

(1871), but he retracted it in the second edition (1874), and it was left to Fisher in 1930 to develop the theory in its general form.

Despite the wide applicability of Fisher's principle, recent work has concentrated on situations where it breaks down, such as the effect of population structure and local mate competition, the consequences of the fitness of the two sexes varying differentially with environmental conditions, and the evolution of sequential hermaphroditism (sex reversal). A previous monograph in this series (*The Theory of Sex Allocation* by E. L. Charnov) gave a fine synthesis of theoretical and empirical work in this area.

The book under review has a different aim. It is written by two mathematicians who are dissatisfied with the theory underpinning the subject. They observe that there are two approaches to sex ratio theory, a more heuristic approach focusing on optimality principles and adaptive functions of sex allocation (including the evolutionarily stable strategy—ESS—concept), and a more rigorous approach based on the full analysis of a population genetic model. The authors' program is to explore in detail the implications of the latter approach, which has been avoided in most studies because of its complexity.

The authors bring highly developed mathematical skills to this task, and the techniques they use deserve close study by anyone involved in this type of modeling. The results are presented in rather an abstract form, and it may be helpful to consider two specific examples.

Suppose that the sex of a zygote is determined by a single locus with two alleles, the three genotypes having different probabilities of being male. If the two homozygote probabilities straddle both the heterozygote probability and 1/2, the population sex ratio at equilibrium will be 1/2, in accordance with Fisher's principle, but otherwise this may not be true. For example, if both homozygote probabilities are 0.1 and the heterozygote probability is 0.75, the population sex ratio at equilibrium is not 0.5 but 0.425. This might seem to contradict Fisher's principle, but it does not really do so. With so much overdominance, additive genetic variability is not available to produce the Fisherian sex ratio, but a third allele leading to an even sex ratio can always invade the system. On the other hand, a system with an even sex ratio at equilibrium cannot be invaded by a new allele leading to a departure from the Fisherian value.

Another example supposes that the sex of a zygote is determined by two loci with two alleles, double heterozygotes being male and all other genotypes female. The equilibrium

sex ratio under this system is 1/4, provided the recombination fraction exceeds 1/6. The reason is clear under free recombination, since every possible cross produces a sex ratio of 1/4 and there is no genetic variability on which selection can operate. As before, the system is structurally unstable, in the sense that it can be invaded by alternative alleles or loci which lead to an even sex ratio.

The authors extend their analysis to multifactorial sex determination models involving many factors of small effect. This chapter is flawed by their use of an ad hoc model of multifactorial inheritance that does not adequately reflect its Mendelian basis.

The conclusion I draw from these studies is that sex ratio models (whether single or multilocus) that do not give an even sex ratio under the usual simplifying assumptions are likely to be structurally unstable and thus of little evolutionary importance. The authors would dispute this conclusion with respect to multilocus and multifactorial models.

MICHAEL BULMER

*Department of Biomathematics,  
Oxford University,  
Oxford OX1 3UB, England*

## Books Received

**Alternative Sweeteners.** Lyn O'Brien Nabors and Robert C. Gelardi, Eds. Dekker, New York, 1986. xiv, 355 pp., illus. \$64.75. Food Science and Technology, 17.

**Analysis of Variance.** The Basic Designs. Charles E. Collyer and James T. Enns. Nelson-Hall, Chicago, 1986. x, 310 pp., illus. \$29.95; spiral bound, \$18.95. Nelson-Hall Series in Psychology.

**The Association of American Physicians 1886–1986.** A Century of Progress in Medical Science. A. McGehee Harvey. Williams and Wilkins, Baltimore, 1986. iv, 680 pp. + appendixes. \$40; to AAP members, \$35.

**Astrodynamics 1985.** Bernard Kaufman *et al.*, Eds. Published for the American Astronautical Society by Univelt, San Diego, CA, 1986. Two parts. xlviii, 1506 pp., illus. \$140; Paper, \$110. Advances in the Astronautical Sciences, vol. 58. From a conference, Vail, CO, Aug. 1985.

**Atlas of Historical Eclipse Maps.** East Asia 1500 BC–AD 1900. F. R. Stephenson and M. A. Houlden. Cambridge University Press, New York, 1986. xvi, 431 pp. \$79.50.

**Atlas of Trichoptera of the SW Pacific-Australia Region.** Arturs Neboiss. Junk, Dordrecht, 1986 (U.S. distributor, Kluwer, Hingham, MA). viii, 286 pp. \$85. Series Entomologica, vol. 37.

**Atmospheric Chemical Compounds.** Sources, Occurrence, and Bioassay. T. E. Graedel, Donald T. Hawkins, and Larry D. Claxton. Academic Press, Orlando, FL, 1986. xii, 732 pp., illus. \$55.

**Atmospheric Chemistry.** Fundamentals and Experimental Techniques. Barbara J. Finlayson-Pitts and James N. Pitts, Jr. Wiley-Interscience, New York, 1986. xxx, 1098 p., illus. \$59.95.

**Atom and Individual in the Age of Newton.** On the Genesis of the Mechanistic World View. Gideon Freudenthal. Reidel, Dordrecht, 1986 (U.S. distributor, Kluwer, Hingham, MA). xvi, 276 pp. \$49. Boston Studies in the Philosophy of Science, vol. 88. Translated from the German.

**Babylon.** Joan Oates. 2nd ed. Thames and Hudson, New York, 1986 (distributor, Norton, New York). 216 pp., illus. Paper, \$10.95. Ancient Peoples and Places.

**Basic Abstract Algebra.** P. B. Bhattacharya, S. K. Jain, and S. R. Nagpaul. Cambridge University Press,

New York, 1986. xviii, 454 pp., illus. \$69.50; paper, \$27.50.

**Basic Tables for Chemical Analysis.** Thomas J. Bruno and Paris D. N. Svoronos. U.S. Department of Commerce, National Bureau of Standards, Boulder, CO, 1986 (available from the Superintendent of Documents, Washington, DC). vi, 234 pp., illus. Paper, \$11. NBS Technical Note 1096.

**Benzodiazepine/GABA Receptors and Chloride Channels.** Structural and Functional Properties. Richard W. Olsen and J. Craig Venter, Eds. Liss, New York, 1986. xiv, 351 pp., illus. \$59.50. Receptor Biochemistry and Methodology, vol. 5.

**Beyond the Gutenberg Galaxy.** Microcomputers and the Emergence of Post-Typographic Culture. Eugene F. Provenzo, Jr. Teachers College Press, Columbia University, New York, 1986. xii, 116 pp. Paper, \$8.95.

**Biological Control of Photosynthesis.** R. Marcelle, H. Clijsters, and M. van Poucke, Eds. Nijhoff, Dordrecht, 1986 (U.S. distributor, Kluwer, Hingham, MA). xii, 271 pp., illus. \$50.75. Advances in Agricultural Biotechnology. From a conference, Diepenbeek, Belgium, Aug. 1985.

**Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields.** Recommendations of the National Council on Radiation Protection and Measurements, Bethesda, MD, 1986. xii, 382 pp., illus. Paper, \$20. NCRP Report no. 86.

**The Biology of Human Ageing.** A. H. Bittles and K. J. Collins, Eds. Cambridge University Press, New York, 1986. viii, 280 pp., illus. \$37.50. Society for the Study of Human Biology Symposium Series, 25. From a symposium, London, April 1984.

**Biotechnology in Food Processing.** Susan K. Harlander and Theodore P. Labuza, Eds. Noyes, Park Ridge, NJ, 1986. xxvi, 323 pp., illus. \$48. From a symposium, St. Paul, MN, Oct. 1985.

**Birds of Eucalypt Forests and Woodlands.** Ecology, Conservation, Management. A. Keast *et al.*, Eds. Illustrated by D. McFarland, D. Milledge, and J. Trompp. Published in association with the Royal Australasian Ornithologists Union by Surrey Beatty, Chipping Norton, NSW, Australia, 1985. xvi, 384 pp. \$43.

**Birds of New Guinea.** Bruce M. Beehler, Thane K. Pratt, and Dale K. Zimmerman. Illustrated by Dale A. Zimmerman and James Coc. Princeton University Press, Princeton, NJ, 1986. xvi, 295 pp. + plates. \$65; paper, \$37.50. Handbook of the Wau Ecology Institute no. 9.

**Birds of the Rocky Mountains.** With Particular Reference to National Parks in the Northern Rocky Mountain Region. Paul A. Johnsgard. Colorado Associated University Press, Boulder, 1986. xii, 504 pp., illus., + plates. \$39.50; paper, \$16.95.

**Blueschists and Eclogites.** Bernard W. Evans and Edwin H. Brown, Eds. Geological Society of America, Boulder, CO, 1986. viii, 423 pp., illus. \$55. GSA Memoir 164. Based on a conference, Bellingham, Washington, Sept. 1983.

**The Bounding Approach to VLSI Circuit Simulation.** Charles A. Zukowski. Kluwer, Boston, 1986. xvi, 220 pp., illus. \$42. The Kluwer International Series in Engineering and Computer Science.

**Brain Tumors.** Their Biology and Pathology. Klaus J. Zülch. 3rd ed. Springer-Verlag, New York, 1986. xviii, 704 pp., illus. \$96.

**Carcinogenesis and DNA Repair.** T. Lindahl, Ed. Published for the Imperial Cancer Research Fund by Oxford University Press, New York, 1985. ii pp. + pp. 491–626, illus. Paper, \$29. Cancer Surveys, vol. 4, no. 3.

**Cell Motility.** Mechanism and Regulation. Harunori Ishikawa, Sadashi Harano, and Hidemi Sato, Eds. Liss, New York, 1986. xiv, 627 pp., illus. \$96. From a conference, Nagoya, Japan, Sept. 1984.

**The Cellular Structure of the Mammalian Nervous System.** A Re-examination, and Some Consequences for Neurobiology. Harold Hillman. MTP Press (Kluwer), Boston, 1986. xii, 318 pp., illus. \$112.25.

**Changing Conceptions of Leadership.** Carl F. Graumann and Serge Moscovici, Eds. Springer-Verlag, New York, 1986. xii, 262 pp., illus. \$33. Springer Series in Social Psychology.

**Chemical Reactions in Organic and Inorganic Constrained Systems.** R. Setton, Ed. Reidel, Dordrecht, 1986 (U.S. distributor, Kluwer, Hingham, MA). xxii, 452 pp., illus. \$74. NATO Advanced Science Institutes Series C, vol. 165. From a workshop, Les Bézards, France, June 1985.

**Chemistry and Function of Pectins.** Marshall L. Fishman and Joseph J. Jen, Eds. American Chemical Society, Washington, DC, 1986. x, 283 pp., illus. \$54.95. ACS Symposium Series, 310. Based on a symposium, Miami Beach, FL, April 1985.

**Chemistry and Physics of Terrestrial Planets.**

Surendra K. Saxena, Ed. Springer-Verlag, New York, 1986. x, 405 pp., illus. \$59. Advances in Physical Geochemistry, vol. 6.

**Classroom Computers.** A Practical Guide for Effective Teaching. Anthony C. Maffei. Human Sciences Press, New York, 1986. 266 pp., illus. Paper, \$16.95.

**Combinatorics of Finite Geometries.** Lynn Margaret Batten. Cambridge University Press, New York, 1986. x, 173 pp., illus. \$39.50; paper, \$16.95.

**The Computer Comes of Age.** The People, the Hardware, and the Software. R. Moreau. MIT Press, Cambridge, MA, 1986. x, 226 pp., illus. Paper, \$9.95. Translated from the French edition (Paris, 1981) by J. Howlett. Reprint, 1984 edition.

**Confronting Nature.** The Sociology of Solar-Neutrino Detection. Trevor Pinch. Reidel, Dordrecht, 1986 (U.S. distributor, Kluwer, Hingham, MA). xii, 268 pp., illus. \$49.50. Sociology of the Sciences Monographs.

**Control of Pesticide Applications and Residues in Food.** A Guide and Directory—1986. Bengt v. Hofsten and George Ekström, Eds. Swedish Science Press, Uppsala, 1986. viii, 316 pp. SKr 240.

**Cosmological Constants.** Papers in Modern Cosmology. Jeremy Bernstein and Gerald Feinberg, Eds. Columbia University Press, New York, 1986. xiv, 328 pp., illus. \$38.

**Crystal Chemistry and Properties of Materials with Quasi-One-Dimensional Structures.** A Chemical and Physical Synthetic Approach. Jean Rouxel, Ed. Reidel, Dordrecht, 1986 (U.S. distributor, Kluwer, Hingham, MA). x, 379 pp., illus. \$69. Physics and Chemistry of Materials with Low-Dimensional Structures. Series B, Quasi-One-Dimensional Materials.

**The Developing Person Through Childhood and Adolescence.** Kathleen Stassen Berger. 2nd ed. Worth, New York, 1986. xviii, 627 pp., illus. \$30.95.

**Development and Regeneration of Skeletal Muscles.** B. Christ and R. Cihák, Eds. Karger, Basel, 1986. vii, 221 pp., illus. \$99.50. Bibliotheca Anatomica, no. 29. From a symposium, Innsbruck, Austria. Sept. 1984.

**Diabetes and Protein Glycosylation.** Measurement and Biologic Relevance. Margo Panush Cohen. Springer-Verlag, New York, 1986. xii, 140 pp., illus. \$39.50.

**Diamond Dealers and Feather Merchants.** Tales from the Sciences. Irving M. Klotz. Birkhäuser, Boston, 1985. x, 120 pp., illus. \$24.95.

**Diatoms and Lake Acidity.** Reconstructing pH from Siliceous Algal Remains in Lake Sediments. J. P. Smol *et al.*, Eds. Junk, Dordrecht, 1986 (U.S. distributor, Kluwer, Hingham, MA). viii, 307 pp., illus. \$105. Developments in Hydrobiology, 29. Based on a workshop, Lyon, France, Aug. 1983.

**Diet and Behavior.** A Multidisciplinary Evaluation. Robert E. Olson *et al.*, Eds. Nutrition Foundation, Washington, DC, 1986. ii, 254 pp., illus. Paper, \$12; to institutions, \$15. *Nutrition Reviews*, vol. 44 (May 1986), supplement. From a symposium, Arlington, VA, Nov. 1984.

**Digestion and the Structure and Function of the Gut.** Donal F. Magee and Arthur F. Dalley, II. Karger, Basel, 1986. viii, 359 pp., illus. \$63. Karger Continuing Education Series, vol. 8.

**Digital CMOS Circuit Design.** Marco Annaratone. Kluwer, Boston, 1986. xviii, 344 pp., illus. \$44.95. Kluwer International Series in Engineering and Computer Science.

**Divided Consciousness.** Multiple Controls in Human Thought and Action. Ernest Hilgard. 2nd ed. Wiley-Interscience, New York, 1986. xviii, 313 pp., illus. Paper, \$18.95. Wiley Series in Behavior.

