development. Presented to Professor Dr. Kurt-Reinhard Biermann on the Occasion of His 60th Birthday. Joseph W. Dauben, Ed. Academic Press, New York, 1981. xvi, 272 pp., \$34.

**Mathématiques Appliquées.** Probabilités—Initiation à la Recherche Opérationnelle. Christian Goujot and Claire Nicolas. Masson, Paris, 1981. 272 pp., illus. Paper, 60 F.

**Mechanical Foundations of Engineering Science.** H. G. Edmunds. Horwood, Chichester, England, and Halsted (Wiley), New York, 1981. xvi, 430 pp., illus. \$49.95. Ellis Horwood Series in Engineering Science.

**Medical Genetics.** Principles and Practice. James J. Nora and F. Clarke Fraser. Lea and Febiger, Philadelphia, ed. 2, 1981. xii, 540 pp., illus. \$42.50.

**Medicine in Transition.** The Centennial of the University of Illinois College of Medicine. Papers from a symposium, Chicago, Oct. 1981. Edward P. Cohen, Ed. University of Illinois College of Medicine, Chicago, 1981 (distributor, University of Illinois Press, Champaign). 340 pp., illus. \$30.

**Membrane Proteins.** A Laboratory Manual. A. Azzi, U. Brodbeck, and P. Zahler, Eds. Springer-Verlag, New York, 1981. xii, 256 pp., illus. Paper, \$19.80.

**Meso-scale Atmospheric Circulations.** B. W. Atkinson. Academic Press, New York, 1981. xviii, 496 pp., illus. \$78.

**Metal-Catalyzed Oxidations of Organic Compounds.** Mechanistic Principles and Synthetic Methodology Including Biochemical Processes. Roger A. Sheldon and Jay K. Kochi. Academic Press, New York, 1981. xxii, 424 pp., illus. \$56.

**The Micro Revolution.** Living with Computers. Peter Laurie, Universe, New York, 1981. 226 pp., illus. Cloth, \$12.50; paper, \$7.95.

**Philosophy of Mathematics and Deductive Structure in Euclid's Elements.** Ian Mueller. MIT Press, Cambridge, Mass., 1981. xviii, 378 pp., illus. \$37.50.

**Photosynthesis Bibliography.** Z. Šesták and J. Čáský, Eds. Junk, The Hague, 1981 (U.S. distributor, Kluwer Boston, Hingham, Mass.). Vol. 8, 1977. vi, 366 pp., Paper, \$75. Vol. 9, 1978. vi, 380 pp., Paper, \$75.

**Physics for Scientists and Engineers.** Sheldon H. Radin and Robert T. Folk. Prentice-Hall, Englewood Cliffs, N.J., 1982. xvi, 790 pp., illus., + index. \$28.95.

**Physics of Semiconductor Devices.** S. M. Sze. Wiley-Interscience, New York, ed. 2, 1981. xii, 868 pp., illus. \$45.

**Physics Reviews.** Vol. 3. I. M. Khalatnikov, Ed. Translated from the Russian. Harwood, New York, 1981. x, 594 pp., illus. \$115. Soviet Scientific Reviews, Section A.

**Phytochemical Methods.** A Guide to Modern Techniques of Plant Analysis. J. B. Harborne. Chapman and Hall, London, 1981 (U.S. distributor, Methuen, New York). x, 278 pp., illus. Paper, \$16.95. Reprint of the 1973 edition.

**The Political Economy of New and Old Industrial Countries.** Christopher Saunders, Ed. Butterworths, Boston, 1981. x, 326 pp., illus. \$44.95. Butterworths Studies in International Political Economy.

**The Politics of Contraception.** The Present and the Future. Carl Djerassi. Freeman, San Francisco, 1981. xxii, 282 pp., illus. Cloth, \$19.95; paper, \$9.95. Reprint with new material of the 1979 edition.

**Population Ecology.** A Unified Study of Animals and Plants. Michael Begon and Martin Mortimer.

(Continued on page 1138)



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### Literature

*Centrifuges* for the clinical laboratory are described in a catalog. Beckman Instruments. Circle 607.

*New Titles* includes the 62nd issue of the venerable *Handbook of Chemistry and Physics* among nearly 300 works. Four dozen are new for spring of 1982. CRC Press. Circle 595.

*Electrochemical Detection* is a bibliography with over 160 selections relevant to high pressure liquid chromatography. Chromatix. Circle 596.

*Ultraviolet-Visible and Fluorescence Spectroscopy* offers accessories and supplies. Wilmad Glass. Circle 597.

*Separations* is devoted to electrophoresis, chromatography, and other biochemical techniques. Bio-Rad Laboratories. Circle 598.

*Fluorescence* is covered in a 352-reference bibliography which is indexed by research subjects from acetone to zinc protoporphyrin. Farrand Optical. Circle 599.

*Water Systems* details central laboratory apparatus for preparing, storing, and dispensing water for various scientific uses. Technic Central Systems. Circle 600.

*Pyroprobe* describes the Series 120 device for the study of volatile and non-volatile organic substances in liquid or solid sample matrices. Chemical Data Systems. Circle 601.

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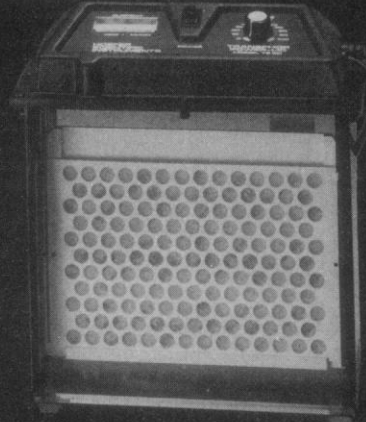
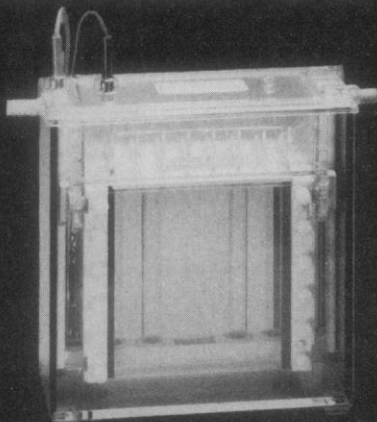
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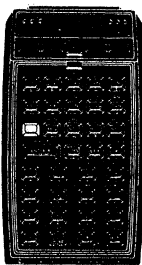
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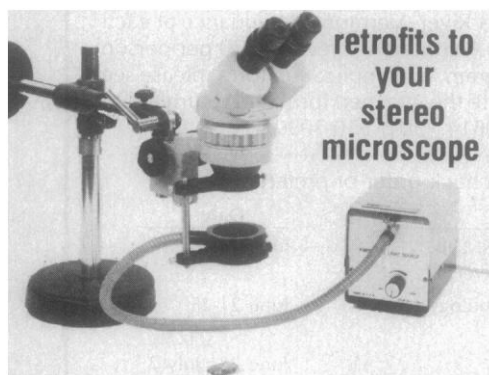
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## BOOKS RECEIVED

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Sinauer, Sunderland, Mass., 1981. viii, 200 pp., illus. Cloth, \$33; paper, \$16.95.

**The Positive State.** Robert A. Solo. South-Western Publishing, Cincinnati, 1981. vi, 248 pp. Paper, \$11.

**Practical Human Biology.** J. S. Weiner and J. A. Lourie. Academic Press, New York, 1981. xvi, 440 pp., illus. \$38.50.

**Practical Methods of Optimization.** Vol. 2, Constrained Optimization. R. Fletcher. Wiley-Interscience, New York, 1981. x, 224 pp., illus. \$31.95.

**Predictability, Correlation, and Contiguity.** Peter Harzem and Michael D. Zeiler, Eds. Wiley, New York, 1981. xiv, 418 pp., illus. \$48.95. Advances in Analysis of Behaviour, vol. 2.

**Predicting the Past.** Memos on the Enticing Universe of Possibility. Humphry Osmond. Macmillan, New York, and Collier Macmillan, London, 1981. xviii, 222 pp. \$11.95.

**Preparation of Nuclear Targets for Particle Accelerators.** Proceedings of a conference, Boston, Oct. 1979. Jozef Jaklovsky, Ed. Plenum, New York, 1981. x, 290 pp., illus. \$35.

**Proceedings of the Seventh Power Systems Computation Conference.** Lausanne, July 1981. Westbury House, Guildford, Surrey, England, 1981 (U.S. distributor, Butterworths, Boston). xx, 1226 pp., illus. \$132.50.

**Stomatal Physiology.** Papers from a seminar, Lancaster, England, Dec. 1979. P. G. Jarvis and T. A. Mansfield, Eds. Cambridge University Press, New York, 1981. viii, 296 pp., illus. Cloth, \$49.50; paper, \$19.95. Society for Experimental Biology Seminar Series, 8.

**The Stone Lady.** A Memoir of Florence Bascom. Isabel Fothergill Smith. Bryn Mawr College Library, Bryn Mawr, Pa., 1981. 52 pp., illus. Paper, \$7.50.

**Stop Burning Your Money.** The Intelligent Homeowner's Guide to Household Energy Savings. John Rothchild. Random House, New York, 1981. xxvi, 260 pp., illus. \$15.50.

**Straight Talk about Mental Tests.** Arthur R. Jensen. Free Press (Macmillan), New York, 1981. xvi, 270 pp., illus. \$12.95.

**Stratigraphical Atlas of Fossil Foraminifera.** D. G. Jenkins and J. W. Murray, Eds. Published for the British Micropalaeontological Society by Horwood, Chichester, England, 1981 (U.S. distributor, Halsted [Wiley], New York). 310 pp., illus. \$79.95. British Micropalaeontological Society Series. Ellis Horwood Series in Geology.

**Stress and Cancer.** Kurt Bammer and Benjamin H. Newberry, Eds. Hogrefe, Toronto, 1981. viii, 264 pp., illus. Paper, \$19.

**Stress and Fish.** Papers from a symposium, Norwich, England, Sept. 1980. A. D. Pickering, Ed. Academic Press, New York, 1981. xiv, 368 pp., illus. \$59.50.

**Synthetic Fuels.** Ronald F. Probst and R. Edwin Hicks. McGraw-Hill, New York, 1981. xvi, 490 pp., illus. \$29.95.

**The Temporary Worker in the Nuclear Power Industry.** An Equity Analysis. Mary H. Melville. Center for Technology, Environment, and Development, Clark University, Worcester, Mass., 1981. x, 70 pp., illus. Paper, \$5. CENED Monograph Series No. 1.

**Tesla.** Man Out of Time. Margaret Cheney. Prentice-Hall, Englewood Cliffs, N.J., 1981. xvi, 320 pp. + plates. \$16.95.

**Tetanus.** Important New Concepts. R. Veronesi, Ed. Excerpta Medica, Amsterdam, 1981 (U.S. distributor, Elsevier North-Holland, New York). xiv, 284 pp., illus. \$46.75.

**Textbook of Endocrinology.** Robert H. Williams, Ed. Saunders, Philadelphia, ed. 6, 1981. xxii, 1270 pp., illus. \$65.

**Theories of Light from Descartes to Newton.** A. I. Sabra. Cambridge University Press, New York, ed. 2, 1981. 366 pp. \$39.50.

**The Theory of Atomic Structure and Spectra.** Robert D. Cowan. University of California Press, Berkeley, 1981. xviii, 732 pp., illus. \$45. Los Alamos Series in Basic and Applied Sciences.

**A Theory of Medical Ethics.** Robert M. Veatch. Basic Books, New York, 1981. xii, 388 pp. \$20.95.

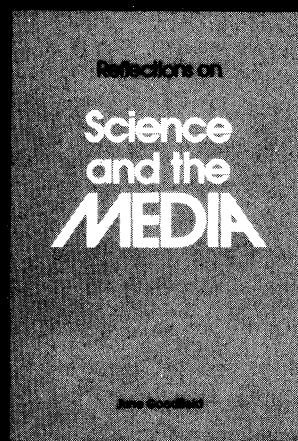
**Topics in Harmonic Analysis on Homogeneous Spaces.** Sigurdur Helgason. Birkhäuser, Boston, 1981. x, 142 pp. \$12. Progress in Mathematics, vol. 13.

**Working the Street.** Police Discretion and the Dilemmas of Reform. Michael K. Brown. Russell Sage Foundation, New York, 1981 (distributor, Basic Books, New York). xvi, 350 pp. \$18.

**World-Climates.** With Tables of Climatic Data and Practical Suggestions. Willy Rudloff. Wissenschaftliche Verlagsgesellschaft, Stuttgart, 1981. 632 pp., illus. DM 180. Books of the Journal *Naturwissenschaftliche Rundschau*.

