

evolution of different feeding modes in the adult animal. The volume ends with a meta-physical essay by Katz entitled "Is evolution random?" There is a good chance that at least one of these papers will change the way you think about the relationship between development and evolution.

GARY FREEMAN  
Department of Zoology,  
University of Texas,  
Austin, TX 78712

## Social Mammals

**Behavioral Biology of Killer Whales.** BARBARA C. KIRKEVOLD and JOAN S. LOCKARD, Eds. Liss, New York, 1986. xvi, 457 pp., illus. \$79.50. Zoo Biology Monographs, vol. 1.

This is the first volume of the series Zoo Biology Monographs, which is intended to provide "a forum for indepth studies and reviews of diverse taxa and issues within the professional scope of practicing zoo biologists." The series is dedicated to the worldwide movement to preserve biological diversity, a movement in which zoological parks are playing an essential and increasing role. Judging by the first volume, these books, which aim to provide a thorough understanding of animals in their natural habitats as well as in captivity, should become an important resource not only for zoo biologists but also for conservationists and academics concerned with ecology and behavior.

The killer whale, *Orcinus orca*, is an immensely striking animal whether seen in the wild or in captivity. This long-lived, highly social species has provided unique opportunities for long-term research on behavior, ecology, and demography.

The book is divided into three main sections, considering evolution and natural history, behavior and social groupings, and vocalizations and communication. Most of the studies presented were conducted on three wild pods of killer whales found in the region of southern Vancouver Island, British Columbia, and Puget Sound in Washington State.

One of the major questions about killer whales concerns the nature of their mating system. In the first section, Duffield reviews the taxonomy of *Orcinus orca* and discusses chromosomal studies and their implications with respect to the mating system. Chromosomal evolution has been rapid in *Orcinus*, and the species karyotype has diverged radically from the strikingly conservative pattern of other cetaceans. Duffield suggests that this divergence might be caused by a social structure involving some degree of inbreeding.

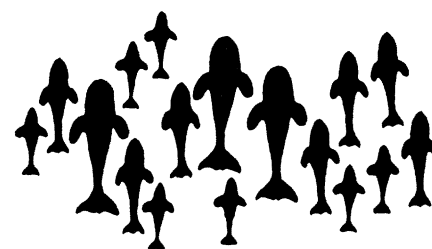
Matkin and Leatherwood review the literature on killer whale distribution, abundance, and social behavior. Their chapter and one on demography by Balcomb and Bigg show that killer whale pods are extremely stable social units with practically no dispersal of individuals between them. The integrity of pods is also indicated by the existence of pod-specific dialects, discussed later in this volume by Hoelzel and Osborne and elsewhere by J. K. Ford and H. D. Fisher (*Rep. Int. Whaling Commission* 32, 671 [1982]). Sara Heimlich-Boran suggests that the males, traditionally assumed to be the breeding bulls in a pod, may be siblings or offspring of the pod's breeding females, residing permanently in their natal pod.

These studies suggest an unusual mammalian social system in which dispersal by either sex is rare or nonexistent and males breed either with close relatives in their own family pod or with females in other pods during social interactions between pods. More data are needed on this intriguing question.

The second section begins with a descriptive chapter by Jacobsen with interesting information on natural history, daily patterns, and foraging behavior of northern Vancouver Island pods. A chapter by Ray *et al.* presents data on social and respiratory synchrony of captive killer whales that will be of use in assessing the health of captive animals. A chapter by Osborne quantifies the time budgets of Puget Sound killer whales and gives particularly interesting descriptions of complex greeting ceremonies when pods meet and discussion of behavioral differences between these and the northern Vancouver Island pods.

The most intriguing chapter is by Sara Heimlich-Boran, who quantifies the frequencies of association between individual members of J-pod, one of the best-studied killer whale groups. Young calves prefer to associate with their own mothers, but after a few years, particularly when a younger sibling is born, they shift allegiance to a non-breeding female, who is usually a close associate of their mother. This "aunting" behavior is particularly interesting, but, disappointingly, few data on the age and status of the "barren" females who act as "aunts" are presented here. Heimlich-Boran concludes that J-pod is composed of four sub-units centered around breeding females and their offspring. This chapter is well complemented by a chapter by Haenel in which a clear qualitative description of calf behavior is given.

Two chapters on vocalization and communication by Morton *et al.* and Bain offer complementary approaches to studying the



Aerial diagram of killer whale tight resting formation. Pod size and age-sex composition are modeled after J-pod. [From R. Osborne's chapter in *Behavioral Biology of Killer Whales*]

context of killer whale vocalizations in captivity and relating findings to the excellent earlier studies by Ford and Fisher in the wild.

In the final chapter Lockard summarizes the information presented in the book with reference to primate behavior. This one comparative chapter is disappointing because killer whale social behavior is as likely to converge with that of other carnivores, which are barely mentioned in the book, as it is with that of primates. The comparative analysis that is done is too brief and in a section entitled "are killer whales cannibalistic?" confusing. The book lacks an exhaustive comparative discussion of killer whale mating systems, which could have helped in formulation of hypotheses for future research.

Although few conclusions are drawn by the contributors, a wide variety of basic data are presented that will provide grist for the mills of marine mammalogists and those interested in mammalian social systems. In keeping with the goals of the series to which the book belongs, the information will also be of use to zoo professionals concerned with sound captive management of killer whales.

PETER O. THOMAS  
Animal Behavior Graduate Group,  
Division of Environmental Studies,  
University of California,  
Davis, CA 95616

## Books Received

**Astrophysical Radiation Hydrodynamics.** Karl-Heinz A. Winkler and Michael L. Norman, Eds. Reidel, Dordrecht, 1986. viii, 590 pp., illus. \$98. NATO Advanced Science Institutes Series c, vol. 188. From a workshop, Garching, F.R.G., Aug. 1982.

**Asymptotic Theory of Statistical Inference.** B. L. S. Prakasa Rao. Wiley, New York, 1987. xvi, 438 pp. \$49.95. Wiley Series in Probability and Mathematical Statistics.

**Atlas of Selected Oil and Gas Reservoir Rocks from North America.** A Color Guidebook to the Petrology of Selected Oil and Gas Reservoir Rocks from the United States and Canada. Edwin W. Biederman, Jr. Wiley-Interscience, New York, 1986. xx, 399 pp., illus. \$125.

**Autobiographical Memory.** David C. Rubin, Ed. Cambridge University Press, New York, 1986. x, 298 pp., illus. \$39.50.

**The Biochemistry of the Nucleic Acids.** Roger L. P. Adams, John T. Knowler, and David P. Leader. 10th ed. Chapman and Hall (Methuen), New York, 1987. xviii, 526 pp., illus. \$59.95; paper, \$33.

**Biological Indicators of Freshwater Pollution and Management.** J. M. Hellawell. Elsevier, New York, 1986. xiv, 546 pp., illus. \$107.25. Pollution Monitoring Series.

**Biological Regulation of Cell Proliferation.** R. Baserga *et al.*, Eds. Raven, New York, 1986. xvi, 366 pp., illus. \$52. Sero Symposia Publications, vol. 34. From a symposium, Milan, 1986.

**Biomineralization in Lower Plants and Animals.** Barry S. C. Leadbeater and Robert Riding, Eds. Clarendon (Oxford University Press), New York, 1986. xii, 401 pp., illus. \$80. Systematics Association Special Volume no. 30. From a symposium, Birmingham, U.K., April 1985.

**Biotechnology.** A Comprehensive Treatise in 8 Volumes. H.-J. Rehm and G. Reed, Eds. Vol. 8, Microbial Degradations. W. Schönborn, Ed. VCH, New York, 1986. xvi, 743 pp., illus. \$298; by subscription, \$198.

**Biotechnology Regulations.** Environmental Release Compendium. Harlee S. Strauss. OMEC International, Washington, DC, 1987. Various pages. In loose-leaf binder, \$95.

**Chaos and Quantum Chaos.** W. H. Steeb and J. A. Louw. World Scientific, Singapore, 1986 (U.S. distributor, Taylor and Francis, Philadelphia). x, 146 pp. \$33.

**Chemicals and Society.** A Guide to the New Chemical Age. Hugh D. Crone. Cambridge University Press, New York, 1986. x, 244 pp., illus. \$39.50; paper, \$14.95.

**Computer Vision, Image Processing and Communications.** Systems and Applications. Patrick S-P Wang, Ed. World Scientific, Singapore, 1986 (U.S. distributor, Taylor and Francis, Philadelphia). xii, 165 pp., illus. \$30. From a conference, Newton, MA, Nov. 1985.

**Concepts of Particle Physics.** Vol. 2. Kurt Gottfried and Victor F. Weisskopf. Oxford University Press, New York, 1986. xx pp. + pp. 193-608, illus. \$45.

**Concurrency Control and Recovery in Database Systems.** Philip A. Bernstein, Vassos Hadzilacos, and Nathan Goodman. Addison-Wesley, Reading, MA, 1987. xiv, 370 pp. \$24.95. Addison-Wesley Series in Computer Science.

**Conversion Tables of Units for Science and Engineering.** Ari L. Horvath. Elsevier, New York, 1986. 147 pp. \$34.95.

**Energy Efficiency.** Perspectives on Individual Behavior. Willett Kempton and Max Neiman, Eds. American Council for an Energy-Efficient Economy, Washington, DC, 1987. 333 pp., illus. Paper, \$19.50. American Council for an Energy-Efficient Economy Series on Energy Conservation and Energy Policy.

**Engines of Creation.** Challenges and Choices of the Last Technological Revolution. K. Eric Drexler. Anchor (Doubleday), Garden City, NY, 1986. xii, 298 pp. \$17.95.

**The English Zechstein and Related Topics.** Gill M. Harwood and Dany B. Smith, Eds. Published for the Geological Society by Blackwell Scientific, Palo Alto, CA, 1986. viii, 244 pp., illus. \$68. Geological Society Special Publication no. 22. From a workshop, Nottingham, U.K.

**Environmental Toxicity and the Aging Process.** Scott R. Baker and Marvin Rogul, Eds. Liss, New York, 1987. xxii, 139 pp. \$39.50. Progress in Clinical and Biological Research. From a workshop, Columbia, MD, Oct. 1985.

**Enzymes and Isoenzymes in Pathogenesis and Diagnosis.** D. M. Goldberg, M. Werner, and J. L. Zaidman, Eds. Karger, Basel, 1987. viii, 162 pp., illus. \$94. Advances in Clinical Enzymology, vol. 5. From a congress, Jerusalem, Sept. 1985.

**Freud's Self-Analysis.** Didier Anzieu. International Universities Press, Madison, CT, 1986. xx, 618 pp. \$60. Translated from the French edition (1975) by Peter Graham.

**From Humanism to the Humanities.** Anthony Grafton and Lisa Jardine. Harvard University Press, Cambridge, MA, 1986. xvi, 224 pp. \$27.50.

**Frontiers of Physics, 1900-1911.** With an Original Prologue and Postscript. Arthur I. Miller. Birkhäuser, Boston, 1986. xxvi, 293 pp., illus. \$34.95. A *Pro Scientia Viva* title.

**Frugivores and Seed Dispersal.** Alejandro Estrada and Theodore H. Fleming, Eds. June, Dordrecht, 1986. (U.S. distributor, Kluwer, Norwell, MA). xiv, 392 pp., illus. \$120.50. Tasks for Vegetation Science, 15. From a symposium, Veracruz, Mexico, June 1985.

**Introduction to Computer-Assisted Experimentation.** Kenneth L. Ratzlaff. Wiley, New York, 1987. xviii, 438 pp., illus. \$44.95.

**Introduction to Information Theory.** Masud Mansuripur. Prentice-Hall, Englewood Cliffs, NJ, 1987. xxii, 149 pp., illus. \$36.95.

**Lasers in Atomic, Molecular and Nuclear Physics.** V. S. Letokhov, Ed. Harwood Academic Publishers, New York, 1986. xii, 610 pp., illus. \$150. From a conference-school, Vilnius, U.S.S.R., Aug. 1984.

**Laws and Other Worlds.** Fred Wilson. Reidel, Dordrecht, 1986 (U.S. distributor, Kluwer, Norwell, MA). xvi, 328 pp. \$69. University of Western Ontario Series in Philosophy of Science, vol. 31.

**Levels of Explanation in Social Psychology.** Willem Doise. Cambridge University Press, New York, 1986. xii, 183 pp. \$29.95; paper, \$10.95. European Monographs in Social Psychology. Translated from the French edition (1982) by Elizabeth Mapstone.

**The Life It Brings.** One Physicist's Beginnings. Jeremy Bernstein. Ticknor and Fields, New York, 1987. xx, 171 pp. + plates. \$16.95.

**Littlewood's Miscellany.** Béla Bollobás, Ed. Cambridge University Press, New York, 1986. viii, 200 pp., illus. \$32.50; paper, \$11.95. Eighteen essays reprinted from the mathematician's earlier works.

(Continued on page 207)

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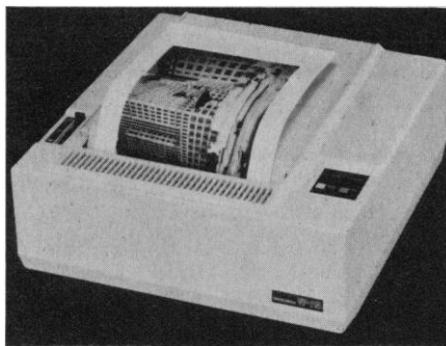
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### *Botanic Electronic Bulletin Board*

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### *Literature*

*New Frontiers in Data Acquisition* is a 56-page brochure that describes a line of data acquisition modules. LeCroy. Circle 565.

*Biochemicals Catalog* features neurochemicals, enzyme inhibitors, pteridines, uric acids, neuronal tissue culture, and receptor assay kits. Research Biochemicals. Circle 566.

The *FPLC System Guide* describes fast protein, peptide, and polynucleotide liquid chromatography components for biomolecular separation and discusses how to configure eight systems. Pharmacia, Laboratory Separation Division. Circle 567.

*System Gold: The Personal Chromatograph* is a 16-page brochure about a line of all-digital, personal computer-based high-performance liquid chromatography systems. Beckman Instruments, Altex Division. Circle 568.

*Megabore, the Packed Column Alternative* details gas chromatography columns that have better resolution than packed columns, yet are more flexible, more durable, more inert, and faster. J & W Scientific. Circle 571.

(Continued from page 205)

**Maximum Entropy and Bayesian Methods in Applied Statistics.** James H. Justice, Ed. Cambridge University Press, New York, 1986. x, 319 pp., illus. \$44.50. From a workshop, Calgary, Alberta, Aug. 1984.

**New Communities for Urban Squatters.** Charles L. Choguill. Plenum, New York, 1987. xiv, 213 pp., illus. \$39.50. Urban Innovation Abroad.

**New Directions in Solid State Chemistry.** Structure, Synthesis, Properties, Reactivity and Materials Design. C. N. R. Rao and J. Opalakrishnan. Cambridge University Press, New York, 1986. x, 516 pp., illus. \$79.50. Cambridge Solid State Science Series.

**New Frontiers in Particle Physics.** J. M. Cameron *et al.*, Eds. World Scientific, Singapore, 1986 (U.S. distributor, Taylor and Francis, Philadelphia). x, 623 pp., illus. \$67. From an institute, Lake Louise, Canada, Feb. 1986.

**New Frontiers in the Study of Gene Functions.** George Poste and Stanley T. Crooke, Eds. Plenum, New York, 1987. xvi, 202 pp., illus. \$45. New Horizons in Therapeutics.

**New Horizons in Electrochemical Science and Technology.** Report of the Committee on Electrochemical Aspects of Energy Conservation and Production, National Research Council. National Academy Press, Washington, DC, 1986. xvi, 147 pp., illus. Paper, \$12.50. Publication NMAB 438-1.