**Earth's Threatened Resources.** Congressional Quarterly, Washington, DC, 1986. vi, 205 pp., illus. Paper, \$9.95. Editorial Research Reports.

**Einstein As Myth and Muse.** Alan J. Friedman and Carol C. Donley. Cambridge University Press, New York, 1985. xiv, 224 pp., illus. \$39.50.

**Elephants at the Arctic Sea.** How They Lived, How They Perished. Vol. 1. Hans Krause. Published by the author, P.O. Box 61, 7000 Stuttgart 41, FRG, 1986. 154 pp., illus. Paper, \$10.

**Empirical Processes with Applications to Statistics.** Galen R. Shorack and Jon A. Wellner. Wiley, New York, 1986. xxxviii, 938 pp., illus. \$59.95. Wiley Series in Probability and Mathematical Statistics.

**Environmental Consequences of Nuclear War.** Vol. 1, Physical and Atmospheric Effects. A. Barrie Pittock *et al.* Published on behalf of the Scientific Committee on Problems of the Environment by Wiley, New York, 1986. xl, 359 pp., illus. \$64.95. SCOPE 28.

**Essays on Supersymmetry.** C. Fronsdal, Ed. Reidel, Dordrecht, 1986 (U.S. distributor, Kluwer, Hingham, MA). x, 270 pp., illus. \$54.95. Mathematical Physics Studies, vol. 8.

**The Evolution of Galactic X-Ray Binaries.** J.

Truemper, W. H. G. Lewin, and W. Brinkmann, Eds. Reidel, Dordrecht, 1986 (U.S. distributor, Kluwer, Hingham, MA). xiv, 309 pp., illus. \$54. NATO Advanced Science Institutes Series C, vol. 167. From a workshop, Rottach-Egern, FRG, June 1985.

**Experiencing Creativity.** On the Social Psychology of Art. Robert N. Wilson. Transaction, New Brunswick, NJ, 1986. viii, 171 pp. \$24.95.

**Experiments in Molecular Biology.** Robert J. Slater, Ed. Humana, Clifton, NJ, 1986. xxii, 378 pp., illus. Spiral bound, \$27.50. Biological Methods.

**The Extraterrestrial Life Debate 1750–1900.** The Idea of a Plurality of Worlds from Kant to Lowell. Michael J. Crowe. Cambridge University Press, New York, 1986. xx, 680 pp., illus. \$59.50.

**Financing Energy Conservation.** Mike Weedall, Robert Weisenmiller, and Michael Shepard, Eds. American Council for an Energy-Efficient Economy, Washington, DC, 1986. vi, 220 pp. Paper, \$17.50. ACEEE Series on Energy Conservation and Energy Policy. Based on a summer study, Santa Cruz, CA, 1984.

**Finite Element Methods in Mechanics.** Noboru Kikuchi. Cambridge University Press, New York, 1986. xiv, 418 pp., illus. Paper, \$39.50.

**Flora of the Great Plains.** The Great Plains Flora Association. University Press of Kansas, Lawrence, 1986. viii, 1392 pp., illus. \$55.

**Foliar Fertilization.** A. Alexander, Ed. Nijhoff, Dordrecht, 1986 (U.S. distributor, Kluwer, Hingham, MA). xii, 488 pp., illus. \$82. Developments in Plant and Soil Science, vol. 22. From a symposium, Berlin, FRG, March 1985.

**Forest Site and Productivity.** S. P. Gessel, Ed. Nijhoff, Dordrecht, 1986 (U.S. distributor, Kluwer, Hingham, MA). x, 270 pp., illus. \$56.75. Forestry Sciences. From a congress, Kyoto, Sept. 1981.

**Foundations of Parapsychology.** Exploring the Boundaries of Human Capability. Hoyt L. Edge *et al.* Routledge and Kegan Paul (Methuen), New York, 1986. xvi, 432 pp., illus., + plates. \$49.95; paper, \$22.50.

**The Fracture of Rocks.** J. L. Blès and B. Fenga. Elsevier, New York, 1986. viii, 131 pp., illus. \$36. Translated, with revisions, from the French edition (Orléans, 1981) by J. Wanklyn.

**Fundamental Forces.** D. Frame and K. J. Peach, Eds. Scottish Universities Summer School in Physics, University of Edinburgh Physics Department, Edinburgh, 1985. xviii, 525 pp., illus. £30. A NATO Advanced Study Institute. From a summer school, St. Andrews, Scotland, Aug. 1984.

**Fundamentals of Plasma Physics.** J. A. Bittencourt. Pergamon, New York, 1986. xviii, 711 pp., illus. \$75; paper, \$29.50.

**GABAergic Transmission and Anxiety.** Giovanni Biggio and E. Costa, Eds. Raven, New York, 1986. xxii, 250 pp., illus. \$49.50. Advances in Biochemical Pharmacology, vol. 41. From a conference, Villasimius, Italy, June 1985.

**Gas Flow in Nozzles.** U. G. Pirumov and G. S. Roslyakov. Springer-Verlag, New York, 1986. x, 424 pp., illus. \$59. Springer Series in Chemical Physics, vol. 29. Translated from the Russian edition (Moscow, 1978).

**The Gene Business.** Who Should Control Biotechnology. Edward Yoxen. Oxford University Press, New York, 1986. x, 230 pp. Paper, \$7.95. Reprint, 1983 ed.

**The Geysers of Yellowstone.** T. Scott Bryan. 2nd ed. Colorado Associated University Press, Boulder, 1986. xiv, 300 pp., illus. Paper, \$7.95.

**Goode's World Atlas.** Edward B. Espenshade, Jr., Ed. Joel L. Morrison, senior consultant. 17th ed. Rand McNally, Chicago, 1986. xvi, 367 pp., illus. \$16.96; paper, \$13.28.

**Grow or Die.** The Unifying Principle of Transformation. George T. Ainsworth-Land. Wiley, New York, 1986. xviii, 267 pp., illus. \$29.95. Reprint, 1973 edition.

**Growth Factors and Malignancy.** A. B. Roberts and M. B. Sporn, Eds. Published for the Imperial Cancer Research Fund by Oxford University Press, New York, 1985. ii pp. + pp. 627–818, illus. Paper, \$29. Cancer Surveys, vol. 4, no. 4.

**Handbook of Research and Quantitative Methods in Psychology.** For Students and Professional. R. M. Yaremkov *et al.* Erlbaum, Hillsdale, NJ, 1986. xxx, 335 pp., illus. \$29.95; paper, \$14.50. Reprint of *Reference Handbook of Research and Statistical Methods in Psychology*, 1982.

**Handbook of Stress, Reactivity, and Cardiovascular Disease.** Karen A. Matthews *et al.*, Eds. Wiley-Interscience, New York, 1986. xvi, 527 pp., illus. \$48.50. Wiley Series on Health Psychology/Behavioral Medicine.

**Histogenesis and Precursors of Human Gastric Cancer.** Research and Practice. Takao Nagayo. Springer-Verlag, New York, 1986. xii, 190 pp., illus. \$86.50.

**Histoire des Mers Australes.** Jean-René Vanney. Fayard, Paris, 1986. 738 pp., illus. Paper, F180.

**A History of Embryology.** T. J. Horder, J. A. Witkowski, and C. C. Wylie, Eds. Cambridge University Press, New York, 1986. xxiv, 477 pp., illus. \$99.50. British Society for Developmental Biology Symposium 8 (Nottingham, April 1983).

**HLA Class II Antigens.** A Comprehensive Review of Structure and Function. B. G. Solheim, E. Møller, and S. Ferrone, Eds. Springer-Verlag, New York, 1986. xviii, 563 pp., illus. \$110.

**Homogeneous and Heterogeneous Photocatalysis.** Ezio Pelizzetti and Nick Serpone, Eds. Reidel, Dordrecht, 1986 (U.S. distributor, Kluwer, Hingham, MA). xxvi, 721 pp., illus. \$119. NATO Advanced Science Institutes Series C, vol. 174. From a workshop, Maratea, Potenza, Italy, Sept. 1985.

**How To Deep-Freeze a Mammoth.** Björn Kurtén. Columbia University Press, New York, 1986. x, 121 pp., illus. \$16.95. Translated, with revisions, from the Swedish edition (Stockholm, 1981) by Eric J. Friis.

**Human Conditions.** The Cultural Basis of Educational Development. Robert A. LeVine and Merry I. White. Routledge and Kegan Paul (Methuen), New York, 1986. viii, 245 pp. \$19.95.

**Imagery in Scientific Thought.** Creating 20th-Century Physics. Arthur I. Miller. MIT Press, Cambridge, MA, 1986. xviii, 355 pp., illus. Paper, \$8.95. Reprint, 1984 edition.

**Impact Geology.** Allan O. Kelly. Published by the author, P.O. Box 1065, Carlsbad, CA, 1985. xvi, 228 pp., illus. \$39.95.

**Molecular Cell Biology.** James Darnell, Harvey Lodish, and David Baltimore. Scientific American Books, New York, 1986 (distributor, Freeman, New York). xxxvi, 1187 pp., illus. \$42.95.

**Mountain Flora of Greece.** Vol. 1. Arne Strid, Ed. Cambridge University Press, New York, 1986. xxx, 822 pp., illus. \$99.50.

**Multiple Primary Cancers in Connecticut and Denmark.** U.S. Department of Health and Human Services, National Cancer Institute, Bethesda, MD, 1985. vi, 437 pp., illus. \$23. National Cancer Institute Monograph 68. NIH Publication no. 85-2714.

**The Natural History of Badgers.** Ernest Neal. Facts on File, New York, 1986. xviii, 238 pp., illus., + plates. \$19.95. Facts on File Mammal Series.

**The Neurobiology of Dopamine Systems.** W. Winlow and R. Markstein, Eds. Manchester University Press, Manchester, England, 1986. xii, 472 pp., illus. £45. Studies in Neuroscience. From a symposium, Leeds, England, July 1984.

**Neurofibromatosis.** Phenotype, Natural History, and Pathogenesis. Vincent M. Riccardi and June E. Eichner. Johns Hopkins University Press, Baltimore, 1986. xxvi, 309 pp., illus. \$48.50. Johns Hopkins Series in Contemporary Medicine and Public Health.

**Neurohistochemistry.** Modern Methods and Applications. Pertti Panula, Heikki Päiväranta, and Seppo Soinila, Eds. Liss, New York, 1986. xx, 690 pp., illus. \$158. Neurology and Neurobiology, vol. 16.

**The New Astronomy.** Nigel Henbest and Michael Marten. Cambridge University Press, New York, 1986. 240 pp., illus. Paper, \$14.95. Reprint, 1983 edition.

**New Perspectives in Thermodynamics.** J. Serrin, Ed. Springer-Verlag, New York, 1986. xii, 260 pp., illus. Paper, \$29. Based on a conference, Minneapolis, MN, June 1983.

**Nitrogen Fixation with Non-Legumes.** F. A. Skinner and P. Uomala, Eds. Nijhoff, Dordrecht, 1986 (U.S. distributor, Kluwer, Hingham, MA). xii, 460 pp., illus. \$72. Developments in Plant and Soil Sciences, vol. 21. From a symposium, Helsinki, Sept. 1984. Reprint, with addition, from *Plant and Soil*, vol. 90 (1986).

**No-Tillage and Surface-Tillage Agriculture.** The Tillage Revolution. Milton A. Sprague and Glover B. Triplett, Eds. Wiley-Interscience, New York, 1986. xxii, 467 pp., illus. \$47.50.

**Nonlocal Quantum Field Theory and Stochastic Quantum Mechanics.** Khavtgin Namsrai. Reidel, Dordrecht, 1986 (U.S. distributor, Kluwer, Hingham, MA). xviii, 426 pp., illus. \$89. Fundamental Theories of Physics.

**Oncogenes.** Their Role in Normal and Malignant Growth. W. F. Bodmer, R. Weiss, and J. Wyke, Eds. Royal Society, London, 1985. vi, 134 pp., illus. £16.50. From a meeting, London, Dec. 1984. Reprinted from *Proceedings of the Royal Society of London*, series B, vol. 226 (no. 1242), pp. 1–134.

**Optical Fibers.** J. Geisler, G. Beaven, and J. P. (Continued on page 1440)

### DNA Purification Columns

Centri-Sep DNA purification columns are spin columns specifically designed for rapid and efficient separation of low molecular weight precursors and salts such as nick translation and 5' end labeling. The columns are used in benchtop centrifuges or microcentrifuges in a procedure that takes less than 10 minutes. The researcher selects the buffer for his or her own application. The columns are stable indefinitely before reconstitution and for 3 to 4 months after hydration if refrigerated. Princeton Separations. Circle 556.

### Pocket Computer

The 128K Pocket Computer is a calculator-sized computer that doubles as a terminal. Used as a computer, it has software for calculating, filing, setting up menus, writing programs, and keeping a diary. It has a two-line by 16-character dot matrix liquid crystal diode display and a 78-character keyboard. A plug-in RS-232 communications module allows the 128K Pocket Computer to function as a terminal, sending and receiving data to and from another computer or to a printer at rates from 75 to 9600 baud. The computer contains 24 kilobytes of read-only memory and 8 kilobytes of random access memory. It operates from a 9-V battery or an optional 117 VAC adapter. Exttech Instruments. Circle 557.

### Digitized Karyotyping

The Genetiscan is a software-hardware system for automated and voice-interactive analysis and karyotyping. A video camera mounted on a microscope digitizes images of microscopic samples and converts them to numerical form for computer processing. All need for photography and the attendant darkroom time is eliminated. Genetiscan can enhance the image quality, and chromosomes may be copied, moved, straightened, or flipped. Automatic karyotyping uses pattern recognition to identify and classify the

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

chromosomes. The user can correct any classification errors. The user can also perform the karyotyping interactively by using the trackball with either the keyboard or the voice headset. The process takes less than 12 minutes per spread. Perceptive Systems. Circle 559.

### Sample Evaporation System

The Evapotec Vortex Evaporator heats, cools, and agitates samples in culture tubes, centrifuge tubes, and scintillation vials. Internal valves regulate evacuation rates automatically and switch to the maximum flow



rate as the vacuum nears completion. This prevents "bumping" and keeps the loss of samples to a minimum. The temperature is adjustable from ambient temperature to 80°C. Vacuum-sealed sample blocks for the Evapotec Vortex Evaporator are available in several sizes. Haake Buchler Instruments. Circle 563.

### Recombinant Protein

Immobilized rProtein A is a protein A produced by recombinant *Escherichia coli*. It has a high specificity and binding affinity for the Fc region of immunoglobulin G (IgG) of many species and subclasses. Consisting of rProtein A covalently coupled to cross-linked agarose beads by a stable amide linkage, it is supplied as a fully swollen, ready-to-use gel. It provides a convenient and rapid method for affinity purification of antibodies, immobilization of IgG, and isolation of lymphocytes. Repligen. Circle 560.