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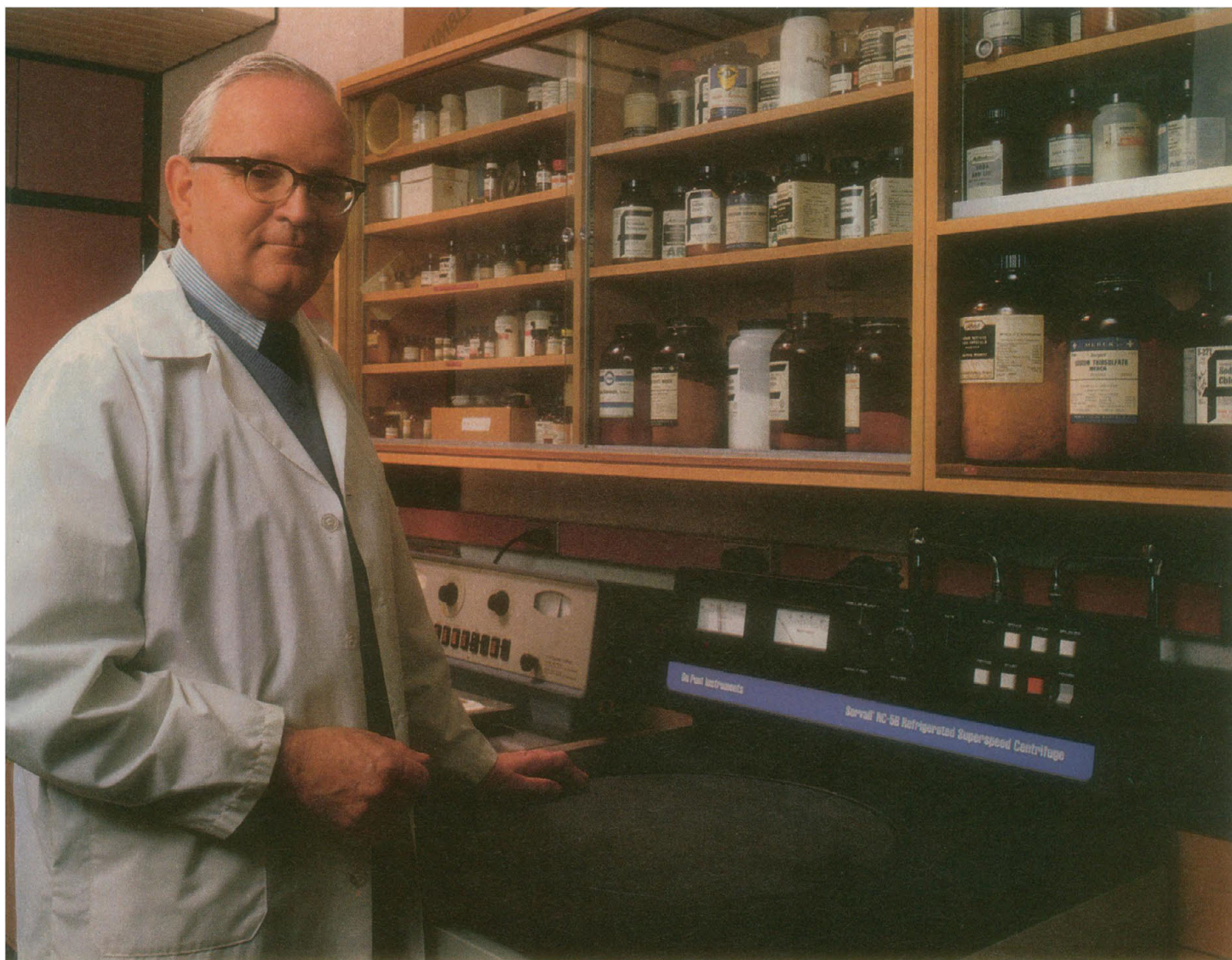
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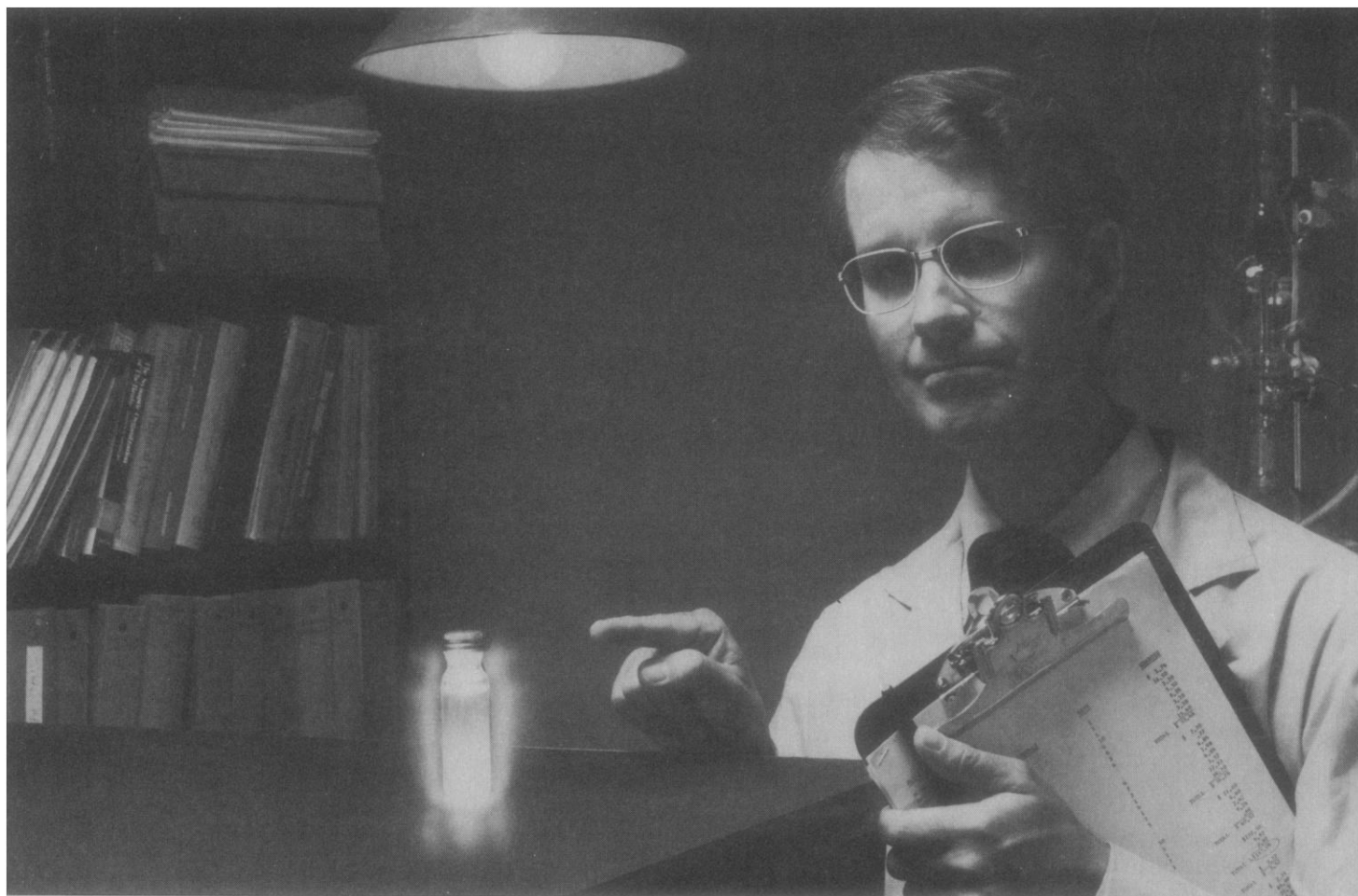
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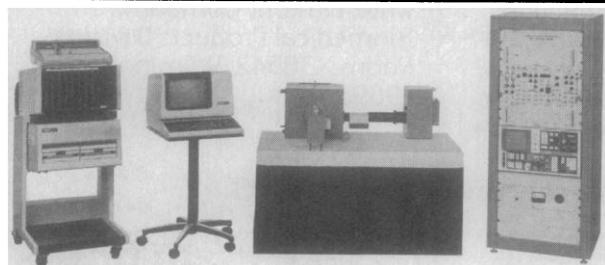
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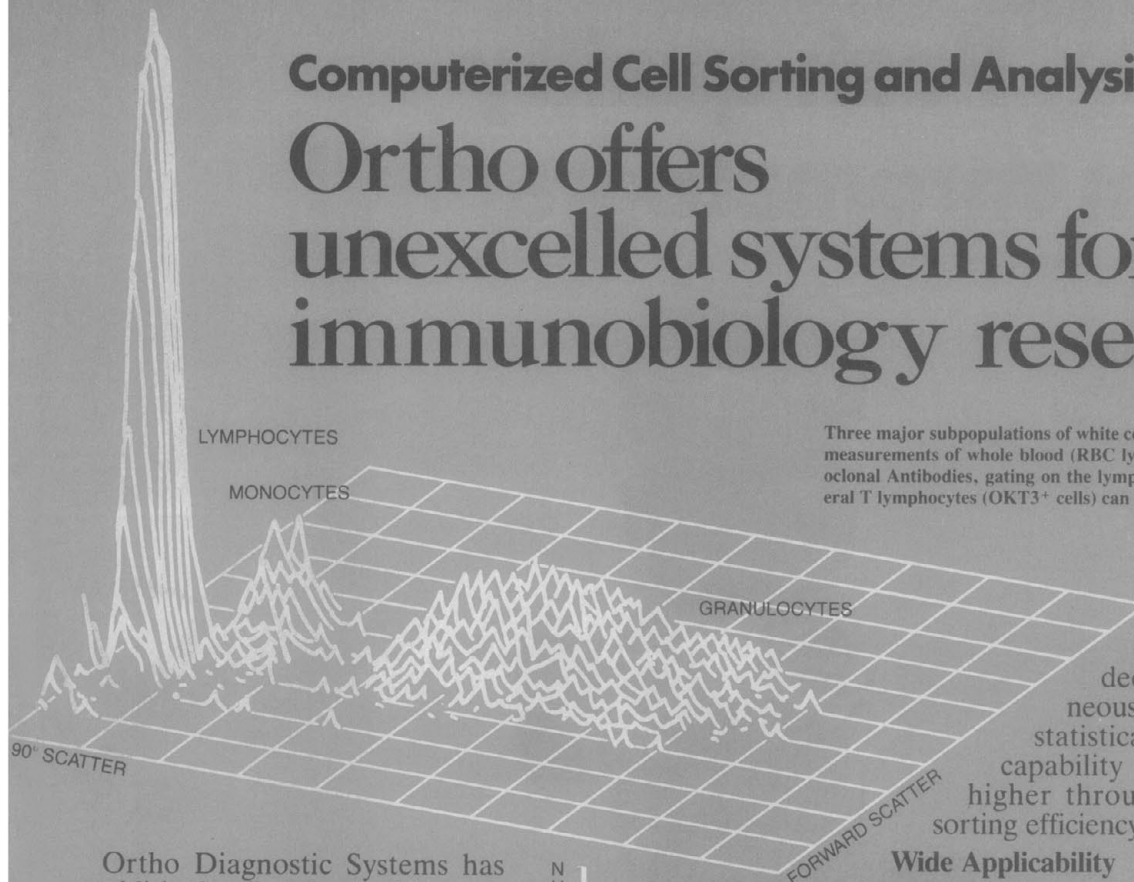
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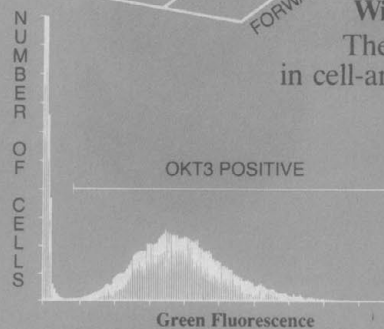
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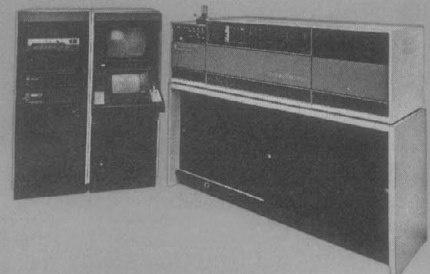
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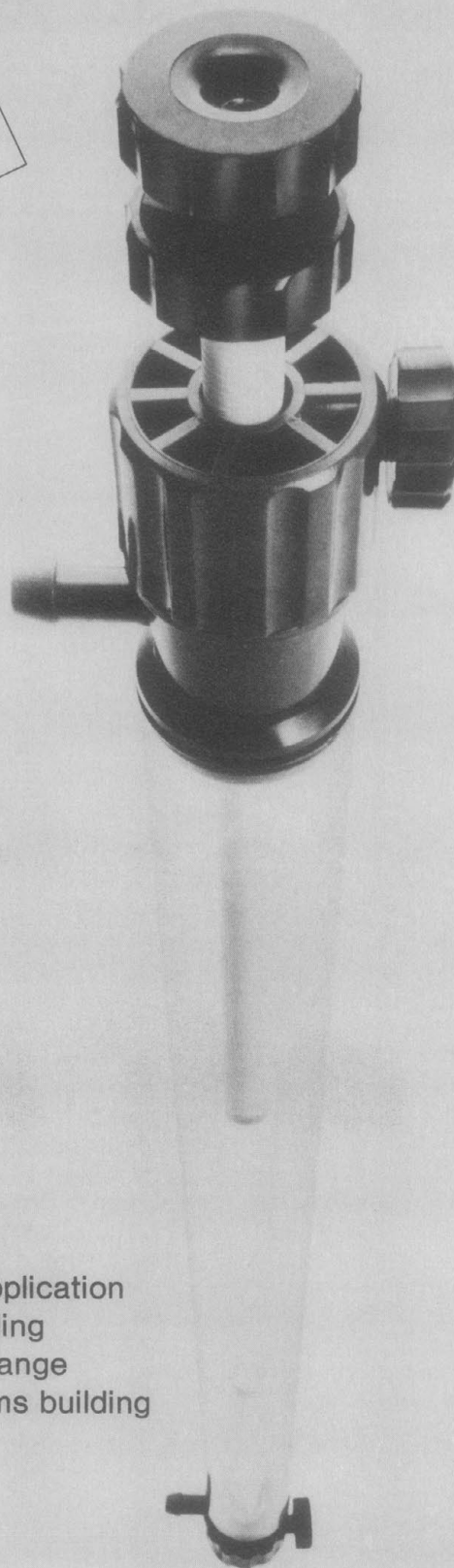
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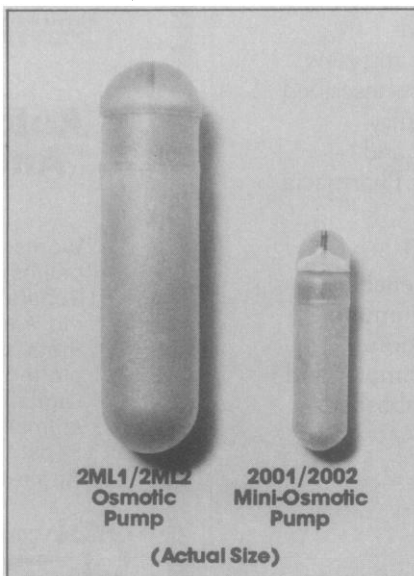
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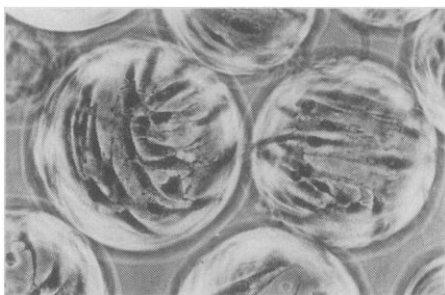
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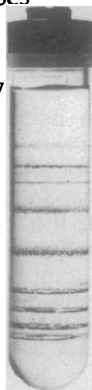
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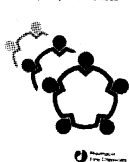
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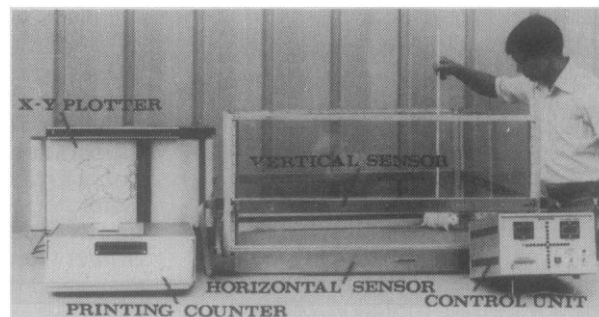
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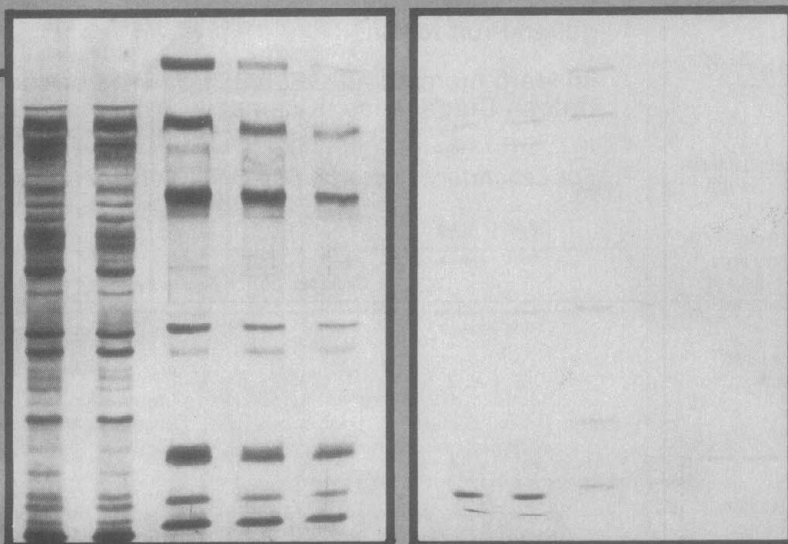
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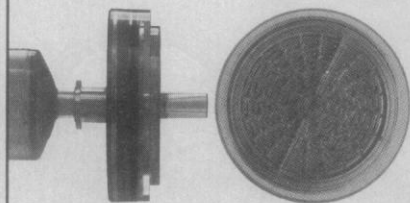
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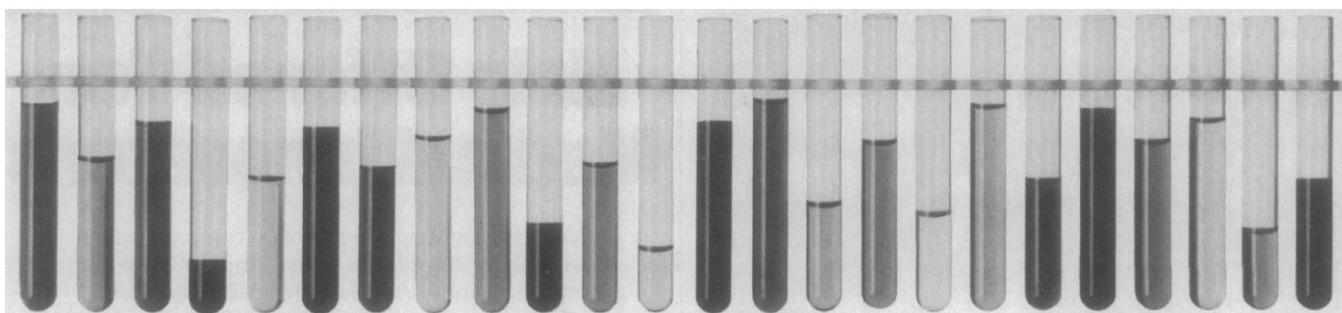
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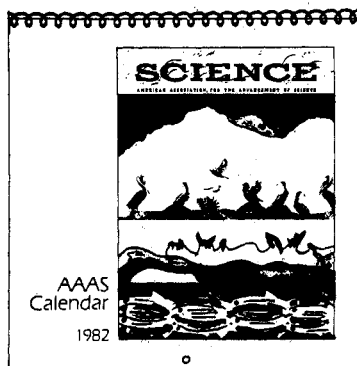
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Science Books & Films needs new reviewers for elementary school through college level films/filmstrips, especially in anthropology, archeology, earth sciences (geology, meteorology), ecology, medicine, math, sociology, psychology, agriculture, science education, learning disabilities, physics, and nutrition. Interested scientists should respond to the Editor, Science Books & Films, 1776 Massachusetts Ave., NW, Washington, DC 20036.