**New Root Formation in Plants and Cuttings.** Michael B. Jackson, Ed. Nijhoff, Dordrecht, 1986 (U.S. distributor, Kluwer, Norwell, MA). xviii, 265 pp., illus. Developments in Plant and Soil Sciences, vol. 20.

**The Newton Handbook.** Derek Gjertsen. Routledge and Kegan Paul (Methuen), New York, 1986. xiv, 665 pp., illus. \$59.95.

**Nobel Dreams.** Power, Deceit, and the Ultimate Experiment. Gary Taubes. Random House, New York, 1986. xxiv, 263 pp., illus. \$19.95.

**Nonlinear Stochastic Operator Equations.** George Adomian. Academic Press, Orlando, FL, 1986. xvi, 287 pp., illus. \$64.50.

**Nuclear Beta Decays and Neutrino.** T. Kotani, H. Ejiri, and E. Takasugi, Eds. World Scientific, Singapore, 1986 (U.S. distributor, Taylor and Francis, Philadelphia). xviii, 542 pp., illus. \$67. From a symposium, Osaka, Japan, June 1986.

**Proceedings of the 12th International Conference on Neutrino Physics and Astrophysics.** (Sendai, June 1986.) T. Kitagaki and H. Yuta, Eds. World Scientific, Singapore, 1986 (U.S. distributor, Taylor and Francis, Philadelphia). xvi, 826 pp., illus. \$99.

**Progress in Solar Engineering.** D. Yogi Goswami, Ed. Hemisphere (Harper and Row), New York, 1987. x, 387 pp., illus. \$65. Based on a symposium, Roorkee, India, Aug. 1985.

**The Red Ape.** Orangutans and Human Origins. Jeffrey H. Schwartz. Houghton Mifflin, Boston, 1987. xiv, 337 pp., illus. + plates. \$18.95.

**Regulating Industrial Risks.** Science, Hazards and Public Protection. Harry Orway and Malcolm Peltu, Eds. Butterworths, Stoneham, MA, 1985. x, 181 pp., illus. \$59.95. Based on a meeting, Ispra, Italy, Oct. 1984.

**Repair of DNA Lesions Introduced by N-Nitroso Compounds.** Bjørnar Myrnes and Hans Krokan, Eds. Norwegian University Press, Oslo, 1986 (distributor, Oxford University Press, New York). x, 292 pp., illus. \$45. From a symposium, Tromsø, Norway, June 1985.

**Reproduction and Development.** W. Richard Duxkel and J. Erwin, Eds. Liss, New York, 1986. xii, 497 pp., illus. \$120. Comparative Primate Biology, vol. 3.

**Ribulose Biphosphate Carboxylase-Oxygenase.** R. J. Ellis and J. C. Gray, Eds. Royal Society, London, 1986. viii, 469 pp., illus. £29.80. First published in *Philosophical Transactions* of the Royal Society, series B, vol. 313, 1986. From a meeting, London, Dec. 1985.

**The Riddle of Gravitation.** Peter G. Bergmann. 2nd ed. Scribner, New York, 1987. xx, 235 pp., illus. \$18.95.

**La Riera Cave.** Stone Age Hunter-Gatherer Adaptations in Northern Spain. Lawrence G. Straus and Geoffrey A. Clark. Department of Anthropology, Arizona State University, Tempe, 1986. xviii, 499 pp., illus. Paper, \$28.50. Arizona State University Anthropological Research Papers, no. 36.

**Robotics Research.** The Third International Symposium (Gouvieux, France, Oct. 1985). O. D. Faugeras and George Giralt, Eds. MIT Press, Cambridge, MA, 1986. xii, 410 pp., illus. \$50. Artificial Intelligence.

**The Role of Organic Matter in Modern Agriculture.** Y. Chen and Y. Avnimelech, Eds. Nijhoff, Dordrecht, 1986 (U.S. distributor, Kluwer, Norwell, MA). xiv, 306 pp., illus. \$74.95. Developments in Plant and Soil Sciences, 25.

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Rockville, MD 20852

**ANAEROBIC MICROBIOLOGIST.** Tenure-track position available to conduct research and supervise graduate education in the biochemistry, physiology, metabolism, ecology, and/or molecular biology of microbes in methanogenic ecosystems such as the rumen and the gastrointestinal tract of domestic animals. The candidate will be expected to develop and obtain funds for a strong research program concerning microbes in the gastrointestinal tract of domestic animals, to direct M.S. and Ph.D. students, to participate in teaching, and to cooperate with faculty in related areas of the animal sciences. Ph.D. in microbiology or related area, with specialization in anaerobic microbiology is essential. Position is available for fall 1987. Rank is open and salary will be commensurate with qualifications and experience. Send résumé, three letters of recommendation, undergraduate and graduate academic transcripts to: W. R. Gomes, Head, University of Illinois, Department of Animal Sciences, 1301 West Gregory Drive, Urbana, IL 61801; Telephone 217-333-3462. To ensure full consideration applications should be received by 1 September 1987. *The University of Illinois is an Affirmative Action/Equal Opportunity Employer.*

**ASSISTANT PROFESSOR—INVERTEBRATE BIOLOGIST:** We seek an outstanding individual using modern analytical approaches at a molecular, cellular, or higher level. We expect an active research program with potential for extramural funding. Postdoctoral experience is preferred. Teaching obligations include both a comprehensive undergraduate course in general invertebrate zoology and, in alternate years, a course in the area of specialization. There are graduate training programs in cell and molecular biology, genetics, developmental biology, neuroscience, and endocrinology-reproductive physiology. Apply by 15 October 1987 with curriculum vitae, statement of research and teaching interests, copies of key publications, and at least three letters of reference to: Dr. Seymour Abrahamson, Chairman, Department of Zoology, 250 North Mills Street, University of Wisconsin-Madison, Madison, WI 53706. *Equal Opportunity Employer.*

### ASSISTANT/ASSOCIATE PROFESSOR OF PHARMACOLOGY

The expanding Department of Pharmacology at Northeastern Ohio Universities College of Medicine invites applications from individuals with strong research credentials in CNS Pharmacology for a tenure-track position, available immediately, at the level of assistant or associate professor. Applicants must have a Ph.D. degree, have completed not less than 2 years of postdoctoral training and have demonstrated ability to conduct independent research. Some teaching experience is desirable since the position requires participation in teaching of medical and graduate students. The medical school is housed in a modern facility on 55 acres and is in close proximity to a wide variety of living styles. Many opportunities are available in the geographic area for academic and scientific interactions. Send curriculum vitae including the names of three references by 1 September 1987 to: Dr. Martin D. Schechter, c/o the Office of Human Resources, Northeastern Ohio Universities College of Medicine, P.O. Box 95, Rootstown, OH 44272. *An Affirmative Action/Equal Opportunity Employer.*

## POSITIONS OPEN

Department of Entomology, University of California, Davis, announces an **ASSISTANT PROFESSOR**, tenure-track position in molecular biology. Ph.D. in molecular biology, biochemistry, or related discipline and postdoctoral experience with demonstrated research productivity. Appointee must become involved in undergraduate and graduate instruction relating to molecular biology, supervise and direct graduate students. Appointee will develop research in the area of molecular biology. Possible research areas are: fundamental studies of gene structure, regulation and expression, biochemical systematics, molecular evolution, and molecular bases of insect-host or insect-pathogen interactions. Submit letter of application, curriculum vitae, summary of teaching and research goals, list and reprints of published material, and names and addresses of three referees. Send to: **Donald L. McLean, Chair of Search Committee, Department of Entomology, University of California, Davis, CA 95616**, no later than 1 September 1987.

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

**ASSISTANT PROFESSOR—INSECT GENETICS.** Available October 1987. A 12-month, tenure-track teaching and research position. Research responsibilities in the area of the genetic basis of insect adaptations to their environment, particularly to animal or plant hosts and/or insecticides, and the application of genetic principles and techniques for the management of insect populations. Teaching responsibilities include a course on insect genetics and a special topics course offered alternate years. A Ph.D. in biological sciences with specialization in genetics and experience with invertebrates is required. Application deadline 1 September 1987. Send letter of application, résumé, transcripts, and names of three references to: **Dr. R. G. Helgesen, Head, Department of Entomology, 123 Waters Hall, Kansas State University, Manhattan, KS 66506**.

### ASSISTANT PROFESSOR OF NEUROPATHOLOGY

Tenure-track position available. Qualifications include: certification or eligibility for Board in pathology with Certificate of Competence in neuropathology; record of research accomplishments, and capacity to function as teacher, independent clinical neuropathologist, and investigator. Send curriculum vitae and names of three referees to: **N. K. Gonatas, Director of Neuropathology, Department of Pathology and Laboratory Medicine, 454 Johnson Pavilion, University of Pennsylvania, Philadelphia, PA 19104**. *The University of Pennsylvania is an Affirmative Action/Equal Opportunity Employer.*

Applications are invited for a full-time tenure-track position at the **ASSISTANT PROFESSOR OR ASSOCIATE PROFESSOR** level in the Department of Anatomy, College of Medicine, University of South Florida. Applicants should have a Ph.D. or M.D. degree and a minimum of 2 years of postdoctoral research experience. The successful candidate will be expected to pursue a vigorous research program, and to participate in the teaching of gross anatomy to freshmen medical students. Experience in the latter is required. Send curriculum vitae, statement of research interests, and the name of three references by 30 September 1987 to: **J. Rhodin, M.D., Ph.D., Chairman, Department of Anatomy, College of Medicine, University of South Florida, 12901 Bruce B. Downs Boulevard, Tampa, FL 33612**. *An Equal Opportunity/Affirmative Action Employer.*

### ASSISTANT PROFESSOR APPLIED IMMUNOLOGY

**CORRECTION:** Please note that the deadline for the ad which appeared in the 3 April 1987 issue should have read "Review of applications will begin on 24 April 1987". Send curriculum vitae, a description of teaching and research interests, and names, addresses, and telephone numbers of two references to:

**Professor Neal S. Rote, Director  
Applied Immunology Program  
106 Science  
University of Southern Maine  
96 Falmouth Street  
Portland, ME 04103**

*USM is an Equal Employment Opportunity/Affirmative Action Employer.*

## POSITIONS OPEN

### ASSISTANT/ASSOCIATE PROFESSORSHIP IN PHYSIOLOGY

Two tenure-track positions are available for the next academic year (1987 to 1988) in the Department of Physiology at the University of South Alabama College of Medicine. All applicants must develop a vigorous research program, participate in medical and graduate teaching programs, and interact with ongoing basic research and teaching programs in physiology, surgery, and medicine. Previous research and teaching experience in cardiovascular and pulmonary physiology are of interest, but candidates in all areas of physiology will be considered, especially in the area of cell physiology. Applicants should forward a letter of application, curriculum vitae, and the names of three references to: **Aubrey E. Taylor, Chairman, Department of Physiology, University of South Alabama, College of Medicine, MSB 3024, Mobile, AL 36688**.

*The University of South Alabama is an Affirmative Action/Equal Opportunity Employer. Deadline for application is 1 September 1987.*

### ASSOCIATE IN PHYSIOLOGY

The Department of Physiology and Biophysics invites applications for faculty positions at the associate level (pre-tenure track). Individuals interested in using cellular and molecular approaches to investigate endocrine regulation, nervous system development, or membrane structure and function are particularly encouraged to apply. Candidates should have the Ph.D. or equivalent degree and at least 2 years of postdoctoral research experience. Please submit a letter of application, with curriculum vitae, two reprints or preprints of recent experimental work, and names of at least three references, to: **Dr. Robert E. Fellows, Department of Physiology and Biophysics, The University of Iowa, 5-660 BSB, Iowa City, IA 52242**.

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

### BIOLOGY LABORATORY COORDINATOR

Applications are invited for a position of Laboratory Coordinator in the Biology Department of Rice University for the 1987 to 1988 academic year. This is a university staff appointment. We are seeking an individual to assume responsibility for the operation of the undergraduate introductory and advanced experimental laboratory courses. The salary is competitive and depends upon qualifications. An advanced degree in biological science and/or suitable experience in a university laboratory is required. For consideration, send résumé and letters of recommendation to:

**Dr. R. M. Glantz  
Department of Biology  
Rice University  
P.O. Box 1892  
Houston, TX 77251**

*Rice University is an Equal Opportunity Employer.*

**BOTANIST**—One-year assistant professor position, with teaching responsibilities including general botany, an upper level course in plant biology, and a third course to be negotiated. Position begins 15 August 1987. Research opportunities include modern lab, herbarium, and 1000-acre campus nature preserve. Send letter of interest, curriculum vitae, and names and addresses of three referees by 24 July 1987 to: **Dr. Paul Hamilton, Chairman, Department of Biology, University of West Florida, Pensacola, FL 32514**. *Equal Opportunity/Affirmative Action Institution.*

**CARDIOVASCULAR PHYSIOLOGIST** interested in basic science with clinical orientation needed for a modern surgical cardiovascular research lab located in a large metropolitan hospital in Atlantic coastal state region. Ph.D./M.D. level only. Hospital has medical school affiliation. Send curriculum vitae to: **Box 99, SCIENCE**.

**CELLULAR IMMUNOLOGIST:** Full-time laboratory research in human autoimmunity. At least 2 years of postdoctoral experience required. Send curriculum vitae and a recent publication to: **Peter C. Dau, M.D., Division of Allergy/Immunology, Evanston Hospital, Evanston, IL 60201**. *An Equal Opportunity/Affirmative Action Employer.*

## POSITIONS OPEN

Princeton University, Department of Chemical Engineering, **ALBERT WAXMAN CHAIR IN BIOENGINEERING**. Seeking a senior faculty member with an international reputation dedicated to teaching and research in areas of engineering related to biology or biochemistry. Program will include an interdepartmental curriculum and research in the physics, molecular biology, chemistry, and chemical engineering departments. Qualified applicants from universities and government or industrial research laboratories should send résumés to: **William B. Russel, Department of Chemical Engineering, Princeton University, Princeton, NJ 08544**. *Princeton University is an Equal Opportunity/Affirmative Action Employer.*

### CHAIRPERSON/HEAD DEPARTMENT OF BOTANY AND PLANT PATHOLOGY OREGON STATE UNIVERSITY

Applications and nominations are invited for the position of Chairperson/Head of the Department of Botany and Plant Pathology, Oregon State University. The Department has 28 regular faculty members and 50 graduate students. It supports a wide range of programs in the discipline, and joint ones in biology, genetics, molecular biology, and plant physiology.

Candidates must possess a doctoral degree, demonstrated excellence in research and teaching, administrative ability, and the enthusiasm to provide leadership to the department in meeting its responsibilities for research, teaching, and extension. The appointee will be expected to continue his/her research, and to participate in the teaching program.