### Programmable Sample Collector

The Model DS500UP Programmable Automatic Sample Collector is designed specifically for testing chemical solutions to determine adherence to *United States Pharmacopeia* dissolution requirements. The microprocessor allows sample collection at precise time intervals without manual intervention. The user can also program the number of samples to be taken and the quantity taken per sample. All surfaces of the DS500UP are resistant to corrosion. Instrutex International. Circle 562.

### Computer-Assisted Molecular Design

DISCOVER is a computer program for molecular simulation and analysis. Incorporating the methodologies of molecular mechanics and dynamics, the program is appropriate for research in biotechnology, pharmaceuticals, and agricultural chemicals. DISCOVER accepts input from many molecular data bases. The user can build and edit molecules interactively, aided by an easily customized library and an English-language command structure. Biosym Technologies. Circle 558.

### Literature

*Psychopharmacology* describes services of a reference laboratory facility for psychiatric researchers or diagnosticians. National Psychopharmacology Laboratory. Circle 554.

*Diskette Guide Book* describes the structure, functioning, types, and care and handling of the three standard sizes of floppy disks; it contains a 40-page glossary. BASF. Circle 574.

*Biochemical General Catalog* describes custom peptide synthesis services and more than 2000 products, including biologically active peptides, amino acid derivatives, and enzyme substrates and inhibitors. Omni Biochem. Circle 575.

*Specification Sheet #331A* provides the specifications for the DNNV-46J Digital Vacuum Gauge. Teledyne Hastings-Raydist. Circle 576.

*The Lab Mart* is a catalog of hundreds of types of laboratory apparatus and reagent products. J.&H. Berge. Circle 577.

*One Step Beyond* is a product guide containing information on stereomicroscopes, macroscopes, microtomes, and other biotechnological equipment. E. Leitz. Circle 578.

(Continued from page 1438)

Boutruche. Pergamon, New York, 1986. xiv, 635 pp., illus. \$150. EPO Applied Technology Series, vol. 5.

**Organometallic Compounds in the Environment.** Principles and Reactions. P. J. Craig, Ed. Wiley-Interscience, New York, 1986. xxii, 368 pp., illus. \$75.

**Organotransition Metal Chemistry.** Fundamental Concepts and Applications. Akio Yamamoto. Wiley-Interscience, New York, 1986. xviii, 455 pp., illus. \$39.95.

**Origins of Sex.** Three Billion Years of Genetic Recombination. Lynn Margulis and Dorion Sagan. Yale University Press, New Haven, CT, 1986. xiv 258 pp., illus. \$35. Bio-Origins Series.

**The Outcrop Quiz.** A Picture Book of Puzzles for Geology Students of All Ages. John Wright. Allen and Unwin, Winchester, MA, 1986. Unpagged, Paper, \$7.95.

**Particles and Detectors.** Festschrift for Jack Steinberger. K. Kleinknecht and T. D. Lee, Eds. Springer-Verlag, New York, 1986. x, 291 pp., illus. \$49. Springer Tracts in Modern Physics, 108.

**Percy Alexander MacMahon: Collected Papers.** Vol. 2, Number Theory, Invariants, and Applications. George E. Andrews, Ed. MIT Press, Cambridge, MA, 1986. xxviii, 952 pp., illus. \$95. Mathematicians of Our Time, 24.

**Perspectives on a Dynamic Earth.** T. R. Paton with the assistance of J. Clarke. Allen and Unwin, Winchester, MA, 1986. xvi, 142 pp., illus. \$29.95; paper, \$11.95.

**Phenomena in Mixed Surfactant Systems.** John F. Scamehorn, Ed. American Chemical Society, Washington, DC, 1986. x, 349 pp., illus. \$66.95. ACS Symposium Series, 311. Based on a symposium and conference, Potsdam, NY, June 1985.

**Philosophy and Technology II.** Information Technology and Computers in Theory and Practice. Carl Mitcham and Alois Huning, Eds. Reidel, Dordrecht, 1986 (U.S. distributor, Kluwer, Hingham, MA). xxii, 352 pp. \$59. Boston Studies in the Philosophy of Science, vol. 90. From a conference, New York, Sept. 1983.

**Physics of Comets.** K. S. Krishna Swamy. World

Scientific, Singapore, 1986 (U.S. distributor, Taylor and Francis, Philadelphia). xvi, 273 pp., illus. \$28.

**Space Science and Applications.** Progress and Potential. John H. McElroy *et al.*, Eds. IEEE Press, New York, 1986. xii, 260 pp., illus. \$52.50.

**Specificity and Function of Clonally Developing T Cells.** B. Fleischer, J. Reimann, and H. Wagner, Eds. Springer-Verlag, New York, 1986. xvi, 316 pp., illus. \$80. Current Topics in Microbiology and Immunology, 126. Based on a workshop, Ulm, FRG, March 1985.

**The Stability of Slopes.** E. N. Broadhead. Surrey University Press, Glasgow, and Chapman and Hall (Methuen), New York, 1986. x, 374 pp., illus. \$85.

**Still Living?** Yeti, Sasquatch and the Neanderthal Enigma. Myra Shackley. Thames and Hudson, New York, 1986 (distributor, Norton, New York). 192 pp., illus. Paper, \$9.95. Reprint, 1983 edition.

**Strategic Nuclear Targeting.** Desmond Ball and Jeffrey Richelson, Eds. Cornell University Press, Ithaca, NY, 1986. 367 pp., illus. \$29.95. Cornell Studies in Security Affairs.

**Stress and Anxiety.** Vol. 10, A Sourcebook of Theory and Research. Charles D. Spielberger and Irwin G. Sarason, Eds. Hemisphere, New York, 1986. xvi, 494 pp., illus. \$49.50; paper, \$21.95. Series in Clinical and Community Psychology. A decennial volume that reprints, with addenda, contributions from its predecessors with the intent of providing an authoritative text.

**Structural Analysis of Granitic Rocks.** Jacques Marre. Elsevier, New York, 1986. xii, 123 pp., illus., + loose map. \$36. Translated, with revisions, from the French edition (Orléans, 1982) by John Renouf.

**Technical Progress and Soviet Economic Development.** Ronald Amann and Julian Cooper, Eds. Blackwell, New York, 1986. viii, 214 pp., illus. \$45. Based on symposium, Birmingham, England, 1984.

**Technology, Human Capital, and the World Food Problem.** G. Edward Schuh, Ed. Department of Agricultural and Applied Economics, University of Minnesota, St. Paul, 1986. x, 167 pp., illus. Paper. Alexander von Humboldt Award colloquium (1984). (University of Minnesota) *Miscellaneous Publication* 37.

**Tectonostratigraphic Terranes of the Circum-Pacific Region.** David G. Howell, Ed. Circum-Pacific Council for Energy and Mineral Resources, Houston, TX, 1985 (available from the American Association of Petroleum Geologists, Tulsa, OK.) x, 585 pp., illus., + loose map. \$32. Circum-Pacific Council for Energy and Mineral Resources Earth Science Series, no. 1.

**Telarmachay.** Chasseurs at Pasturs Préhistoriques des Andes 1. Danièle Lavallée *et al.* Éditions Recherche sur les Civilisations, Paris, 1985. Two volumes. 461 pp., illus. and loose maps in folder. Paper, F317.79, "Synthèse," no. 20.

**Temperature-Programmed Reduction for Solid Materials Characterization.** Alan Jones and Brian McNicol. Dekker, New York, 1986. x, 199 pp., illus. \$59.75. Chemical Industries, vol. 24.

**Templets and the Explanation of Complex Patterns.** Michael J. Katz. Cambridge University Press, New York, 1986. x, 127 pp., illus. \$24.95.

**The Tenth Muse.** The Pursuit of Earth Science. Ronald B. Parker. Scribner, New York, 1986. xvi, 221 pp. \$15.95.

**Theory of Matroids.** Neil White, Ed. Cambridge University Press, New York, 1986. xviii, 36 pp., illus. \$39.50. Encyclopedia of Mathematics and Its Applications, vol. 26.

**Thermoelasticity.** Witold Nowacki. 2nd ed. Pergamon, New York, and PWN-Polish Scientific Publishers, Warsaw, 1986. xii, 566 pp., illus. \$100. Translated from the Polish by Henry Zorski.

**Third Asian-Pacific Regional Meeting of the International Astronomical Union.** (Kyoto, Sept. 1984.) M. Kitamura and E. Budding, Eds. Reidel, Dordrecht, 1986 (U.S. distributor, Kluwer, Hingham, MA). Part 1. x, 537 pp., illus. \$49. Reprinted from *Astrophysics and Space Science*, vol. 118, nos. 1/2 (1986). Part 2. x, 265 pp., illus. \$49. Reprinted from *Astrophysics and Space Science*, vol. 119, no. 1 (1986).

**To Utopia and Back.** The Search for Life in the Solar System. Norman H. Horowitz. Freeman, New York, 1986. xvi, 168 pp., illus. \$17.95; paper, \$11.95.

**Trends in Applications of Pure Mathematics to Mechanics.** E. Kröner and K. Kirchgässner, Eds. Springer-Verlag, New York, 1986. viii, 523 pp., illus. Paper, \$36.40. Lecture Notes in Physics, 249. From a symposium, Bad Honnef, Germany, Oct. 1985.

**Turtle Geometry.** The Computer as a Medium for Exploring Mathematics. Harold Abelson and Andrea A. diSessa. MIT Press, Cambridge, MA, 1986. xx, 477 pp., illus. Paper, \$14.95. The MIT Press Series in Artificial Intelligence, Reprint, 1981 edition.

# Personnel Placement

**SCIENCE** publishes each Friday, except the last Friday of the year. Advertising is accepted only in writing; no abbreviations. Any deadline in ad must be at least 2 weeks after date of issue in which ad appears. Also, personnel advertising is accepted only with the understanding that the advertiser does not discriminate among applicants on the basis of race, sex, religion, age, color, national origin, handicap, or sexual preference.

**LINE CLASSIFIED ADVERTISING DEADLINES:**  
17 October issue (mailed 10 October): **26 September**  
24 October issue (mailed 17 October): **3 October**  
31 October issue (mailed 24 October): **10 October**  
7 November issue (mailed 31 October): **17 October**

**POSITIONS WANTED:** 40¢ per word, plus \$4 for use of box number, per week. \$10 minimum, per week. Prepayment required. This rate is available only to individuals seeking jobs.

**LINE DISPLAY (POSITIONS OPEN, COURSES, FELLOWSHIPS, MARKETPLACE, and so forth):** \$13.00 per millimeter; \$325 minimum, per week (minimum charge covers 25 millimeters on a single column; 25 millimeters equals 10 lines of 50 spaces per line). No charge for use of box number. No agency commission for ads less than 103 millimeters (4 inches). No cash discount. Prepayment required for all foreign ads. Purchase orders and billing address required for all other advertising.

Send copy for all **Positions Wanted** ads and **Line Display** ads less than 1/6 page in size (125 millimeters) to:

**SCIENCE Classified Advertising**  
1333 H Street, NW, Room 940  
Washington, DC 20005  
Telephone: 202-326-6555

Send copy for **Fractional Display** ads, 1/6 page and larger, and all **Marketplace** ads to:

**Scherago Associates, Inc.**  
1515 Broadway  
New York, NY 10036  
Telephone: 212-730-1050

Blind ad replies should be addressed as follows:

**Box (give number)**  
**SCIENCE**  
1333 H Street, NW  
Washington, DC 20005

## POSITIONS WANTED

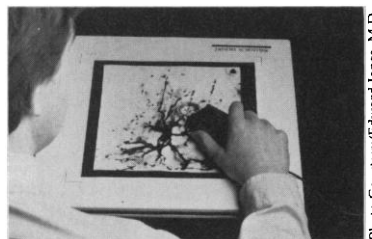
**Analytical Biochemist, Ph.D.** Extensive experience in biophysical chemistry, clinical immunology, and molecular biology. Experienced in production of monoclonal antibodies and development of enzyme immunoassays. Publications in reputed journals. Grant support. Seeks industrial research and development/academic faculty position. Permanent resident of United States. Box 166, **SCIENCE**. 9/26; 10/3

**Entomologist, Ph.D.** Twelve years of experience in field research on insects of ten crops in areas of host plant resistance, chemical control, cultural control, biological control, chemosterilants, economic threshold, diapause, sampling methodology, and so forth. Over 45 publications in refereed journals. Seeks research, industry, teaching, or consulting position. Box 168, **SCIENCE**. 9/26; 10/3, 10, 17

**Immunologist/Cell Biologist, M.D.** with 15 years of university experience in basic and clinical research (cell differentiation, hematopoiesis, megakaryocyte biology, membrane antigen characterization, monoclonal antibody technology, and flow cytometry). Over 40 publications in front rank journals, seeks research/service position in academia/industry. Box 169, **SCIENCE**. 9/26; 10/3, 10

**Toxicologist, D.V.M., Ph.D., D.A.B.T.** Many years of research experience in biochemical toxicology of organophosphate compounds, HPLC, cholinergic elements, receptor binding, radio-enzymatic assays, high-energy phosphate nucleotides, protein metabolism, and pharmacokinetics. Excellent publications. Seeks academic, industrial, or regulatory position. Available immediately. Box 165, **SCIENCE**. X

## AUTOMATE MEASUREMENT ON YOUR IBM PC



New digitizing tablet with Sigma-Scan™ measurement software. \$1195

Cat #3011 — 12" x 12" system

Resolution of .025 mm, accuracy of at least .25 mm. Comes with state-of-the-art software for area, linear, perimeter, length of curvy line, and angular measurements. X, Y point or stream digitizing. Descriptive statistics. Transfer data to other programs in standard ASCII or DIF format.

Call or write today for more information.