# Personnel Placement

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19 March issue (mailed 12 March): **26 February**  
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## POSITIONS WANTED

**Aquatic Ecologist.** Ph.D. 1978. Research and teaching experience in limnology and invertebrate zoology. Currently employed by major university. Desires academic, academic/research, or consulting position. Box 65, SCIENCE. X

**Biochemist.** Ph.D., 9 years of research experience in lipid and prostaglandin metabolism and environmental toxins. Seeks research and/or teaching position. Los Angeles area preferred. Box 62, SCIENCE. 2/26; 3/12, 26

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**Biotechnology Consultant.** Licensed physician and biochemist experienced in prokaryotic and eukaryotic techniques. Expertly prepared to evaluate feasibility and diagnostic or therapeutic utility of "biotechnology" products. Salary or consultation. Box 63, SCIENCE. 2/26; 3/5, 12, 19

**Cardiovascular Physiologist.** Ph.D. Six years of research/teaching experience. Active research in cardiac and skeletal muscle blood flow regulation; publications. Acute, chronic, in vitro, and in vivo methods. Undergraduate, graduate, and medical teaching. Seeks academic, industry, or government research position. Box 59, SCIENCE. 2/26; 3/5

**Electron Microscopist.** Currently supervises large, university-affiliated hospital diagnostic laboratory. EMSA-certified. Experimental pathology research background. Experience developing/supervising histochemistry and immunocytochemistry protocols at light and EM levels. Wishes to relocate to San Francisco/Bay area. Box 61, SCIENCE. 2/26; 3/12, 26

## POSITIONS WANTED

**Cell Biologist/Electron Microscopist.** Ph.D., with experience and training in the biochemistry of contractile proteins, immunology, and light microscopy. Seeks a position in medical school, industry, or academia. Currently employed in an Ivy League x-ray microanalysis laboratory studying ion transport. Broad interests in cell biology and biomedical research. Publications. Can teach/train and perform/direct research in EM (including SEM and freeze-fracture), cell structure/function, cell motility, phagocytosis, and inflammation. Prefers tenure-track position for medical schools or academia. Salary: competitive. Available July 1982 with some flexibility. Box 50, SCIENCE. X

**Clinical Immunologist.** Ph.D., experienced in cellular immunology, histocompatibility, serum proteins, serology; research interest in autoimmune disease. Seeks clinical laboratory position, teaching, research at university or teaching hospital. Box 4, SCIENCE. X

**Ecologist/Ethologist.** Ph.D. 1982. Research on rodent social behavior, population dynamics, olfactory communication. Seeks academic teaching and research position. Teaching experience and publications. Box 66, SCIENCE. X

**Ph.D. 1975. Professional Fish Parasitologist:** Ten years of experience in teaching, research, fish disease diagnosis, histopathology, histotechnology, and photomicrography. Seeking teaching or research position. Box 57, SCIENCE. X

**Gross Anatomy—Pathology.** 20 years of laboratory and lecture teaching in major medical and dental colleges in United States. Seeks teaching with dissection responsibilities or position as pathology assistant. Teaching-related activities (museum dissection) emphasized. No research interest. Nontenure contractual arrangement preferred. G.P.O. Box 2682, Brooklyn, N.Y. 11202. X

**Limnology/Aquatic Ecology, M.S., May 1982.** Seeking research position or academic assistantship in the aquatic sciences. Skills include biological/chemical water quality analysis, data analysis using SPSS and SAS programs, photomicrography, underwater photography, SEM, and flying (private pilot). Box 52, SCIENCE. 2/26; 3/5, 12

**M.B.A. wants to help manage growing company.** Ph.D. in plant physiology. Skills in marketing, finance, strategic management, negotiations. Box 53, SCIENCE. X

**Nutritional/Biochemical Toxicologist.** Ph.D. Extensive experience: chemical/nutritional carcinogenesis, toxicology. Human cancer. Tissue culture. GLP. Independent publications. Teaching. Responsible position. Box 54, SCIENCE. X

**Project Evaluator/Grant Referee.** Researcher experienced in biology and biochemistry. "Hands on" expertise in macromolecular biochemistry, recombinant DNA technology, immunology, immunohistochemistry, cell culture, metabolic diseases, hormone action, development, neurophysiology, histopathology, ultrastructural pathology, computerized image analysis, and medicine. Desires position reviewing or administering review of proposed or ongoing projects. Box 64, SCIENCE. 2/26; 3/12

**Research Psychologist/Clinical Electroencephalographer.** Ph.D. Senior investigator with extensive experience seeks clinical-research position in psychiatric facility. Broad interests in research methodology and empirical study of biological-organic and neuropsychological variables operating in major psychiatric dysfunction. Other interests involve ethical considerations in research and issues of informed consent. Numerous publications. Good record of obtained grants. Current rank of associate professor. Box 58, SCIENCE. X

## POSITIONS OPEN

**ASSISTANT PROFESSOR OF BIOLOGY.** A 1-year position (sabbatical leave replacement) will be available for the academic year beginning September 1982. Candidates should possess a Ph.D. and show evidence of strong teaching ability and an interest in undergraduate education. Duties will include general biology lecture and laboratory sections with an option to offer a field botany course. Send curriculum vitae, including the names of three references, to: **Kenneth Wittig, Biology Department, Siena College, Loudonville (Albany), N.Y. 12211.** *Siena College is an Equal Opportunity Employer.*

## POSITIONS OPEN

### WESTERN STATE COLLEGE OF COLORADO

**ANIMAL PHYSIOLOGIST.** Tenure-track position, ASSISTANT or ASSOCIATE PROFESSOR, beginning September 1982. Ph.D. in animal physiology preferable. Primary responsibilities include teaching physiology (general, human, animal) and introductory zoology courses. A strong commitment to teaching is required. Potential exists for research in a high-altitude setting. Send résumé, transcripts of all college work, and three letters of reference to: **Search Committee, Biology Department, Western State College, Gunnison, Colo. 81230.** Application deadline: 2 April 1982 or until position is filled. *Equal Opportunity/Affirmative Action Employer.*

The Ohio State University College of Medicine, Department of Medical Microbiology and Immunology, invites applications for two tenure-track positions. One is in the area of **ANIMAL VIROLOGY**, with a preference for a person working with herpesviruses. The second position is for a **TUMOR IMMUNOLOGIST** with experience in the preparation of monoclonal antibodies. Minimum requirement is a Ph.D. degree with postdoctoral training. These individuals will participate in the medical and graduate teaching programs of the department and will be expected to develop a productive research program. Rank and salary will depend upon qualifications. Send curriculum vitae and three letters of recommendation to: **Ronald Glaser, Ph.D., Department of Medical Microbiology and Immunology, The Ohio State University, 333 West 10 Avenue, Columbus, Ohio 43210.** *Ohio State University is an Equal Opportunity Employer.*

### ASSISTANT DIRECTOR

An experienced administrator is being sought for a nuclear physics research center. His/her responsibilities would include financial management; budget planning, preparation, and monitoring; establishing and maintaining management information systems; internal personnel planning, procedures, and relations; purchasing procedures; serving as liaison for national and international users of the center; supervision of administrative and clerical staff; coordination of preparation of technical proposals, reports, and newsletters; and serving as liaison with federal agencies and institutional representatives.

Qualifications: bachelor's degree in science or technical field, a minimum of 1 year of training in computer programming and analysis, plus at least 4 years of experience in financial management and business administration. Salary range: \$23,000 to \$30,000, depending on qualifications. Submit résumé to: **Indiana State Employment Service, 10 North Senate Avenue, Room 100, Indianapolis, Ind. 46204,** attention B. Anderson, ID 91135.

**ASSISTANT PROFESSOR, BIOCHEMICAL NUTRITIONIST.** The Department of Nutrition at Rutgers University invites applications for a 12-month tenure-track appointment available July 1982 with research emphasis in the area of mineral and vitamin metabolism. Applicants must present evidence of exceptional qualifications for development of an independent research program and for teaching at both the graduate and undergraduate levels. Postdoctoral experience is desirable. Complete résumé, summary of research plans, and three letters of recommendation should be sent to: **Dr. Paul Griminger, Department of Nutrition, Room 103, Thompson Hall, Rutgers University, Cook College, New Brunswick, New Jersey 08903,** by 1 April 1982. *An Equal Opportunity/Affirmative Action Employer.*

**ASSISTANT PROFESSOR OF MEDICINE.** College of Physicians and Surgeons, Columbia University, Pulmonary Division, Department of Medicine. Tenure track for candidate with interest and demonstrated ability in doing independent research. Send curriculum vitae to: **Dr. Réjane M. Harvey, Department of Medicine, College of Physicians and Surgeons, Columbia University, New York, N.Y. 10032.** *An Equal Opportunity/Affirmative Action Employer.*

**ASSISTANT PROFESSOR.** Tenure-track position available August 1982. Ph.D. in pathogenic microbiology. Responsibilities include teaching introductory microbiology, pathogenic microbiology, possibly anatomy and physiology, and master's level course(s) in area of specialization; initiation of active research program and supervision of M.S. students. Applications close 1 April 1982. Send letter of application, official transcripts, curriculum vitae, and three letters of recommendation to: **Chairman, Department of Biological Sciences, Florida Atlantic University, Boca Raton, Fla. 33431.** *An Equal Opportunity/Affirmative Action Employer.*

## POSITIONS OPEN

### ASSISTANT PROFESSORS

The Department of Biological Sciences at the University of Maryland Baltimore County (UMBC) will make a tenure-track appointment for fall 1982 in one of the following areas:

- 1) **ANIMAL PHYSIOLOGIST** will research interests in neural, endocrine, or regulatory problems in invertebrate or vertebrate biology, or
- 2) **PHYSIOLOGICAL ECOLOGIST** with research interests to complement current faculty research in ecological genetics, population dynamics, evolutionary ecology, behavior, and neural and endocrine physiology.

Candidates must have postdoctoral training and a record of research accomplishments. Appointees are expected to continue productive research programs and to teach at the undergraduate level in a team-taught course in anatomy and physiology, as well as advanced/graduate courses in their area of specialty. The Department of Biological Sciences offers the M.S. and Ph.D. degrees and also participates in the university-wide graduate program in marine-estuarine-environmental sciences. Funds will be provided to initiate research. Send curriculum vitae, statement of future research interests, and names of four referees to:

**Dr. Frank E. Hanson**  
Department of Biological Sciences  
University of Maryland Baltimore County  
Catonsville, Maryland 21228

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**ASSISTANT PROFESSOR—Tenure-track position in Anatomy Department beginning September.** Candidates should have Ph.D. with postdoctoral research experience. Research interest in cell biology desired, especially in areas such as membrane structure and function, cell adhesion, and membrane glycoproteins. Individuals will participate in teaching in one of the areas of anatomy with ultimate development of a graduate course in their area of expertise. Superb research facilities available in new building. Send curriculum vitae, brief statement of research interests, and names of three references by 1 April to:

**Gary E. Wise, Ph.D.**  
Chairman, Department of Anatomy  
Texas College of Osteopathic Medicine  
Camp Bowie at Montgomery  
Fort Worth, Texas 76107-2690

*An Equal Opportunity/Affirmative Action Employer*

**ASSISTANT PROFESSOR OF ANATOMY.** Ph.D., M.D., or equivalent; minimum of 2 to 3 years of postdoctoral research experience in techniques of cellular and/or molecular biology applied to problems in developmental, cellular, and/or neurobiology. Share responsibilities for instruction of human morphology to medical students in both traditional/experimental curriculum tracks. Must demonstrate potential for excellence in his/her chosen field of research and establish productive laboratory program competitive for extramural funding. Curriculum vitae, description of research/teaching interests, and names of three references by 1 April 1982 to: **Dr. Robert O. Kelley, Chairman, Anatomy Department, University of New Mexico School of Medicine, Albuquerque, N.M. 87131. Affirmative Action/Equal Opportunity Employer.**

### ASSISTANT PROFESSOR APPLIED PHYSIOLOGY

Tenure-track position in Department of Health Sciences for research and teaching in human physiology on both undergraduate and graduate levels. General knowledge of exercise and environmental physiology essential with special expertise in either muscle biochemistry or cardiopulmonary physiology. Appointment: September 1982. Contact: **Chairman, Department of Health Sciences, Sargent College of Allied Health Professions, Boston University, Boston, Mass. 02215. An Equal Opportunity Employer.**

**ASSISTANT PROFESSOR: NEUROCHEMIST.** Recent Ph.D. (postdoctoral experience preferred) with research interests in basic mechanisms of chemical neurotransmission. The position demands developing a strong research program and undergraduate and graduate teaching in the area of specialization. Please send curriculum vitae and three letters of reference to: **M. F. MacDonnell, Chairman, Search Committee, Department of Biological Science, Rutgers University, New Brunswick, N.J. 08903.**

## POSITIONS OPEN

**ASSISTANT PROFESSOR, NEUROSCIENCE.** Assistant professor position available in the Department of Neuroscience. Expertise required in intracellular recording techniques and use of HRP methods for single cell identification in the mammalian CNS with special focus on basal ganglia systems. At least 5 years of experience preferred. Applicants should have credible publication record in refereed journals. Salary according to institutional standards. Send curriculum vitae to: **Dr. Dominick Purpura, ALBERT EINSTEIN COLLEGE OF MEDICINE, KENNEDY CENTER, 1410 Pelham Parkway, Bronx, New York 10461. An Equal Opportunity Employer.**

### BIOCHEMISTS—MOLECULAR BIOLOGISTS

Tenure-track faculty positions at assistant and associate professor levels. Candidates should be interested in developing strong and independent research with long-term growth potential on the mechanisms of gene expression at the molecular level in either prokaryotic or eukaryotic systems. This area may be interpreted broadly from chemical-physical to genetic interests. Teaching includes medical, dental, and graduate students at sizable and rapidly expanding medical complex. Biochemistry department with excellent new facilities is undergoing substantial expansion. Salary commensurate with experience and competitive. Curriculum vitae, brief statement of present and future research interests, and three letters of recommendation should be sent to: **Dr. Robert D. Wells, Chairman, Department of Biochemistry, University of Alabama—Birmingham, Schools of Medicine and Dentistry, University Station, Birmingham, Alabama 35294. An Equal Opportunity/Affirmative Action Employer.**

**TENURE-TRACK OPENING IN BIOCHEMISTRY** at Illinois Wesleyan University (IWU). This appointment is an entry-level position for a biochemist with a strong background in organic chemistry. Organic majors with strong biochemistry will also be considered. IWU is an undergraduate-only university of 1650 students with an ACS-accredited Chemistry Department with four full-time members. By 15 March, send résumé and transcripts and have three letters of recommendation sent to: **Dr. David N. Bailey, Department of Chemistry, Illinois Wesleyan University, Bloomington, Ill. 61701. IWU is an Equal Opportunity Employer.**

**BIOCHEMISTRY/MOLECULAR BIOLOGY.** One or two tenure-track assistant professor positions on or after 1 September 1982. Postdoctoral experience, commitment to teaching, and development of strong independent research program required. Research area open but preference for molecular/cell biology. Send résumé, research plans, and three letters of recommendation by 1 June 1982 to: **D. Lambeth, Biochemistry Department, Emory University, Atlanta, Georgia 30322. An Equal Opportunity/Affirmative Action Employer.**

Wanted: **Ph.D., BIOCHEMISTRY,** research position available, tenure track, in Division of Nephrology. Must have experience in membrane transport including preparation of plasma vesicles and/or reconstitution of transport system. Send curriculum vitae to: **University of Arkansas for Medical Sciences, J. A. Arruda, M.D., Chief of Nephrology, Slot 501, 4301 West Markham, Little Rock, Ark. 72205.**

### DEPARTMENT OF BIOLOGY UNIVERSITY OF PUERTO RICO RIO PIEDRAS CAMPUS

Applications are invited for tenure-track positions for a **cellular immunologist**, a **physiological ecologist** (animal), a **microbiologist** (recombinant DNA), and a **general biologist**. Ph.D. is preferred for the general biologist position, required for the others. The general biologist will be expected to coordinate and develop a large (1000 students) undergraduate general biology course. The others will be expected to develop active independent research programs, supervise graduate students, and teach both undergraduate and graduate courses in their respective areas. Speaking and writing knowledge of Spanish is preferred. All appointments are expected to be made at the assistant professor level, but exceptional candidates will be considered at other levels. Send a letter describing commitment to teaching, current and future research interests, curriculum vitae, transcripts, bibliography, representative reprints, and the names, addresses, and telephone numbers of at least three people who may be contacted for letters of recommendation to: **Chairman, Faculty Search Committee, Department of Biology, University of Puerto Rico, Rio Piedras, P.R. 00931. An Equal Opportunity Employer.**

## POSITIONS OPEN

### BIOCHEMIST

Research fellow (Ph.D.) to assume major responsibility for a team effort lending to the structural analysis of human antihemophilic factor. Applicant must be self-motivated and familiar with all aspects of protein isolation and characterization. Previous experience with HPLC helpful. Individual must be U.S. citizen or have permanent visa. Send résumé to: **B.H., P.O. Box 435, Lenox Hill Station, New York, N.Y. 10021.**

**BIOCHEMIST:** Postdoctoral position in lipids, protein chemistry, and molecular biology. Send application and three letters of recommendation by 1 April 1982 to: **P. E. Kolattukudy, Institute of Biological Chemistry, Washington State University, Pullman, Washington 99164. An Affirmative Action/Equal Opportunity Employer.**

The **DEPARTMENT OF BIOLOGY** plans three full-time temporary appointments for 1982-1983:

**ANATOMIST.** Teach anatomy, neuroanatomy, or anatomy and physiology; Ph.D. preferred. (May become tenure track; Ph.D. required.)

**MEDICAL TECHNOLOGY INTERN PROGRAM DIRECTOR.** Teach medical technology and administer intern program in hospitals.

**ENVIRONMENTAL HEALTH PROGRAM DIRECTOR.** Teach environmental health, coordinate with government programs, and develop community information. Ph.D. preferred.

Occasional part-time appointments in other areas; no closing date.