Applications should include a statement of interest, curriculum vitae, and list of publications. Inquiries and nominations are welcome; contact: **Dr. Kenton L. Chambers, Search Committee, Department of Botany and Plant Pathology, Oregon State University, Corvallis, OR 97331**, by 15 August 1987. *An Equal Opportunity/Affirmative Action Employer.*

### CLINICAL MANAGER

Contract laboratory in south Florida is looking for a clinical manager for over-the-counter clinical studies. Ph.D. in pharmacology or biochemistry or equivalent in O.T.C. Management, with a background in industry or contract laboratory preferred. Good oral and written communication skills required. Please send résumé and salary history to:

**Hazleton Laboratories  
900 Osceola Drive  
West Palm Beach, FL 33409  
Attention: Personnel**

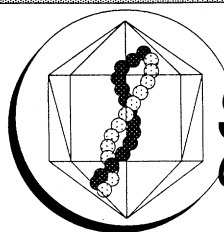
**CLINICAL RESEARCH ASSOCIATE**, St. Luke's Hospital, Milwaukee, Wisconsin. Full-time position available September 1987. Excellent opportunity available to join our oncological clinical research project. Candidates must have 3 to 5 years of research experience including research in mammalian tissue culture, blood banking and aseptic techniques. Candidates should send curriculum vitae immediately and call collect to discuss your qualifications: **D. Brutus, Employment Department, St. Luke's Hospital, 2900 West Oklahoma Avenue, Milwaukee, WI 53215**. Telephone: 414-649-6378. *An Equal Opportunity Employer M/F/H/V.*

### DIRECTOR: COMPUTER CORE/IMAGE ANALYSIS FACILITY

Internationally recognized brain research laboratory at a major medical center seeks a scientist with a background in quantitative image analysis and interactive computer graphics. This individual should have experience with UNIX systems and a desire to work in a research environment. While an advanced degree (M.S. or Ph.D.) in computer science is desirable, a suitable candidate might otherwise be a neuroscientist whose interest has shifted to computer science. Interpersonal and management skills are required as this individual will help coordinate and plan the future direction of the research activities of the facility, select system hardware for purchase, supervise (and hire) technical staff and interact with other scientists.

This is an academic position at the assistant professor or associate research professor level.

Send résumé to: **D. J. Reis, Laboratory of Neurobiology, Cornell University Medical College, 411 East 69th Street—KB410, New York, NY 10021**. *Equal Opportunity Employer/Affirmative Action M/F/H/V.*



## STRATAGENE CLONING SYSTEMS

Stratagene is an innovator in research products for molecular biology. The company is now expanding its focus and plans to utilize its proprietary technologies in areas related to gene prognosis, gene expression in transgenic animals, and genomic mapping and sequencing.

### Research Associates

Applicants should have a B.S. or M.S. in Molecular Biology or Biochemistry and 2 or more years of relevant laboratory experience. Experience with nucleic acid hybridization, gene cloning and subcloning, or DNA sequencing is expected. Candidates should have the ability to function independently within the laboratory setting. Good interpersonal skills are required.

Stratagene provides a unique working environment. The company is growing rapidly and encourages group involvement in major decisions and policy. A generous stock option plan is available in addition to standard fringe benefits. Stratagene is located within an important center for biotechnology. It is one mile from the University of California and several other major research institutes. Recreational opportunities are plentiful, being walking distance from the beach. Salaries are excellent.

### Postdoctoral Positions

Applicants should have a doctorate degree in Molecular Biology or Biochemistry and significant laboratory experience with a broad range of technologies, including nucleic acid hybridization, gene cloning and subcloning, DNA sequencing. Candidates should demonstrate their productivity and ability to function independently within the laboratory setting. Good writing and interpersonal skills are required. Staff Scientists are expected to continue publishing and to move to the forefront of their area of focus.

Stratagene encourages scientists with an entrepreneurial spirit. Creativity and productivity are acknowledged and rewarded. The opportunity for advancement within the company is exceptional.

Please send resume and three references to:

Ms. Sandra Carter  
Administrative Coordinator  
Stratagene Cloning Systems  
11099 North Torrey Pines Road  
La Jolla, CA 92037

## Plant Molecular Biologist

American Cyanamid Company's Agricultural Research Division has an opening in its expanding Plant Biotechnology program for a plant molecular biologist. We are seeking an individual with proven skills in gene isolation from higher plants, in the use of plant transformation systems, and/or in the analysis of gene expression in higher plants. The ideal candidate will have a Ph.D. in molecular biology or a related discipline and 2-5 years of relevant post-doctoral research.

American Cyanamid offers a competitive compensation and benefits package. For prompt and confidential consideration, forward your resume, an outline of research interests, career goals and the names and addresses of three references to the Employment Office.



### American Cyanamid Company

Agricultural Research Division  
P.O. Box 400  
Princeton, NJ 08540

An Equal Opportunity Employer M/F/H

## SuGene *is expanding*

Sungene Technologies Corporation, an established plant biotechnology company in the San Francisco Bay Area, is expanding its staff of Scientists to conduct research in the areas of:

- **Plant Tissue Culture** involving protoplast isolation, transformation, callus induction, plantlet regeneration and in-vitro selection in agronomic crops.
- **Plant Lipid and Protein Biochemistry** using enzymological and analytical approaches as well as collaboration with cell biologist and plant breeding station scientist.
- **Molecular Biology** including nucleic acid manipulation involving the identification, isolation, expression and regulation of genes in plant systems.

Ideal candidates will have an advanced degree, 3+ years experience and an interest in working in an organization with a strong technical and commercial orientation.

Sungene Technologies offers excellent salary, benefits, relocation and stock option plans. Please send resume with references to:

John Kelley  
Sungene Technologies Corporation  
3330 Hillview Avenue  
Palo Alto, CA 94304

## SCIENTISTS

### B.S. – M.S. – POST DOC

Merck Sharp & Dohme Research Laboratories is currently offering two unique opportunities for scientists to join our expanding Department of Biological Research.

• **B.S./M.S. Position**—The selected candidate will carry out a variety of assays involving blood coagulation factors as well as platelet aggregation and adhesion. Responsibilities will also include maintaining a cell/tissue culture facility. A B.S. or M.S. in Biology, Biochemistry or the equivalent is required. Experience in clinical coagulation and cell culturing would be preferred.

• **Post-Doctoral Position**—The selected candidate will study various aspects of proteins containing beta-hydroxyaspartic acid and beta-hydroxyasparagine. These would include protein chemistry, protein-protein and protein ligand-receptor binding, cell culture, and enzymological approaches.

Requirements include a Ph.D. in Biological Chemistry or the equivalent and experience with several or all of the above disciplines.

Excellent salary and benefits programs accompany these positions at our modern research facilities located 25 miles northwest of Philadelphia.

Please send resume with salary requirements to: Manager, Research Personnel, W42-2

**Merck Sharp & Dohme  
Research Laboratories  
West Point, PA 19486**

EEO/AA/VH/EMPLOYER



**Merck & Co., Inc.**



## POSITIONS OPEN

### CURATOR OF FISH

Requires B.A./B.S. in marine biology, biology, or zoology, with minimum of 3 years of experience as an aquarist. Must be experienced diver. Supervisory/administrative experience preferred. Will assist in the design and planning of major new public aquarium. Send letter, résumé, and three references to:

**Dr. Judith L. Wellington**  
Vice President, Project Development  
Zoological Society of Philadelphia  
34th Street and Girard Avenue  
Philadelphia, PA 19104

**DENDROCHRONOLOGIST.** Applications are invited for an entry-level scientist to join a new dendrochronology laboratory at the Mountain Research Station, Institute of Arctic and Alpine Research (INSTAAR), University of Colorado. The laboratory is a component of INSTAAR's new Center for Geochronological Research in Boulder and a large equipment budget has been allocated by the University. The dendrochronologist will study tree rings in relation to dating, ecological problems, and/or climate reconstruction and will collaborate with scientists in related disciplines. The successful candidate will participate in the development of the laboratory, initiate externally funded research programs, teach a summer course, and assist in Station management. The station is located at 2900 miles in the Front Range of the Rocky Mountains and is one of the nation's outstanding field research and teaching facilities. The appointment will be 75% time over 12 months, and the position is available from 15 September 1987. Submit letter of application and an explanation of research experience and plans, curriculum vitae, three letters of reference, and reprints, by 24 July 1987 to: **Dr. Mark Noble, Mountain Research Station, University of Colorado, Nederland, CO 80466.**

*The University of Colorado has a strong commitment to the principle of diversity and in that spirit is interested in receiving applications from a broad spectrum of people, including women, ethnic minorities, and disabled individuals.*

### DIRECTOR OF MOLECULAR VIROLOGY

The James N. Gamble Institute of Medical Research is seeking a senior investigator as Director of its Division of Molecular Virology.

This individual is expected to be internationally recognized, and to have maintained consistent research funding. The job will entail the management of an active Division, recruitment of new independent investigators, interaction and collaboration with investigators in other Divisions of the Institute, and continuation and expansion of an active research program in molecular virology. A joint appointment at the University of Cincinnati will be encouraged.

The Gamble Institute is a non-profit, independent research facility affiliated with the Christ Hospital. It is composed of three Divisions: Molecular Virology, Clinical Virology and Immunology. The goal of the Institute is to combine excellence in basic research in the areas of virology and immunology, with directed clinical applications.

Interested candidates should send curriculum vitae and names of three references to:

**Richard L. Ward, Ph.D.**  
Chairman of Search Committee  
James N. Gamble Institute of  
Medical Research  
2141 Auburn Avenue  
Cincinnati, OH 45219  
Telephone: 513-369-2582

*An Equal Opportunity/Affirmative Action Employer.*

### FACULTY POSITION DIVISION OF ONCOLOGY

The Division of Oncology, Thomas Jefferson University has a position at the assistant or associate professor level available for fall 1987. Candidates should have a Ph.D. or an M.D. with Board-eligibility in medical oncology, with a research program in cancer pharmacology, immunology, or cell biology. Send curriculum vitae and a brief description of research interests to: **Dr. Michael J. Mastrangelo, Division of Medical Oncology, Thomas Jefferson University, 1015 Walnut Street, Philadelphia, PA 19107.** *Equal Opportunity Employer.*

## POSITIONS OPEN

### ECOLOGY AND EVOLUTION

The Ecology and Evolution Group seeks two visiting **ASSISTANT PROFESSORS** (1987 to 1988 academic year). Appointees will teach or co-teach one course per quarter and have research opportunities. Courses include introductory biology (ecology and evolution), evolution, ecology, environmental biology and one in candidate's area of specialization. At least one appointee will be in the area of plant population biology. Starting date is 15 September 1987 and salary will be commensurate with experience (Ph.D. and publications expected). Send curriculum vitae, research and teaching interests, and three letters of recommendation to: **Sidney B. Simpson, Jr., Head, Department of Biological Sciences (m/c 066), University of Illinois at Chicago, Box 4348, Chicago, IL 60680 by 1 August 1987.** Appointments depend on availability of funds. *The University of Illinois at Chicago is an Equal Opportunity/Affirmative Action Employer.*

### ECOSYSTEM MODELER SCHOOL OF FISHERIES UNIVERSITY OF WASHINGTON

The Center for Quantitative Science in Fisheries, Forestry and Wildlife, an inter-college unit of the School of Fisheries and the College of Forest Resources, invites applications for a tenure-track teaching and research appointment at the assistant, associate, or full professor level, beginning 1 January 1988. This is a 9-month appointment in the School of Fisheries. The applicant should have individual and team leadership ability in mathematical modeling of aquatic and/or terrestrial natural resource systems, demonstrated by a Ph.D. degree or equivalent and, strong record of research publications.

The person selected will be an integrator to ecosystem research initiatives in fisheries and forestry. Teaching duties will be three courses per year, primarily to graduate students in fisheries, forestry, biomathematics, and related disciplines: A course in computational techniques, a first course in system simulation, and an advanced ecosystem modeling course. Salary is commensurate with experience.

Please send curriculum vitae, reprints of three papers, and names and addresses of four references, by 15 September 1987 to:

**Stephen B. Mathews**  
Center for Quantitative Science, HR-20  
University of Washington  
Seattle, WA 98195  
206-543-1191

*Equal Opportunity/Affirmative Action Employer.*

### EVOLUTIONARY BIOLOGY AND ECOLOGY SENIOR LEVEL POSITION

The Department of Biology at the University of Rochester invites applications for a senior level faculty position in the general area of evolutionary biology (including evolutionary and ecological genetics, molecular evolution, population genetics, animal behavior and coevolution). Established scientists with outstanding reputations in any of the above fields are strongly encouraged to apply.

Please send curriculum vitae, selected reprints or manuscripts, a statement of research interests, and a list of three references to: **Dr. John Jaenike, Evolutionary Biology Search Committee, Department of Biology, University of Rochester, Rochester, NY 14627.** Deadline for receipt of applications is 1 December 1987. *The University of Rochester is an Affirmative Action/Equal Opportunity Employer.*

**FISHERIES FACULTY—ASSISTANT PROFESSOR** (tenure-track, 12-month) with expertise in organismal or suborganismal biology. Specialization in fish physiology, toxicology, nutrition, pathology, immunology, endocrinology, and behavior will be considered. Sixty percent research; 40% teaching. Available 1 January 1988. A Ph.D. in fisheries or related field with evidence of research productivity is required. Send application letter with description of how research interests relate to the solution of problems in fisheries science/management (postmarked by 15 August 1987), résumé, transcripts, and three letters of reference to: **Dr. Thomas S. Waters, Department of Fisheries and Wildlife, 1980 Folwell Avenue, St. Paul, MN 55108.** *The University of Minnesota is an Equal Opportunity Educator and Employer and specifically invites and encourages applications from women and minorities.*

## POSITIONS OPEN

**FACULTY POSITION, PURDUE UNIVERSITY, IMMUNOPHARMACOLOGIST:** Tenure-track assistant/associate professor position. The successful candidate will have a doctoral degree and a minimum of 2 years of postdoctoral research training. Candidates must show evidence of innovative research productivity and capability of obtaining extramural funding for their projects. Research interests should be in an area of immunopharmacology that would complement current and developing research programs in cancer and/or cardiovascular pharmacology in the department. Experience in flow cytometry and molecular biological techniques are definite assets. Applicants should send, by 1 September 1987, a letter stating their interest in the position, curriculum vitae, and names and telephone numbers of three referees to: **Chairman of Faculty Search Committee, Department of Veterinary Physiology and Pharmacology, School of Veterinary Medicine, Purdue University, West Lafayette, IN 47907.** *Purdue University is an Equal Opportunity/Affirmative Action Employer.*

### UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE FACULTY POSITION IN MICROBIOLOGY PROKARYOTIC MOLECULAR BIOLOGY

Applications are invited for a tenure-track position at the level of assistant professor to commence 1 July 1988. Applicants should have an established research interest in molecular biology, specializing in prokaryotic cell biology, genetics, or basic aspects of pathogenesis. Potential to obtain funding as an independent investigator is important, together with an active commitment to teaching medical and graduate students. Applicants should have a doctoral degree, and at least 2 years of postdoctoral experience. Please send: (i) curriculum vitae, (ii) names of at least three references, (iii) reprints of three papers, and (iv) professional background and future plans to: **Sol H. Goodgal, Search Committee, Department of Microbiology, School of Medicine, University of Pennsylvania, Philadelphia, PA 19104-6076.** *Equal Opportunity/Affirmative Action Employer. Women and minorities are encouraged to apply.*

### COLLEGE OF MEDICINE AND MEDICAL SCIENCES KING FAISAL UNIVERSITY DAMMAM, SAUDI ARABIA

Applications are invited from qualified and experienced candidates for faculty positions (professors, associate professors, and assistant professors) in the department of biochemistry, college of medicine and medical sciences.

Candidates must hold the Ph.D. degree in biochemistry, and have proven teaching experience in their field of at least 5 years. Holders of similar academic posts are particularly encouraged to apply. Terms of employment are attractive with no local tax, plus free furnished accommodation, 60 days paid vacation, and return air tickets per year. Initial contract is for 1 year but is renewable.