**JANDEL SCIENTIFIC**

MICROCOMPUTER TOOLS FOR THE SCIENTIST  
2656 Bridgeway, Sausalito, CA 94965  
800-874-1888

(In Calif. call 415-331-3022)

Circle No. 48 on Readers' Service Card

## POSITIONS WANTED

**Aquatic Ecologist/Administrator, Ph.D.** Twenty-five years of experience in teaching, research, government, business management, and environmental consulting. Desires challenging industrial/academic position, preferably at administrative/graduate level. Box 156, SCIENCE. 9/26; 10/3

**Computer Programmer** available for special projects in Baltimore-Washington area. Eighteen years of experience supporting physical and life science research. Real-time experiments, one-of-a-kind-instrument handlers, graphics. Lucid assembly and FORTRAN 77 programming. George Hovey, 3704 Ednor Road, Baltimore, MD 21218. Telephone: 301-243-3269. X

**Molecular Biologist, Ph.D.**, extensive experience in DNA sequencing, DNA synthesis, physical chemical studies, and steroid receptors. Several publications. Grant support. Seeks industrial research and development/academic position. Permanent resident of United States. Box 167, SCIENCE. 9/26; 10/3

**Toxicologist, Ph.D.** (M.S. industrial hygiene): Experienced in animal surgery, clinical chemistry, in vitro models, radioisotopes, electrophoresis, and histochemistry. Seeks industrial position. Box 160, SCIENCE. X

## POSITIONS OPEN

### ASSISTANT INVESTIGATOR

To participate in an on-going investigation on the mechanisms of fibrinogen assembly and secretion. Must have Ph.D. in biochemistry or related field and postdoctoral experience. Candidates should have training in DNA recombinant techniques and a record of accomplishment in this area. A competitive salary and excellent benefits are offered. Apply with curriculum vitae and three references to: **Colvin Redman, Ph.D., New York Blood Center, 310 East 67 Street, New York, NY 10021.** *Equal Opportunity Employer.*

**ASSISTANT PROFESSOR**, to join an active, interdisciplinary group in studies of various aspects of cell and molecular biology related to heart disease, cancer, muscular disease, and aging. The applicant will develop a strong, independent research program in an area of modern biochemistry such as recombinant DNA, hybridoma, or hormone receptors. Please send curriculum vitae, bibliography, description of research, and request three letters of recommendation to be sent to:

**Dr. Karl A. Schellenberg**  
Department of Biochemistry  
Eastern Virginia Medical School  
P.O. Box 1980  
Norfolk, VA 23501

**ASSISTANT/ASSOCIATE MARINE SCIENTIST: TROPICAL COASTAL ECOLOGIST** to provide technical expertise in the management of tropical ecosystems in developing nations. Individual is expected to spend approximately half-time outside the United States. Requires advanced degree in coastal/marine ecology, minimum of 3 years of experience in practical aspects of resource management, excellent communication skills, and overseas experience. Applications, including names and addresses of three references, should be sent by 10 October 1986 to: **Steve Olsen, Search Committee Chair, Assistant/Associate Marine Scientist (190182) position, THE UNIVERSITY OF RHODE ISLAND, P.O. Box G, Kingston, RI 02881.** *An Affirmative Action/Equal Opportunity Employer, M/F.*

**ASSISTANT PROFESSOR OF ANATOMY** position available immediately. Applicants for this tenure-track position must have a Ph.D. or equivalent and 2 to 3 years of postdoctoral training in neurobiology. In addition to establishing an independent research program, the successful candidate will be expected to teach an undergraduate neuroanatomy course. Submit curriculum vitae, statement of research goals, and names of three references to: **Dr. P. A. Young, Chairman, Department of Anatomy, St. Louis University School of Medicine, 1402 South Grand Boulevard, St. Louis, MO 63104.** *Equal Opportunity Employer, M/F/H/V.*

## R&D CAREER OPPORTUNITIES

The Ames Division of Miles Laboratories, Inc., a leader in the clinical diagnostics industry, has openings in its Research & Development Department. The work addresses innovative approaches which will be implemented in future dry phase reagent and instrument systems.

Candidates should have a Ph.D., preferably with post-doctoral experience, and/or several years experience in industrial research and development. Candidates without a Ph.D., but with demonstrated expertise in the areas indicated will also be considered. Excellent communication skills are required to enable efficient interactions in an interdisciplinary setting.

### 1. BIOPHYSICIST/BIOCHEMIST

A Ph.D. in biophysics or biochemistry with experience in membrane, oil, colloid or surface chemistry. Working knowledge of emulsion and dispersion techniques is desirable.

### 2. PHYSICAL BIOCHEMIST

A Ph.D. in biochemistry or biophysics with a strong background in kinetics and thermodynamics of enzyme catalysis, optical spectroscopy and surface chemistry. The applicant should also be knowledgeable in redox chemistry and photochemistry. Experience with design of optical and/or electronic equipment will be helpful.

### 3. POLYMER CHEMIST

A Ph.D. in polymer chemistry with emphasis on physical properties of materials and analytical methods for their characterization. The position will involve tailoring of polymer properties by means of derivatization, blending, copolymerization, grafting or alloying. Knowledge of the effect of solvent systems on transport properties is required. Familiarity with conducting organic polymers is also desired, as is exposure to the immobilization techniques used in biochemical systems.

### 4. POLYMER CHEMIST

A Ph.D. with formulation experience in coating technology involving both natural and synthetic polymers. The candidate should be familiar with physical characterization techniques of emulsions and dispersions. Experience with adhesive and foam systems and knowledge of enzyme chemistry would be useful.

### 5. MOLECULAR SPECTROSCOPIST

A Ph.D. level spectroscopist to conduct research in the application of new technologies to clinical diagnostics. Requirements include familiarity with IR, RAMAN, NMR and polarimetry spectroscopies with expertise in at least one of those areas. A spectroscopist with experience in mid-IR laser sources, detectors and fiber optics is preferred.

### 6. BIOMEDICAL ENGINEER

A Ph.D. level biomedical engineer with experience in optical spectroscopies. The position will involve the development of novel medical devices for measurement of analytes in body fluids. Experience with laser sources, detectors and fiber optics is desirable.

### 7. BIOCHEMIST

A Ph.D. in biochemistry with post-doctoral training in immunochemistry. Experience in development activities in the diagnostic industry, especially dry-phase reagent instrument systems would be helpful.

Situated 90 miles from Chicago, our South Bend Elkhart, Indiana location provides access to leading cultural and multi-university facilities. Close proximity to lower Michigan and the Great Lakes furnishes unique recreational opportunities. Miles offers an excellent starting salary, superior benefits program and company paid relocation. For confidential consideration, send your resume to:

**Mary Sproull**  
Director of Personnel  
Department 66150

**MILES LABORATORIES, INC.**

P.O. Box 70  
Elkhart, Indiana 46515



Please indicate the position by number for which you are applying.

An Equal Opportunity Employer M/F/H



## POSITIONS OPEN

### ASSISTANT/ASSOCIATE PROFESSOR OF BIOCHEMISTRY UNIVERSITY OF ILLINOIS AT CHICAGO COLLEGE OF MEDICINE

**THE DEPARTMENT OF BIOLOGICAL CHEMISTRY** is seeking applications for a tenure-track assistant/associate professor position, effective academic year 1987. Applicants should have a Ph.D. and at least 2 years of postdoctoral experience. We are seeking candidates with a strong commitment to developing an independent research program using contemporary approaches to fundamental problems in biochemistry. The department is well equipped and well funded, having 22 full-time faculty members. The department is particularly strong in nucleic acid structure-function and gene regulation, membrane and cellular biochemistry, and lipid metabolism. Applicants should provide curriculum vitae, at least three letters of reference, and a brief statement of research interests and plans by 1 December 1986. Send applications to: **Secretary, Biochemistry Search Committee, Department of Biological Chemistry, University of Illinois at Chicago, College of Medicine, 1853 West Polk Street, Chicago, IL 60612.**

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

### ASSISTANT PROFESSOR INSECT BIOLOGY

Tenure-track position for individual to study insect-plant interactions on rangeland systems. Possible areas to be developed are community ecology, natural defense mechanisms of plants to insect attack, or biological control of weeds. Position requires Ph.D. in entomology, ecology, or related areas. Emphasis will be on research and teaching. The potential for establishing a nationally recognized research program in area of expertise is expected. Some extension will be required. Send curriculum vitae, transcripts, selected reprints, and a statement of professional and research goals. Application material and three letters of recommendation should be sent to: **Dr. W. A. Brindley, Utah State University, Logan, UT 84322-5305.** Closing date is 15 December 1986, or until a suitable applicant is found.

*An Affirmative Action/  
Equal Opportunity Employer*

### ASSISTANT OR ASSOCIATE PROFESSOR IN DEVELOPMENTAL NEUROBIOLOGY

**The Department of Zoology of the University of Massachusetts at Amherst** invites applicants for a tenure-track position in developmental neurobiology for September 1987. Applicants must have a Ph.D. and postdoctoral experience and must demonstrate ability to pursue an active research program. Duties include teaching and graduate student supervision in the Zoology Department and in the new Neuroscience and Behavior Graduate Program. Application deadline is 31 October 1986. Send application, curriculum vitae, statement of research goals, and names of at least three referees to: **Dr. Gordon Wyse, Chairman, Developmental Neurobiology Search Committee, Department of Zoology, University of Massachusetts, Amherst, MA 01003.** *The University of Massachusetts is an Affirmative Action/Equal Opportunity Employer.*

**ASSISTANT PROFESSOR OF ENVIRONMENTAL SCIENCE AND PHYSIOLOGY, Respiratory Epidemiology Program, Harvard School of Public Health.** Candidate should have a doctorate in a field related to environmental science, with training or experience in respiratory disease epidemiology. Responsibilities include teaching, as well as the supervision of graduate students and research fellows. He/she should be able to perform analyses of health outcomes as related to personal and environmental exposures.

Send curriculum vitae, including list of publications and statement of research interests, and the names of three to five individuals who would be willing to respond to request for evaluation to: **Susan Donnelly, Respiratory Epidemiology Search, Harvard School of Public Health, 665 Huntington Avenue, Room 1414, Boston, MA 02115.** Deadline: 15 November 1986.

*Expressions of interest are particularly invited from women and minority candidates.*

## POSITIONS OPEN

### ASSISTANT PROFESSOR OF PHARMACOLOGY

**The Department of Pharmacology in the College of Medicine of the University of Tennessee, Memphis,** invites applications from individuals with strong research credentials in biochemical neuropharmacology or neuroendocrinology for a tenure-track position, available immediately, at the level of assistant professor. Applicants must have a Ph.D. and/or M.D. degree, have completed not less than 2 years of postdoctoral training, and have a demonstrated ability to conduct independent research. Preference will be given to applicants who apply modern approaches in biochemistry, immunology, or molecular biology to research problems in neuroscience as related to pharmacology. Faculty members are expected to develop a strong research program and to participate in departmental teaching activities. Closing date is 1 January 1987. Please submit curriculum vitae, statement of research interests, and arrange for three letters of reference to be sent to: **Dr. William R. Crowley, Department of Pharmacology, University of Tennessee, Memphis, 874 Union Avenue, Memphis, TN 38163.** *The University of Tennessee is an Equal Opportunity/Affirmative Action Employer.*

**ASSISTANT PROFESSORSHIP IN MICROBIOLOGY/COLLEGE OF MEDICINE:** Tenurable position beginning August 1987, salary dependent upon training and experience. Ph.D. and/or M.D. and a minimum of 2 years of postgraduate research experience required. Appointee will be expected to participate in a program of instruction in microbiology for medical students, direct graduate student research, and develop a vigorous program of research at the molecular level. Send résumé and names of three referees to: **Dr. Jeffrey Gardner, Department of Microbiology, University of Illinois, 131 Burrill Hall, 407 South Goodwin, Urbana, IL 61801; telephone: 217-333-7287.** To receive full consideration, applications should be received by 15 January 1987. Some interviews may be conducted before 15 January 1987. However, all applications received by that date will be given equal consideration. *The University of Illinois is an Affirmative Action/Equal Opportunity Employer.*

### BIOCHEMISTRY UNIVERSITY OF CALIFORNIA LOS ANGELES (UCLA)

**The Department of Chemistry and Biochemistry** has a tenure-track opening in biochemistry. The position probably will be filled at the assistant professor level, but applications for a more senior position may also be considered. Preference will be given to candidates with research interests in the general areas of metabolism, enzymes, protein chemistry, plant biochemistry, or developmental biochemistry. Teaching responsibilities will include undergraduate general biochemistry and participation in graduate courses appropriate to the appointee's interests. Candidates should submit curriculum vitae and statement of research plans, and should have three letters of recommendation sent to: **Dr. C. A. West, Department of Chemistry and Biochemistry, University of California, Los Angeles, CA 90024,** by 1 November 1986.

*The University of California is an Equal Opportunity/Affirmative Action Employer, and encourages applications from women and minority candidates.*

**BIOLOGY: Community and/or plant population ecologist.** Assistant Professor, tenure-track position. Ph.D. preferred. Maintain active research which will involve undergraduates. Additional background in evolutionary and quantitative biology and in use of computers in biology desirable. Teaching course for nonscience majors and in interdisciplinary programs expected. The college is an independent liberal arts college with a commitment to excellence in undergraduate education. *The College of Wooster wishes to ensure that the search identifies qualified candidates who are women or members of minorities. Applicants belonging to these groups are encouraged to identify themselves if they wish. Affirmative Action/Equal Opportunity Employer.* Curriculum vitae, three letters of recommendation, and transcripts to: **Donald Wise, The College of Wooster, Wooster, OH 44691,** by 1 December 1986.

## POSITIONS OPEN

### ASSISTANT PROFESSOR OF MICROBIOLOGY

**Tennessee Technological University** is seeking a highly qualified microbiologist to fill a tenure-track position in the Department of Biology, available January 1987. The individual will be expected to teach undergraduate and graduate level courses in microbiology and/or related areas, such as virology, immunology, or microtechniques. The individual will also be expected to direct the research of graduate students in the program and to develop an extensive program of research and scholarly activity. Candidates should have the Ph.D., have a demonstrated record of research activity, and be committed to excellence in teaching. Salary will be commensurate with experience and qualifications. Interested persons should send letter of application, complete résumé, and the names, addresses, and telephone numbers of four references to:

**Dr. John W. Harris  
Microbiologist Search Committee  
Department of Biology, Box 5063  
Tennessee Technological University  
Cookeville, TN 38505**

Closing date: 1 November 1986, or until filled. *Tennessee Technological University is an Affirmative Action/Equal Opportunity Employer.*

**ASSISTANT RESEARCH NEUROIMMUNOLOGIST. Department of Neurology, University of California, San Francisco.** Candidate required to have at least 2 years of postdoctoral experience. This position requires extensive experience in acetylcholine receptor biochemistry, monoclonal antibody production (including anti-active site antibodies), immunocytochemistry, as well as the application of these techniques to the modification of signal transduction in vitro and in vivo. Candidate must have experience in signal transduction in the nervous system, specifically involving protein kinases and a mastery of kinetic measurements. Experience in developmental studies in the nervous system including application of molecular biology techniques to developmental neurobiology is required, specifically, messenger RNA preparation and translation in vivo and in vitro. Duties will include membrane protein purification, production of monoclonal antibodies, immunohistochemistry, and injection of proteins into living cells in culture. Salary range: \$34,600 to \$43,200; level to be commensurate with experience. Please submit complete curriculum vitae, including list of publications and names of three references, by 30 October 1986 to: **Dr. Adrienne S. Gordon, Ernest Gallo Clinic and Research Center, San Francisco General Hospital, Building 1, Room 101, San Francisco, CA 94110.** *The University of California is an Equal Opportunity/Affirmative Action Employer.*

### CELL BIOLOGIST

A new position is available at the **associate professor** level in the Department of Anatomy and Cell Biology at the University of Virginia. Candidates should have an established research program and a consistent record of productivity and funding. The research should be in some aspect of cell biology, such as secretion, the cytoskeleton, the cell surface, cell-matrix interactions, and growth factors. Medical school teaching responsibilities will be in either cell biology-histology or gross anatomy. The department emphasizes research in cellular, reproductive, and developmental biology. Opportunities also exist for interaction with interdisciplinary programs in cancer, diabetes, and muscle cell biology. Interested persons should send their curriculum vitae and the names of three references to: **Dr. Charles J. Flickinger, Chairman, Department of Anatomy and Cell Biology, Box 439, University of Virginia Medical Center, Charlottesville, VA 22908.** *An Equal Opportunity/Affirmative Action Employer.*

**DOCTORATES NEEDED** from many fields to provide intensive laboratory instruction to surgeons. Excellent teaching ability, congenial personality, and professional presence are necessary prerequisites. Training provided. Not a sales position. Some travel is required. Teachers will be based at permanent instruction sites in New York City, West Palm Beach, Los Angeles area (Orange), or Chicago. Salary \$40,000. WRITE for application form to: **Director, Midas Rex Institute, 3001 Race Street, Fort Worth, TX 76111.**

**UNIVERSITY OF CALIFORNIA, SANTA CRUZ**, invites applications for two tenure track positions at the **Assistant Professor** level, starting with the 1987-88 academic year. The University of California, Santa Cruz is committed to a significant expansion of resources in Molecular, Cellular and Developmental Biology. This includes the construction of a new research building, now underway, and additional new faculty positions.