Inquiries and complete applications by 25 March to: **Dr. Leon Dorosz, Chair, Department of Biology, San Jose State University, Washington Square, San Jose, Calif. 95192.**

**BIOLOGY.** Central College, a selective liberal arts college with a strong biology program and a strong financial and admissions base, seeks faculty person for August 1982, with emphasis in physiology and cellular biology. Applicants should be committed to undergraduate teaching, research with undergraduate participation, and a liberal arts tradition. Send résumé no later than 15 March 1982 to: **Dr. Donald M. Huffman, Department of Biology, Central College, Pella, Iowa 50219. Telephone: 515-628-5203. Equal Opportunity Employer.**

### DEPARTMENT OF BIOLOGY BOSTON UNIVERSITY

Applications are invited for three tenure-track research/teaching positions as assistant or associate professors in the following areas:

- 1) **Ultrastructure**, with main interests in neurosciences, cell-cell interactions, or other areas,
- 2) **Regulatory Physiology**, with research interests in vertebrate neuroendocrinology and a broad background in comparative endocrinology and physiology, and
- 3) **Biochemistry**, with interests in molecular biology, cellular or macromolecular regulatory mechanisms, membrane interactions, or intra/intercellular signals.

We prefer candidates who have current research support or clear potential for funding and who can interact with existing faculty in molecular/cell biology, development, neurobiology, endocrinology, and physiological ecology. Candidates will be expected to teach courses and direct research at the undergraduate and graduate levels. Submit curriculum vitae, recent reprints, and names of at least three references who can (or have been asked to) send letters of recommendation to: **Chairman of Search Committee (indicate which), Department of Biology, Boston University, 2 Cummings Street, Boston, Mass. 02215. Closing date is 1 April 1982. Equal Opportunity/Affirmative Action Employer.**

### BOTANIST—PHYCOLOGIST OR BRYOLOGIST

The Department of Botany, University of Iowa, invites applications for a 9-month tenure-track position at the assistant professor level beginning August 1982. Candidates should have a Ph.D. and demonstrated research ability in the area of phycology or bryology. Teaching duties will include an advanced course in the candidate's specialty and participation in the undergraduate teaching program. Screening of applicants will begin 31 March 1982. Send curriculum vitae, graduate transcripts, statement of research plans, and three letters of recommendation to: **Dr. Robert W. Embree, Department of Botany, University of Iowa, Iowa City, Iowa 52242. The University of Iowa is an Equal Opportunity/Affirmative Action Employer.**

## Director - Analytical Chemistry

### Pharmaceuticals

A dynamic international pharmaceutical company has an immediate opening for a PhD in analytical or physical chemistry, with a minimum of 5 years pharmaceutical experience as an analytical chemist with managerial responsibilities.

The successful candidate must have a strong background in instrumentation and must excel in one or more of the following areas: GC, HPLC, TLC, IR, NMR, UV and MS.

The individual must also possess a thorough knowledge of full range of wet method analysis of pharmaceutical dosage forms and finished products.

This person will have the responsibility of supervising the analytical group and preparing analytical sections of FDA submissions. The position offers a challenging opportunity to resolve a variety of analytically related problems emanating from research and development using both instrumentation and wet methods.

We offer excellent working conditions and a complete benefits package including dental coverage. Please send resume including salary history to: Vice President, Personnel

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## Vice Provost for Research and Graduate Studies

SUNY Stony Brook invites nominations and applications for the position of Vice Provost for Research and Graduate Studies. The Vice Provost is responsible for all aspects of post-baccalaureate education, for the overall supervision of the Graduate School and the Office of Research Administration and for fostering the development of research on campus.

The University enrolls 16,000 students, including 4,600 graduate and professional students, and consists of a College of Arts and Sciences, a College of Engineering and Applied Sciences, the W. Averell Harriman College for Urban and Policy Sciences and a Health Sciences Center that includes Schools of Medicine, Dental Medicine, Nursing, Social Welfare and Allied Health Professions and a newly constructed 540-bed University Hospital. There are currently 34 graduate programs and sponsored research program expenditures in 1981 exceeded 31 million dollars.

Qualifications include a record of academic distinction and evidence of outstanding administrative abilities. We particularly wish to encourage applications from women and minority groups. The position will be available at the earliest on September 1, 1982.

Nominations and applications with supporting documentation should be sent by March 31, 1982 to: Professor David Cohen, Chairman, Vice Provost for Research and Graduate Search Committee, PO Box 599, Stony Brook, NY 11790.

SUNY Stony Brook is an equal opportunity/affirmative action employer. AK# 305C.



State University of New York  
**Stony Brook**

## PHARMACOLOGIST/ NEUROSCIENTIST

We have an excellent opportunity for a Pharmacologist/Neuroscientist with a PhD or equivalent with a minimum of 2 years related experience. Specific interests should include the effect of drugs on animal behavior.

The successful candidate will develop operant conditioning techniques to study psychotropic drugs and will collaborate with ongoing research involving single unit recording. The Sterling-Winthrop Research Institute is located in upstate New York, in an area that offers many cultural and recreational opportunities. Please send your Curriculum Vitae including salary requirements and the names of three references in confidence to:



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**STERLING-WINTHROP  
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## Research Investigator

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Barbara Gardner  
#828-127

Research & Development Division  
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The International Atomic Energy Agency seeks

### Safeguards Inspectors

to participate in the execution of the Agency's safeguards programme. Required university degree in nuclear chemistry, nuclear chemical engineering, or nuclear electronics/instrumentation. Experience in the processing of nuclear materials, preferably in plant operation or in the instrumental measurements of quantities of nuclear material advantageous. Fixed-term contract for two years with the possibility of further extension if service satisfactory. Tax-free emoluments depending on qualifications and experience approx. US\$ 33,200 per annum. Send curriculum vitae, indicating your nationality, under Vacancy Notice 4/82 to Division of Personnel, International Atomic Energy Agency, PO Box 100, A-1400 Vienna, Austria, before 19 May 1982.

## MICROBIOLOGIST IMMUNOLOGIST

The Microbiology Section of Wyeth Laboratories Research Division has an opening at the group leader level for a Ph.D. in microbiology with a strong background in immunology. The objective of the research program is the development of new drugs in the immunomodulator and anti-infective areas. The candidate should have approximately 5 years of post doctoral experience, should be familiar with animal models for infectious diseases, autoimmune disease and immunodeficiency at the cellular and host levels, and should have the capacity to develop new models of these types.

An attractive fringe benefit package is offered along with a competitive starting salary. If interested, send resume including salary requirements in strict confidence to:

**Wyeth Laboratories**  
P.O. BOX 8299  
Philadelphia, PA 19103

Refer to Job #3

Equal Opportunity Employer, M/F/H

## POSITIONS OPEN

### MEDICAL

#### BIostatistician

The State Department of Health Services has an opening for a **Biostatistician IV**. Doctorate degree in biostatistics or closely related field and 18 months of teaching or research experience at the postdoctorate level required. For application forms, telephone: Robin Kubochi, 916-323-9721, or write: Raymond Neutra, M.D., Ph.D., Epidemiology Studies Section, 2151 Berkeley Way, Room 515, Berkeley, Calif. 94704. Deadline: 12 March 1982.

*The California State Department of Health Services is an Equal Opportunity Employer.*

### BIOTECHNOLOGY PRINCETON, N.J.

Cytogen Corporation, a new biotechnology company located in Princeton, N.J., is recruiting qualified professional personnel (Ph.D. level or equivalent) with two or more years of industrial and/or academic experience in one or more of the following areas:

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- TUMOR IMMUNOLOGY
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Applications are welcome from qualified individuals who wish to contribute to the innovative solutions to problems in the diagnostic and therapeutic arenas. Please send resume and salary history to:

Thomas J. McKearn, M.D., Ph.D.  
CYTOGEN CORPORATION  
201 College Road East  
Princeton Forrestal Center  
Princeton, N.J. 08540

### CARDIAC ELECTROPHYSIOLOGIST

A postdoctoral position will be available in the Foundation for Cardiovascular Research starting 1 July. Salary negotiable, depending on experience. Candidates with microelectrode experience are invited to submit their curriculum vitae and request that two letters of recommendation be sent separately to:

Richard S. Cosby, M.D.  
201 North El Molino, Suite 100  
Pasadena, California 91101

*An Affirmative Action/Equal Opportunity Employer*

### CHAIRMAN DEPARTMENT OF BIOLOGICAL SCIENCES UNIVERSITY OF MARYLAND BALTIMORE COUNTY

The Department of Biological Sciences at the University of Maryland Baltimore County (UMBC) is seeking a distinguished scientist to serve as **CHAIRMAN**. The department presently has a group of 20 professional faculty ranging in research interests from molecular to population biology. It is anticipated that the department will be adding additional professorial faculty members within the next 3 years. Almost all faculty have federally funded research programs. Within a year, the department will expand into a new facility, effectively doubling the research and teaching space. The department presently offers the Ph.D. in biological sciences, in addition to the M.S. and B.A. degrees.

The appointment as professor and chairman is to become effective on or after 1 July 1982. Send curriculum vitae and names and addresses of at least three references to:

Professors T. F. Roth and P. S. Lovett  
Chairmen, Faculty Search Committee  
Department of Biological Sciences  
University of Maryland Baltimore County  
Catonville, Maryland 21228

*UMBC is an Affirmative Action/Equal Opportunity Employer.*

**POSTDOCTORAL POSITION** available immediately to study Rhizobia/legume interactions. Experience required in microbiology, plant physiology, and biochemistry. Applicants should submit resume and three letters of recommendation to: Dr. A. R. J. Eaglesham, Boyce Thompson Institute at Cornell, Tower Road, Ithaca, N.Y. 14853.

*An Equal Opportunity/Affirmative Action Employer*

## Process Development Scientists/Engineers

Genentech, Inc., a leading genetic engineering company located on the beautiful San Francisco Peninsula, is currently seeking Scientists/Biochemical Engineers for our Process Development Group. We have immediate openings in the following areas:

### Senior Microbiologist

Will build and direct a laboratory group which conducts Process Development research for the purpose of increasing yields and efficiencies of fermentation processes. Must have strong background and skills in genetic transfer and selection techniques and in Microbial Biochemistry. Requires a PhD plus 2-5 years laboratory supervision. **Position # 11-111**

### Senior Biochemical Engineer

Will build and lead a research group which develops and optimizes new processes and techniques for large-scale fermentation production. Must have strong background in state-of-the-art fermentation technology coupled with an appreciation of recombinant DNA principles. Requires PhD in Biochemical Engineering or related discipline plus 2-5 years experience as a group leader in fermentation process development. **Position # 11-112**

### Scientist-Yeast Fermentation Development

Will develop efficient high yielding fermentation processes using genetically engineered yeast strains. Must have strong background in yeast physiology and genetics. Appreciation for industrial problems and ability to use computer methods desirable. Requires a PhD in Microbiology, Biochemical Engineering or related disciplines, or an MS degree with significant laboratory experience. **Position # 11-113**

### Scientist-Microbial Biochemistry & Physiology

Will develop and apply diagnostic research methodologies to the optimization of bacterial fermentations which produce eukaryotic proteins. Must be able to apply techniques of protein biochemistry to problems of microbial physiology. Requires PhD in Biochemistry, Microbiology or related discipline. Post-doctoral experience preferable. **Position # 11-114**

All applicants must be able to interact effectively with complementary disciplines.

We have an excellent compensation and a benefit package which includes a liberal relocation program. For immediate consideration please send curriculum vitae and the name of three references to **Professional Employment**, referring to specific Position Number.

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

We are an equal opportunity employer m/f

## POSITIONS OPEN

**BIOLOGY, ASSISTANT PROFESSOR.** Cedar Crest College, a 4-year liberal arts college for women, located in Pennsylvania's Lehigh Valley near New York City and Philadelphia, Pa., invites applications for this position. Ph.D. required and college-level teaching experience desirable. Responsibility for teaching molecular genetics (including recombinant DNA techniques), coordinating multisectioned microbiology laboratories, and teaching microbiology laboratory sections; and ability to teach electron microscopy desirable. Renewable 9-month contract with option to teach in evening, weekend, or summer Continuing Education programs. Position to be filled for fall 1982 semester. Deadline for applications: 12 March 1982. Salary dependent on qualifications and experience. Send curriculum vitae and letters of reference to: W. G. Dickinson, Director of Operations, Cedar Crest College, Allentown, Pa. 18104. *Equal Opportunity Employer.*

**CHAIR, DEPARTMENT OF ANIMAL SCIENCES** Washington State University, to provide leadership and direction in teaching, research, and extension in a large consolidated department. Qualifications required include an earned Ph.D. degree; 10 years of experience in teaching, research, and/or extension in animal, dairy, or poultry science; and demonstrated evidence of leadership, communication skills, and involvement with animal industries. For job description and application information write: J. J. Reeves, Department of Animal Sciences, Washington State University, Pullman, Washington 99164-6310. Applications will be closed 30 April 1982 or until position filled. *Washington State University is an Equal Opportunity/Affirmative Action Employer.*

**CHAIRPERSON**  
Department of Microbiology  
University of Alabama  
School of Medicine  
Birmingham, Alabama

The Department of Microbiology is seeking a chairperson to head up a large multidisciplinary department.

**Qualifications:** Candidates for this position must have a distinguished record in research and teaching, and, in addition, must possess administrative skills. The Department of Microbiology at the University of Alabama School of Medicine is responsible for graduate and undergraduate education at the School of Medicine and the School of Dentistry as well as for its own graduate programs. Applications will be accepted from qualified persons with either M.D. or Ph.D. degree.

Please submit applications, including curriculum vitae, to:

C. Glenn Cobbs, M.D.  
Director, Division of Infectious Diseases  
The University of Alabama in Birmingham  
University Station  
Birmingham, Ala. 35294

*An Equal Opportunity/Affirmative Action Employer*

**COMPARATIVE ANATOMIST** assistant professor. Nontenure-track position available fall 1982. Annual appointment, not to exceed 3 years. Ph.D. required. Primary responsibilities will be teaching comparative anatomy and introductory courses and advising students. Send curriculum vitae, statement of teaching experience, official transcripts, and three current letters of reference by 1 April to: E. Bruce McLean, Chairman, Department of Biology, John Carroll University, Cleveland, Ohio 44118. *Equal Opportunity Employer.*

University of Michigan Medical School, **DEPARTMENT OF RADIOLOGY**, has on occasion open **FACULTY POSITIONS** within the department and at its affiliated hospitals. Physicians filling these positions will take part in the programs of patient care, teaching, and research of the Departments of Radiology. They will supervise the activities of house officers and aid in the teaching of house officers and medical students. Qualified applicants must be American Board of Radiology-certified or Board-eligible. Previous training or work experience in an academic institution as well as demonstration of previous academic research and teaching experience are desirable. Academic rank will depend on qualifications and experience.

Interested applicants should contact: William Martel, M.D., Acting Chairman, Department of Radiology, University of Michigan Medical School, Ann Arbor, Michigan 48109. *A nondiscriminatory, Affirmative Action Employer.*

*Journal Announcement*

**National Cancer Institute  
National Institutes of Health  
Public Health Service  
Department of Health and Human Services  
Division of Cancer Treatment  
ASSOCIATE DIRECTOR,  
CANCER THERAPY EVALUATION PROGRAM  
Division of Cancer Treatment  
National Cancer Institute**

The National Cancer Institute (NCI) develops the overall national strategy against cancer, coordinates federal government and non-federal government cancer programs, and supports international programs of cancer research.

The Division of Cancer Treatment is responsible for directing the NCI's major research effort related to the treatment of cancer. The Cancer Therapy Evaluation Program of the Division of Cancer Treatment monitors and sponsors clinical trials for cancer therapies. This extramural program supports the investigation of therapeutic modalities through the use of grants, contracts, and cooperative agreements. In fiscal year 1981 the program had a budget of approximately \$128,000,000 and a staff of 50 persons.

This is a civil service position in the Senior Executive Service (SES) with a salary range from \$54,755 to \$61,300 (currently limited to \$58,500 per annum). Candidates may be eligible for Physicians Comparability Pay up to \$10,000 per year. (Alternately candidates may be eligible for appointment in the Commissioned Corps of the U.S. Public Health Service). The individuals selected, if not presently in SES, must serve a one year probationary period.

The mandatory professional/technical qualifications for the position require that candidates:

1. meet the minimal educational requirements for a Medical Officer, GS-602 as defined by the U.S. Office of Personnel and Management Handbook X-118 (Qualifications Standards for Positions Under the General Schedule), which is available in Federal Personnel Offices;
2. have clinical and biomedical research experience and knowledge of research programs related to the treatment of cancer. Clinical experience must include the management of all treatment modalities: surgery, radiotherapy, medical oncology, and biological response modifiers. Candidates must have participated in clinical trials using at least one of the mentioned modalities and must have managed trials of a multimodal nature;
3. be licensed and qualified to provide care to patients in NCI research clinical trials.