Those interested should apply immediately by forwarding their complete curricula vitae to:

**Dr. Mohammed Hisham Al-Sibai**  
Dean, College of Medicine and  
Medical Sciences  
King Faisal University  
P.O. Box 2114  
Dammam 31451, Saudi Arabia

**GEOHERMAL OPERATIONS MANAGER/CITY ENGINEER** City of Calistoga, California (Napa Valley). Education: College degree in engineering with training in civil and mechanical engineering. Training in geothermal engineering and geothermal heating system management and operation. Salary: \$45,000 annually plus generous benefit package. Experience: Equivalent of 10 years of experience in operation, management, design and/or administration of geothermal heating systems. Equivalent of 3 years of experience in city engineering. Any combination of the above will be considered. Current state of California civil engineering registration is required. To apply: Submit résumé to: **Lester Cavagnaro, Administrator, City of Calistoga, 1232 Washington Street, Calistoga, CA 94515 by 1 August 1987.** Applications must be postmarked 1 August 1987 or earlier. *The City of Calistoga is an Equal Opportunity Employer.*

## POSITIONS OPEN

**INSTRUCTOR/POSTDOCTORAL POSITION**  
available immediately to study macrophage and lymphocyte activation genes as they relate to autoimmunity and transplantation. Applicant must be experienced in molecular techniques but does not necessarily require a background in immunology. Position and salary commensurate with background. Send résumé to: **Vicki E. Kelley, Ph.D. or Terry Strom, M.D., Department of Medicine, Brigham and Women's Hospital, Boston, MA 02115. Telephone: 617-732-5915.**

**MICROBIOLOGY**—One year appointment to teach microbiology and cell biology. Ph.D. preferred. Starting date is 24 August 1987. Search is currently ongoing. It is anticipated that during the 1987 to 1988 academic year a search will be conducted for a tenure-track appointment in this position. Contact: **Dr. Douglas Wartzok, Biological Sciences, Indiana University-Purdue University at Fort Wayne, Fort Wayne, IN 46805-1499. Telephone: 219-481-6304. Indiana University-Purdue University at Fort Wayne is an Equal Opportunity/Affirmative Action Employer.**

## MOLECULAR BIOLOGIST

The Department of Pathology and Laboratory Medicine at Emory University is seeking a molecular biologist (M.D. or Ph.D.) to work in the division of hematopathology. The individual is expected to develop diagnostic molecular pathology and an independent research program in collaboration with the existing hematopathology faculty members. The rank (instructor/assistant professor) and salary will be commensurate with the experience of the individual. Send curriculum vitae and names of three references to: **Dr. Kenneth W. Sell, Chairman, Department of Pathology and Laboratory Medicine, Emory University School of Medicine, Atlanta, GA 30322. Closing date is 31 August 1987. Emory University is an Equal Opportunity Employer.**

## MOLECULAR BIOLOGISTS

Four tenure-track positions are immediately available in the Institute of Molecular Biology at the University of Houston. The rank of each position is open. An endowed Cullen Professorship in Molecular Biology is available for one of the positions. Both individual applicants or groups of applicants in the broad area of molecular biology will be considered. Candidates will be expected to develop an independent research program, direct graduate students, and teach at the undergraduate or graduate level. A joint appointment will be made between the Institute and either the Biology Department or the Department of Biochemical and Biophysical Sciences. The University of Houston is a state supported comprehensive graduate institution with an enrollment of about 30,000 students. Applicants should submit curriculum vitae, a list of publications, a brief summary of future research plans, and names of four references to: **Dr. A. Eskin, Chairman, Institute of Molecular Biology, University of Houston, Houston, TX 77004. Successful candidates may assume positions at any time up to September 1988. The University of Houston is an Affirmative Action/Equal Opportunity Employer.**

## MOLECULAR IMMUNOLOGIST— BIOCHEMIST— CELL BIOLOGIST

The Laboratory of Immunology, of the National Institute of Allergy and Infectious Diseases, National Institutes of Health (NIAID/NIH), Public Health Service, intends to make an appointment at the independent scientist level. Individuals with interests and training in membrane biochemistry or cell biology are particularly sought but all qualified candidates are encouraged to apply. The successful candidate will be expected to conduct a program of independent research and will be appointed at a level appropriate to scientific qualifications. Contact: **Dr. William Paul, Building 10, Room 11N311, NIAID/NIH, 9000 Rockville Pike, Bethesda, MD 20892; telephone: 301-496-5046. U.S. citizenship required. An Equal Opportunity Employer.**

## ASSOCIATE DIRECTORS Cellular and Molecular Biology

Merck Sharp & Dohme Research Laboratories' expanding long-term commitment to molecular and cellular biology has created the opportunity for positions of strong leadership. We seek talented and experienced scientists to accept the responsibility for leading groups of 7 to 12 molecular biologists within projects in both research as well as product development. These multidisciplinary programs will be collaborative efforts which utilize techniques in molecular and cellular biology for the identification, isolation and analysis of proteins of therapeutic, pharmacologic, or process development interest as well as the control of expression of such proteins.

The successful candidates possess broad experience in a range of areas which include: regulation of gene expression, cDNA cloning and expression in recombinant microbial and eukaryotic hosts, viral vectors and vaccines, structure/function studies of proteins, scale-up of recombinant mammalian and microbial cells, and protein analytical and purification techniques. Demonstrated research independence, extensive supervisory experience, and an excellent publication record in molecular biology all are required. Strong communication and leadership skills, a desire to work as part of a multi-disciplinary team, and the ability to develop the talents of other scientists are very important. Industrial experience is a plus.

These positions will provide an outstanding opportunity to implement novel research projects with the potential for significant impact in several areas of human health. Collaborations with other research departments will offer the opportunity for high visibility and career growth. We encourage broad interactions with the scientific community at large through collaborations, publications, and presentations at major scientific conferences. Additionally, successful leaders would be expected to be able to expand their future responsibilities in these dynamic positions.

Excellent salary, broad benefits, and generous relocation entitlements accompany these positions in our modern and spacious laboratories at our two major research sites in Rahway, New Jersey and West Point, Pennsylvania. In confidence, please send your resume, four professional references whom we may contact, and salary history and requirements to: **Mr. Jacques P. Kueny, Research Personnel, MERCK SHARP & DOHME RESEARCH LABORATORIES, West Point, PA 19486. EEO/AA/VH/Employer.**



**Merck & Co., Inc.**

## VETERINARY PATHOLOGIST

Opportunity available for individual with a Veterinary degree (D.V.M.), well-trained in anatomic pathology (Board Certified or Board eligible desired), to contribute to the experimental pathology efforts of the Lovelace Inhalation Toxicology Research Institute.

The Institute has a strong multi-disciplinary team research effort involving scientists in physical, biophysical, and medically-related fields including D.V.M. and M.D. pathologists. The Institute, which is heavily oriented to comparative animal experimentation, is addressing significant problems concerning the effects of airborne toxic materials on man and his environment.

The successful candidate will be expected to design and implement both independent and collaborative research on inhaled toxicants, and to conduct histopathologic examination of a wide range of species and organ systems with primary emphasis on evaluation of respiratory and bone diseases. Salary and starting date negotiable.

Submit resume to: **Personnel Unit, Lovelace Inhalation Toxicology Research Institute, P.O. Box 5890, Albuquerque, NM 87185 or call (505) 844-9431. An Equal Opportunity Employer M/F.**



**NATIONAL INSTITUTE ON AGING**  
National Institutes of Health  
Public Health Service

The Laboratory of Neurosciences, National Institute on Aging, National Institutes of Health, invites applications for a Fellowship position to study the pharmacokinetics and cerebral metabolism of central nervous system agents. Research will involve: (1) methods development for the quantitation of drugs and metabolites in plasma and tissue, (2) relating pharmacokinetic data to brain imaging results, and (3) molecular modification of drugs to enhance their brain penetration. The position is that of a Fellow with a salary range of \$17,000 to \$47,788 per annum commensurate with qualifications, and is located in Bethesda, Maryland.

Experience in high performance liquid chromatography, gas chromatography and mass spectrometry is desirable.

Applications are invited from individuals having a Ph.D. in Pharmacology or a Chemistry discipline. Interested candidates should submit their Curriculum Vitae to **Stanley I. Rapoport, M.D., Chief, Laboratory of Neurosciences, National Institute on Aging, Building 10, Room 6C 103, 9000 Rockville Pike, National Institutes of Health, Bethesda, Maryland, 20892, USA.**

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## SENIOR CHEMIST & BIOCHEMIST

Wyeth Laboratories, one of the world's most respected pharmaceutical research, development and manufacturing companies, has two senior level positions available in the Drug Metabolism Subdivision at its Radnor, Pennsylvania facility. BOTH positions require a minimum of a Ph.D. with 2 years experience in Life or Physical Sciences. Demonstrated ability to pursue independent creative research and excellent verbal and written communication skills are prerequisites. Expertise in modern bioanalytical methods and supervisory ability are essential.

### SENIOR CHEMIST

The position involves the development of bioanalytical methodologies required within drug metabolism investigations. The candidate must have a strong background in chromatographic and mass spectrometric methods of analysis, and the ability to develop novel, imaginative approaches for the extraction, separation, derivative formation and measurement of drugs in biological materials. An understanding of statistical methods and data systems is essential. Experience in radiometric techniques is desirable. This position offers an excellent opportunity for a scientist with the above qualifications to join an innovative and highly productive research group. **(Refer to Job #102 in your response.)**

### SENIOR BIOCHEMIST

The position requires a scientist to study the absorption, distribution, metabolism and excretion of drugs and metabolites in biological fluids. The candidate should have a broad knowledge of the theory of drug metabolism, including pharmacokinetics, clinical pharmacology, enzyme kinetics and comparative metabolism. Experience in a variety of state-of-the-art bioanalytical techniques, including HPLC, radioassay and mass spectrometry is highly desirable. We look to you to perform independent sophisticated research in an exciting field of study. **(Refer to Job #103 in your response.)**

Explore Wyeth's ideal research environment that offers state-of-the-art equipment, the best professionals in the field, and open lines of communication at all levels. We provide an excellent salary, extensive benefits, and advancement opportunity. Please send curriculum vitae to: **Personnel Manager, Wyeth Laboratories, Inc., P.O. Box 8299, Philadelphia, PA 19101.** Equal opportunity employer, M/F/H/V responses encouraged.

**Wyeth Laboratories**



Ecova Corporation is a leader in the research, development and application of biological treatments on hazardous and toxic waste sites.

We seek qualified candidates for the following positions:

### MICROBIAL ECOLOGIST SOIL MICROBIOLOGIST MICROBIAL GENETICIST

Candidates at all levels (Ph.D., M.S., B.S.) must have a record of scientific accomplishment, preferably in biological treatment of toxic and hazardous waste. An ability to communicate well is also essential.

Ecova offers a dynamic research and development environment, competitive salaries and comprehensive benefits, plus a rare opportunity for professional growth and recognition. Please forward curriculum vitae and references to Vice President/Human Resources, 15555 N.E. 33rd, Redmond, Washington, 98052. Equal Opportunity/Affirmative Action Employer.

**E C O V A**

**The Microbial Ecology Company**

## Director Japanese Affairs

The NATIONAL RESEARCH COUNCIL is seeking candidates for a newly established position, Director, Japan Programs. Will establish and direct a new Office of International Affairs unit, designed to promote closer working relationships between the U.S. and Japan in science and technology. Responsibilities will include (1) identification of various means to promote symmetrical access by American scientists and engineers to the Japanese R&D systems (i.e. academic, industrial, and government laboratories); (2) identification of opportunities for scholarly exchanges promoting a more effective two-way information flow in science and technology; and (3) development of workshops, conferences, and studies to promote greater understanding of how each society pursues scientific and technological objectives. Position requires Ph.D. or equivalent in Japanese studies or in social sciences or technical discipline, with 6 or more years of research and administrative experience dealing with U.S.-Japan relations in science and technology, and preferably field experience in Japan. Individual must possess a broad understanding of the Japanese R&D system and of past and present U.S.-Japan relations in science and technology. Excellent oral and written skills in English, and speaking and reading fluency in Japanese are required. Successful fund raising experience highly desirable. We offer a highly competitive salary commensurate with experience, paid relocation to Washington, D.C. area, plus an exceptional benefits package. Please forward confidential résumé to NRC, Position #220.157S, Personnel Office, 2101 Constitution Ave., N.W., Washington, D.C. 20418. An Equal Opportunity Employer.



## THE AUSTRALIAN NATIONAL UNIVERSITY

Applications are invited for appointment as **PROFESSOR** and **DIRECTOR** of the newly established **NATIONAL CENTRE FOR EPIDEMIOLOGY AND POPULATION HEALTH**. The appointment will be for a period of seven years, but it may be extended. The National Centre is funded by the Commonwealth Government. It will carry out appropriate research of the highest academic standards in the fields of epidemiology, population-based research in clinical medicine and biomedical science, statistics, sociology, health economics and population studies. It will provide a supervised experience in research leading to M.Sc. and Ph.D. degrees in the above fields, so as to generate leaders in epidemiology and population health. The appointee will have high academic standing and a substantial commitment as a scholar in one or more of the fields related to epidemiology and population studies, and will have proven leadership and administrative capabilities. The appointee's main task will be to develop the Centre, to provide leadership in research, to interact with other relevant research groups on the campus and with related government agencies. When fully operational, the Centre is expected to have up to 15 academic staff and 10-15 full-time graduate students. The salary will be that of a professor in the Institute of Advanced Studies, currently \$A62,523 p.a. plus a responsibility loading of, currently, \$A3057 p.a. A clinical loading for a medically qualified appointee is payable as follows: \$A10,433 p.a. for a person having responsibilities for patient care and \$A5,223 p.a. for a person not having responsibility for patient care. An entertainment allowance of \$A1545 p.a. will also be payable. **Applications should be submitted in duplicate to the Registrar, The Australian National University, GPO Box 4, Canberra ACT 2601, Australia quoting reference number EPH1 and including curriculum vitae, list of publications and names of at least three referees.** The University reserves the right not to make an appointment or to make an appointment by invitation at any time. Further information is available from the Registrar. Applications should be lodged by 31 July 1987.

THE UNIVERSITY IS AN EQUAL OPPORTUNITY EMPLOYER

## TENURED POSITION

### REPRODUCTIVE BIOLOGIST TO DIRECT GAMETE BIOLOGY RESEARCH PROGRAM

Established Ph.D. basic scientist to direct research program in academic environment and new IVF-ET program. Experience in tissue culture and sterile technique mandatory. Previous IVF-ET experience preferable. Salary negotiable. For more information send C.V. to:

**Sandra Ann Carson, M.D.**  
Department of Obstetrics and Gynecology  
University of Tennessee, Memphis  
University Physicians Foundation, Inc.  
956 Court Avenue, Room D-324  
Memphis, TN 38163

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## RADIOCHEMIST

**Salary Range:**  
**\$18,358 to \$27,172**

Qualifications: Research Assistant with credentials in Radiochemistry. Candidate must have a Bachelor's Degree and two years experience, or a Master's Degree with one year experience in doing chemistry with high levels of radioactive nuclides. Previous experience in Biochemistry and/or labeling proteins helpful. Work entails labeling monoclonal antibodies with radiometals for clinical trials or Radioimmunotherapy.

Send curriculum vitae or, for further information, contact:

**Dr. Otto A. Gansow**  
National Cancer Institute  
National Institutes of Health  
9000 Rockville Pike  
Bldg. 10, Room B3B69  
Bethesda, MD 20892  
(301) 496-5936

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## Immunologists

ImClone Systems Incorporated, an innovative, rapidly growing biotechnology company located in New York City, is seeking highly motivated individuals for vaccine development and generation of monoclonal antibodies.

Positions are available at the doctoral and research associate levels for individuals with demonstrated skills in the generation of B and T cell hybridomas. Relevant industrial experience would be an advantage.

ImClone offers excellent salary and benefits, and a challenging, multi-disciplinary environment for scientists who can assume both individual and team responsibilities.

Send CV to: **John Landes, ImClone Systems Incorporated, 180 Varick St., New York, New York 10014.**



**ImClone Systems Incorporated**



## EniChem Americas Inc.

EniChem, part of ENI (Ente Nazionale Idrocarburi), is establishing a Plant Biotechnology Group of approximately 50 scientists in the Princeton, New Jersey area. The group intends to apply an integrated approach to the improvement of crops for U.S. and international markets.