### MICROBIOLOGY

Preference will be given to applicants using molecular biology to study basic problems in procaryotes or lower eucaryotes and who have several years postdoctoral experience. In addition to developing an active research program, the appointee will be expected to teach an upper division course in microbiology and contribute to teaching at the lower division and graduate levels. Applications should be submitted by no later than **December 1, 1986**.

### MOLECULAR BIOLOGY

Preference will be given to applicants with post-doctoral experience whose research involves biologically interesting protein-nucleic acid interactions, although exceptionally well-qualified applicants from all areas of fundamental molecular biology will be considered. In addition to developing an active research program, the applicant will be expected to offer one upper division course in the area of molecular biology and subsequently to contribute to teaching at the graduate and lower division levels. Applications should be submitted by no later than **January 1, 1987**.

Applicants should submit a curriculum vitae, a brief description of research plans, and reprints and/or preprints of scientific papers and three letters of reference to: **Chair, Search Committee, Department of Biology, Thimann Laboratories, University of California, Santa Cruz, California 95064**.

In accordance with UCSC Affirmative Action guidelines, it is **important** for candidates to indicate which position they are applying for.

*Applications from women and ethnic minorities are strongly encouraged. UCSC is an Affirmative Action/Equal Opportunity Employer.*

## RESEARCH BIOLOGIST

The Upjohn Company has a challenging position for a Research Associate in a new area studying control of growth and differentiation of specialized mammalian cells. Position requires a BS or MS in Biology, Biochemistry or related field with a strong background in Cell Biology or Developmental Biology. Applicants must have experience in tissue culture and biochemical methods. Position requires an ability to work independently, to effectively solve difficult problems of basic biology and to interact with people of varying disciplines.

Kalamazoo is a medium-sized Southwestern Michigan community with immediate access to a rich mix of cultural, educational and recreational pursuits including numerous lakes and a four-season climate. Upjohn offers the opportunity for career growth, a competitive salary, commensurate with experience, a comprehensive benefits program and relocation assistance.

For confidential consideration, please call from outside of Michigan toll free 1/800-253-8600, ext. 3-6767, (inside Michigan call collect 616/323-6767) to request an employment application be sent to you immediately. Please refer to Ad Number 19965-A when calling.



A Century  
of Caring  
1886-1986

An Equal Employment Opportunity Employer M/F

## RESEARCH SCIENTIST CARDIOVASCULAR PHARMACOLOGY

We are seeking a candidate for our cardiovascular drug discovery development program.

The position available is that of a Senior Assistant Scientist in the Cardiovascular Section. The work will be primarily analytical in nature, concerned mainly with the effects of agents on vascular smooth muscle metabolism. Duties will include preparation of solutions, preparation of tissue homogenates and subcellular fractions for the measurement of intracellular intermediates and the determination of enzyme activities.

The applicant should possess a B.S. or M.S. Degree, with emphasis on chemistry and mathematics. He or she should also have a working knowledge of basic analytical equipment, including: liquid scintillation counter, UV/vis spectrophotometer, ultra centrifuge, atomic absorption spectrophotometer, spectrofluorometer, and gas chromatograph.

Qualified applicants should send resume/curriculum vitae in confidence to:

Ms. S. Hultquist  
Personnel Representative

**WARNER-LAMBERT/  
PARKE-DAVIS**

Pharmaceutical Research Division  
2800 Plymouth Rd.  
Ann Arbor, MI 48105

**WARNER  
LAMBERT**

Equal Opportunity In Action

## POSTDOCTORAL FELLOWSHIPS

BURROUGHS WELLCOME CO. is an innovative pharmaceutical company located in the **Research Triangle Park** in **North Carolina**. Our facility houses the state's largest industrial library and our staff maintains close research contact with three nearby major universities and medical centers. We currently have postdoctoral positions available for one year (with possible extension for an additional year) in the following areas of CNS Pharmacology.

### ANTIOBESITY (#1439)

To develop and evaluate pharmacological approaches to the control of body weight and the treatment of obesity. Position requires a Ph.D. in neuroscience, physiology, nutrition or related area. Familiarity with nutritional biochemistry, gut physiology, body composition or other areas related to possible mechanism of drug action on body weight is desirable.

### ANALGESIC (#1632)

To investigate novel pharmacological approaches to the treatment and control of pain. Requires Ph.D. in an area of the neurosciences and expertise in electrophysiology with training and experience studying pain pathways and sensory systems. Familiarity and experience with standard analgesic tests and familiarity with areas of neurochemistry related to pain research desired.

BURROUGHS WELLCOME CO. offers a comprehensive company-paid benefit package and a stimulating environment for scientific research. If you meet the above requirements and would like to make a contribution to one of these fields, forward a curriculum vitae, indicating position number to:

Employment Supervisor, BURROUGHS  
WELLCOME CO., 3030 Cornwallis Road,  
Research Triangle Park, NC 27709.

**BURROUGHS  
WELLCOME CO.**



An Equal Opportunity/  
Affirmative Action  
Employer

**Wellcome**



Qualified Minority, Female, Veteran and Handicapped individuals are encouraged to apply

## POSITIONS OPEN

### CANCER RESEARCH SCIENTIST

Applications are invited for a staff career scientist position as a member of a group studying the mechanisms of tumor promotion and tumor progression. The successful candidate should have demonstrated excellence in carrying out independent research at the molecular and/or cellular level. After a start-up period, on-going support for research will be from competitive granting agencies. Academic appointment will be at the University of Ottawa.

*In accordance with Canadian immigration requirements, priority will be given to Canadian citizens and permanent residents of Canada, although others are encouraged to apply.*

Closing date for this competition is 15 December 1986. Applicants should send résumé and names of three references to:

**Dr. H. C. Birnboim, Head**  
Department of Experimental Oncology  
Ottawa Regional Cancer Centre  
General Division, 501 Smyth Road  
Ottawa, Ontario Canada K1H 8L6

### CELL BIOLOGIST

The Department of Biology at the University of Rochester invites applications for a junior-level, tenure-track position in the area of plant or animal cell biology. Candidates should have shown excellence in research and a commitment to teaching at the graduate and undergraduate level. Applications are particularly invited from individuals who apply recombinant DNA, genetic, and/or immunological approaches to the study of topics such as: intracellular protein traffic, nuclear-cytoplasmic interactions, organelle biogenesis, cell motility and cytoarchitecture, and cellular aspects of development. Applicants should send curriculum vitae, a statement of research interests, and have three letters of recommendation sent to:

**Dr. J. B. Olmsted, Chairman**  
Cell Biology Search Committee  
Department of Biology  
University of Rochester  
Rochester, NY 14627

Closing date for applications is 31 December 1986. *The University of Rochester is an Affirmative Action/Equal Opportunity Education Institution, M/F.*

### CHAIR IN CHEMISTRY VIRGINIA TECH

The Department of Chemistry at Virginia Polytechnic Institute and State University invites applications and nominations for the Harvey W. Peters Chair of Chemistry. This position is part of the Harvey W. Peters Research Center for the study of Parkinson's disease and disorders of the central nervous system, a newly established, privately endowed research component of the Department of Chemistry. Applicants will be expected to have a record of research accomplishment in the area of CNS drug design and synthesis, or related areas, consistent with appointment as full professor of chemistry.

Candidates should submit curriculum vitae, a summary of research plans, and three letters of reference to: **Professor James F. Wolfe, Head, Department of Chemistry, Virginia Polytechnic Institute and State University, Blacksburg, VA 24061; telephone: 703-961-5966.** Closing date for receipt of applications is 1 December 1986.

*Virginia Tech is an Affirmative Action/Equal Opportunity Employer.*

### DIRECTOR OF PUBLIC INFORMATION

The Cancer Research Institute, a not-for-profit organization founded in 1953 to sponsor research in cancer immunology, is seeking an experienced research scientist with new career goals to author reports, articles, a newsletter, and other materials on general and cancer immunology.

This is a new position requiring an individual who is well grounded in the research and clinical implications of emerging immunological approaches to cancer treatment and who is able to communicate these issues effectively in verbal and written form to both lay and professional audiences. Respond in confidence to: **James E. Siegel, Executive Director, Cancer Research Institute, 133 East 58 Street, New York, NY 10022.**

## POSITIONS OPEN

### CHEMIST ANALYTICAL CHEMIST/WRITER

U.S. Pharmacopeia, a non-profit organization which sets national standards for drugs and produces a variety of drug information publications, seeks a B.S., M.S. or Ph.D. chemist to write drug standards. Experience in writing pharmaceutical and/or analytical test procedures and specifications, plus at least 5 years of laboratory and administrative experience required. This is a liaison position requiring excellent interpersonal, oral, and written communication skills in order to interact effectively with elected Committee of Revisions and representatives of industry and government. We offer excellent company paid benefits and salary commensurate with qualifications. Send résumé and salary requirements in confidence to:

**Dr. Lee T. Grady**  
U.S. Pharmacopeia  
12601 Twin Brook Parkway  
Rockville, MD 20852  
*An Equal Opportunity Employer*

### DIVISION CHIEF WASHINGTON DEPARTMENT OF FISHERIES

The State of Washington seeks a natural scientist with professional competence in data processing to head the Technical Services Division of the Marine Fish Program, located in Seattle. The salary is \$27,000 to \$34,000 per year. For an official announcement and application, telephone or write by 10 October to: **Ardith Stark, Fisheries Personnel, 115 General Administration Building, Olympia, WA 98504; telephone: 206-753-6622.**

The Laboratory for the Study of Skeletal Disorders and Rehabilitation, Department of Orthopedic Surgery, Harvard Medical School and Children's Hospital, Boston, is seeking an individual to work on the DEVELOPMENT OF AN ELECTRON PROBE for frozen hydrated calcified tissue analysis. The candidate should have a Ph.D. in biophysics, biology, or equivalent; experience in working with electron probe instrumentation and computer programming; and the ability to work independently. The ideal candidate will also have experience in electron microscopy, electron diffraction, and methods of immunocytochemistry. Position at level of postdoctoral fellow for period of 1 to 3 years or faculty appointment, depending on qualifications and experience.

Apply in writing, enclosing names of three references to: **Melvin J. Glimcher, M.D., Director, Laboratory for the Study of Skeletal Disorders, Children's Hospital, 300 Longwood Avenue, Boston, MA 02115.** *Equal Opportunity Employer.*

### FACULTY BIOCHEMIST AT THE OHIO STATE UNIVERSITY

The Department of Chemistry seeks to fill a tenure-track position at the assistant professor level to begin July-September 1987 in the area of biochemistry. Outstanding candidates who qualify for a higher level appointment may also be considered. Candidates will be considered regardless of research interests. Demonstrated excellence, and the ability to carry out innovative research are essential. A strong commitment to teaching at both the undergraduate and graduate levels is also required. Applicants should send curriculum vitae (including graduate transcripts, and a list of publications), a statement of research and teaching interests, and three letters of recommendation to: **Dr. Devon W. Meek, Chairman, Department of Chemistry.**

Review of applications will begin 15 October 1986, and the deadline is 8 December 1986. *The Ohio State University is an Equal Opportunity Educator/Employer, which specifically invites and encourages applications from women and minorities.*

**OSU**

The Ohio State University  
Department of Chemistry  
120 West 18 Avenue  
Columbus, OH 43210-1358

## POSITIONS OPEN

The Environmental Defense Fund (EDF) has an opening for an ENVIRONMENTAL SCIENTIST/ENGINEER in its Toxic Chemicals Program in Washington, DC. The position concentrates on issues in hazardous waste management and disposal and involves applying scientific principles and approaches to improve upon national and state level toxic chemical regulation and legislation. Scientist will work as a team with other EDF scientists and lawyers.

Candidate should possess broad training in the environmental sciences, with advanced coursework/experience in environmental engineering, chemistry, biology, soil science, toxicology, statistics, and so forth, as well as in a particular area of advanced study. Well developed written and oral communication skills essential. Experience in working on interdisciplinary projects with other scientists, as well as nonscientists helpful. Requires a masters degree, plus 3 years of experience or equivalent.

Send résumé and brief writing sample to: **Linda Greer, Environmental Defense Fund, 1616 P Street, NW, Washington, DC 20036.**

Two tenure-track FACULTY POSITIONS AT THE ASSISTANT PROFESSOR LEVEL are available for the 1987-1988 academic year. Exceptional candidates at higher ranks may be considered.

- 1) MODERN SYSTEMATIST USING BOTH FIELDWORK AND THEORY.
- 2) CELLULAR OR DEVELOPMENTAL BIOLOGIST. PREFERENCE WILL BE GIVEN TO A PERSON WHO WILL ALSO SUPERVISE THE DEPARTMENTAL SEM/TEM FACILITY.

Successful candidates will be expected to have demonstrated commitment to quality teaching and a vigorous, independent research program. Please submit curriculum vitae (including biographic data), short statement of research objectives, names of at least 5 referees, and selected reprints to: **The Chairman, Department of Zoology, University of Texas at Austin, Austin, TX 78712, before 1 November 1986.**

*The University of Texas at Austin is an Equal Opportunity/Affirmative Action Employer*

### FACULTY POSITION IN MICROBIOLOGY.

The Department of Microbiology and Immunology of Morehouse School of Medicine is soliciting applications to fill an opening at the assistant professor level. The successful applicant will have teaching duties in virology and microbial genetics and will be expected to establish an externally supported research program. Prospective candidates are expected to have a Ph.D. in medical microbiology with a specialization in virology and should have a minimum of 2 years of postdoctoral experience. Please submit curriculum vitae, the names of three references, and a brief summary of current research activities to: **Dr. Ram G. Navalkar, Chairman, Department of Microbiology and Immunology, Morehouse School of Medicine, 20 Westview Drive, S.W., Atlanta, GA 30310.** *Morehouse School of Medicine is an Affirmative Action/Equal Opportunity Employer.* Deadline for receiving application is 10 October 1986.