The managerial/executive qualifications are:

Experience as Director of a clinical research program of substantial size including the specialties, Surgery, Radiotherapy, and Medical Oncology, demonstrating the competence to assume leadership responsibilities in:

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

Candidates who meet the mandatory requirements will be evaluated by the search committee on the following factors: scientific reputation/peer recognition; training and education; honors and awards; and the degree to which they exceed the minimally qualified level of the mandatory professional/technical and managerial/executive qualifications. Additional information may be obtained from **Ms. Susan Corey, Personnel Management Specialist, NCI (301) 496-6862.**

Applications (personal qualifications statement SF-171) are to be sent to the above individual at: **The National Cancer Institute, Bldg. 31, Rm. 3A34, Bethesda, Maryland 20205.** A current curriculum vitae and bibliography must accompany all applications. Applications of women and/or minority group members are especially solicited.

The National Institutes of Health is an **EQUAL OPPORTUNITY EMPLOYER.**

**APPLICATIONS MUST BE POSTMARKED NO LATER THAN MARCH 1, 1982.**

## POSITIONS OPEN

University of Michigan Medical School, Department of Pathology, Clinical Pathology Program/Chemical Pathology Laboratory, is seeking a **CLINICAL CHEMIST OR CHEMIST** with a Ph.D. in analytical chemistry or biochemistry. Duties will include assistance with the administration of the Chemical Pathology Laboratory, teaching of medical school students and resident staff, and an opportunity for basic and applied research. Faculty rank and salary will be commensurate with experience and qualifications. Please direct inquiries to: **Harold A. Oberman, M.D., David F. Keren, M.D., Department of Pathology, University of Michigan Medical School, 1335 East Catherine Street, Ann Arbor, Mich. 48109.** A nondiscriminatory, Affirmative Action Employer.

**CYTOGENETICS TECHNOLOGIST POSITION**—B.S. or M.S. with experience in the area of cytogenetics and tissue culture. Salary commensurate with qualifications. Contact: **Dr. Razia S. Muneer, Scientific Director, Cytogenetic and Tissue Culture Laboratories, Oklahoma Children's Memorial Hospital, Department of Pediatrics, University of Oklahoma, Health Sciences Center, P.O. Box 26901, Oklahoma City, Okla. 73190.**

**DEVELOPMENTAL BIOLOGY.** Ph.D. required. This tenure-track position is for teaching general zoology, embryology, and histology. Assistant professor level starting 23 August 1982. *An Equal Opportunity/Affirmative Action Employer.* Apply to: **V. Thiesfeld, Chairman, Department of Biology, University of Wisconsin-Stevens Point, Stevens Point, Wis. 54481. Telephone: 715-346-2159.**

The Department of Obstetrics and Gynecology at the University of Michigan is initiating an integrated residency in obstetrics and gynecology at Beyer Hospital of the Peoples Community Hospital Authority in Ypsilanti, Michigan, 1 July 1982, and is seeking a **DIRECTOR** of the program in that facility. Faculty appointment at levels instructor through professor will be considered. Board-certification or Board-eligibility in obstetrics and gynecology is required. Please direct inquiries and curriculum vitae to: **Alan E. Beer, M.D., Professor and Chairman, Department of Obstetrics and Gynecology, L2122 Women's Hospital, University of Michigan Medical Center, Ann Arbor, Mich. 48109.** The University of Michigan is a nondiscriminatory, Affirmative Action Employer.

### DIRECTOR, LABORATORY OF BIOMEDICAL AND ENVIRONMENTAL SCIENCES, UCLA

Applications and nominations are invited for the position of director, Laboratory of Biomedical and Environmental Sciences (LBES), University of California, Los Angeles (UCLA). The laboratory is a Department of Energy laboratory operated by the university as an Organized Research Unit. Potential candidates should have an excellent research record, demonstrated or potential administrative skill, and a commitment to providing leadership for continued scientific growth of the laboratory. The director will also assume a professorship within an appropriate department in the College of Letters and Sciences or the School of Medicine.

Submit curriculum vitae and inquiries to: **LBES Search Committee, Office of the Chancellor, University of California, Los Angeles, Calif. 90024.** Closing date: 1 April 1982. *UCLA is an Affirmative Action/Equal Opportunity Employer.*

**ENTOMOLOGIST.** Tenure-track position (lecturer if university budget precludes tenure-track appointment) at the assistant professor level available September 1982. Ph.D. is required at time of appointment. A strong background in taxonomy/biology of terrestrial and aquatic insects is required. Preference to applicants with a Ph.D. specialization in entomology, broad training in biology, and teaching experience at the college level. Fifty to 75 percent of the teaching load involves general biology; a strong commitment to teaching at the lower-division level is required. Position also involves teaching courses in general and aquatic entomology, curatorial duties, student advising, faculty committee participation, and graduate student supervision at the master's level. Submit curriculum vitae, transcripts, and three letters of recommendation by 2 April 1982 to: **Dr. Juanita Barrena, Chair, Department of Biological Sciences, California State University, Sacramento, Calif. 95819.** *An Equal Opportunity/Affirmative Action/Handicapped/Title IX/Vietnam Era Veteran Employer.*

## POSITIONS OPEN

Applicants are solicited for a Ph.D. **ENVIRONMENTAL ORGANIC CHEMIST** with expertise in petroleum hydrocarbons. Position is part of an extensive baseline oil pollution study in West Africa. Responsibilities include setting up laboratories, training, field sampling, data analysis and interpretation, and long-term program planning. Anticipate spending one-third time abroad the first year. We encourage and expect the successful candidate to develop a strong chemical program. RPI is a growing, multidisciplinary, scientific consulting company offering many opportunities for professional development. Send résumé and representative publications to:

**Dr. Jacqueline Michel  
Research Planning Institute, Inc.  
925 Gervais Street  
Columbia, South Carolina 29201**

### ENVIRONMENTAL QUALITY AND HEALTH POSITION

**UNIVERSITY OF CALIFORNIA, IRVINE.** The Program in Social Ecology, University of California at Irvine, invites applications for an assistant professor in a tenure-track position, beginning September 1982. Candidates must be well trained in analytical or physical chemistry and have research interests in environmental chemistry and in the health implications of environmental contaminants. Doctoral training may be in chemistry, toxicology, environmental science or engineering, public health, or medicine. The candidate must be capable of developing an independent research program within the environmental analysis (environmental quality and health) area of the Program in Social Ecology. The ideal candidate would have experience and/or interests in the public policy application of environmental research findings. The Program in Social Ecology is a multidisciplinary unit which grants the B.A., M.A., and Ph.D. degrees. Faculty include biologists, health specialists, lawyers, planners, psychologists, and sociologists who conduct research on environmental and social problems. The campus is located 40 miles south of Los Angeles and 5 miles inland from the Pacific Ocean. Applications from all qualified candidates are welcome. *Women and minorities are encouraged to apply.* Candidates should submit a brief letter stating research interests and equipment needs, curriculum vitae, and names and addresses of three references by 31 March 1982 to: **Dr. Steven D. Colome, Chair, Search Committee, Program in Social Ecology, University of California, Irvine, Irvine, Calif. 92717.** *An Affirmative Action/Equal Opportunity Employer.*

### EXECUTIVE DIRECTOR HEALTH SCIENCES COMPUTING FACILITY

Responsible for the operation of the Health Sciences Computing Facility (HSCF) located in the Harvard School of Public Health. HSCF consists of multiple computer systems and a staff of 25 professionals and supporting personnel. The executive director is responsible for formulating and implementing services for the HSCF. The facility provides local and remote machine services, programming, database management, and word processing to over 1000 users in the Harvard School of Public Health, Harvard Medical School, Harvard School of Dental Medicine, and other health institutions. HSCF has an annual budget of \$1.5 million derived from research and instructional funds.

**Minimum requirements:** Administrative experience providing computing services for a technical or biomedical community. Advanced degree in a relevant discipline preferred.

*Harvard University is an Equal Opportunity Employer with an Affirmative Action Program.*

Send curriculum vitae and letters of support to:

**Dr. Joseph D. Brain  
Department of Physiology  
Building I-1302  
Harvard School of Public Health  
665 Huntington Avenue  
Boston, Mass. 02115**

**FACULTY POSITION—PHARMACOLOGY/TOXICOLOGY.** Full time, tenure track. Assistant or associate professor rank, depending upon qualifications. Successful applicant will be expected to be able to enhance the capabilities of active research groups within the department and teach courses in environmental toxicology. Submit résumé, including current research summary and names of referees, to: **J. W. A. Burley, Ph.D., Head, Department of Biological Sciences, Drexel University, Philadelphia, Pa. 19104.** *An Equal Opportunity/Affirmative Action Employer.*

## POSITIONS OPEN

**ELECTRON MICROSCOPY.** Full-time laboratory manager to operate and maintain central EM facility. Duties include instruction in EM courses and operation of an Hitachi H-600 TEM and an Hitachi S-450 SEM with Kevex 7067 EDS. Opportunity to participate in research. Minimum: B.S. Salary negotiable, depending upon qualifications. Applications accepted until 25 March or the position is filled. Résumé to: **Dr. Roy C. Brown, Biology Department, University of Southwestern Louisiana, Lafayette, La. 70504.**

**ENVIRONMENTAL SCIENCES,** Faculty position—section chief to become vacant in spring 1982. Ph.D. in environmental chemistry or related field required. Provide leadership to water, air and organic chemistry and water microbiology analysis units; interact with state and federal agencies. We seek an established scientist with research (publications) and administrative experience. Concurrent faculty appointment at appropriate rank in University of Wisconsin-Madison academic department, depending on qualifications. Send résumé, list of publications, and names, addresses and telephone numbers of three references to: **Dr. R. H. Laessig, Director, State Laboratory of Hygiene, 465 Henry Mall, University of Wisconsin-Madison, Madison, Wisconsin 53706.** Application deadline is 1 May 1982.

*An Equal Opportunity/Affirmative Action Employer*

### FACULTY POSITION IN DEPARTMENT OF BOTANY Plant Sciences/Molecular Biology

The Department of Botany, University of Toronto, invites applications for a tenure-track position in plant bioengineering. Applicants should have experience in recombinant DNA techniques and an interest in photosynthesis and photosynthetic organisms at the molecular level. The appointee is expected to develop an independent research programme, to train graduate students, and to collaborate with other departments at the University of Toronto and with other universities in Ontario. The appointee will be expected to teach in undergraduate courses and to help develop a training programme in recombinant DNA technology. The appointment would be made at a level commensurate with experience and qualifications. In accordance with Canadian immigration requirements, this advertisement is directed to Canadian citizens and permanent residents. Send curriculum vitae and names of three referees to: **T. C. Hutchinson, Professor and Chairman, Department of Botany, University of Toronto, Toronto, Ontario, Canada M5S 1A1.** Deadline for applications is 30 April 1982.

### FACULTY POSITION DEPARTMENT OF PATHOLOGY

A faculty position is available with primary responsibility in experimental pathology for an M.D. who is interested in some aspect of thrombosis, hemostasis, or atherosclerosis and is capable of applying recombinant DNA techniques. Optimally, the candidate will be eligible to take the examination of the American Board of Pathology. We are keenly interested in attracting female and minority people. Tenure track available if qualified. Send curriculum vitae, research plans, and three letters of recommendation to: **Dr. John B. Graham, Department of Pathology, School of Medicine, University of North Carolina, Chapel Hill, N.C. 27514.**

*An Affirmative Action/Equal Opportunity Employer*

### FACULTY POSITIONS IN PHARMACOLOGY

The Department of Pharmacology of the University of North Carolina School of Medicine at Chapel Hill is seeking applications for three tenure-track faculty positions at the level of assistant or associate professor. Applicants must have a relevant Ph.D. or M.D. degree and two or more years of postdoctoral training. Evidence of a commitment to a career in independent research and teaching should be provided. Of special interest for two of the positions are applicants with experience and interest in either CNS pharmacology and clinical pharmacology. For a third position, we are seeking individuals with appropriate training who are interested in applying the techniques of molecular and cellular biology to any of the fundamental problems of pharmacological interest. Send curriculum vitae, a brief description of proposed research, and three letters of reference to: **Dr. John P. Perkins, Chairman, Department of Pharmacology, University of North Carolina at Chapel Hill, Chapel Hill, N.C. 27514,** before 15 April 1982. *The University of North Carolina is an Equal Opportunity/Affirmative Action Employer and specifically invites and encourages applications from women and minorities.*



Chemists

## Research Chemists

### We Have the Formula for Success

Bio-Rad Laboratories, a growing manufacturer in the biotechnology industry, is looking for creative professionals with expertise in Chemistry to join us in our expansion. The following positions are available in the R&D Group of our Diagnostics Systems Division:

#### Biochemist/Immunochemist

Your primary responsibility involves participating in the research and development of non-isotopic diagnostic products. We require a BS/MS in Chemistry/Biochemistry.

#### Sr. Research

#### Biochemist/Immunochemist

This position is responsible for the research and development of fluorescent immunoassay systems. We desire experience in the purification of antigens and antibodies, hapten and protein labeling, and immunoassay development. Ph.D. in Chemistry, Immunochemistry or Biochemistry is required.

Qualified and interested candidates are invited to forward a resume to: **Human Resources, #39, BIO-RAD LABORATORIES, 2200 Wright Avenue, Richmond, CA. 94804.** We are proud to be an equal opportunity employer.

**\*BIO-RAD** *Laboratories*

#### VACANCY ANNOUNCEMENT

### National Institutes of Health Public Health Service Department of Health and Human Services

The NATIONAL INSTITUTES OF HEALTH invites nominations and applications for the position of ASSOCIATE DIRECTOR, OFFICE OF PROGRAM PLANNING AND EVALUATION, Office of the Director. This is a Civil Service position in the Senior Executive Service with a salary range of \$54,755 to \$58,500 per annum. The person selected may be eligible for Physician's Comparability pay up to \$10,000 per year. A one-year probationary period must be served if the individual selected is not currently in the SES.

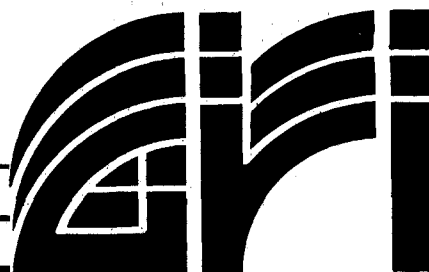
The Associate Director, OPPE, provides leadership for the conduct and coordination of program planning and evaluation activities for the NIH. This responsibility embraces the reporting and analytical (legislative, programs, resources) functions which comprise program development and policy formulation.

This position serves as the principal advisor to the Director, NIH, on all major program planning, legislative, and analytical issues relative to the NIH research mission, resources, and capabilities.

Further information about the position and qualification requirements may be obtained by contacting **Mrs. Jacqueline Waters at 301-496-6521.** Applications (SF-171, Personal Qualifications Statement) accompanied by a current curriculum vitae and bibliography should be submitted to Mrs. Waters at: **OD Personnel, Building 31, Room 1C15, National Institutes of Health, 9000 Rockville Pike, Bethesda, MD 20205.**

Applications must be postmarked not later than March 15, 1982. (The SF-171 form is available at all Federal Personnel Offices and Job Information Centers.) Applications from women and minority group candidates are solicited.

AN EQUAL OPPORTUNITY EMPLOYER



## Project Management: Unconventional Gas Supply

GRI is a national research management corporation dedicated to the natural gas industry and the gas ratepayer. Our goal is to improve the supply and efficient utilization of natural gas resources through the management of R&D programs developed and sponsored by GRI.

Current research efforts include the supplement of existing natural gas supplies from unconventional sources found in low-permeability formations, such as tight sands, eastern Devonian shales, and coal seams. This also includes validation technologies related to the co-production of gas and water from now uneconomic formations and watered-out gas reservoirs.

Several positions are available, commensurate with background and experience. B.S./M.S., Geology or Engineering discipline, and project management experience in one of the following areas is required: oil and gas prospect evaluations, conventional oil and gas field operations, or unconventional natural gas R&D. Energy research is the key to a promising future. Will you be one to help insure it?

**Forward your resume to:**

**D.J. Levit, Dept. SUG-413**

#### **GAS RESEARCH INSTITUTE**

**8600 West Bryn Mawr Avenue  
Chicago, IL 60631**

equal opportunity employer m/f/h

# Gas Research Institute

## POSITIONS OPEN

**FACULTY POSITION IN PHYSIOLOGY.** Ph.D. to teach basic cellular, blood, reproductive, endocrine, and neurophysiology (total of 53 lectures annually) to first-year medical students. Assist in teaching appropriate laboratories. Three-member Ph.D. department. Preference given to those with current successful teaching excellence in medical school. Research encouraged. Large modern campus hospital. Cultural suburban living. Rank and salary commensurate with qualifications. Begin June or July 1982. Send curriculum vitae, plus names, addresses, and telephone numbers of four current references, by 30 March to: **Dr. E. H. Whitten, Associate Dean, The University of Health Sciences, College of Osteopathic Medicine, 2105 Independence Boulevard, Kansas City, Missouri 64124.** Applications encouraged from all qualified persons.

### UNIVERSITY OF OKLAHOMA COLLEGE OF MEDICINE

Applicants are solicited for **FACULTY POSITIONS** in the following departments:

**GYNECOLOGY/OBSTETRICS** (Number 363)—**Professor and Chairman.** Desiring an individual with outstanding credentials and commitment toward academic excellence. Should be of national reputation with broad experience and accomplishments in clinical investigation and medical education. Will direct the clinical, research, and educational programs of an established department. Resident and fellowship programs are well established and of high quality.