We are interested in Ph.D., M.S. or B.S. level candidates who can apply technical expertise in Molecular Biology, Metabolic Biochemistry or Cell Biology to the project areas of nitrogen assimilation/utilization or crop protection. We have immediate openings for candidates who have experience with monocot protoplasts, transformation technology and/or the expression of genes in plants.

Send Curriculum Vitae and cover letter to:

**Director of Personnel**  
**ENICHEM AMERICAS INC.**  
**1221 Avenue of the Americas**  
**New York, N.Y. 10020**

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## POSITIONS OPEN

### NEUROPEPTIDES/ BLOOD-BRAIN BARRIER

**POSTDOCTORAL POSITION** available immediately to study peptide delivery through the blood-brain barrier using novel peptide drug delivery systems. Biochemistry, pharmacology, or physiology experience required. Send curriculum vitae and letters of reference to: **Dr. William M. Pardridge, Department of Medicine, University of California, Los Angeles (UCLA), School of Medicine, Los Angeles, CA 90024.**

### ORGANIC, MEDICINAL CHEMIST

Dynamac Corporation is an environmental research and consulting firm with immediate staffing requirements for an organic, medicinal chemist.

Applicants should have a Ph.D. degree, a strong background and recent experience in natural products, and experience in performing literature searches for chemicals. They must also have experience in evaluating and interpreting biological data, preferably in the antiviral area.

To apply, please send résumé in confidence to:

**Dynamac Corporation  
Personnel Department  
11140 Rockville Pike  
Rockville, MD 20852**

*Equal Opportunity Employer M/F/H*

**POSTDOCTORAL FELLOW:** A Fellowship is available for a **PLANT BIOCHEMIST/ENZYMOLOGIST** to work in an interdisciplinary team (chemistry/biology) studying biosynthesis in plants, including the isolation of enzymes from protoplasts. Applicants should have experience in protoplast isolation, enzyme purification, and be familiar with techniques in plant molecular biology. Please send curriculum vitae and arrange for three letters of reference to be sent to: **Professor A. I. Scott, Center for Biological NMR, Department of Chemistry, Texas A&M University, College Station, TX 77843.** *Texas A&M University is an Affirmative Action/Equal Opportunity Employer.*

## POSITIONS OPEN

### ORGANIC LABORATORY MANAGER

Princeton Testing Laboratory, an accredited independent laboratory offering environmental, microbiological, and industrial hygiene testing services, is seeking a goals and results oriented individual to join its management team.

The preferred candidate will have a Ph.D. in chemistry, 5-plus years of environmental analysis experience, including an in-depth knowledge of EPA regulations, and at least 2 years of supervisory experience, or a strong academic record and solid background in GC/MS, organic analysis, HPLC, IR, and supervisory skills.

Competitive salary and excellent benefits are offered. Please send résumé and salary history to: **E. M. Conaway, President, P.O. Box 3108, Department S, Princeton, NJ 08543-3108.**

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### ARGONNE NATIONAL LABORATORY PLANT BIOTECHNOLOGY

The Division of Biological and Medical Research at Argonne National Laboratory has openings for scientists interested in joining a new program in plant molecular biology and biochemistry. Candidates will be expected to establish basic research programs, and to complement existing efforts involving structure/function relationships in photosynthesis, bioenergetics, organelle biogenesis, and photorespiration. Additional collaborative opportunities are available at the University of Chicago. Appointments will be made at the level of assistant scientist (assistant professor) or higher; a Ph.D. and postdoctoral research experience are required. Salary and rank will be commensurate with experience. Opportunities for adjunct appointments at several nearby universities are excellent. Applicants should send curriculum vitae, the names of three references and a summary of research goals to: **Rosalie Bottino, Reference D-BIM-26467-55, Argonne National Laboratory, 9700 South Cass Avenue, Argonne, IL 60439.**

*Argonne National Laboratory is an Equal Opportunity/Affirmative Action Employer.*

## POSITIONS OPEN

### PHYSIOLOGY AND/OR CLINICAL PHARMACOLOGY FACULTY POSITION

The Department of Veterinary Biology, University of Minnesota, College of Veterinary Medicine, invites applications for a full-time, 12-month position beginning January 1988 or later. Responsibilities include establishing a strong independent research program, teaching physiology and/or clinical pharmacology to veterinary students, advising graduate students, and teaching graduate courses. Selection criteria are research potential, ability to secure extramural funding, demonstrated teaching ability, and potential for interaction with other disciplines in the College of Veterinary Medicine. Department research foci are gastrointestinal, neuroscience, muscle function, and membrane biology; there are also opportunities for collaboration with faculty in medicine, agriculture and biological sciences. We offer newly remodeled laboratory facilities, start-up funds and competitive salary. Appointment may range from assistant professor (tenure-track) to professor (tenured), commensurate with experience. Applicants for assistant or associate professor levels must have D.V.M./Ph.D., or equivalent foreign degree before appointment. Applicants for professor must have D.V.M./M.S. or Ph.D. Further guidelines for appointment levels sent on request. Send curriculum vitae, statement of research interests, and names of three references by 15 September 1987 to: **Dr. Esther Gallant, Department of Veterinary Biology (G), 295 AS/VM Building, University of Minnesota, 1988 Fitch Avenue, St. Paul, MN 55108.**

*The University of Minnesota is an Equal Opportunity Educator and Employer, and specifically invites and encourages applications from women and minorities.*

**PHYSIOLOGY—ANATOMY.** A 1-year appointment that can possibly become tenure-track will be available 1 September 1987. Teaching duties include comparative animal physiology, comparative anatomy, and two non-majors courses. Send credentials and three reference letters by 31 July to: **Glen G. Wurst, Biology Department, Allegheny College, Meadville, PA 16335.** Review of credentials will begin 31 July 1987. *Equal Opportunity Employer.*

## Postdoctoral Scientist Molecular/Cell Biologist

The Department of Cell Biology at Smith Kline & French Laboratories, located near Valley Forge, Pennsylvania, is seeking a Postdoctoral Scientist to join a multidisciplinary team developing new therapeutic strategies for the treatment of colon carcinoma. The successful candidate will use a combination of cDNA cloning and screening techniques to purify and characterize factors involved in the growth and differentiation of normal and malignant epithelial cells.

Our postdoctoral appointments are normally for a two year duration.

Candidates are required to have:

- a Ph.D. in Molecular or Cell Biology or Biochemistry with 0-3 years postdoctoral experience.
- expertise in gene cloning, expression vectors and growth factor assays.
- a good publication record.
- clear, concise communication skills.

We offer excellent compensation and benefits as well as an attractive relocation policy. For confidential consideration, please send your curriculum vitae and the names of three references to: **Robert F. Obst, R&D Senior Employment Consultant, R0078, Smith Kline & French Laboratories, Research and Development Division, P. O. Box 1539, King of Prussia, PA 19406-0939.** We are an Equal Opportunity Employer, M/F/H/V.

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## EXPERT, AIDS-ANTIVIRAL EVALUATIONS

### DEVELOPMENTAL THERAPEUTICS PROGRAM (DTP)

### NATIONAL CANCER INSTITUTE (NCI) NATIONAL INSTITUTES OF HEALTH (NIH)

The NCI is actively seeking an individual to manage a new initiative in preclinical AIDS-antiviral drug evaluations. In the NCI's Developmental Therapeutics Program's extramural component, a new organization is being created to provide a specific focus for development and operation of a national AIDS-antiviral drug screening program. Activities will encompass the development and application both of human host-cell based anti-HIV models and of specific biochemical/molecular target directed screens. Highly automated technologies will be adapted to achieve a testing capacity in excess of 10,000 substances per year. Sources of agents for evaluation and possible development include: the NIH intramural and extramural programs (grantees, contractors, drug discovery groups); other government agencies; private research institutes; foundations; individual investigators; universities, private industry, and through international collaborations.

The incumbent will manage these activities and coordinate these functions closely with those of the other DTP branches/laboratories as required. He/she will serve as chairperson or member of key committees encompassing the major executive decision making responsibilities for the AIDS preclinical drug development program.

Candidates should have a Ph.D. and/or M.D. with relevant training (Pharmacologist, Biologist, Microbiologist, Chemist, Medical Officer, etc.) with experience in antiviral drug research and development or closely related fields. Specific experience in retrovirology and development and applications of antiviral drug screening models and/or preclinical experimental therapeutics investigations would be desirable. Substantial experience in management of complex applied technology operations in a highly interdisciplinary setting would also be advantageous.

Proposed salary range (\$45,763-\$72,120) dependent upon education and experience. Interested individuals should submit their Curriculum Vitae, bibliography, salary history, and any other relevant materials to: Dr. Michael R. Boyd, Associate Director, Developmental Therapeutics Program, Division of Cancer Treatment, National Cancer Institute, Landow Building, Room 5A21, Bethesda, Maryland 20892, by July 31, 1987.

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## DISTINGUISHED RESEARCH FELLOWSHIPS

### LOS ALAMOS NATIONAL LABORATORY

The Medical Radioisotopes Research Program is seeking outstanding recent Ph.D. recipients for the postdoctoral fellowships described below. All positions require responsibility for planning, initiation, and implementation of independent research and presentation of research results. The ability to work as part of a team is also required. Compensation of \$31,260-\$32,940 per annum provided; possible renewal for a second year. **U.S. citizenship is required.**

**Tumor immunologist or immunobiochemist** to examine the stability, immunoreactivity, and cytotoxicity of radiolabeled antibodies, using *in vitro* and *in vivo* techniques. Collaborate with medicinal chemist to develop methods to radiolabel monoclonal antibodies and covalently bind radiolabeled small molecules to whole and fragmented antibodies. Experience in immunobiochemistry, immunological methods, or tumor immunology is required. Familiarity with cancer diagnostic techniques and monoclonal antibody production is desirable.

**Synthetic inorganic coordination chemist or synthetic organic chemist** to label monoclonal antibodies with metal radionuclides and with paramagnetic metals, using chelating agents for these metals. Synthesize chelating agents that can be covalently linked to antibodies. Determine the serum stability of the chelates and assist in animal biodistribution studies of the radiolabeled molecules. Experience in synthesis, radiolabeling, or chelating reactions is required.

**Analytical, electroanalytical, inorganic, or radiochemist** to develop chemical or electrochemical separation procedures on a no-carrier-added level to isolate radioisotopes of interest to the nuclear medicine research community. Perform chemistry in radiochemical hot-cells. Develop new radioisotope generator systems. Interact with radiolabeling and biodistribution researchers in the Program. Experience in analytical separations (ion-exchange, solvent extraction, electrodeposition) and gamma-ray analysis is desirable.

**Organoarsenic chemist** to synthesize molecules containing radioactive arsenic for positron emission tomography (PET). These molecules must have either the ability to cross the blood-brain barrier, or have suitable functionalities for conjugation to monoclonal antibodies. Assist in animal biodistribution studies of the radioarsenic labeled molecules. Experience in organoarsenic chemistry is required.

Interested candidates should send a resume to Dr. Janet Mercer-Smith (tumor immunology or immunobiochemistry, synthetic inorganic coordination or organic chemistry) or to Dr. Dennis Phillips (separations chemistry, organoarsenic chemistry) at INC-11, MS J514, Los Alamos National Laboratory, Los Alamos, New Mexico 87545 or phone (505) 667-2646 (Mercer-Smith) or (505) 667-4253 (Phillips).

To formally apply, send a resume, bibliography, three letters of reference, and graduate and undergraduate transcripts to:

Carol M. Rich (MS P290)  
Human Resources Development Division POSTDOC-Q  
Los Alamos National Laboratory  
Los Alamos, New Mexico 87545

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LOS ALAMOS

## POSITIONS OPEN

### U.S. DEPARTMENT OF AGRICULTURE (USDA) AGRICULTURAL RESEARCH SERVICE (ARS)

**PLANT PHYSIOLOGIST**—The Northern Regional Research Center, Peoria, Illinois, is seeking qualified candidates for appointment (1 or 2 years) as a postdoctoral research associate to conduct research in the Bioactive Constituents Research management unit. Research conducted by this unit is aimed at detecting and identifying biologically active compounds that affect growth of agriculturally important plants. Current emphasis is on the discovery of natural biodegradable and otherwise environmentally acceptable herbicides and plant growth regulators. Research involves bioassay of plant tissue or extracts thereof to detect activity, isolation and chemical characterization of the active products, laboratory determination of the germination inhibitory, mode of action and plant growth regulatory effect of these materials, and if appropriate, assessment of their potential for field use. Applicant should have a strong background in natural product chemistry as well as in plant physiology. A Ph.D. or equivalent and U.S. citizenship are required. The position is GS 11 (\$27,172). Additional information may be obtained by calling Mr. Powell at 309-685-4011, extension 596. Applications in response to this advertisement must be marked 7N013. Send résumé to: R. G. Powell, Northern Regional Research Center, 1815 North University Street, Peoria, IL 61604, by 3 August 1987.

*The USDA is an Equal Opportunity Affirmative Action Employer.*

**POSTDOCTORAL POSITION** Available immediately for 2 to 3 years, to study expression of apolipoprotein genes. Experience in tissue culture, protein purification, and recombinant DNA technology is desirable. Send curriculum vitae and names of references to: Sotirios K. Karathanasis, Department of Cardiology, The Children's Hospital, Harvard Medical School, Boston, MA 02115.

**POSTDOCTORAL POSITION** available immediately for multidisciplinary project studying the therapeutic potential for porphyrins and related macrocycles for photodynamic therapy of tumors. A Ph.D. in biochemistry or pharmacology preferred, with cell biology preferred, with cell biology background. Experience with general biochemical techniques and various types of chromatography (HPLC, TLC) needed. Porphyrin methodology a great plus. Send curriculum vitae and names, addresses, and telephone numbers of three references to: Dr. Martha Kreimer-Birnbaum, Director, Research Department, St. Vincent Medical Center, 2213 Cherry Street, Toledo, OH 43608. St. Vincent Medical Center is an affiliated teaching hospital of the Medical College of Ohio. *An Equal Opportunity Employer.*

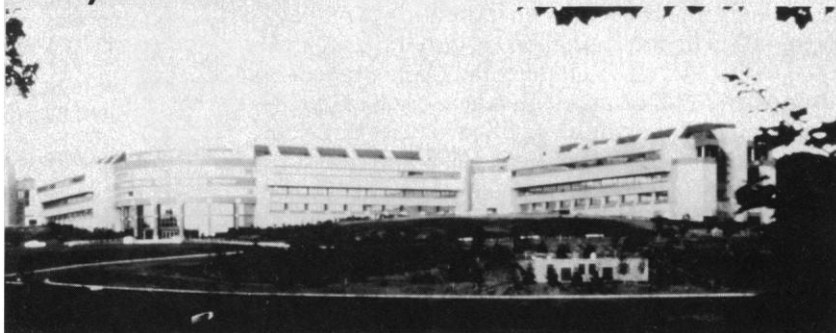
**POSTDOCTORAL POSITION** available immediately for a molecular biologist to join basic cancer research laboratory studying the regulation of growth factor expression in mammalian cells. Studies will include cloning, sequencing, gel retardation assays, DNA footprinting, site-directed in vitro mutagenesis, and transfection. A second position is for a recent Ph.D. with experience in protein chemistry or cell culture. Send résumé and three references to: Dr. Ing-Ming Chiu, Room 302, Cancer Research Center, The Ohio State University, 410 West 12th Avenue, Columbus, OH 43210.