CLINICAL INVESTIGATOR with solid medical oncology training and interest/experience in BRM's, sought at assistant/associate professor level at new cancer institute. Major emphasis upon innovative clinical investigations of cytokine, growth factors, monoclonal antibodies, and other immunomodulators. Wide opportunities for basic and clinical collaboration in major multidisciplinary programs throughout medical center. Send curriculum vitae to: **Dr. J. M. Kirkwood, Chief, Division of Medical Oncology, Department of Medicine, Pittsburgh Cancer Institute, 230 Lothrop Street, Pittsburgh, PA 15213.**

POSTDOCTORAL FELLOWSHIP (2 years) in tumor immunology stressing the development and analysis of human monoclonal antibodies to tumor cell surface antibodies. Research laboratory in new cancer institute, established Department of Medicine, with wide opportunities for interaction with cellular and transplantation immunologists. Send curriculum vitae to: **Dr. J. M. Kirkwood, Chief, Division of Medical Oncology, Department of Medicine, Pittsburgh Cancer Institute, 230 Lothrop Street, Pittsburgh, PA 15213.**

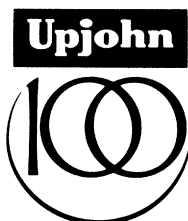


## PROTEIN STRUCTURE

The Upjohn Company, a worldwide producer of pharmaceutical, health care, and agricultural products, has an opening in its Physical and Analytical Chemistry Research Unit for a research associate in macromolecular crystallography. The successful candidate will work closely with crystallographers and biochemists to prepare and evaluate protein and other macromolecular crystals for use in three-dimensional structure determinations. Responsibilities will include development of reproducible crystallization procedures, preparation of heavy atom derivatives, preparation of crystal samples or experiments, and characterization of crystals by X-ray diffraction techniques. In addition, opportunities to participate in all aspects of the structure determination process will be offered. Applicants must have a Bachelors or Masters degree in chemistry, biochemistry or related field. Experience in basic biochemical laboratory techniques, including protein purification and crystallization, is desirable.

Kalamazoo, is a mid-sized Southwestern Michigan community offering an excellent mix of cultural/recreational opportunities including lakes, nearby colleges, and a four-season climate. The Upjohn Company offers an excellent salary, benefits, and relocation plan.

For confidential consideration, please call from outside of Michigan toll free 1-800-253-8600, extension 3-6767; or inside Michigan collect (616) 323-6767 to request a specialized employment application be sent to you immediately. Please refer to Ad Number 19915-B when calling.



A Century of Caring  
1886-1986

An Equal Employment Opportunity Employer M/F

## Neurobiologists

The Worcester Foundation for Experimental Biology has several faculty level openings for Neurobiologists committed to cellular and molecular approaches to understanding the function and organization of the nervous system. Excellent opportunities exist for collaboration with scientists working on membrane organization, ion channel function and regulation, chemoreception, biological rhythms, gene expression, cell-cell interactions, cytoskeleton and motility, developmental biology, and neuroendocrinology. Candidates must be able to develop a strong, independent research program. Excellent facilities, a minimum of non-scientific obligations and a vigorous administrative commitment to quality research all contribute to a supportive environment highly conducive to scientific interactions. The Foundation is situated on a wooded 100 acre campus only a few minutes from the University of Massachusetts Medical Center and in close proximity to all major New England academic and research institutions. Send resume, a statement of research plans and interests and the names of at least three references to the **Neurobiology Recruitment Committee, C/O Personnel Office, Worcester Foundation for Experimental Biology, 222 Maple Avenue, Shrewsbury, MA 01545, USA.**



**WORCESTER  
FOUNDATION FOR  
EXPERIMENTAL  
BIOLOGY**

An Equal Opportunity, Affirmative Action Employer

## Statistics Manager

SmithKline  
Animal Health  
Products has an  
immediate opening in  
its suburban Philadelphia location  
for a Manager of Statistics.

This person will be responsible for overall statistical policy for the Division, as well as for designing, planning and implementing studies, preparing reports including those for regulatory submissions and providing statistical support for Human Safety projects and SmithKline Animal Health worldwide development operations.

We require a Ph.D. in statistics; 5 or more years industrial research experience, demonstrated working knowledge of statistical design and analysis for efficacy, bioequivalence, carcinogenicity and toxicity studies; and the ability to travel 20% of the time. Preferred experience/skills include demonstrated experience with government regulatory agencies, production oriented animal health research, supervisory skills, familiarity with statistical computer packages (SAS, MINITAB) and excellent interpersonal/communication skills.

Our compensation and benefits package, including our relocation package, are geared to today's economy and are among the best in the industry. Investigate our growth and your potential to grow with us by sending your CV and salary requirements, in confidence to Bill Groves, SmithKline Beckman Corporation, 1522 Spring Garden Street, Philadelphia, PA 19101.

We are an equal  
opportunity  
employer.

**SmithKline  
ANIMAL HEALTH  
PRODUCTS**

## POSITIONS OPEN

### FACULTY POSITIONS IN GENETICS

Three tenure-track research and teaching positions will be filled in the Department of Genetics at North Carolina State University. These are 12-month appointments at the ASSISTANT OR ASSOCIATE PROFESSOR level and they will be filled in the following areas:

**ANIMAL DEVELOPMENTAL GENETICS:** Specific area of research is open, but preference will be given to candidates using molecular techniques to investigate problems in development and differentiation with *Caenorhabditis*, *Drosophila*, or the mouse.

**EXPERIMENTAL POPULATION GENETICS:** Specific area of research is open, but preference will be given to individuals using molecular techniques to investigate problems in population genetics and evolution.

Preference is given to individuals with postdoctoral experience. Interested individuals should submit a complete curriculum vitae, three letters of recommendation, reprints of relevant publications, and a cover letter outlining their research interests and teaching experience to:

**Dr. William R. Atchley, Head  
Department of Genetics  
North Carolina State University  
Raleigh, NC 27695-7614  
Telephone: 919-737-2292**

Closing date for applications is 1 November 1986.  
*North Carolina State University is an Equal Opportunity/Affirmative Action Employer.*

### FACULTY POSITIONS IN MOLECULAR BIOLOGY

The Department of Biology at the University of Virginia invites applications from molecular biologists who use modern molecular approaches to study fundamental problems in biology. Two new positions at the assistant or associate professor level are available immediately as part of an expanding program in molecular biology. Exceptional senior investigators also will be considered. Our search will consider candidates in all current areas of molecular biology including protein and nucleic acid interactions, nuclear or cytoplasmic function, and developmental and neuronal regulation. Send résumé, description of research program, summary of teaching interests, and three letters of reference by 15 November 1986 to: **Molecular Biology Search Committee, Department of Biology, University of Virginia, Charlottesville, VA 22901. Equal Opportunity/Affirmative Action Employer.**

### FACULTY POSITIONS DEPARTMENT OF BIOCHEMISTRY AND MOLECULAR BIOLOGY THE UNIVERSITY OF CHICAGO

The Department of Biochemistry and Molecular Biology at The University of Chicago wishes to invite applications and nominations for several tenure-track faculty positions to be filled within the next few years. Three individuals were recruited to the faculty in our 1985 to 1986 search, and we expect that at least two additional positions will be filled during the 1986-1987 academic year. Candidates should have a doctoral degree, significant postdoctoral research experience, a strong record of research accomplishment, and demonstrable potential for the development of an independent research career in an academic setting. We are seeking outstanding individuals with research interests in any area of modern biochemistry and molecular biology, including nucleic acid biochemistry, protein-nucleic acid interactions, DNA replication and transcription, membrane and cell biochemistry, molecular endocrinology, transmembrane signaling, physical biochemistry, structural biology, and molecular structure and dynamics. Applications should include curriculum vitae, a list of publications, a summary of current research activities and future research plans, and the names of at least four individuals from whom letters of reference may be solicited. Please send applications or nominations to:

**Howard S. Tager, Chairman  
Department of Biochemistry and Molecular Biology  
The University of Chicago  
920 East 58 Street  
Chicago, IL 60637**

*The University of Chicago is an Equal Opportunity Employer.*

## POSITIONS OPEN

### FACULTY POSITION IN NEUROBIOLOGY:

Applications are invited for a tenure-track position in the Department of Biology. Ability to develop a viable, independent research program and a commitment to undergraduate and graduate teaching are essential. The candidate is expected to have an active research program in cellular or developmental neurobiology and be able to interact with existing programs in genetic neurobiology, or theoretical approaches to learning and memory or membrane neurobiology. Postdoctoral experience essential. Send curriculum vitae, statement of research interests, copies of pertinent reprints, and names of three referees by 25 October to: **A. E. Linkins, Chairman, Department of Biology, Clarkson University, Potsdam, NY 13676. Clarkson University is an Equal Opportunity Employer.**

The Department of Clinical Sciences, Mississippi State University invites applications for **FACULTY POSITIONS** in (i) anesthesiology, (ii) surgery, small animal, and (iii) internal medicine, small animal. Qualifications include D.V.M. or equivalent degree. Preference will be given to Board-eligible or -certified individuals. An advanced degree and experience in clinical research are desirable. Teaching responsibilities will involve didactic and clinical training for professional students in an innovative academic program. Service responsibilities involve clinical case management and consultation with private practitioners. Participation in the college's research program is available. Salary and rank commensurate with experience and qualifications. Qualified applicants are invited to submit a letter of application, curriculum vitae, and names of three references to: **Dr. Philip Roudebush, Chairman, Department of Clinical Sciences, College of Veterinary Medicine, Mississippi State University, Drawer V, Mississippi State, MS 39762.**

*Mississippi State is an Equal Opportunity/Affirmative Action Employer.*

The Department of Basic and Applied Sciences at Mississippi State University is seeking applications for a **FACULTY POSITION** at the **ASSISTANT OR ASSOCIATE PROFESSOR LEVEL** in veterinary microbiology. Responsibilities include participation in the research program (approximately 50 percent), supervision of the diagnostic microbiology section, and assisting with professional and graduate instruction. Qualifications should include the D.V.M. and/or Ph.D. degrees with work experience in diagnostic bacteriology, mycology, or virology. Preference given to individuals with D.V.M. degree. Teaching and research interests in immunology are desired. To apply, send curriculum vitae and the names of three references to: **Dr. J. V. Kitzman, Chairman, Department of Basic and Applied Sciences, College of Veterinary Medicine, P.O. Drawer V, Mississippi State University, Mississippi State, MS 39762.**

*Mississippi State is an Equal Opportunity/Affirmative Action Employer.*

### FACULTY POSITION IN MOLECULAR PATHOGENICITY

The Department of Medical Microbiology and Immunology at the Albert B. Chandler Medical Center/University of Kentucky invites applications for a tenure-track faculty position at the assistant professor level. We are seeking an individual with research interests in the area of molecular mechanisms of bacterial pathogenesis. The position is a 12-month appointment with a competitive salary and negotiable starting date. Candidates must have relevant postdoctoral training, outstanding research credentials, and an interest in participating in an active graduate teaching and training program. Excellent support for research start-up, technical assistance, and equipment will be provided. The Medical Microbiology and Immunology Department at the University of Kentucky has eighteen faculty members with a strong history of federal funding and administers an NIH Training Grant that can provide support for graduate students and postdoctoral fellows. Interested individuals should apply by sending curriculum vitae, a brief statement describing proposed research, and three letters of reference to: **Dr. Susan C. Straley, Department of Medical Microbiology and Immunology, University of Kentucky College of Medicine, Lexington, KY 40536-0084. The University is an Equal Opportunity/Affirmative Action Employer.**

## POSITIONS OPEN

The University of California, San Diego, Department of Chemistry, invites applications for **FACULTY POSITIONS IN INORGANIC AND ORGANIC CHEMISTRY**. The appointments will be at the assistant professor level (\$29,800 to \$37,200). We are seeking candidates with a Ph.D. and a demonstrated ability for creative research and teaching at the undergraduate and graduate levels. We are more interested in candidates with outstanding research ability than in specific areas within inorganic and organic chemistry. Candidates should send curriculum vitae, a list of publications, reprints of representative papers, a summary of research plans, and names and addresses of three references to: **Chairman, Department of Chemistry, B-032, Attention: Inorganic/Organic Search Committee, University of California, San Diego, La Jolla, CA 92093.** Prompt response is recommended, but all applications received by 15 November 1986 will be given thorough consideration.

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

### FLOW CYTOMETER OPERATOR Life Science Research Assistant II/III Department of Biological Sciences Stanford University

Responsibilities involve highly sophisticated methods development and data interpretation for biological research involving a Coulter EPICS 753 flow cytometer. Duties include the use of independent initiative and theoretical judgment in the choice of appropriate methods and supervision of instrument maintenance. The research assistant will research the development of new techniques and uses of flow cytometry in various areas of the biological sciences, as well as provide instruction on use of the instrument. Serving as a special resource, the research assistant will act as a consultant to investigators in their use of the flow cytometer, supervise and schedule the use of the instrument, and ensure proper collection and handling of the data. Responsibilities also include maintaining a familiarity with current literature, performing literature searches for manuscript preparation, and providing original research contributions.

Candidates should have a masters of science in molecular biology or related field and/or equivalent experience in flow cytometry theory and instrumentation. Individual should have the theoretical knowledge and interpersonal skills necessary for supervising and interacting with a variety of users (graduate students, postdoctoral fellows, and faculty). Candidates should also have organizational and supervisory skills necessary for scheduling users and for supervising the proper maintenance of the instrument.