**PATHOLOGY** (Number 366)—**Associate Professor.** Associate director, Clinical Laboratories/Medicine. Director of Hematology Laboratories, M.D. and CP-certified or 3 years of equivalent experience. Opportunity for teaching and research. Reply with curriculum vitae and three letters of reference. Deadline to apply is 20 March 1982.

Applicants should send curriculum vitae, identifying vacancy number for which they are applying, to: **O. C. Coleman, Assistant Dean, College of Medicine, University of Oklahoma Health Sciences Center, P.O. Box 26901, Oklahoma City, Okla. 73190.** We are an Equal Opportunity Employer.

**GENERAL BIOLOGIST.** Full-time position available 1 August 1982. Teaching responsibilities will be primarily general biology for majors and one or two courses in the areas of immunology, neurobiology, or molecular biology. Ph.D. is preferred. Ursinus College is a coed, liberal arts college located 26 miles northwest of Philadelphia, with an enrollment of 1100 students. Commitment to undergraduate teaching is essential. Send curriculum vitae and the names of three references to: **Dr. Mary B. Fields, Department of Biology, Ursinus College, Collegeville, Pa. 19426,** by 26 March 1982.

**GENETICS AND MICROBIOLOGY.** The Biology Department of Loyola University of Chicago invites applications for two tenure-track positions at the assistant professor level. A Ph.D. is required and postdoctoral experience is preferred. Teaching responsibilities include undergraduate and graduate courses in genetics and microbiology and courses in area of specialization. In addition, a productive research program is expected. Curriculum vitae, future research plans, and three letters of recommendation should be sent to: **Search Committee, Department of Biology, Loyola University of Chicago, 6525 North Sheridan Road, Chicago, Illinois 60626.** Deadline for applications is 1 April 1982.

Loyola University of Chicago is an Equal Opportunity/Affirmative Action Employer.

### GEOLOGY POSITIONS AVAILABLE

Colby College is seeking two talented, enthusiastic, and motivated geologists to join the faculty in tenure-track positions for fall semester 1982. Preference will be given to persons who have strong interests and training in (i) geophysics and global tectonics and the applications of quantitative methods to geology and (ii) general geology, Northern Appalachian structure and stratigraphy, geomorphology, and glacial geology. A joint appointment in geology and physics is possible. Applicants should have a Ph.D. degree. A strong interest in undergraduate teaching and in research is essential. Colby College has new laboratories with modern instrumentation including EM and SEM facilities. Applicants should respond with a résumé, transcripts, a description of research interests, and three letters of recommendation by 31 March 1982 addressed to: **Professor Donaldson Koons, Chairman, Geology Department, Colby College, Waterville, Maine 04901.**

Colby College is an Affirmative Action/Equal Opportunity Employer.

## POSITIONS OPEN

**ELECTROPHYSIOLOGIST** (Ph.D.)—Administrative as well as research responsibilities included in position for electrophysiologist with interest in extracellular and intracellular recording from nerve tissue cultures (explants). Familiarity with word processor and computer applications desirable. Equipped laboratory provided. Position available for 1 year beginning 1 July 1982, with reasonable expectation for continued support. Salary range from \$23,566 to \$33,586 (GS-11 to 13). Academic appointment at affiliated medical school. Send curriculum vitae and names of three references to **F. J. Sell, M.D., Director, Office of Regeneration Research Programs (151N), VA Medical Center, Portland, Oregon 97201.** Telephone: 503-222-9221, extension 526. Equal Opportunity Employer.

### GENETICIST/MICROBIOLOGIST

The Biology Department of Augustana College has a possible tenure-track position available 1 September 1982 with teaching responsibilities of courses in genetics, microbiology, and general biology. Ph.D. required.

During September 1979 the Biology Department moved into newly remodeled facilities which include three lecture rooms, nine laboratories and store-rooms, animal rooms, and so forth. Additional laboratory rooms are reserved for student and faculty research. There are eight full-time faculty members and more than 200 majors in the Biology Department.

Send letter of application, curriculum vitae, and three letters of reference by 1 April to: **Dr. I. W. Larson, Department of Biology, Augustana College, Rock Island, Illinois 61201.**

**HEAD, DEPARTMENT OF OCEANOGRAPHY AND OCEAN ENGINEERING**—Florida Institute of Technology seeks an individual to head a multidisciplinary department of scientists and engineers. Position is currently open. Candidates must possess a Ph.D. degree and have demonstrated meritorious scientific work in oceanography and/or ocean engineering with interest and experience in teaching, research, and administration. Send résumé and names of references by early April 1982 to: **Chairman of Search Committee, Department of Oceanography and Ocean Engineering, Florida Institute of Technology, Melbourne, Florida 32901.** An Equal Opportunity Employer.

The Department of Biochemistry, Purdue University, is seeking an **IMMUNOBIOCHEMIST** for a tenure-track position at the level of assistant professor. Preference will be given to individuals whose research interests concern molecular interactions at cell surfaces, biosynthesis of cell surface components, cell-cell interactions, or immunology of the cell surface. Experience with monoclonal antibody techniques and a willingness to establish a laboratory for producing and utilizing monoclonal antibodies are essential. We desire an individual who will interact effectively with the ongoing research activities of investigators in this department and Purdue University.

Applicants should submit curriculum vitae, the names of three people who can supply letters of reference, and a concise statement of future research plans. Evidence that the candidate has the potential to develop a vigorous, independent research program and to participate effectively in the teaching program of the department are essential. Information should be sent to: **Dr. Mark Hermodson, Head, Department of Biochemistry, Purdue University, West Lafayette, Ind. 47907.** Telephone: 317-464-1637. Purdue University is an Equal Opportunity/Affirmative Action Employer.

**INSTRUCTOR/POSTDOCTORAL ASSOCIATE** in the area of hybridoma/microinjection/recombinant DNA technology. Studies include control of gene expression by hormones and carcinogens, poly(A) polymerase in diseases, mRNA processing, microinjection of polymerases and their IgG into cells to elucidate their functions. Send curriculum vitae and three letters of reference to: **Dr. S. T. Jacob, Professor, Department of Pharmacology, Pennsylvania State University College of Medicine, Hershey, Pa. 17033.**

### NEUROCHEMISTRY OR NEUROPHARMACOLOGY

Postdoctoral fellow for work on cellular basis of psychoactive drug action. Also expanding efforts on phospholipid metabolism in psychiatric illness. *Affirmative Action/Equal Opportunity Employer.* Contact: **Fritz A. Henn, Ph.D., M.D., University of Iowa, 500 Newton Road, Iowa City, Iowa 52242.**

## POSITIONS OPEN

**IMMUNOLOGIST.** We anticipate the availability of a line-position at the assistant/associate professor level 1 July 1982 and seek to appoint an immunologist (Ph.D. and/or M.D.). The specific area of research interest is secondary to clear evidence of scholarship, productivity, and a commitment to an academic career in research. Ability to teach at clinical as well as basic levels would be an asset. We offer new facilities, ample laboratory space, and start-up support within a unit possessing multidisciplinary expertise. Salary would be highly competitive. Applicants should send current curriculum vitae, including a brief description of research and the names of three references, to:

**Dr. B. Salafsky  
Chairman, Search Committee  
Department of Biomedical Sciences  
College of Medicine—University of Illinois—Rockford  
1601 Parkview Avenue  
Rockford, Ill. 61107-1897**

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

**MAMMALOGIST,** Fordham University, assistant professor, starting September 1982; postdoctoral experience, background in genetics preferred. Expected to teach graduate and undergraduate courses and to develop strong research program in collaboration with New York Zoological Society. By 26 March, send curriculum vitae and names of three references to: **Dr. Howard Rothstein, Chairman, Department of Biological Sciences, Fordham University, Bronx, New York 10458.**

An Equal Opportunity/Affirmative Action Employer

### MICROBIAL BIOTECHNOLOGIST

Applications are invited for a tenure-track position at the assistant, associate, or full professor level. The successful applicant will be required to teach in the general area of microbiology and to develop a strong research program that will complement the ongoing research of an active interdisciplinary biotechnology group. Applications, including the names and addresses of three referees, should be directed to: **Dr. J. E. Thompson, Chairman, Department of Biology, University of Waterloo, Waterloo, Ontario, Canada N2L 3G1.** Effective date of appointment is 1 July 1982. Canadian citizens and landed immigrants will be given preference.

### MICROBIOLOGIST NEUROPHYSIOLOGIST

The Division of Basic Sciences invites applications for a microbiologist and a neurophysiologist at the junior rank.

Both positions available 1 July 1982 and require (i) Ph.D., D.P.M., or M.D. degree and (ii) a strong commitment to teaching. The microbiologist should have a strong background in clinical bacteriology. The neurophysiologist should have sufficient background to teach motor physiology and neuroanatomy. Research is encouraged.

Applicants should submit curriculum vitae and have two letters of recommendation sent by 15 April to:

**R. N. Iyer, Ph.D.  
Director of Basic Sciences  
Ohio College of Podiatric Medicine  
10515 Carnegie Avenue  
Cleveland, Ohio 44106  
Equal Opportunity Employer**

**MOLECULAR BIOLOGIST/CELL BIOLOGIST.** The Department of Biological Sciences at Drexel University is seeking an experienced investigator in some field of molecular biology. Monoclonal antibody, hybridoma, nucleic acid sequencing, fermentation screening, and cell fusion are some examples of technologies our department is interested in developing. Applicants should submit a résumé, including a summary of current research and names of referees, to: **J. W. A. Burley, Ph.D., Head, Department of Biological Sciences, Drexel University, Philadelphia, Pa. 19014.** An Equal Opportunity/Affirmative Action Employer.

### OCEANOGRAPHY

Assistant professor in marine chemistry or biogeochemistry, chemical sedimentology, or atmospheric geochemistry. Applications invited for position starting with 1982-1983 academic year. Contact by 1 May 1982: **Chemical Oceanography Search Committee, Department of Oceanography, Florida State University, Tallahassee, Fla. 32306.** Telephone: 904-644-6700. We are an Equal Opportunity Employer.

## CALBIOCHEM-BEHRING CORP.

is seeking experienced professionals to join the staff of our biochemical company in La Jolla. We currently have the following opportunities available:

### MANAGER OF MICROBIOLOGY/ ENZYMOLOGY R & D

Will direct all facets of research and development within our Microbiology and Enzymology Laboratories including implementation of working state-of-the-art knowledge in biochemistry, enzymology, and protein chemistry. Primary responsibilities involve technical operations, personnel supervision, financial budgeting and coordination of interdepartmental activities. Must have a Ph.D. in related discipline and a minimum of 5-7 years experience. Familiarity with organic chemistry and industrial fermentation required. Previous managerial experience essential.

### SR. RESEARCH CHEMIST/ GROUP LEADER

Will supervise personnel and the development activities in our Enzymes R&D Laboratory. Must have a M.S. in Biochemistry with a minimum of 5-7 years experience or a Ph.D. in Biochemistry with a minimum of 3-5 years related experience. Research development will range from the isolation of proteins, enzymes, and related biochemicals to the development and evaluation of new clinical diagnostic formulations and their constituents. Previous supervisory experience desirable.

### RESEARCH CHEMIST

Will interface with production and other areas in the development of new and existing products. Principle investigator for 1 or more complex projects in fermentation development of biochemicals from microbial sources including bacteria, streptomycetes, yeast and fungi. Must have Ph.D. in Microbiology or related area with emphasis in microbial physiology and/or biochemistry, or M.S. with same emphasis and a minimum of 3-5 years experience. Should be augmented with working knowledge of contemporary techniques and instrumentation. Expertise in scientific literature review and interpretation, as well as preparation of manuscripts for publication is required.

Interested and qualified candidates are invited to submit resume and salary history, in confidence, to:

**CALBIOCHEM-BEHRING CORP.**  
A Division of  
American Hoechst Corp.  
10933 N. Torrey Pines Rd.  
La Jolla, CA 92037  
714/453-7331

*Affirmative Action Employer M/F/H*

## SCIENTISTS AND POSTDOCTORAL FELLOWS BIOMEDICAL RESEARCH

The NCI-Frederick Cancer Research Facility, a leading biomedical research facility located near Washington, D.C., has two postdoctoral or scientist level positions available immediately in its Cancer Biology Program.

### IMMUNOBIOLOGIST

The laboratory of Immunobiology of Carcinogenesis directed by Dr. Margaret Kripke, is seeking a person possessing a recent Ph.D. in an appropriate field of study and predoctoral or postdoctoral experience in basic cellular immunologic regulations and/or tumor immunity. This position will involve participation in ongoing studies of the UV carcinogenesis system in mice and will offer significant opportunities to develop independent research projects. Refer to position #2215.

### MOLECULAR BIOLOGIST

The Molecular Genetics Section headed by Dr. Michael Yarmolinsky is currently studying plasmid replication and partition in bacteria, and is searching for a person possessing a recent Ph.D., strong background in the biochemistry of DNA replication or bacterial membranes and some familiarity with phage and bacterial genetics. Individuals with tissue culture experience and an interest in applying techniques of prokaryote genetics to the study of replication control in eukaryotes will also be given consideration. Refer to position #1952.

Information concerning other positions is available upon request.

Interested persons should send curriculum vitae, cover letter describing their research interests, and the names and addresses of three persons who will provide letters of recommendations to:

Personnel Department

### NCI-FREDERICK CANCER RESEARCH FACILITY



### LITTON BIONETICS, INC.

P. O. Box B  
Frederick, MD 21701

An Equal Opportunity Employer

## Recombinant DNA Research

New England Nuclear, an established company in the scientific community for the past 25 years, offers challenging career opportunities in the rapidly expanding fields of genetic research and molecular biology. Accessibility to a stimulating Boston academic community encourages an individual's personal as well as professional growth.

Qualified scientists will be familiar with current recombinant DNA methodology and will have direct experience with eukaryotic gene cloning and expression. Requires Ph.D. in molecular biology/biochemistry with one to three years post doctoral experience.

Our modern Biotechnology Center is located in Newton, MA, a pleasant suburban area ten miles west of Metropolitan Boston. NEN offers competitive salaries and a comprehensive benefits package including relocation assistance.

Candidates interested in exploring these opportunities further should submit resume and salary requirements to Steve Epstein, New England Nuclear, 549-1 Albany Street, Boston, MA 02118.



**New England Nuclear**  
a Du Pont company

An Equal Opportunity Employer M/F



## POSITIONS OPEN

### MOLECULAR BIOLOGIST/BIOCHEMIST

The Biology Department at Centenary College has a tenure-track position in molecular biology. Salary commensurate with experience. Candidates should be broadly trained with expertise in microtechnique and biochemistry and teach additional courses in cell biology, immunology, or related fields. Starting date: September 1982. Closing date: 30 March 1982. Send credentials to: Dr. Brad McPherson, Department of Biology, Centenary College, Shreveport La. 71104.

### OPHTHALMOLOGIST

Faculty position, Department of Ophthalmology, University of Pennsylvania, Scheie Eye Institute, Presbyterian-University of Pennsylvania Medical Center. Seeking full-time general ophthalmologist at assistant professor level to begin 1 July 1982. Requires well-trained ophthalmologist with at least 1 year of training in retinal vascular disease and an additional year in anterior segment surgery, preferably through fellowships. Direct inquiries with up-to-date curriculum vitae and bibliography to: Myron Yanoff, M.D., Director, Scheie Eye Institute, Chairman, Department of Ophthalmology, University of Pennsylvania-Presbyterian Medical Center, 51 North 39 Street, Philadelphia, Pa. 19104. An Equal Opportunity/Affirmative Action Employer.

### DEPARTMENT OF PATHOLOGY UNIVERSITY OF UTAH

Two tenure-track positions at the level of assistant or associate professor to be filled on or before 1 July 1982. Applicants should hold the Ph.D. or M.D. degree, have postdoctoral experience in a relevant basic science, and show promise of independent capability in research. Successful candidates will participate in expansion of our present Ph.D. training program in experimental pathology with emphasis on molecular and cellular aspects. Current research efforts include cellular and molecular immunology, membrane biology, biochemistry of connective tissue, and bacterial pathogenesis. Curriculum vitae, bibliographies, and names of three references should accompany inquiries to:

Dr. Charles W. DeWitt  
Department of Pathology  
5C 239 Medical Center  
University of Utah Hospital  
Salt Lake City, Utah 84132

University of Utah is an Affirmative Action/Equal Opportunity Employer.

### PEDIATRIC CARDIAC SURGEON Lansing, Michigan—Ingham Medical Center and Michigan State University

Board-eligible or -certified by American Board of Thoracic Surgery. Experience in academic pediatric cardiac surgery program required. Position involves academic appointment, an integral role in private practice cardiovascular surgery group, and institutional responsibility for pediatric cardiac surgery program. Academic requirements include program development; teaching and training of medical and nursing students and house officers; and direction or participation in research programs. Contact: Park W. Willis, III, M.D., Chairman, Pediatric Cardiac Surgery Search Committee, B 220 Life Sciences, Michigan State University, East Lansing, Mich. 48824.