**POSTDOCTORAL POSITION** available immediately to study the electron transfer reactions of cytochrome c with cytochrome oxidase, the cytochrome bc<sub>1</sub> complex, and photosynthetic reaction centers. The techniques used include site-specific modification and cross-linking, high field NMR, and laser rapid kinetics. Send curriculum vitae, and names of three references to: Dr. Frank Millett, Department of Chemistry and Biochemistry, University of Arkansas, Fayetteville, AR 72701. *Equal Opportunity Employer.*

**POSTDOCTORAL POSITION** now available for person experienced in protein biochemistry or cloning. Opportunity to participate in study of transmembrane signal transduction involving phosphoinositides. Send curriculum vitae and names of three references to: Dr. O. Hayes Griffith, Institute of Molecular Biology, University of Oregon, Eugene, OR 97403. *UO is an Equal Opportunity/Affirmative Action Employer.*

# Basic Research Into Cardiovascular Therapeutic Agents

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OUR WALLINGFORD, CONNECTICUT WORLD HEADQUARTERS for pharmaceutical research opened in 1986, signaling the start of our second century. Designed by scientists for scientists, this state-of-the-art environment fosters interaction across many scientific disciplines and rewards individual achievement. Activities in Wallingford are aimed at the discovery and development of new therapeutic agents in 4 key areas: cardiovascular, central nervous system, anti-cancer, and anti-infective research. Immediate opportunities are available for:

## SYNTHETIC CHEMISTS

Excellent cardiovascular positions on our research team for recent PhDs or post doctoral graduates in the synthesis of biologically active molecules for the treatment of various cardiovascular diseases. Openings for BS/MS synthetic chemists are also available. Strong laboratory skills and independent work habits are key.

## BIOCHEMISTS

Openings currently exist at all levels (PhD/MS/BS) on our antithrombotic and atherosclerosis drug discovery project teams. Individuals interested in identifying and developing drugs to treat atherosclerosis, hyperlipidemia, and thrombosis are encouraged to apply.

## CARDIOVASCULAR PHARMACOLOGISTS

Immediate opportunities are available for PhDs, and individuals with MS and BS degrees. Surgical skills *in vivo* models. Experience with radio ligand binding, hemodynamics, and/or myocardial functions are desirable.

BRISTOL-MYERS is a multi-billion dollar global competitor that pursues excellence in pharmaceutical research and development. Our strong, sustained growth, highly competitive salaries, extensive benefits and career support have helped us attract and keep the best people. Located in the Connecticut countryside, we are close to the resources of New Haven, New York and New England.

TO EXPLORE YOUR FUTURE on the leading edge of cardiovascular drug research, send resume with salary history, noting position of interest to: **BRISTOL-MYERS COMPANY, Pharmaceutical Research & Development Division, Attn: TZ8, P.O. Box 5100, 5 Research Parkway, Wallingford, CT 06492.**

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Established in 1981 in the San Francisco Bay Area, Nellcor's charter is to develop, produce and market real-time, non-invasive medical instruments that give timely and critical information. Products which have saved lives, changed medical technology and made Nellcor successful in a very short time.

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As a member of an interdisciplinary team of research scientists, you'll be responsible for perform-

ing research leading to the development of new biosensors, physiological probes, and medical instruments. In this role, you will utilize your expertise in areas that may include physics, chemistry, biology, optics and instrumentation.

To qualify, you should have a PhD or MS in physics, biophysics, biophysical chemistry or a related science. Hands-on instrumentation and computer experience also desired.

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## BIOCHEMICAL PHARMACOLOGIST (Research Scientist)

Rorer, a worldwide ethical pharmaceutical company, has an immediate career opportunity in its Research Division located in suburban Philadelphia.

Our Gastrointestinal Biology Group is seeking an individual with a PhD in Pharmacology or Biochemistry who has a good publishing record and is interested in drug discovery research. Experience in receptor ligand interactions and cell isolation assays is essential. An understanding of GI Pharmacology/Physiology is preferred but not required.

We offer competitive salary, a full paid benefits package and a pleasant work environment. If your credentials meet our requirements and you are interested in exploring a career with us, submit a resume including salary requirements to: **Barbara F. Lippmann, Rorer Central Research, 640 Alendale Road, King of Prussia, PA 19406.** Equal Opportunity Employer, M/F.



**Rorer Central Research**

## Howard Hughes Medical Institute

The Trustees invite nominations and applications for President of the Howard Hughes Medical Institute. It is anticipated that the President of the Institute will be a nationally recognized scientist with demonstrated administrative capacity and the potential for guiding the Institute in an imaginative and productive manner.

Established in 1953 by the aviator-industrialist Howard R. Hughes, the Institute today is a rapidly growing scientific organization whose core program is basic biomedical research. The Institute has 27 research laboratories located throughout the United States in outstanding academic medical centers, hospitals, and universities. These laboratories are staffed by 178 research scientists working in five broad program areas: cell biology and regulation, genetics, immunology, neuroscience, and structural biology. The Institute's scientific research staff numbers about 1100.

The Institute recently announced that it would begin a new program of grants for other scientific purposes within its charter.

The Institute's executive offices are located in Bethesda, Maryland, where there is an administrative and program staff of about 150.

Responses should include the person's present position, a brief summary of his or her scientific interests and accomplishments, and a description of the person's administrative experience. Please address nominations and expressions of interest to:



William T. Quillen, Esq.  
Secretary of the Search Committee  
Vice President and General Counsel  
Howard Hughes Medical Institute  
6701 Rockledge Drive  
Bethesda, Maryland 20817

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## POSITIONS OPEN

**POSTDOCTORAL POSITION.** A position is available immediately to study the disruption of growth control and signal transduction mechanisms by anticancer drugs like adriamycin. We are particularly focused on growth factor receptors, oncogene products and phosphatidylinositol turnover. Experience in cell or molecular biology would be helpful. Contact: **Dr. Thomas R. Tritton, Department of Pharmacology, University of Vermont Medical School, Burlington, VT 05405.**

**POSTDOCTORAL POSITION** available immediately to work in the area of chemical carcinogenesis. Previous experience in this area, or in enzymology, organic chemistry or cell culture techniques desirable. Please send curriculum vitae and the names of three references to: **Dr. Trevor M. Penning, Department of Pharmacology/6084, University of Pennsylvania, School of Medicine, Philadelphia, PA 19104.**

**POSTDOCTORAL POSITIONS IN DRUG METABOLISM** are available in a multidisciplinary group studying mechanistic aspects of metabolic transformations in vitro and in vivo. Applicants should have a Ph.D. in medicinal chemistry or related discipline, and experience in the use of GC and GC-MS techniques for the analysis of biological samples. Send résumé, statement of research interest, and the names of three references to: **Dr. Thomas Baillie, Department of Medicinal Chemistry, BG-20, University of Washington, Seattle, WA 98195.**

**POSTDOCTORAL POSITION—MOLECULAR BIOLOGIST** to study hormone-regulated gene expression in plants. Position available September 1987. Candidate should have demonstrated proficiency in recombinant DNA techniques. Salary range is \$20,000 to \$25,000 per year. Send curriculum vitae and three letters of reference to: **Professor B. W. Poovaiah, Laboratory of Plant Molecular Biology and Physiology, 155 Johnson Hall, Washington State University, Pullman, WA 99164-6414. Affirmative Action/Equal Opportunity Employer.**

**POSTDOCTORAL POSITION IN MOLECULAR VIROLOGY** available winter, 1987, to study herpes simplex virus latency. We are utilizing a mouse model system to study herpes simplex virus type 1 latency. Having shown that the viral genome, when latent, is in a different physical state from that found during productive infection, we now wish to study the chromatin structure of the latent DNA. We are also studying transcription during the latent state and the effects of drugs which block reactivation. There is a moderate size group, including several investigators, working on this field. The Wistar Institute is the oldest biochemical research institute in the United States, and is situated on the University of Pennsylvania campus in the University City section of Philadelphia. Send curriculum vitae including names of three references to: **Dr. Nigel W. Fraser, Associate Professor, The Wistar Institute, 36th and Spruce Streets, Philadelphia, PA 19104. Equal Opportunity Employer, M/F.**

**POSTDOCTORAL POSITIONS**—Applications are invited to join a group studying the mechanism of chemotaxis in eukaryotic cells. Research is focused currently on the early molecular events involved in hormone induced actin polymerization leading to pseudopod formation. Potential candidates should be recent Ph.D.'s or equivalent with a background in either protein chemistry, molecular or cellular biology. The group is multidisciplinary, conducts only basic research and is endowed with outstanding research facilities.

Send curriculum vitae and names of three references to: **Dr. John Condeelis, Department of Anatomy and Structural Biology, Albert Einstein College of Medicine, 1300 Morris Park Avenue, Bronx, NY 10461. An Equal Opportunity Employer.**

**POSTDOCTORAL POSITIONS.** Postdoctoral positions available for multidisciplinary studies concerning (i) structure and function of neuronal nicotinic acetylcholine receptors, or (ii) mechanisms of neuronal differentiation. Investigations are to encompass biochemical, immunological, pharmacological, molecular genetic approaches with model cell culture systems in a unique and dynamic institution. Send curriculum vitae, names and addresses of three references, and brief statement of research experience and objectives to: **R. J. Lukas, Division of Neurobiology, Barrow Neurological Institute, 350 West Thomas Road, Phoenix, AZ 85013. Equal Opportunity Employer.**

## Plant Physiologist

Chevron Chemical Company is one of the nation's leading producers of fungicides, herbicides and other agricultural and garden chemicals sold under the Ortho name. Currently, our Agricultural Chemicals Division is seeking a Ph.D. degreed Plant Physiologist to join our new and stimulating research environment located in Richmond, California.

As a vital member of our Inventive Research Group, you'll concentrate on pesticide penetration and transport studies. You'll have the creative latitude to design and direct laboratory and greenhouse research programs, as well as draw from our vast resources to evaluate alternate formulations of pesticides.

In addition to a multidisciplinary environment, we provide an attractive salary and benefits package. For immediate consideration, candidates should send resumes to: Chevron Chemical Company, Human Resources, P.O. Box 4010, Richmond, CA 94804-0010. An equal opportunity employer.



## MANAGER Drug Experience Reporting

McNeil Pharmaceutical, a Johnson & Johnson Company, is a well established leader in the ethical pharmaceutical field. We currently have an opportunity for an individual to be responsible for the receipt of the information concerning the drug experience reports, verification of the information and reports, and the completion of the required FDA report forms within the specified time frames.

The ideal candidate will have a PhD in the Health Sciences with training or experience in drug epidemiology. Excellent communication, interpersonal and organizational skills are essential.

In return for your expertise, we offer a competitive salary, excellent benefits and an environment which fosters your professional growth at our suburban Philadelphia facility.

For consideration, please send resume with salary requirements to: Susanne Ford



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There was a time when you could buy life insurance and know exactly what your benefits would be down the line. It's not so easy anymore. Today, insurance plans feature complicated investment devices tied to fluctuating interest rates. And while the minimum and maximum amounts payable are fixed, your beneficiary might get less than you planned for. Simple isn't always better, but many insurance experts recommend you look at Term Life Insurance. It pays what it promises...no fancy investment footwork...right up to the termination age.

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Interested? Simply contact the Administrator, AAAS Group Insurance Program, 1255 23rd Street, N.W., Suite 300, Washington, D.C. 20037, or call Toll-Free 800/424-9883 (in Washington, D.C. call 202/296-8030). They will be pleased to answer any questions you may have about this valuable member benefit.

## POSITIONS OPEN

**POSTDOCTORAL POSITION IN IMMUNO-BIOLOGY** available for an individual to join a university-based biotechnology program dealing with domestic food animal lymphokines and monokines. Candidates should have a strong background in cellular immunology with experience in hybridoma and recombinant DNA technology. Salary support available for 2 years, with possible extension for a third year. Starting salary range \$23,000 to \$26,000. Send curriculum vitae and names and addresses of three references to:

**Dr. Frank Blecha**  
Department of Anatomy and Physiology  
Veterinary Medical Center VMS 228  
Kansas State University  
Manhattan, KS 66506  
Telephone: 913-532-5666

**POSTDOCTORAL POSITION** available 1 September 1987 for project on yeast peroxisome biogenesis. Recent Ph.D. in biochemistry or closely related area. Experience in organelle isolation, membrane protein chemistry, and knowledge of immunochemical and genetic techniques highly desirable. Send curriculum vitae and arrange to have two letters of recommendation sent directly to: **Dr. Edward Bellion, Department of Chemistry, The University of Texas at Arlington, Arlington, TX 76019.** An Equal Opportunity/Affirmative Action Employer.

**POSTDOCTORAL POSITION** available immediately to study eye movements and control of eye position in crustaceans. Experience in vision science, neurophysiology, and/or image processing desirable. Send curriculum vitae and three letters of recommendation to: **Dr. Thomas W. Cronin, Department of Biological Sciences, University of Maryland Baltimore County, Catonsville, MD 21228.** UMBC is an Equal Opportunity Employer.

## POSTDOCTORAL POSITION IN PSYCHOPHARMACOLOGY

Multiyear NIDA-funded position available immediately to study drugs of abuse, neurotransmitters, and behavior. Experiments are directed toward simultaneous recording of drug self-administration and in vivo voltammetry. Experience in either research area is desirable. Send curriculum vitae, summary of research experience, and names and addresses of three references to: **Dr. Martin D. Schecter, Professor/Chairman, Department of Pharmacology, Northeastern Ohio Universities College of Medicine, P.O. Box 95, Rootstown, OH 44272.** An Affirmative Action/Equal Opportunity Employer.

## POSTDOCTORAL POSITIONS IN CELLULAR AND MOLECULAR NEUROBIOLOGY

The Department of Physiology and Biophysics of the University of Miami is offering postdoctoral training on the basis of an NIH training grant. Faculty and research areas include: **Ellen Barrett**, electrophysiological properties of myelinated axons and motor nerve terminals; **John Barrett**, neurotrophic factors, trophic regulation of dopaminergic and cholinergic neurons; **Edward Chambers**, biophysics of gamete cell interaction; **Gerhard Dahl**, biogenesis of cell-cell channels, membrane fusion, neurohormone receptors; **Robert Keane**, developmental neurobiology, neuroimmunology; **Phyllis Hoar and W. G. L. Kerrick**, biophysics of muscle contraction; **David Landowne**, molecular basis of neuronal excitability; **Werner R. Loewenstein**, cell-to-cell communication by gap junctions: its genetic and molecular regulation and physiological functions; **Karl Magleby**, biophysics of ion channels in muscle; **Kenneth Muller**, neuron signaling and integration, synapse regeneration and development; **Wolfgang Nonner**, biophysics of neuronal ion channels; **Birgit Rose**, regulation of junctional communication; **David Wilson**, axonal transport and nerve regeneration.

Write to: **Sara Villamil, Department of Physiology and Biophysics, University of Miami Medical School, P.O. Box 016430, Miami, FL 33101.** Indicate the investigator(s) whose research interests you, and enclose curriculum vitae and names of three references.

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## POSITIONS OPEN

**POSTDOCTORAL RESEARCH ASSOCIATE—BROWN UNIVERSITY.** A postdoctoral position is available immediately involving work on oncogene and growth factor expression in normal and transformed liver cells, and studies of cell lineages and stem cells in liver carcinogenesis. Experience with molecular biology techniques and/or tissue culture methodology is desirable. Please send curriculum vitae and names and addresses of two referees to: **Nelson Fausto, Department of Pathology and Laboratory Medicine, Division of Biology and Medicine, Brown University, Providence, RI 02912.** Brown University is an Equal Opportunity/Affirmative Action Employer.