Applicants should send résumés to: **Dr. Robert T. Schimke, Department of Biological Sciences, Stanford University, Stanford, CA 94305. Stanford University is an Equal Opportunity Employer.**

**GENETICIST, MOLECULAR.** Director of division, associate professor/professor of pediatrics with Board-certification in genetics. The position includes research, teaching, patient care, and participation in service at the St. Louis University School of Medicine. Send curriculum vitae to: **Thomas Aceto, Jr., M.D., 1465 South Grand Boulevard, St. Louis, MO 63104. Equal Opportunity Employer, M/F/H/V.**

### IMMUNOLOGIST

The Department of Microbiology and Immunology, Bowman Gray School of Medicine of Wake Forest University, invites applications for a tenure-track position at the level of assistant professor. Qualified individuals should have a Ph.D. or M.D. and at least 2 years of postdoctoral research experience in immunology. Individuals with research interests in tumor immunology, macrophage activation, or the regulation of IgE synthesis are particularly encouraged to apply. The successful applicant will be expected to establish a strong independent research program and participate in the teaching of graduate and medical students. Candidates are requested to submit curriculum vitae and the names of three references to: **Dr. Steven B. Mizel, Chairman, Department of Microbiology and Immunology, Bowman Gray School of Medicine, Wake Forest University, Winston-Salem, NC 27103. Wake Forest University is an Equal Opportunity/Affirmative Action Employer.**

## FACULTY POSITIONS

The Department of Molecular Genetics and Cell Biology at The University of Chicago is initiating a search for four new faculty interested in parasitology, cell biology, bacteriology, and vertebrate development at the molecular level. We invite applicants for tenure-track positions at all academic levels. The prospective candidates are expected to maintain research emphasis in their respective areas and to participate in the teaching responsibilities of the Department. Interested individuals should submit curriculum vitae, a summary of research plans, and references to:

FACULTY SEARCH COMMITTEE  
Department of Molecular Genetics & Cell Biology

### THE UNIVERSITY OF CHICAGO

920 East 58th Street  
Chicago, IL 60637

*In keeping with its long-standing tradition and policies, The University of Chicago considers all applications for employment on the basis of individual merit and without regard to race, color, religion, sex, sexual orientation, age, national or ethnic origin, handicap, or other factors irrelevant to employment.*

## COMPUTING SUPPORT FOR MOLECULAR BIOLOGY

The Biological Sciences Department of the Monsanto Company has an immediate opening for an individual with strong skills in biological computing applications. The work will involve consultation across the department on problems in DNA and protein sequence analysis, data management, and lab automation. The appointee will have responsibility for maintaining and updating our molecular biology programs and data bases, training users on biological applications, writing documentation and on-line help, and coordinating application development with the MIS Department.

The ideal candidate will be fluent in FORTRAN and C, have extensive working experience in a VAX/VMS environment, and some experience in molecular biology or a related field. Excellent ability in working with people, both novice and expert, is required.

Send resume, three letters of reference, and transcripts to: **John Bussen; MONSANTO COMPANY; BB5B-8; 700 Chesterfield Village Parkway; Chesterfield, MO 63198.** An Equal Opportunity Employer M/F/H/V.

# Monsanto

## FELLOWSHIP IN MOLECULAR EPIDEMIOLOGY

The Laboratory of Biochemical Risk Analysis of the National Institute of Environmental Health Sciences invites applications for a Staff Fellowship position to study interactions of chemicals with nucleic acids following exposure to environmental chemicals. These studies will utilize animal cells and tissues as well as samples from human populations inadvertently exposed to toxic chemicals. Investigations will involve DNA adduct, detection by a variety of methods including post-labelling with <sup>32</sup>P-ATP. Emphasis is placed on dose-response relationship and the generation of biochemical data useful in making species-to-species extrapolation of risk associated with exposure to specific classes of environmental toxicants. The studies involve collaboration with molecular biologists, toxicologists, epidemiologists and mathematicians. The position is available January 1, 1987 and it is located in Research Triangle Park, North Carolina.

Applications are invited from qualified individuals having a Ph.D., M.D. or combined degrees, and pertinent research experience. NIH is an equal opportunity employer, and applications from women and minorities are invited. Interested candidates should submit their Curriculum Vitae to:

**Mrs. Lou Rozier**  
Personnel Office  
National Institute of Environmental  
Health Sciences  
P.O. Box 12233, Mail Drop 1-01  
Research Triangle Park, NC 27709

NIH IS AN EQUAL OPPORTUNITY EMPLOYER

## Senior Scientist

### An Opportunity in Toxicology With a World Class Corporation.

CIBA-GEIGY Pharmaceuticals Division has a distinguished reputation for scientific excellence worldwide. We currently have an excellent opportunity at our Summit, New Jersey location for a qualified individual to join our Toxicology Division as a Study Director.

In this position, you will perform safety evaluations dealing with Reproductive Toxicology. Responsibilities include conducting Segments I, II, III and Multigeneration studies in rats, mice or rabbits, as well as performing visceral and skeletal evaluations on fetal specimens.

To qualify you must possess a Ph.D. or equivalent experience in Toxicology or a closely related discipline. One to three years' postdoctoral experience in Teratology or Reproductive Toxicology is important. Well developed written and verbal skills are essential, as is a working knowledge of GLP regulations.

We offer a competitive salary, comprehensive benefit package and the opportunity to work in an innovative, professional environment. For immediate consideration, please forward your CV with salary history and requirements, in confidence to: Mr. Stephen Mitchell, Dept. 384, The Pharmaceuticals Division, CIBA-GEIGY Corporation, 545 Morris Avenue, Summit, N.J. 07901. We are an equal opportunity employer M/F/H/V.

Progress Through Innovation

# CIBA-GEIGY



**The Howard Hughes Medical Institute  
and  
The National Institutes of Health  
again announce  
The Program for Research Opportunities for  
Medical Students  
1987-88**

HHMI-NIH Research Scholars can spend 9-12 months in one of the 1,000 research laboratories located at the NATIONAL INSTITUTES OF HEALTH, Bethesda, MD.

Salary, fringe benefits and travel will be provided.

**Further information** and application forms may be obtained by writing to the  
Howard Hughes Medical Institute, Research Scholars Program, 9101 Old Georgetown Road, Bethesda, Maryland 20814.

Applications invited from students in all American Medical Schools.

Your request for the application information should be received by December 31, 1986.

Final deadline for return of all application materials is January 15th, 1987.

---

## ENERGY RESEARCH

---

The U.S. Department of Energy offers challenging opportunities for training in energy research and engineering activities.

**At the facilities, DOE provides part-time and sabbatical appointments for university and college faculty research training for Ph.D. and M.S. postgraduates funded thesis and dissertation research and research participation for graduate students internship programs and research participation for graduate and undergraduate students**

Participants come from various academic fields including chemistry, analytical chemistry, engineering, geology, physics, environmental sciences, biology, mathematics, life sciences, and other science and engineering fields.

Participating laboratories  
Oak Ridge National Laboratory  
Oak Ridge Associated Universities  
Atmospheric Turbulence and Diffusion Division  
National Center for Toxicological Research  
Martin Marietta Energy Systems, Inc.  
Morgantown Energy Technology Center  
Pittsburgh Energy Technology Center  
Savannah River Laboratory  
Savannah River Ecology Laboratory  
Other Federal Government Laboratories

Write to  
Laboratory Co-op  
Research Opportunities  
University Programs Division



Oak Ridge  
Associated  
Universities

P.O. Box 117  
Oak Ridge, TN 37831-0117  
or call (615)-576-1083

NOTE: Indicate your  
academic status

This is an equal opportunity program open to all qualified persons without regard to race, sex, creed, color, handicap, or national origin. The program is open to U.S. citizens and permanent resident aliens.

# RESEARCH Opportunities

faculty, students, graduates, postgraduates



## BINATIONAL FELLOWSHIP PROGRAM

UNITED STATES-ISRAEL

BARD—The United States-Israel Agricultural R&D Fund has initiated a postdoctoral fellowship program promoting cooperative agricultural research between postdoctorate fellows from the United States and scientists from Israel and vice versa.

Grant applicants should be citizens of either the United States or Israel, should have fulfilled the requirements for a PhD degree within the last 3 years (postdoctorates) and should have no other sources of support.

Deadline for Applications: December 1st each year.

For information on application procedures please contact **YAIR GURON, EXECUTIVE DIRECTOR** at either:

**BARD**  
**U.S.D.A., BARC-West**  
**Bldg. 005**  
**Beltsville, MD 20705**  
**U.S.A.**  
**Tel: 301-344-2605**

**BARD**  
**POB 6**  
**Bet Dagan**  
**50250**  
**ISRAEL**  
**Tel: 972-3-955133**



### Boston University Faculty Positions in Chemistry

As part of its \$100-million development in science and engineering, Boston University seeks applicants for 6-8 new and replacement chemistry faculty positions, to be filled within the next three years. At least three positions will be filled in September 1987. We have specific needs for assistant professors in inorganic, materials, and synthetic organic chemistry, chemical physics, and, in coordination with the joint Biology-Chemistry-Physics Molecular Biophysics Program, in molecular imaging using state-of-the-art NMR, x-ray scattering, electron and tunneling microscopy, crystallography and molecular modelling. Beyond these specific areas, we welcome highly qualified applicants across all ranks and areas of research. The department is located in a new \$20-million, 6-floor research complex, equipped with modern instrumentation and support facilities, including full machine and electronics shops, 400 MHz NMR, FTIR, Evans & Sutherland molecular modelling system, dedicated departmental VAX (3) and SUN (2) computers, IBM 3090 with vector facility, and convenient access to international communication networks. Aggressive start-up laboratory and equipment allocations will be provided. Send resume and a brief statement of research interests, and have three letters of recommendation sent to:

**Faculty Development Committee**  
**Department of Chemistry**  
**Boston University**  
**590 Commonwealth Avenue**  
**Boston, Massachusetts 02215**

Boston University is an affirmative action/equal opportunity employer.

## Cell Biologist

We're California Biotechnology Inc., a rapidly growing biotechnology and drug delivery company. Currently, we're seeking a Cell Biologist to participate in ongoing research directed toward producing highly modified mammalian expression systems.

The qualified candidate will have a PhD and postdoctoral experience in biochemistry or molecular/cell biology. Research background should include cell biology of protein modification, folding and transport. Experience in the characterization of growth requirements for mammalian cells is desirable.

We offer a stimulating work environment along with a competitive compensation and benefits package. To apply, please send your resume to: Human Resources, Dept. MFTW, California Biotechnology Inc., 2450 Bayshore Parkway, Mountain View, CA 94043. We're an equal opportunity employer.

**CAL  BIO**

## TOXICOLOGIST

The Goodyear Tire & Rubber Company has an immediate opening for a staff toxicologist to join a small health and safety group. Responsibilities include assessing the safety of new and existing chemicals used in manufacturing operations through critical evaluation of scientific literature supplemented by appropriate testing through contract laboratories.

The qualified candidate will possess an MS or PhD degree in Toxicology or related disciplines, with at least one year industrial toxicological experience and a working knowledge of EPA/QECD guidelines and risk assessment procedures.

As well as an excellent position with an industry leader, we offer outstanding benefits, relocation assistance and compensation. If combining versatility with your technical background interests you, we encourage you to forward your resume to:

**T.G. Bettinger**  
**Salaried Personnel Department**  
**THE GOODYEAR TIRE**  
**& RUBBER COMPANY**  
**1144 East Market Street**  
**Akron, Ohio 44316-0001**

An Equal Opportunity Employer, M/F/H/V

**GOOD  YEAR**



## POSITIONS WANTED

### HEAD, LABORATORY OF MOLECULAR BIOLOGY

The Pulmonary Medicine Section, Department of Internal Medicine, is recruiting an individual to be head, Laboratory of Molecular Biology. Applicants should have a Ph.D. in biological sciences and have demonstrated the ability to organize a scientific program. Contact: Stephen I. Rennard, Pulmonary Section, University of Nebraska Medical Center, 42nd and Dewey Avenue, Omaha, NE 68105. The University of Nebraska is an Affirmative Action/Equal Opportunity Employer.

**HUMAN MOLECULAR CYTOGENETICIST:** The Division of Medical Genetics, of Emory University School of Medicine seeks a tenure-track faculty member for the rank of associate or full professor. The candidate will be expected to develop a productive, extramurally funded research program, preferably in the area of human molecular genetics, and supervise a well-established, clinical cytogenetics service. Candidates should send their curriculum vitae, three letters of recommendation, representative reprints, and a synopsis of their current and future research interests to:

Dr. Louis J. Elsas, II  
Director, Division of Medical Genetics  
Emory University  
2040 Ridgewood Drive, Room 13  
Atlanta, GA 30322

Deadline for receipt is 1 December 1986.

### INSECT MOLECULAR BIOLOGIST

The Department of Entomology, University of Illinois at Urbana-Champaign, is seeking an assistant professor (tenure-track), whose major interests are in insect biology and whose research program involves recombinant DNA technology. The position is open to any individual with a Ph.D. degree, and, preferably, some postdoctoral experience, who is doing basic research on insects or insect-borne diseases. Teaching responsibilities will emphasize insect genetics. Salary range is competitive.

Starting date is August 1987. To receive full consideration, applications must be received by 1 December 1986. Send curriculum vitae, reprints, statements of research plans, and names of three references to:

Dr. J. H. Willis  
Chair, Search Committee  
Department of Entomology  
University of Illinois  
320 Morrill Hall  
505 South Goodwin Avenue  
Urbana, Illinois 61801  
Telephone 217-333-2454

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

The Hospital Infections Program, Centers for Disease Control, invites applications for a position as MEDICAL EPIDEMIOLOGIST. Primary responsibilities include conducting a national collaborative surveillance study of *P. cepacia* infections in patients with cystic fibrosis (CF), collating and analyzing the data, and formulating infection control measures from study results. Other responsibilities include epidemiologic and microbiologic investigations in hospitals. Candidates should have: M.D. or equivalent, specialty training in infectious diseases and microbiology, experience in infection control, at least 3 years of experience in medical epidemiology with intensive involvement in infections in CF patients, experience in the design and analysis of epidemiologic studies, and a working knowledge of computers and statistical analysis system. Recent publications should reflect this experience. Salary range is \$37,599 to \$50,354, depending on experience. Applicants should send curriculum vitae and three letters of recommendation to: Louise Griggs, Personnel Management Office, Centers for Disease Control, Atlanta, GA 30333. Technical inquiries should be directed to: Dr. William R. Jarvis, Assistant Chief, Epidemiology Branch, Hospital Infections Program, CDC, Atlanta, GA 30333; telephone: 404-329-3406. CDC is an Equal Opportunity Employer. Applications must be received within 3 weeks of publication of this notice.

## POSITIONS OPEN

Tenure-track position available as of September 1987, for an IMMUNOPARASITOLOGIST or MOLECULAR BIOLOGIST using HELMINTHS as research material and familiar with this group of animals. Duties include teaching an undergraduate course in parasitology and one other cell or invertebrate zoology course per year, and maintaining a vigorous research program, including supervision of graduate students. Salary commensurate with experience. Applicants with postdoctoral experience should send their curriculum vitae, with reprints of representative publications, and a list of at least three referees to: Dr. Christopher Woodcock, Chairman, Parasitology Search Committee, Department of Zoology, Morrill Science Center, University of Massachusetts, Amherst, MA 01003. Deadline for receipt of applications is 31 October 1986. An Affirmative Action/Equal Opportunity Employer.

### MOLECULAR BIOLOGY/BIOTECHNOLOGY

The College of Agricultural and Environmental Sciences, University of California (UC) Davis, is developing a strong program in molecular biology to complement existing strengths in basic biology and agricultural/environmental sciences. The following tenure-track faculty position is available immediately:

**ASSISTANT PROFESSOR/ASSISTANT NEMATOLOGIST.** Eukaryotic molecular biologist/geneticist interactions, host plant resistance and tolerance, organism diagnosis, and enhanced fitness of antagonists. Position has teaching, advising, and research responsibilities. Candidate should have a Ph.D. in an appropriate field. Submit résumé, statement of teaching and research experience, list and reprints of publications, names, and addresses of three persons familiar with applicant's qualifications to: H. K. Kaya, Division of Nematology, University of California, Davis, CA 95616 by 1 October 1986.