**PHYSIOLOGICAL PLANT ECOLOGIST**—Postdoctoral available immediately to individual with a background in physiological plant ecology interested in studying gas exchange and other processes in *C<sub>4</sub>* grasses from the Serengeti region of East Africa. Salary: \$14,000 to \$16,000. One-year definite appointment with renewal possible. Research is basically laboratory-centered but field research possible if desirable for meeting research goals. Submit curriculum vitae and three references. Send to: S. J. McNaughton, Biological Research Laboratories, 130 College Place, Syracuse, N.Y. 13210. An Equal Opportunity/Affirmative Action Employer.

**RESEARCH ASSISTANT PROFESSOR.** Ph.D. in biochemistry or cell biology to pursue research on cell secretion. Experience with amine storage mechanisms, membrane transport, and/or phospholipases desirable. Please write, including curriculum vitae and two references, to: Dr. David Lagunoff, Department of Pathology, St. Louis University School of Medicine, 1402 South Grand Boulevard, St. Louis, Missouri 63104.

## POSITIONS OPEN

### ANTICIPATED PHYSICS/FACULTY POSITION UNIVERSITY OF ALASKA, ANCHORAGE

Assistant professor, Ph.D. in physics, beginning August 1982. Postdoctoral experience required. Position involves teaching and research within a developing physics program. Position is subject to legislative funding. Send curriculum vitae, reprints of most recent publications, and brief outline of research plans by 29 March 1982 to:

Dr. John P. Harrington  
Chairman, Physics Search Committee  
University of Alaska, Anchorage  
3221 Providence Drive  
Anchorage, Alaska 99508

University of Alaska, Anchorage, is an Equal Opportunity/Affirmative Action Employer and Educational Institution.

### PHYSIOLOGICAL PLANT ECOLOGIST

Permanent, tenure-track position is open for a physiological plant ecologist who holds Ph.D. or equivalent and has full-time college-teaching experience. Duties of position include directing preforestry program and regular teaching of general ecology, plant ecophysiology, environmental conservation, and dendrology. Experience in computer programming is essential. Deadline for applications is 1 April 1982. Candidates should send curriculum vitae, official transcripts, and three reference letters to: Dr. Preston Somers, Chairman, Department of Biology, Forestry and Agriculture, Fort Lewis College, Durango, Colo. 81301. Telephone: 303-247-7327.

Equal Opportunity/Affirmative Action Employer

## POSTDOCTORAL POSITIONS (TWO)

Available 1 April 1982 for 2 to 3 years to study molecular and biochemical genetics of human diseases using cultured cells in ongoing projects in cystic fibrosis and DNA repair disorders.

Contact: Dr. M. Buchwald, Department of Genetics, The Hospital for Sick Children, 555 University Avenue, Toronto, Ontario, Canada M5G 1X8.

**POSTDOCTORAL POSITION**—Available for research on cell biology of sickled erythrocyte membranes. Expertise in membrane glycoproteins and/or endothelial cells in culture desirable. Some laboratory teaching in one of the anatomy courses will enhance future job prospects. Send curriculum vitae and names of three references by 1 April to:

Gary E. Wise, Ph.D.  
Chairman, Department of Anatomy  
Texas College of Osteopathic Medicine at  
Camp Bowie at Montgomery  
Fort Worth, Texas 76107-2690

An Equal Opportunity/Affirmative Action Employer

**POSTDOCTORAL POSITIONS** available immediately to study cellular regulatory mechanisms. Research background in membrane, enzyme, or protein biochemistry preferred. Send curriculum vitae and names of three references to: Dr. Mariano Tao, Department of Biological Chemistry, University of Illinois—Medical Center, 835 South Wolcott Avenue, Chicago, Ill. 60612.

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

**POSTDOCTORAL RESEARCH ASSOCIATE.** Position available immediately for a period of 1 year with possibility of extension to study genetic engineering in plants. Interests of the laboratory are in the introduction of foreign recombinant DNA into plant protoplasts via liposome and Agrobacterium fusion. Individuals with a strong background in recombinant DNA technology and/or isolation and regeneration of plant protoplasts preferred. Salary range is \$15,000 to \$17,000 per year. Send curriculum vitae and three letters of reference to: Dr. P. F. Lurquin, Associate Professor of Genetics, Molecular Genetics—Heald Hall, Washington State University, Pullman, Wash. 99164. Closing date for application is 12 March 1982. An Affirmative Action/Equal Opportunity Employer.

## POSITIONS OPEN

**POSTDOCTORAL POSITION.** Photochemistry of biological molecules and medical applications of light-initiated reactions. Experience in physical organic chemistry, biochemistry, or photochemistry required. Salary range: \$17,000 to \$21,000. Send résumé with a brief description of research interests and names of three references to: Irene E. Kochevar, Ph.D., Department of Dermatology, Harvard Medical School, Massachusetts General Hospital, Boston, Mass. 02114. Equal Opportunity/Affirmative Action Employer.

**POSTDOCTORAL POSITION IN REPRODUCTIVE PHYSIOLOGY** available immediately to study the neuroendocrine control of gonadotropin secretion. Emphasis is on the mechanisms controlling hypothalamic GnRH secretion and GnRH regulation of gonadotropin release. Send curriculum vitae, summary of interests, and references to: Dr. M. Susan Smith, Department of Physiology, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania 15261.

An Equal Opportunity/Affirmative Action Employer

**POSTDOCTORAL POSITIONS** for teaching and research starting August 1982, for 2 years to support half-time teaching of laboratory sections in introductory biology and half-time research in collaboration with a member of the faculty who provides the facilities. To obtain information on areas of research or to apply, send résumé and three letters of recommendation by mid-April to: Paul Megrew, Department of Zoology, University of Iowa, Iowa City, Iowa 52242. An Equal Opportunity/Affirmative Action Employer.

**POSTDOCTORAL POSITION IN NEUROCHEMISTRY** available for 2-year period. Clinical and basic research programs in dementia, depression, and schizophrenia. GC-MS, HPLC, TIA and receptor binding facilities. Send curriculum vitae and references to: Dr. P. Wood, Director Research Laboratory, Douglas Hospital Research Centre, 6875 LaSalle Boulevard, Verdun, Québec, Canada H4H 1R3.

**POSTDOCTORAL POSITIONS IN CARDIOVASCULAR PHARMACOLOGY** available immediately for a recent Ph.D. in pharmacology or physiology. The project is related to the study of purine receptors in isolated vascular preparations and binding studies. Salary NIH level. Experience in cardiovascular sciences preferred. Write to: Dr. S. Jamal Mustafa, Department of Pharmacology, East Carolina University, Greenville, North Carolina 27834. East Carolina University is an Equal Opportunity Employer through Affirmative Action.

**POSTDOCTORAL POSITION** available. Project involves synthesis of short sections of DNA and RNA for biophysical studies. Applicants should have experience in synthetic techniques. Specific background in nucleic acid chemistry is desirable but not necessary. Send résumé, a short description of research experience, and three letters of reference to: Dr. K. J. Breslauer, Department of Chemistry, Douglass College, Rutgers University, New Brunswick, N.J. 08903. Rutgers University is an Affirmative Action Employer.

### PSYCHOLOGY PROFESSOR

The Department of Psychology at The Johns Hopkins University announces the creation of the G. Stanley Hall Professorship. It seeks a superior, active, established investigator. We are particularly interested in someone with broad interests in cognition, cognitive neuropsychology, or the relationships between brain and behavior. Candidates should send curriculum vitae, a letter stating current research and theoretical interests, and selected reprints to: Professor Elliott M. Blass, G. Stanley Hall Search Committee, Department of Psychology, The Johns Hopkins University, Baltimore, Maryland 21218. The Johns Hopkins University is an Equal Opportunity/Affirmative Action Employer.

**RESEARCH ASSISTANT II**—Perform experiments involving perfusion of rat kidneys in vitro requiring animal feeding, handling and surgery, solution preparation, setting up perfusion apparatus, specimen handling, and data recording. Biochemical analytical procedures including measurement of pH, total CO<sub>2</sub>, electrolytes, calcium, phosphorus, ammonia, and a variety of metabolites assayed by enzymatic techniques and scintillation counting. Calculation of experimental results and planning new experiments with the investigator. Master's degree in biology/biochemistry required. Starting salary: \$11,500. Send résumé to: Victor Abdella, Number 261470, MESC, 301 Maple Village, Ann Arbor, Mich. 48103.

## DIRECTOR OF INFORMATION RESOURCES

The CALIFORNIA INSTITUTE OF TECHNOLOGY invites applications and nominations for the position of Director of Information Resources. The position is available 1 July 1982.

Candidates for director of information resources should have the following interests and capabilities:

- 1) The ability to oversee and establish a user-oriented and user-sensitive organization;
- 2) The administrative experience and leadership qualities to develop research information resources;
- 3) Knowledge of, and interest in, current technological developments in order to guide successfully the libraries into the information technology era (with special emphasis on computerized cataloging, special information systems, computer-based data surveying, and information retrieval); and
- 4) The capability to supervise personnel, work with the Faculty Library Committee, and develop plans for automation, space, and equipment needs for the combined libraries of the Institute.

The California Institute of Technology is an independent, privately supported institution and is considered one of the world's major research centers. The position is a challenging one because the libraries are vital to the basic thrust of the Institute's scientific and technical research activities, as well as its strong programs in humanities and social sciences.

The collective libraries, under the overall supervision of the director, contain approximately 350,000 volumes, serving 740 faculty, 830 undergraduates, and 900 graduate students.

Minimum salary is \$40,000, depending on qualifications and experience. A letter of application, a professional résumé, and names of three current references should be sent to: Professor John D. Roberts, Vice President and Provost, California Institute of Technology, Pasadena, California 91125.

*Caltech is an Equal Opportunity Employer.  
M/F/H*

## Respiratory Pharmacologist

SmithKline, a leader in pharmaceutical research, is seeking a Pharmacologist who has a keen interest and experience in research in pulmonary pharmacology.

The successful candidate will be expected to:

- assist in developing and directing a research program in pulmonary pharmacology
- apply known state-of-the-art technologies/theories and create new methodologies where applicable to the discovery of drugs to treat the diseases of the respiratory tract
- prepare scientific reports for oral presentation and publication in scientific journals
- maintain a high degree of literature familiarity
- train, supervise and evaluate laboratory personnel
- establish and maintain scientific contacts in academia

Candidates are required to have:

- a PhD in pharmacology with 2 or more years of relevant post doctoral experience in conducting in vivo and in vitro experiments in respiratory pharmacology
- a thorough knowledge of those animal models used to investigate acute and chronic aspects of pulmonary diseases
- excellent written and oral communication skills

Preference will be given to those who also have:

- biochemical experience in conducting ionic flux investigations and radiolabeled moieties
- experience in receptor identification and drug-receptor interactions
- a demonstrated record of bibliographic excellence and the ability to interact in an interdisciplinary fashion

We offer excellent compensation and benefits and an attractive relocation policy. For confidential consideration, send your C.V. and names of 3 references to: Mr. Walter B. Flagg, SMITHKLINE CORPORATION, P.O. Box 7929, 1588 Spring Garden Street, Philadelphia, PA 19101.

**SK&F**  
a SmithKline company

We are an equal opportunity employer, M/F/H/V

## MOLECULAR BIOLOGY

### Eucaryotic Genetics

Meloy Laboratories, a Revlon health care group subsidiary located in suburban Washington, D.C., is seeking to expand its Recombinant DNA staff with a scientist (PhD) possessing expertise in Eucaryotic genetics. The successful applicant will be required to obtain expression of mammalian genes by cloning in eucaryotic vectors. Experience with DNA sequencing, gene construction, promoter regulation desirable.

We offer salary commensurate with experience, liberal benefits, company paid relocation, etc. Interested applicants should submit resume/curriculum vitae in confidence to the Personnel Administrator at:

### MELOY LABORATORIES

6715 Electronic Drive  
Springfield, Virginia 22151

*An Equal Opportunity Employer M/F/H*

## SCIENTISTS ELECTRO-CHEMISTS

Technicon Instruments Corporation, a leading manufacturer of automated clinical laboratory instruments, is expanding the development and advancement of new programs within its R&D Dept.

Our interest focuses on the development of new electrochemical technology for blood analysis.

We are seeking candidates with MS and Ph.D. in Chemistry or Biochemistry and 1-3 years experience in voltammetric and/or ion selective electrode techniques.

Our organization offers a professional and stimulating environment providing competitive salaries plus a wide range of company paid benefits. To explore these opportunities, submit resume in confidence to: Manager Technical Staffing

### TECHNICON INSTRUMENTS CORPORATION

511 Benedict Ave., Tarrytown NY 10591

*An Equal Opportunity Employer M/F*



**TECHNICON**

## POSITIONS OPEN

### PROTEIN CHEMISTRY

**CALGENE INC.**, Davis, Calif., has an immediate opening for a protein chemist with demonstrated research ability in application of HPLC to protein/peptide isolation and sequence analysis. Will join multidisciplinary team applying molecular biology and somatic cell genetic techniques to improvement of crop plants. Ph.D. and postdoctoral or industrial experience required.

**CALGENE INC.** was founded in 1980 to develop, produce, and market agricultural products, using an integrated plant and microbial science capability ranging from recombinant DNA to field breeding. We have strong financial resources and an outstanding Scientific Advisory Board. **CALGENE** offers a competitive salary and benefit package with significant equity participation. Please send résumé, list of publications, and statement of research interest, in strict confidence, to: **File 570, CALGENE INC., 1910 5th Street, Davis, Calif. 95616.** *An Equal Opportunity Employer.*

## RADIATION SAFETY OFFICER

The University of Connecticut invites applications for the position of radiation safety officer. Requires a B.S. degree in physics, chemistry, or related discipline and 6 years of experience in the administration of a Radiation Safety Program or equivalent. Responsible for total university program including about 70 licensed users, 30 analytical x-ray machines, and 20 generators of nonionizing radiation. If appropriate to candidate, responsibilities may include management of a hazardous waste disposal (including incineration) facility.

Send letter of interest with curriculum vitae and the names of at least three references to:

**SANDY VAN GELDER**  
**UNIVERSITY OF CONNECTICUT**  
U-133, Storrs, Conn. 06268  
Telephone: 203-486-3337  
*An Equal Opportunity/Affirmative Action Employer*  
(Search Number 1G328)

### REPRODUCTIVE PHARMACOLOGISTS

Mason Research Institute has reopened the search for a Ph.D., preferably in pharmacology, with expertise in steroid biochemistry and radioimmunoassays, to work on bioavailability studies and drug delivery systems, in a reproductive physiology and contraceptive development program. One to 2 years of postdoctoral experience are desirable. Salary competitive, with excellent fringe benefits. Forward résumé and transcripts and arrange two letters of recommendation to be sent to: **EG&G Mason Research Institute, 57 Union Street, Worcester, Mass. 01608, Attention: Donna L. Perron, Personnel Manager.** *EG&G Mason Research Institute is an Equal Opportunity Employer.*

**RESEARCH ASSOCIATE** position available for work on the interactions of heavy metals with the cell nucleus and its components. Salary negotiable depending on experience. Contact: **Dr. Lubomir S. Hnilica, Department of Biochemistry, Vanderbilt University School of Medicine, Nashville, Tennessee 37232.**

*Vanderbilt University is an Equal Opportunity/Affirmative Action Employer.*

**RESEARCH ASSOCIATE or RESEARCH ASSISTANT PROFESSOR** to study structure of physiologically identified neurons in the cat's visual system. Minimum requirement: Ph.D. or equivalent degree plus training in anatomy (LM or EM) or physiology. Salary negotiable. Send curriculum vitae plus three references to: **Dr. S. M. Sherman, Department of Neurobiology and Behavior, State University of New York (SUNY), Stony Brook, Stony Brook, N.Y. 11794.** *SUNY, Stony Brook, is an Equal Opportunity/Affirmative Action Employer.* AK Number 304.