## U.S. DEPARTMENT OF AGRICULTURE (USDA) AGRICULTURAL RESEARCH SERVICE (ARS)

**POSTDOCTORAL RESEARCH ASSOCIATE POSITIONS**—Positions are available at the Northern Regional Research Center, Peoria, Illinois, in three areas of research: (i) sugar transport in developing maize endosperm, including the use of photolabile analogs to isolate and characterize membrane hexose carriers; (ii) glycoprotein biosynthesis and secretion in maize endosperm including enzymology of synthesis, structural studies of oligosaccharides, and targeting of proteins; (iii) regulation of lipid metabolism in soybeans including the measurement of enzyme activities during temperature acclimation and isolation and characterization of the enzyme. Knowledge and experience in enzyme assay, isolation, or purification required. Appointments will be at GS-11 (\$27,172) for 1 year and can be extended to 2 years. Applicants must be U.S. citizens and have a Ph.D. Please send curriculum vitae and names of three references to: (i) **Frederick C. Felker**, (ii) **Jan A. Miernyk**, (iii) **Thomas M. Cheesbrough**, Seed Biosynthesis Research Unit, USDA—ARS—Northern Regional Research Center, 1815 North University Street, Peoria, IL 61604. Applications in response to this announcement must be marked 7N016. ARS is an Equal Opportunity Employer.

## POSTDOCTORAL RESEARCH ASSOCIATE

A position is available immediately to study the developmental mechanisms controlling eye growth, with emphasis on the role of visually induced retinal activity. This work is relevant to the etiology of myopia. (See report in last week's *Science*.) Please send curriculum vitae and references to: **Josh Wallman, Department of Biology, City College, City University of New York, New York, NY 10031.**

**POSTDOCTORAL RESEARCH ASSOCIATE** position available August 1987 to study the molecular genetics of tissue polarity in the epidermis of *Drosophila*. Ongoing studies have shown that mutations in the *frizzled* locus alter a polarity prepattern. The locus has been cloned, and cDNA clones are currently being sequenced. Further studies will be focused on determining the role of the *fz* protein in the development of normal tissue polarity. Applicants should send curriculum vitae and three letters of reference to: **Dr. Paul Adler, Biology Department, Gilmer Hall, University of Virginia, Charlottesville, VA 22903.**

## POSTDOCTORAL—RESEARCH ASSOCIATE

Several positions are available immediately for persons with Ph.D. trained in protein biochemistry or molecular biology. Projects include (i) purification and characterization of developmentally regulated proteins, (ii) preparation and screening of cDNA and genomic clone banks and (iii) hormone regulation of gene expression. Salary range \$16,000 to \$27,000, depending on experience and position title. Send curriculum vitae, research summary, and names of four references to: **Box 100, SCIENCE.**

**POSTDOCTORAL RESEARCH ASSOCIATE**—Position available for an electrophysiologist to characterize the properties of central axons which have regenerated along peripheral nerve implants. Preference given to applicants experienced in spinal cord physiology and/or tract-tracing, and histological techniques. Please send curriculum vitae with names of three references to: **Dr. Julia K. Terzis, Microsurgical Research Center, Eastern Virginia Medical School, 700 Olney Road, Norfolk, VA 23507.**

## POSITIONS OPEN

Columbia University Orthopaedic Research Laboratory—**NEW POSTDOCTORAL RESEARCH SCIENTIST—Ph.D., BIOCHEMIST IN CONNECTIVE TISSUE RESEARCH.** This is a 3-year position for research in the biochemistry of cartilage and intervertebral disc. Candidates should be knowledgeable in protein-carbohydrate biochemistry, immunochemistry and/or molecular biology. Experience in connective tissue research is desirable. Interdisciplinary collaborative research is expected. Competitive salary range of \$26,000 to \$32,000 per annum depending on experience; 1 October 1987 starting date is anticipated. Interested candidates should send their curriculum vitae to: **Anthony Ratcliffe, Ph.D., Orthopaedic Research Laboratory, Columbia-Presbyterian Medical Center, 630 West 168th Street, BB 1412, New York, NY 10032.**



## RECEPTOR PHARMACOLOGIST/ BIOCHEMIST

Nova Pharmaceutical Corporation, a leading research and development company in Baltimore, is inviting applications for a scientist with expertise in receptor pharmacology to participate in a unique drug discovery program. The successful candidate must possess a Ph.D. and 0 to 2 years of postdoctoral experience. Individuals with training in pharmacology, biochemistry, or neuroscience are encouraged to apply. Those applicants, however, with a demonstrated understanding of ligand-receptor binding and second messenger systems are preferred. The position will require supervision of a small group of technical associates, plus excellent written and oral communication skills.

Nova Pharmaceutical Corporation is an Equal Opportunity Employer, offering a very competitive compensation and benefits package and a challenging work environment. Interested individuals should forward their résumé, along with a cover letter detailing specific interests and three references to:

**Maria Kenealy**  
Manager, Human Resources  
Nova Pharmaceutical Corporation  
6200 Freepoint Center  
Baltimore, MD 21224

**RESEARCH ASSISTANT: Ph.D. ORGANIC CHEMISTRY.** Demonstrated knowledge of organic synthesis and spectroscopy. Demonstrated expertise in cyclodextrin chemistry and analysis of hydrophobic interactions. Research into mechanistic and spectroscopic aspects of enforced proximity rigid organic molecules and reactivity of cyclodextrin complexes. \$19,955 per year. Submit résumé to: **Georgia Department of Labor, 1275 Clarendon Avenue, Avondale Estates, Georgia 30002 or to the nearest Georgia Job Service Center. Control Number GA 5229034.**

**RESEARCH ASSOCIATE.** Research on the role of ion currents in the growth and development of microorganisms. Application of concepts and techniques from bioenergetics and electrophysiology; improvise and fabricate devices for use in research program; instruments used include: ultrasensitive vibrating microelectrode, ion-selective electrodes, microscopes, and diverse biochemical and microbiological tools. Minimum requirements are Ph.D. in biochemistry and 2 years of experience in research in bioenergetics and microbial electrophysiology. \$22,260 per year. Forty hours per week. Apply by résumé to: **Colorado Division of Employment and Training, 600 Grant Street, Suite 900, Denver, CO 80203. Refer to Order No. CO 2860451.**

**RESEARCH ASSOCIATE POSITION** available 1 August 1987 to study the central mechanisms of cardiovascular homeostasis. Ph.D. in physiology, pharmacology, or neuroscience required. One year stipend guaranteed with possibilities for extension. Send curriculum vitae and names of three references to: **Dr. Patrice G. Guyenet, Department of Pharmacology, University of Virginia School of Medicine, Box 448, Charlottesville, VA 22908.** An Equal Opportunity/Affirmative Action Employer.

## POSITIONS OPEN

**RESEARCH ASSOCIATES:** The Behavioral Sciences Department of the Armed Forces Radiobiology Research Institute (AFRRI), a command of the Defense Nuclear Agency, is seeking two behavioral scientists to conduct animal research on the behavioral effects of ionizing radiation. One position is for an experimental psychologist with interests in the areas of learning and operant conditioning. The successful candidate will work as part of a team studying the force and duration of motor responses. This position, available immediately, is a 1-year appointment renewable up to 4 years. Salary ranges from \$22,458 to \$35,326. The other position is for a Research Pharmacologist with interests in CNS neurochemistry and behavior. Although consideration would be given to candidates with experience in any area of neurochemistry, emphasis would be placed on those with a strong background in ion channels. This is a 4-year appointment with salary ranges from \$32,567 to \$42,341. For both positions, desirable qualifications include a Ph.D., a strong publication record, and independent research experience. To apply for these Civil Service positions, send a form SF-171 and/or curriculum vitae and reprints of published work to: **Armed Forces Radiobiology Research Institute, Civilian Personnel Office, Bethesda, MD 20814-5145**, not later than 31 August 1987. Reference Announcement Number 28/86B for the research psychologist position, and MSVA 29/87A for the research pharmacologist position. Direct inquiries to: **Dr. Alan Harris, Department Chairman, telephone 202-295-0114 or Deborah Bush, Personnel Management Specialist, telephone 202-295-1426. U.S. citizenship is required. AFRRI is an Equal Opportunity Employer.**

**RESEARCH ASSOCIATE:** Research studies roles of cholesterol and glycoprotein biosynthesis in developing neural systems, principally primary cultures. Position includes supervision of technician. Faculty appointment possible. Salary competitive. Stimulating academic environment. Send curriculum vitae to: **Dr. Joseph J. Volpe, Washington University School of Medicine, Children's Hospital, 400 South Kingshighway, Saint Louis, MO 63110.**

**RESEARCH ASSOCIATE—CYTOGENETICS.** Participate in faculty research involving cytogenetics and molecular cell biology of solid tumors. Qualifications include M.S. degree in cytogenetics or cell biology, and research experience in cytogenetics, tissue culture, or molecular biology. Send résumé to: **Martha Lennard, Human Resource Management, LSUMC, 1501 King's Highway, P.O. Box 33932, Shreveport, LA 71130. An Equal Opportunity Employer.**

### MALARIA RESEARCH

**TWO RESEARCH ASSOCIATE** positions available immediately for initially 2 years. One project will focus on the expression of genes from human malaria parasites cloned in different vector systems. The other concerns the further development and modification of malaria-specific DNA probes and their adaptation to field use. Applicants for both positions should have at least 2 years of postdoctoral experience, and a strong background in recombinant DNA technology. Send curriculum vitae to: **Dr. J. Werner Zolg, Department of Molecular Biology, Biomedical Research Institute, 12111 Parklawn Drive, Rockville, MD 20852. An Equal Opportunity Employer.**

**RESEARCH POSITION:** Cellular Immunology and Molecular Biology. The Pulmonary Unit (Medical Services) of the Massachusetts General Hospital has a staff opening for a Ph.D. with a strong background and experience in cellular immunology and molecular biology to work in newly expanded laboratory facilities. Experience in the use of in vitro techniques, including cell culture work, and interest in environmental/occupational immunology are desirable. Please send curriculum vitae and a brief description of research interests to: **L. C. Ginns, M.D., Pulmonary Unit, Bulfinch 1, Massachusetts General Hospital, Boston, MA 02114. An Equal Opportunity/Affirmative Action Employer.**

10 JULY 1987

## SENIOR SCIENTIST Inhalation Toxicology

The LILLY RESEARCH LABORATORIES, a division of Eli Lilly and Company, is seeking candidates for a senior scientist position in inhalation toxicology.

Applicants must have a doctoral degree with a background in inhalation toxicology, aerosol generation and sampling. Prior laboratory experience and a knowledge of inhalation toxicology are essential.

Primary responsibilities involve the supervision of an inhalation toxicology testing program that currently includes acute and subchronic toxicology studies and evaluation of pulmonary function, sensory irritation, and bronchoalveolar lavage. Objectives of this program are the screening of new drug candidates for inhalation toxicity potential; the performance of studies to meet international regulatory requirements for product registration; and the performance of studies to develop internal workplace exposure guidelines. The position represents a unique challenge to a qualified scientist interested in contributing to research aimed at the development of pharmaceutical compounds.

Qualified candidates should send their curriculum vitae to:



**Ms. Carol Zapapas  
Personnel Representative-GL961  
Eli Lilly and Company  
Greenfield Laboratories  
P.O. Box 708  
Greenfield, Indiana 46140**

Equal Opportunity Employer

## Protein Crystallography Project Team Leader

### • The Job

A vacancy exists at the Daresbury Laboratory for a senior scientist to be responsible for the development, operation and use of the protein crystallography data collection facilities using the synchrotron radiation source (SRS). We have an extensive range of equipment, including a FAST detector system, operating in an intense focussed monochromatic X-ray beam. A facility for focussed Laue crystallography using a broad-band radiation beam is under development. Powerful computing systems are available for data analysis.

The duties include coordinating the protein crystallographic research programmes of external users at the SRS, ensuring the operation of data collection facilities to the highest possible standard, directing and supervising Laboratory staff and the management of a substantial budget. The Project Team Leader would be expected to initiate research programmes and/or to undertake collaborative research with external users of the SRS. The person appointed would be the senior technical expert in protein crystallography at the Laboratory and would be expected to maintain the leading international status of the PX facilities.

### • The Person

We need someone with extensive experience in protein structure solving and the associated instrumentation and computational needs. Experience in the use of synchrotron radiation would be a valuable asset. Dedication, enthusiasm and leadership are essential qualities.

### • The Benefits

The appointment will be made at Grade 7 level on a salary scale (currently under review) from £14,318 to £19,465 per annum, depending on qualifications and experience. There is a non-contributory superannuation scheme.

Further information may be obtained from the following people:

**Dr. D. J. Thompson** 0925 603120  
**Professor M. Hart** 0925 603265 or 061 372 4873 Ext. 14  
**Professor P. J. Duke** 0925 603460

Application forms may be obtained, quoting reference number DL/9 from: The Personnel Officer, Daresbury Laboratory, Science and Engineering Research Council, Daresbury, Warrington, Cheshire WA4 4AD. Tel: Warrington (0925) 603467 (24 hour answering service).

CLOSING DATE: 31st July, 1987.

**Daresbury**  
SCIENCE & ENGINEERING  
RESEARCH COUNCIL



## POSITIONS OPEN

Telios is a newly developed pharmaceutical company in the La Jolla area. We are currently recruiting at the research scientist and technical level.

**RESEARCH SCIENTIST:** Three positions are currently available. Successful applicants will have a Ph.D. and relevant experience with either (i) peptide chemistry/purification; (ii) small laboratory animal physiology; or (iii) synthetic organic chemistry.

**TECHNICAL SPECIALISTS:** Three positions are available. Applicants should have a B.S. in one of the above mentioned areas.

Send curriculum vitae to: **Personnel Manager, La Jolla Cancer Research Foundation, 10901 North Torrey Pines Road, La Jolla, CA 92037.**

**RESPIRATION MECHANICS/GAS TRANSPORT.** Research engineer or physiologist with computational or experimental expertise in fluid mechanics, transport processes, or systems dynamics. Contact:

**Jeffrey Fredberg, Ph.D.**  
The Biomechanics Institute  
896 Beacon Street  
Boston, MA 02215

**SENSORY NEUROPHYSIOLOGIST.** Tenure-track possibility for position available at assistant professor level. Serious commitment to collaborative work within the Microsurgical Research Center. Expertise required to characterize electrophysiologically the properties of central axons which have regenerated along peripheral nerve implants. Preference given to applicants experienced in spinal cord neurophysiology and tract-tracing and histological techniques. Please send curriculum vitae with three letters of recommendation to: **Dr. Julia Terzis, Microsurgical Research Center, Eastern Virginia Medical School, P.O. Box 1980, Norfolk, VA 23501.**

**SCIENTISTS**—Roy F. Weston, Inc., a leader in the field of environmental engineering for over 30 years, has positions open for environmental scientists. We require an advanced degree in microbiology or a related field and experience in industrial/environmental microbiology, fate and effect, bioreclamation, and biodegradability/treatability of hazardous substances. Weston offers excellent salaries, competitive benefits, and an exceptional work environment. Apply today by sending résumé to: **Roy F. Weston, Inc., Weston Way, West Chester, PA 19380. Attn: Paula J. Gill. Equal Opportunity Employer.**

### TRANSMISSION ELECTRON MICROSCOPY TECHNICIAN

Position requires M.S. in biology or experienced B.S. and familiarity with TEM protocol. Experience in histology helpful. Responsibilities include maintenance and operation of an Hitachi 600 electron microscope. Salary commensurate with experience. Comprehensive benefits package. To apply, send résumé to:

**Southern Research Institute**  
Department B212  
P.O. Box 55305  
Birmingham, AL 35255

*An Affirmative Action/Equal Opportunity Employer.*

The Division of Urology, UCLA School of Medicine, is recruiting a **UROLOGIST** to function as a full-time faculty member primarily in the areas of urodynamics and female urology. Applicants must be Board-certified or Board-eligible, have extensive experience and made sufficient contributions to clinical research in urodynamics, bladder reconstruction, and female urology. The applicant must be capable of organizing and supervising a section of neurourology and female urology in a large clinical department. Applicants should submit curriculum vitae, bibliography, and names of references. **UCLA is an Equal Opportunity/Affirmative Action Employer.** Inquiries should be addressed to: **Chief, Division of Urology, UCLA School of Medicine, Los Angeles, CA 90024-1738.**

## AWARDS

**ARTHRITIS RESEARCH AWARDS.** The Southern California Chapter of the Arthritis Foundation is instituting Arthritis Research Awards of up to \$100,000 each to provide support to a physician(s) or other scientist(s) (M.D.'s or Ph.D.'s) conducting an innovative biomedical research project relevant to the rheumatic diseases. Funded research must be conducted within the Southern California Chapter area. Applications from sources not traditionally funded by the Arthritis Foundation are encouraged. The application deadline is 14 August 1987. Contact: **Arthritis Foundation, 4311 Wilshire Boulevard, Suite 311, Los Angeles, CA 90010, Attention: Mary Ellen Kullman, or telephone: 213-938-6111.**

## RESEARCH TRAINING

### RESEARCH TRAINING IN SALIVARY SECRETION

Positions available immediately, at the University of Washington for research training in the cell biology and pathophysiology of salivary secretion. Possible topic areas include elemental analysis using electron probe, interactions between salivary macromolecules, intracellular messengers, transport of secretory macromolecules, tissue culture, bacterial colonization, etc. Applicants should have Ph.D. or professional degree (M.D., D.D.S., D.V.M. or equivalent) and must be U.S. citizen or have permanent visa. Graduate programs leading to Ph.D. or M.S. are available. Stipends: \$15,996 to \$30,000, depending upon years of experience. Send curriculum vitae, three references, and statement of research interests to: **Dr. Kenneth Izutsu, Department of Oral Biology, SB-22, University of Washington, Seattle, WA 98195, at earliest possible date. An Affirmative Action/Equal Opportunity Employer.**

## FELLOWSHIPS

**POSTDOCTORAL FELLOWSHIP** available 15 June 1987, to study mechanisms underlying functional and structural neuroplasticity during regeneration and aging. Send curriculum vitae, names and addresses of three references to: **G. Gilad, Department of Neurobiology, Coriell Institute for Medical Research, Copewood Street, Camden, NJ 08103.**

**POSTDOCTORAL POSITION.** Available immediately. **NIH FELLOWSHIP** to study S-adenosylmethionine-dependent protein methylation reaction using myelin basic protein as a model system. Opportunity to gain experience in molecular cloning, in vitro transcription and in vitro translation reactions. Applicants must be U.S. citizens or landed immigrants. Please send curriculum vitae, and names and addresses of three references to: **Dr. Sangduk Kim, Fels Research Institute, Temple University School of Medicine, Philadelphia, PA 19140.**

### OPPORTUNITIES FOR DOCTORAL STUDY IN DEVELOPMENTAL NEUROSCIENCE

The College of Staten Island (CSI) and the Institute for Basic Research in Developmental Disabilities (IBR) have agreed to cooperate closely in a joint program to provide a multidisciplinary environment for doctoral and postdoctoral education in molecular, cellular, and developmental neurobiology; in neurobehavior and in the psychology of developmental disabilities. Qualified students interested in neurobiology will be admitted to the Ph.D. Program in Biology of The City University of New York and will work with investigators at IBR and CSI, as well as with other faculty in the CUNY doctoral sub-program in physiology and neuroscience (biology). Research opportunities range from basic topics in modern neurobiology to highly targeted studies related to neurodevelopmental and neurodegenerative disease.

A limited number of attractive fellowships funded by the N.Y. State Office for Mental Retardation and Developmental Disabilities (OMRDD) are available.

For further information write to: **Dr. David Soifer, CSI/IBR, 1050 Forest Hill Road, Staten Island, NY 10314.**

## FELLOWSHIPS

### POSTDOCTORAL FELLOWSHIP PROGRAM IN TERATOLOGY AND DEVELOPMENTAL BIOLOGY

Support for training is available immediately through an NIH training grant. The program emphasizes research on molecular aspects of teratology including molecular genetics, intracellular pH regulation, and behavior. Applicants must be U.S. citizens. Send correspondence, curriculum vitae, and three letters of recommendation to: **Dr. William J. Scott, Jr., Division of Basic Science Research, Children's Hospital Research Foundation, Elland and Bethesda Avenues, Cincinnati, OH 45229.**

### ALFRED P. SLOAN FOUNDATION

**POSTDOCTORAL FELLOWSHIPS IN MOLECULAR STUDIES OF EVOLUTION.** New program of up to six awards. Total compensation: \$25,000 plus \$10,000 research funds per year. Tenable for 1 to 2 years at universities or non-profit research institutions in U.S. or Canada. Applicant should be prospective or recent Ph.D. in molecular biology, evolutionary biology, or related discipline. Deadline: 15 October 1987. For details, contact: **Dr. Michael S. Teitelbaum, Alfred P. Sloan Foundation, 630 Fifth Avenue, New York, NY 10111. Telephone: 212-582-0450.**

**POSTDOCTORAL FELLOWSHIPS.** Studies on neuropeptide metabolizing enzymes and their inhibitors. The project involves isolation and characterization of peptides from brain and pituitary, design and synthesis of inhibitors, and evaluation of the pharmacological properties of these inhibitors. This broad-based project can accommodate candidates trained in biochemistry, organic chemistry, or the neurosciences. Fellowships are supported by a training grant from the National Institute of Drug Abuse (NIDA). Requirements: Ph.D. or M.D. degree, and U.S. citizenship or permanent resident. Salary: NIDA stipend, plus supplement. Immediate availability. Send curriculum vitae and names of three references to: **Dr. Sherwin Wilk, Department of Pharmacology, Box 1215, Mount Sinai School of Medicine, One Gustave L. Levy Place, New York, NY 10029. An Equal Opportunity Employer.**

### POSTDOCTORAL RESEARCH FELLOWSHIP IN THE NEUROSCIENCES

Laboratory organized 3 years ago to utilize complementary basic and clinical research to understand human neurodegenerative disorders, for example Alzheimer's disease and schizophrenia. Current group of five researchers—one position available immediately. Applicant may join ongoing research or develop own project within the general focus of the laboratory. Current research includes the use of models of brain damage in the albino rat, the evaluation of the characteristics of cultured fibroblasts derived from skin biopsies of patients with neurodegenerative disorders, and the use of monoclonal antibodies to identify and isolate important factors in brain damage. Applications entertained from individuals from diverse disciplines. Experience in neuroscience research not an absolute requirement. We are more interested in your talent and work ethic. Send curriculum vitae to: **Martin R. Cohen, M.D., Chief, Sensor Research Laboratory, WSHPI, University of South Carolina Department of Neuropsychiatry and Behavioral Science, P.O. Box 202, Columbia, SC 29202, or telephone: 803-734-7102.**

**RESEARCH FELLOWSHIP.** Department of Zoology, University of Toronto, invites applicants from Canadian citizens and landed immigrants who wish to be sponsored for an NSERC University Research Fellowship. The department is multidisciplinary, and excellent researchers in any zoological field are encouraged to apply. Preference may be given, however, to those using modern molecular techniques. The fellowships are awarded for a 5-year term, and may lead to a tenure-track position. Financial support for research will be available. Send curriculum vitae, representative reprints, statement of research interests, and three letters of reference by 7 August 1987 to: **Dr. Irv Tallan, Department of Zoology, University of Toronto, Toronto, Canada M5S 1A1.**

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## Director Fels Research Institute Of Cancer & Molecular Biology

Temple University School of Medicine invites applications and nominations for a scientific and administrative leader of the Fels Research Institute of Cancer and Molecular Biology. The Director will hold a tenured faculty appointment in the School of Medicine. The Fels Research Institute is currently a Laboratory/Basic Cancer Center of the National Cancer Institute. Temple Medical School also houses the Editorial Office for *Cancer Research*. The Fels Research Institute will be the focus for a University-wide expansion of research related to cancer and molecular biology. The Director is expected to provide leadership in molecular biological approaches to cancer research and to foster expansion of molecular biological research at Temple University. A number of positions in addition to the Director are available for rapid expansion of the research program.

Temple University Health Sciences Center includes a new hospital with clinical research laboratories and a modern Clinical Research Center. These facilities provide opportunities for collaborations in clinical aspects of research in cancer, molecular biology and genetics. Applicants should have a recognized program in an area of molecular biology. A relationship to cancer is desired, however other areas will be considered. Applications or letters of nomination should be accompanied by a curriculum vitae, and the names of at least three references. Send the application before September 30, 1987, to: **Gerhard Plaut, Ph.D., Chairman, Search Committee, Fels Research Institute of Cancer and Molecular Biology, Office of the Dean, Temple University School of Medicine, 3400 N. Broad Street, Philadelphia, PA 19140. Temple University is an Affirmative Action/Equal Opportunity Employer.**

**I**ntegrated Genetics has established a leadership position in the biotechnology industry by providing innovative products utilizing advanced genetic engineering technology. The products being developed include cardiovascular proteins, animal and human fertility hormones, blood cell growth factors, and a hepatitis B vaccine. In addition, we have established the first commercial reference laboratory in the United States for the detection of genetic diseases.

IG looks for excellence in its staff and welcomes applications from scientists with a proven track record of outstanding research in a broad range of areas. Minimum requirements for the following positions are a PhD and 2 years' postdoctoral experience with additional relevant industrial experience preferred. Many positions, in addition to these, are also currently available.

### GENETIC DISEASES/GENETIC REFERENCE LABORATORY

IG supports a major research effort in the cloning of genes associated with particular diseases, including cystic fibrosis. **STAFF SCIENTISTS** are needed in the area of population genetics to examine genetic components in risk factors; particularly for cardiovascular and neurological diseases and cancer. The **GENETIC REFERENCE LABORATORY** also has an opening for a **LABORATORY DIRECTOR**. An MD/PhD, background in DNA research, and supervisory experience in a commercial laboratory setting required.

### PROTEIN CHEMISTRY

Positions available in **PROTEIN PURIFICATION**, especially large-scale column chromatography; **PROTEIN SEQUENCING**; **PROTEIN ENGINEERING**, involving recombinant techniques; **PROTEIN CHARACTERIZATION** and **SPECIFICATION**; **CARBOHYDRATE ANALYSIS**, applied to glycoproteins; **PROTEIN MODELING** using computer-assisted systems; and **RECEPTOR PROTEIN STUDIES**, involving characterization of membrane proteins.

### EXPRESSION

The mammalian expression group is focused on high level expression of cloned genes in eukaryotic systems with the goal of producing large amounts of biologically active and structurally faithful proteins. Openings exist for **STAFF SCIENTISTS** with expertise in **CELL BIOLOGY**, **TRANSGENIC ANIMALS** and **CHIMERIC** or **HUMAN MONOCLONAL ANTIBODY ENGINEERING**.

### BIOENGINEERING

Bioengineering develops processes for the efficient production of therapeutics using large-scale mammalian tissue culture at our new GMP pilot production facility. Openings exist for experienced staff to work in the **SCALE-UP OF MAMMALIAN TISSUE CULTURE** processes and the engineering aspects of **LARGE-SCALE PROTEIN PURIFICATION**.

### DISCOVERY

The Discovery Program has the aim of examining, in the broadest sense, other applications of our technology to the production of healthcare products. **STAFF SCIENTISTS** are needed with the ability to discover new research areas and new therapeutic proteins. A broad knowledge of **SCIENCE** and **MEDICINE** and extensive contacts within academia are essential.

### LABORATORY SERVICES

A **MANAGER** is needed for the Laboratory Services Department which provides DNA sequencing, DNA synthesis, analytical chemistry, and assay development services. Requires several years' experience running a service facility providing the above services and a strong knowledge of molecular biology and immunoassay development.

**Integrated Genetics offers an attractive compensation and benefits package, including equity participation. For consideration for any of the above opportunities, please send your resume to: David Nikka, Human Resources, Dept. S65, Integrated Genetics, Inc., 31 New York Avenue, Framingham, Massachusetts 01701.**

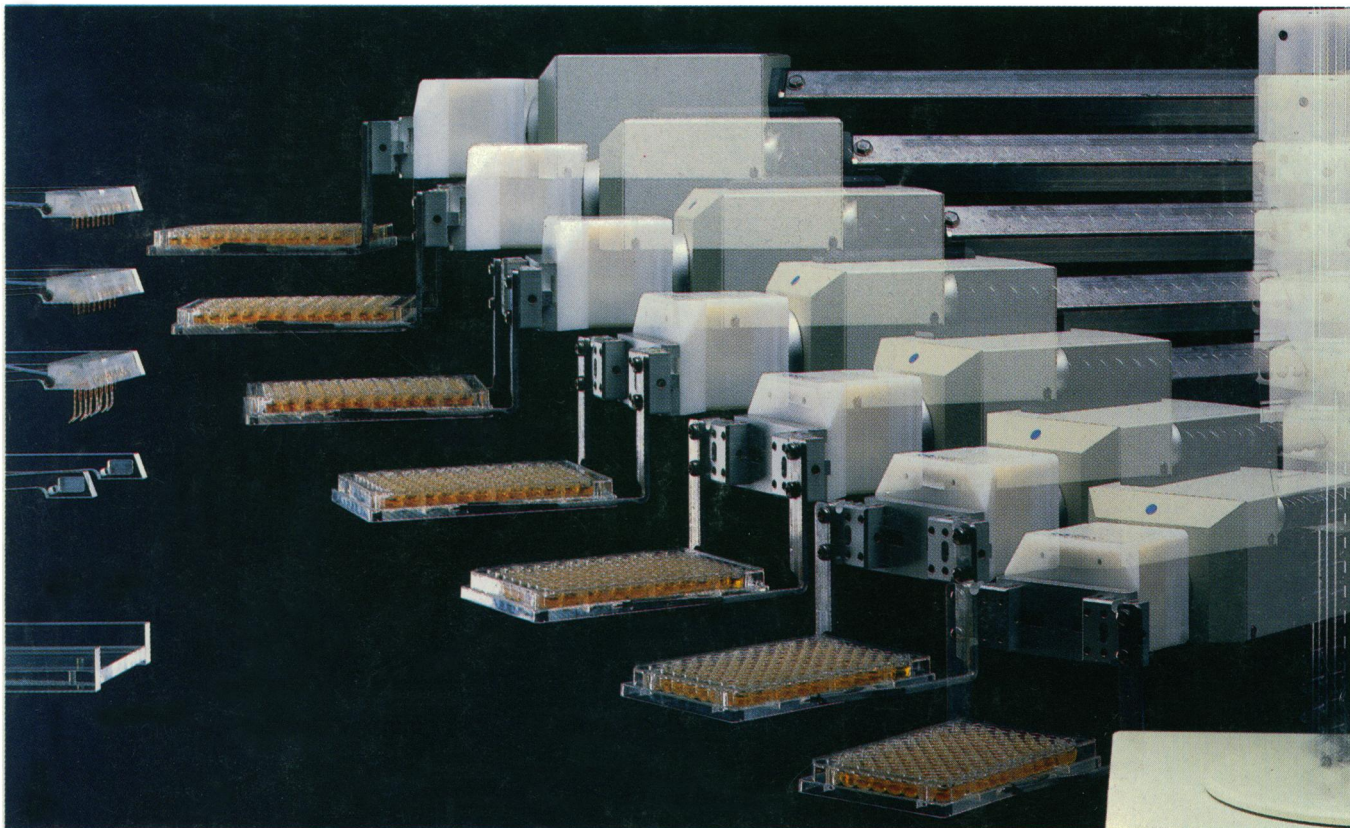
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