## POSITIONS OPEN

### RESEARCH ASSOCIATE

Postdoctoral position available immediately to study the enzymology of DNA replication in mammalian cells. Applicants should have a background in enzymology and preferably in the biochemistry of DNA replication. Send curriculum vitae and names of three references to: **Dr. Earl Baril, c/o Personnel Office, Worcester Foundation for Experimental Biology, 222 Maple Avenue, Shrewsbury, Mass. 01545.**

*An Equal Opportunity/Affirmative Action Employer*

**RESEARCH ASSOCIATE, NEUROPHYSIOLOGY.** The Department of Neurology, Stanford University School of Medicine, is searching for a **RESEARCH ASSOCIATE** to participate in projects dealing with properties of neurons in mammalian CNS, utilizing brain slice preparations. Candidates should have a doctoral degree and postdoctoral training in neurophysiology, including experience with intracellular recording and labeling techniques and quantitative approaches to analysis of electrophysiological data. The position will be available 1 March 1982. Applicants should send curriculum vitae and the names of three referees to: **David Prince, M.D., Professor and Chairman, Department of Neurology, Stanford University School of Medicine, Stanford, California 94305.** *Stanford is Equal Opportunity Employer and welcomes applications from women and minority candidates.*

### RESEARCH NEUROSCIENTIST

A position is available at the assistant or associate professor level for an independent investigator. A neurochemical research program in the area of aging, at development or the peripheral nervous system is preferred. Investigations utilizing tissue culture or immunologic techniques are of particular interest. The successful candidate will work in a multidisciplinary program emphasizing molecular and cellular approaches. The applicant should be interested in teaching and participating in pre- and postdoctoral neuroscience training programs that are now being organized. Candidates should send curriculum vitae, bibliography, and a statement of research interests to: **Barbara Talamo, Ph.D., Neuroscience Laboratories, Department of Neurology, Tufts-New England Medical Center, 136 Harrison Avenue, Boston, Massachusetts 02111.** Telephone: 617-956-7640. *An Equal Opportunity/Affirmative Action Employer.*

**RESEARCH SCIENTISTS IN PROTEIN CHEMISTRY AND ORGANIC CHEMISTRY—SIDNEY FARBER CANCER INSTITUTE**, affiliated with Harvard Medical School, announces openings for Ph.D. scientists experienced in organic chemistry, particularly in the synthesis of peptides and the modification of proteins. Appointees will join a team involved in research and development of immunotoxins as reagents for treatment of human cancers. Appointments will be on the research ladder at a level equivalent to an instructor. Applicants should arrange for a curriculum vitae and three letters of recommendation to be sent to: **Carole Taylor, Division of Tumor Immunology, SIDNEY FARBER CANCER INSTITUTE, 44 Binney Street, Boston, Mass. 02115.** *An Affirmative Action/Equal Opportunity Employer.*

**RESEARCH SCIENTIST—Solar thermal technology and end use energy analysis.** Experienced researcher with strong publication record, and pertinent teaching experience, to lead an experimental research program in solar thermal physics and engineering and to carry out detailed studies of end use energy systems, including the energy system of the Princeton University campus. Ph.D. in physics or engineering and strong references required. Reply: **Director, Center for Energy and Environmental Studies, H102 Engineering Quadrangle, Princeton University, Princeton, N.J. 08544.** *Princeton University is an Equal Opportunity Employer, M/F.*

**SPECIALIST (LABORATORY INVESTIGATOR)** position available. Research experience and publications in expired air trace gas analysis for investigation of gastrointestinal function and heme catabolism are required. Knowledge of gas chromatography and mass spectrometry techniques required. Must have expertise in *in vitro* and *in vivo* procedures for assessment of metabolic functions of intestinal bacteria. Send curriculum vitae and names and addresses of three references to: **Dr. J. A. Perman, Department of Pediatrics, Room M 650, University of California, San Francisco, Calif. 94143.** *The University is an Equal Opportunity/Affirmative Action Employer. Women and minorities are encouraged to apply.*

## POSITIONS OPEN

### RESEARCH TECHNICIAN III

The University of Georgia's Savannah River Ecology Laboratory announces a vacancy in **environmental chemistry**. The successful applicant will be expected to have a thorough working knowledge of radioisotope chemical separations and instrumental analysis including alpha and gamma spectrometry. In addition, experience in biogeochemical research of trace element/organic matter interactions is desired. Position requires a willingness to work in both laboratory and field situation. Appointment to begin in May 1982. Interested parties to forward application, curriculum vitae, and names of three references by 20 March to:

**Dr. James Alberts**  
**Savannah River Ecology Laboratory**  
**Drawer E**  
**Aiken, S.C. 29801**

*An Equal Opportunity/Affirmative Action Employer*

**STAFF POSITION.** We are seeking an outstanding research investigator whose program involves the **ROLE OF MEMBRANES IN DIFFERENTIATION**. The department's research efforts are focused around membranes and membrane-related phenomenon. Salary is competitive. Send curriculum vitae, bibliography, references, and a brief outline of research program to: **Dr. Martin Morrison, Department of Biochemistry, St. Jude Children's Research Hospital, P.O. Box 318, Memphis, Tennessee 38101.**

*Equal Opportunity Employer*

**SYNTHETIC MACROMOLECULAR CHEMIST/FACULTY POSITION.** This position requires a synthetic macromolecular chemist with some research interests in biomacromolecular chemistry in the areas of synthetic and natural polymers. A chemist interested in the synthesis of biopolymers would be a reasonable candidate, but the position is not restricted to this alone. Applications at the assistant, associate, and/or full professor level will be considered. The position would be centered in the Chemistry Department of the University of Michigan and the individual would have a joint appointment with the Macromolecular Research Center. All applications should be addressed to: **Dr. T. M. Dunn, Chairman, Chemistry Department, University of Michigan, Ann Arbor, Mich. 48109.** *A nondiscriminatory, Affirmative Action Employer.*

## FELLOWSHIPS

**POSTDOCTORAL FELLOWSHIP** to study opioid receptors and opioid peptides, especially dynorphin. Applicants should have training in chemistry, biochemistry, or pharmacology. Résumé and references to: **Dr. Avram Goldstein, Director, Addiction Research Foundation, 701 Welch Road, Suite 325, Palo Alto, Calif. 94304.** *Equal Opportunity/Affirmative Action Employer.*

### ERINDALE COLLEGE UNIVERSITY OF TORONTO

Applications are invited for a 1983 NSERC University Research Fellowship tenable in the Department of Zoology, University of Toronto, Erindale College. Candidates in cell/developmental biology will be considered, especially those with expertise in monoclonal antibody techniques or those with expertise in morphogenesis. The term of the fellowship begins in April 1983. Completed curriculum vitae which includes the names of three referees should be received no later than 31 May 1982 by: **Dr. W. G. Sprules, Department of Zoology, University of Toronto, Erindale College, Mississauga, Ontario, Canada L5L 1C6.** These fellowships can be held only by Canadian citizens or landed immigrants.

**POSTDOCTORAL FELLOWSHIP** available 1 July 1982 in NIH-funded Pathobiology Training Program of the Department of Veterinary Microbiology and Pathology and the Department of Biochemistry, Washington State University. Research includes biochemistry, immunology, and pathology of persistent viral and protozoal diseases; biochemical studies of cell membrane proteins and contractile proteins of muscle and male reproductive hormones; and characterization of genetic diseases including immunodeficiency disorders. Send inquiries, curriculum vitae, and three letters of recommendation to: **Dr. Travis McGuire, Department of Veterinary Microbiology and Pathology, Washington State University, Pullman, Wash. 99164.** *Equal Opportunity/Affirmative Action Employer.*



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Merck Sharp & Dohme Research Laboratories, a world leader in the development of pharmaceutical and biological products, is currently seeking a Ph.D. Biochemist with postdoctoral experience to join our Department of Biochemistry of Inflammation located in Rahway, New Jersey.

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### ASSISTANT SCIENTIST

This individual will participate in research involving use of recombinant DNA technology. 3-5 years of relevant laboratory experience and basic knowledge of biochemical techniques is essential. Experience in handling radioactive materials and an M.S. in Biochemistry or Microbiology is desirable.

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This position will entail the design and synthesis of peptides and peptide analogs and requires experience in solid phase and solution synthesis techniques. Previous experience with HPLC purification and spectroscopic analysis is necessary.

Successful candidate will have a PhD in Organic Chemistry and while post-doctoral experience is preferred, it is not a requirement. The ability to interact effectively in a multidisciplinary environment is essential.

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## FELLOWSHIPS

### IMPERIAL CANCER RESEARCH FUND Research Fellowship

Applications are invited for a 3-year postdoctoral fellowship to work on cellular and molecular aspects of the growth-modulatory effect of interferon in cells in culture. The position would be jointly held in two laboratories which cooperate in this project. Interferon receptors and opposite effects of interferon and growth-promoting factors on early, intermediate, and late biochemical events of the proliferative response would be some of the areas of interest.

Salary range £8787 to £10,837 (inclusive of London weighting), with entry according to qualifications and experience. Applications with curriculum vitae and names of two referees should be sent to: **Secretary, Imperial Cancer Research Fund, Lincoln's Inn Fields, London WC2, England**, quoting reference number 21/82.

### PREDOCTORAL AND POSTDOCTORAL FELLOWSHIPS IN BIOCHEMISTRY

The Department of Biochemistry, The University of Texas Health Science Center at Dallas, invites applications from qualified individuals who wish to pursue pregraduate or postgraduate studies related to the fundamental chemistry of biological processes. Major areas of emphasis include cell and developmental biology, endocrinology, enzymology, immunology, molecular genetics, pharmacology, and toxicology. Appointees will be supported by state and federal funds or The Robert A. Welch Foundation Fellowships. Postdoctoral candidates should make application prior to 15 May by sending curriculum vitae. Predoctoral candidates should request application forms from: **Chairman, Graduate Studies Committee in Biochemistry, The University of Texas Health Science Center at Dallas, 5323 Harry Hines Boulevard, Dallas, Texas 75235. An Equal Opportunity/Affirmative Action University.**

**POSTDOCTORAL FELLOWSHIPS IN BEHAVIORAL GENETICS** for Ph.D.'s or M.D.'s with training in genetics, psychology, psychiatry, neuroscience, or related field. Emphasis on multidisciplinary approaches to human problems. Participating faculty from genetics, psychology, psychiatry, psychopharmacology, neuropsychology, neuroanatomy, cell biology, biochemistry, and statistics. Send curriculum vitae, statement of research and training goals, three letters of reference, and other supporting materials to: **V. Elving Anderson, Dight Institute for Human Genetics, University of Minnesota, Minneapolis, Minn. 55455** (or telephone: 612-373-3639). For consideration on first review, apply by 15 April. *The University is an Equal Opportunity Educator and Employer and specifically invites and encourages applications from women and minorities.*

**CARDIOVASCULAR RESEARCH FELLOWSHIPS.** Two-year postdoctoral fellowships for research training in the laboratory of Dr. James F. Greenleaf in:

- 1) Ultrasonic tissue characterization in heart, breast, and thyroid,
- 2) Ultrasonic imaging of myocardium,
- 3) Basic ultrasonic wave propagation in tissues, and
- 4) Computer applications in ultrasonic imaging.

Positions available immediately for candidates with M.D. or Ph.D.; competitive stipend. May combine with advanced clinical training in cardiovascular medicine. Funding requires citizenship or permanent visa. Contact: **Robert G. Tancredi, M.D., Director, Cardiovascular Research, Mayo Clinic, Rochester, Minn. 55905.**

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### POSTDOCTORAL FELLOWSHIP MOLECULAR BIOLOGY OF FACTOR VIIIc

An immediate opening is available for studies of the molecular biology of the Factor VIIIc plasma protein-hemophilic factor. Investigative experience is provided in a multidisciplinary program addressing the molecular biology of the coagulation pathways. The fellowship will address the biosynthesis and isolation of mRNA and characterization by in vitro translation of Factor VIIIc. Applicant must have experience with mRNA and in vitro translation. Knowledge of coagulation proteins desirable, but not necessary. Submit application and curriculum vitae with references to:

**Thomas S. Edgington, M.D., or  
Daryl S. Fair, Ph.D.  
Research Institute of Scripps Clinic  
La Jolla, California 92037**

## FELLOWSHIPS

**POSTDOCTORAL FELLOWSHIP** available in molecular biology, at the Medical Center Department of Biological Chemistry and Center for Research in Periodontal Disease and Oral Molecular Biology, in interdisciplinary studies of the role of prostaglandins and cyclic nucleotides in cell physiology. Send curriculum vitae, three letters of recommendation, and a description of research interests to: **Dr. Gustav Graff, Department of Biological Chemistry, University of Illinois at the Medical Center, 835 South Wolcott, Chicago, Illinois 60612.**

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

**POSTDOCTORAL FELLOWSHIP**—Three-year fellowship at \$14,000 per year; will participate in structural carbohydrate studies. Position available 1 June 1982. Send curriculum vitae, a short statement of research interests, and three letters of reference to: **Dr. James P. Chambers, Department of Pediatrics, The University of Texas Health Science Center at Houston, 6431 Fannin, Houston, Texas 77030. An Equal Opportunity Employer.**

**POSTDOCTORAL FELLOWSHIP.** To study hormonal regulation of vitamin D metabolism in mammals. Theoretical and/or practical experience required. Contact: **Dr. E. M. Spencer, Children's Hospital of San Francisco, 3700 California Street, San Francisco, Calif. 94118.**

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### POSTDOCTORAL FELLOWSHIP MOLECULAR AND CELLULAR BIOLOGY OF LIPOPROTEINS

Fellowships available 1 July 1982 to investigate cellular participants and pathways by which plasma lipoproteins influence lymphocyte and monocyte functions with particular emphasis on lymphocyte-instructed monocyte/macrophage functions. Available areas of investigation include the immunochromatography of lipoproteins using hybridoma antibodies, lymphocyte subsets influenced by lipoproteins, T lymphocyte subsets responsible for induction of monocyte effector products, procoagulant products of the monocyte/macrophage, and investigation of in vivo induction of cellular initiators of coagulation in familial and acquired hyperlipidemias. Interdisciplinary training and experience in basic and clinical investigation is supported by an NIH training grant. Must be U.S. citizen or permanent resident. Submit application and curriculum vitae with references to:

**Thomas S. Edgington, M.D., or  
Linda K. Curtiss, Ph.D.  
Department of Molecular Immunology  
Research Institute of Scripps Clinic  
La Jolla, California 92037**

## CONFERENCE

### NATO ADVANCED RESEARCH INSTITUTE MECHANISMS OF MIGRATION IN FISHES 13 to 17 December 1982 Acquafredda di Maratea, Italy

This Advanced Research Institute (ARI) will critically examine current knowledge and establish future research objectives for the study of physical and biological mechanisms underlying migration and migratory orientation in fishes. It will consider mechanisms of migration based on passive and modulated drift, directed orientation and navigation, and environmental regulation of fish movement in the context of three major hydrographic regimes: oceans and large lakes, estuaries and continental shelves, and rivers. The program will also include presentation of special topics pertinent to the study of fish migration. The format will be papers and panel discussions requiring the active participation of all. A limited number of contributions and discussions will be published in the NATO conference series. Members of the organizing committee are: **James D. McCleave (United States); Geoffrey P. Arnold (England); Julian J. Dodson (Canada); and William H. Neill (United States).** Grants are available to participants to partially cover accommodation and travel costs.

This invitation to apply is extended to active research biologists and oceanographers interested in the field. Approximately 35 participants will be selected from the applicants. Please apply by 15 April 1982 (giving curriculum vitae, list of publications, and brief outline of potential contribution) to: **Dr. James D. McCleave, Department of Zoology, University of Maine at Orono, Orono, Maine 04469.**

## ASSISTANTSHIPS

**TEACHING ASSISTANTSHIPS** for September 1982. Graduate study in Biology Department leading to M.S. or Ph.D. with concentration in biochemistry, botany, zoology, microbiology, physiology, ecology, cell biology, and marine biology. Anticipated stipends: \$4500 or more for 9 months and tuition waiver which includes 1982 summer courses at our marine station at Nahant. For information, write to: **Dr. Ernest Ruber, Department of Biology, Northeastern University, Boston, Mass. 02115. An Affirmative Action/Equal Opportunity Employer.**

## GRADUATE STUDY

### GRADUATE STUDIES IN BIOLOGY GEORGETOWN UNIVERSITY WASHINGTON, D.C.

The Department of Biology has positions available in both the M.S. and Ph.D. programs. University fellowships are available for qualified Ph.D. applicants. The 14 faculty members conduct active research programs in various areas of cellular and organismal biology, including: cell biology, development, genetics, immunology, behavior, physiology, neurobiology, membrane biology, phycology, microbiology, ecology, radiobiology, and tissue culture (plant and animal). For further information, please contact: **Chairperson, Committee on Graduate Students and Studies, Department of Biology, Georgetown University, Washington, D.C. 20057.**

## COURSES

**SCANNING AND TRANSMISSION ELECTRON MICROSCOPY.** A series of practical courses will be offered during June. They are designed to introduce the participants to the theory and practical aspects of electron microscopy. Specimen preparation, operation of electron microscopes, x-ray microanalysis, and photographic techniques will be stressed. TEM 7-18, SEM 21-25, Combined 7-25. Contact: **Fred Lightfoot, George Washington University, 2300 I Street, NW, Washington, D.C. 20037. Telephone: 202-676-2881, or 3511.**

### RISK ANALYSIS IN ENVIRONMENTAL HEALTH 27 to 29 April 1982

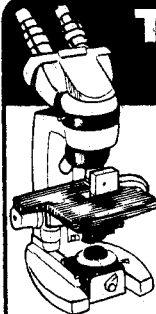
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## MARKETPLACE

**How to Use Biological Abstracts**, Slide Tape by Eva Jonas, 1981 Revised and Enlarged Edition, Museum of Comparative Zoology, Harvard University. Describes the 1981 format of Biological Abstracts, its indices, and basic research techniques. Explains latest format changes of the Biosystematic and the Concept (Cross) indices (former Bioresearch Index). \$115. Prepaid only. **Museum of Comparative Zoology Library, 26 Oxford Street, Cambridge, Mass. 02138.**



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