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

### NEUROBIOLOGIST

The Department of Anatomy and Cell Biology of the Georgetown University Schools of Medicine and Dentistry has a tenure-track opening for a neurobiologist at the assistant or associate professor level. Research interests should be in the area of cellular/molecular neurobiology. The successful candidate will be expected to pursue a vigorous research program and obtain extramural support. Teaching responsibilities are in medical and dental neuroanatomy. Previous experience in teaching neuroanatomy (lecture and laboratory) is essential. Applicants should submit curriculum vitae, a statement of research interests and future plans, and the names of at least three referees to:

Dr. Arthur N. Popper  
Department of Anatomy and Cell Biology  
Georgetown University, 3900 Reservoir Road, NW  
Washington, DC 20007.

Deadline for applications is 1 December 1986. Georgetown University is an Equal Opportunity/Affirmative Action Employer.

### PEDIATRIC NEPHROLOGY FELLOW DEPARTMENT OF PEDIATRICS CEDARS-SINAI MEDICAL CENTER LOS ANGELES, CA

**PEDIATRIC NEPHROLOGY FELLOW:** Cedars-Sinai Medical Center, a 1015-bed, acute-care, research and teaching hospital affiliated with the University of California, Los Angeles (UCLA) School of Medicine, is seeking candidates for fellowship in pediatric nephrology. The program offers comprehensive training in all aspects of pediatric nephrology, but will give preference to applicants who seek intensive focused training in laboratory investigation leading to a career as an independent clinical investigator. Interested individuals should send their curriculum vitae and three letters of reference to:

Dr. Stanley C. Jordan, Director  
Pediatric Nephrology and  
Transplantation Immunology  
Cedars-Sinai Medical Center  
Room 4310, 8700 Beverly Boulevard  
Los Angeles, CA 90048  
Cedars-Sinai Medical Center is an Equal Opportunity Employer.

## POSITIONS OPEN

### MOLECULAR BIOLOGIST

Southern Research Institute has an immediate position for a Ph.D. molecular biologist to participate in research involving the characterization of gene expression in eukaryotic cells, the regulation of oncogene expression in cells treated with chemical carcinogens, and the molecular genetics of drug resistance in tumor cell populations. Postdoctoral experience in oncogene research desirable.

To apply, send curriculum vitae to:  
Denise Johnson, Personnel Administrator,  
SOUTHERN RESEARCH INSTITUTE  
Personnel Office, Department B-167  
P.O. Box 55305  
Birmingham, AL 35255-5305

An Affirmative Action/Equal Opportunity Employer.

**NUCLEAR MAGNETIC RESONANCE IMAGING (MRI) AND SPECTROSCOPY (MRS) FACILITY** is seeking an individual with a strong background in *in vivo* NMR techniques to join a research group interested in the application of noninvasive, non-destructive techniques to the study of metabolism, ion gradients, transport, and chemical messenger synthesis and release in neural and endocrine models. Instrumentation currently consists of a dedicated 4.7-tesla/33-cm imaging/spectroscopy system with excellent support facilities. Applicant must have an M.D., Ph.D., or both, and several years of experience in NMR. Experience in probe design and development desirable. Qualifications should be appropriate for appointment at the junior faculty level. Send curriculum vitae and names of three references to: Dr. Robert G. Johnson, Jr., M.D., Ph.D., Howard Hughes Medical Institute, University of Pennsylvania, School of Medicine, Johnson Pavilion, Room 360, 36th and Hamilton Walk, Philadelphia, PA 19104.

### PEDIATRIC IMMUNOLOGIST DEPARTMENT OF PEDIATRICS CEDARS-SINAI MEDICAL CENTER LOS ANGELES, CA

**PEDIATRIC IMMUNOLOGIST:** Cedars-Sinai Medical Center, a 1015-bed, acute-care, and research and teaching hospital affiliated with the University of California, Los Angeles (UCLA) School of Medicine, seeks an academically oriented individual to establish and direct the new Pediatric Immunology Division. The successful candidate would be expected to develop productive programs in research, teaching, and clinical services. Interested individuals should send their curriculum vitae and three letters of reference to:

David L. Rimoin, M.D., Ph.D.  
Director, Department of Pediatrics and the  
Medical Genetics-Birth Defects Center  
Cedars-Sinai Medical Center  
Room 4310, 8700 Beverly Boulevard  
Los Angeles, CA 90048

Cedars-Sinai Medical Center is an Equal Opportunity Employer.

**POSTDOCTORAL ASSOCIATE.** Available immediately to study the molecular genetics of the mitochondrial uncoupling protein in mice. Interested candidates should send curriculum vitae and list of three references to: Leslie P. Kozak, Ph.D., Senior Staff Scientist, The Jackson Laboratory, Bar Harbor, ME 04609. Affirmative Action/Equal Opportunity Employer.

**Department of Pharmacology, University of California, San Francisco. POSTDOCTORAL ASSOCIATE** position available immediately to study ion channels in mammalian central neurones with patch clamp methods. Experience in electrophysiology required. Send copy of curriculum vitae, details of research experience, and names of references to: Dr. Jeffrey B. Lansman, Department of Pharmacology, School of Medicine, University of California, San Francisco, CA 94143.

**POSTDOCTORAL BIOCHEMIST**—Available 1 November to study the yeast to hypha transition of *Candida albicans*. Project involves flux and enzymatic analyses, as well as the integration of these data into dynamic (computer) models of this system. Experience with *Candida albicans* preferred. Send résumé and references to: Dr. B. E. Wright, Department of Microbiology, University of Montana, Missoula, MT 59812. Affirmative Action/Equal Opportunity Employer.

## SCIENTIFIC/TECHNICAL VITA BANK

Oak Ridge Associated Universities, a prime contractor of the U.S. Department of Energy and not-for-profit corporation of 49 colleges and universities, is seeking vitae from minority and female technical and scientific personnel. Vitae will be retained for two years and reviewed as openings occur.

ORAU frequently has openings in the following disciplines:

	BS	MS	PhD/MD
Biochemistry	X	X	X
Computer Science	X	X	
Economics		X	X
Health Physics		X	X
Instructional Technology	X	X	
Medical Research			X

Individuals who want to participate in ORAU's minority/female Scientific and Technical Vita Bank program should send vitae to:

Employment Office  
OAK RIDGE ASSOCIATED UNIVERSITIES  
P.O. Box 117  
Oak Ridge, TN 37831-0117

An Equal Opportunity Employer

# Research Opportunities

Syva, a subsidiary of Syntex, is a leader in the medical diagnostics field — developing, manufacturing and marketing tests to diagnose infectious diseases and to detect and quantify clinically significant substances in patients' body fluids.

## Research Manager

You will lead projects to develop new tests to detect infectious organisms. Must have proven leadership skills and at least 5 years' postdoctoral experience in biochemistry, virology or infectious diseases, assay development, agglutination assays and prototype instrumentation.

## Senior Scientist

Join our hybridoma laboratory leading projects with monoclonal antibodies used to investigate new immunodiagnostic assay techniques. Must have PhD, at least 2 years' postdoctoral research experience, hands-on experience with hybridoma technology, and familiarity with immunodiagnostic assays.



Syva offers an attractive salary and benefits package. For consideration, please send your resume to Syva, Professional Staffing, Dept. DP/SCI, P.O. Box 10058, Palo Alto, CA 94303. An equal opportunity employer.

## SHOWA UNIVERSITY RESEARCH INSTITUTE FOR BIOMEDICINE

**TWO ESTABLISHED SCIENTISTS** are sought to serve as program directors in two different areas:

- 1) *Regulation of Gene Expression*: molecular characterization of cis- and trans- effects in the regulation of gene expression, influences of foreign environment (for example in transgenic mice) on specific gene expression, developmental control of gene activation.
- 2) *Molecular Immunogenetics*: identification of regulatory factors that influence specific immune function, structure and characterization of mechanisms that control expression of molecules associated with B and T cell lineages, developmental stage-specific regulation of genes involved with immune function.

Preference will be given to those programs that are directly involved with or seek to resolve basic issues in human disease.

Showa University Research Institute is unique in its affiliation with a major Japanese Medical University. The Institute is based in a new facility with excellent individual laboratory and office space and centralized services. Investigators are allowed complete freedom to pursue research goals and while generous program support is provided, scientists are expected to secure extramural funding. Both postdoctoral and predoctoral opportunities exist. Ranks will be commensurate with experience and research accomplishments. Salary, fringe benefits and start-up support are excellent.

These are senior positions and candidates are requested to submit a brief description of their presently active research and a current research support statement. Send Curriculum Vitae and a list of publications to: **Chairman, Search Committee, Showa University Research Institute for Biomedicine, 10900 Roosevelt Boulevard, St. Petersburg, Florida 33702.**

A not-for-profit organization/equal opportunity employer.

International Technology Corporation, a leader in environmental management services, has career opportunities in our rapidly expanding risk control services group in Knoxville, TN.

## Environmental Health Risk Assessment Scientist

Position requires an M.S. in Environmental Sciences or related field, [Engineering, Health, Chemistry] plus 3-5 years' experience in risk assessment work. Strong analytical skills are required. Project management experience with a background in environmental transport and fate processes, including computer modeling, highly desirable.

## Environmental Project Engineers

Management and mid-level positions available for individuals with a B.S. in Engineering, Chemistry, or Environmental Sciences and a minimum of 3-5 years' experience in hazardous waste management and control problems. Experience in environmental auditing and regulatory compliance in the hazardous waste industry is highly desirable.

International Technology Corporation offers a stimulating professional environment, opportunity for professional growth and a competitive comprehensive package. Qualified candidates should submit a resume stating salary requirement to: **Anthony J. Dury, Ph.D., Director, Corporate Staffing, International Technology Corporation, Dept. SM, 2790 Mossdale Boulevard, Monroeville, PA 15146.** An Equal Opportunity Employer M/F/H/V.



**INTERNATIONAL  
TECHNOLOGY  
CORPORATION**

*Creating a safer tomorrow.*

## RESEARCH MANAGER MARINE GEOLOGY / GEOPHYSICS

The Office of Naval Research is seeking a highly qualified individual to plan and manage a program in marine geology/geophysics. The research sponsored is conducted principally at universities and industrial laboratories. This is a Civil Service position at the GM-13, 14 or 15 level (\$37,599-\$67,940), depending on qualifications.

The incumbent will establish goals for and conceive, organize and direct research and development programs in unexplored areas involving fundamental concepts in the area of marine geology/geophysics. Programmatic objectives include developing a physical understanding of the amplitude and mode of propagation of seismic energy in the ocean bottom as well as the geological structure and properties; determining how sea bed morphology relates to origin and dynamics of sediments and crust; understanding the

processes, mechanisms and statistics of sediment erosion, transportation and deposition and understanding the propagation of electromagnetic signals in and near the seafloor.

Applicants must have (1) a Ph.D. or equivalent in geology, geophysics or a related area (preferably acoustics) and at least one year of professional experience or (2) acquired a minimum of three years of progressively responsible professional experience. Applicants should have significant research and/or management experience in marine geology/geophysics with at least one year of experience comparable in difficulty and responsibility to the next lower level in the Federal Service.

Interested persons should send a resume or Standard Form 171, Application for Federal Employment (available at Federal Job Information Centers or from the address below), to:

*Office of the Chief of Naval Research*  
Civilian Personnel Division, Code 01242P  
Attn: Announcement #86-73 (S)  
800 North Quincy Street  
Arlington, VA 22217-5000



U.S. Citizenship Required

An Equal Opportunity Employer

Applications will be accepted through 31 October 1986 and must be received by that date. Applicants are requested to complete the appropriate supplemental forms. For further information and supplemental forms, please call (202) 696-4705.

U.S. Department of Energy

**FOSSIL ENERGY**

Morgantown Energy Technology Center  
Pittsburgh Energy Technology Center

The DOE Energy Technology Centers offer challenging opportunities for training in fossil energy research and engineering activities.

The programs introduce participants to current technologies, and extensive and modern research facilities.

At the Centers, the U.S. Department of Energy provides part-time and sabbatical appointments for **university and college faculty**

research experience for **Ph.D. and M.S. postgraduates** funded thesis and dissertation research and research participation for **graduate students**

professional internship programs and research participation for **graduate and undergraduate students**

Participants come from various academic fields, including chemistry, analytical chemistry, chemical engineering, geology and other science and engineering fields.

Write to  
Fossil Energy  
Research  
Opportunities  
University Programs  
Division



Oak Ridge  
Associated  
Universities

P.O. Box 117  
Oak Ridge, TN 37831-0117  
or call (615) 576-1090

NOTE: Indicate your academic status.

This is an equal opportunity program open to qualified persons without regard to race, sex, creed, color, handicap, or national origin. The program is open to U.S. citizens and permanent resident aliens.

**RESEARCH  
Opportunities**  
faculty, students, graduates, postgraduates

## Molecular/Cellular Biologist M.S. - Ph.D.

Merck Sharp & Dohme Research Laboratories is currently offering several career opportunities for scientists to join our expanding department of Virus & Cell Biology. These new positions are part of our expanding research efforts in the fields of cancer biology, molecular oncology and mammalian cell transformation. Laboratory studies will include the regulation of oncogene and growth factor expression in mammalian cell culture systems, the enzymatic activities of oncogene products, and the role of growth factors in supporting cancer cell proliferation.

We envision a long term commitment to cancer research and we invite exceptional scientists at the Ph.D. and M.S. levels to join this exciting research program.

An excellent salary and a superb benefits program accompany these positions at our modern research facilities located in a suburban Philadelphia County, Pennsylvania. Reply in confidence to: **Assistant Personnel Manager.**

### Merck Sharp & Dohme Research Laboratories

West Point, PA 19486

EEO/AA/VH/Employer



**Merck & Co., Inc.**

## NATIONAL INSTITUTE OF ALCOHOL ABUSE AND ALCOHOLISM ALCOHOL, DRUG ABUSE, AND MENTAL HEALTH ADMINISTRATION PUBLIC HEALTH SERVICE DEPARTMENT OF HEALTH AND HUMAN SERVICES

The National Institute of Alcohol Abuse and Alcoholism (NIAAA) invites applications and nominations for the position of **Chief, Laboratory of Physiologic and Pharmacologic Studies (LPPS), Division of Intramural Clinical and Biological Research.** The Chief, LPPS, will conduct his or her own research studies and provide direction and supervision to investigators studying the physiologic, pharmacologic, pathologic and behavioral correlates on alcohol and related drug ingestion. The Chief also serves as the focal point in the Federal sector, the scientific community and the public for these activities.

This position can be filled by a biologist, chemist, immunologist, pharmacologist, physician or neurophysiologist. It is a Civil Service position at the Grade 15 level with a salary range of from \$52,262 to \$67,939 a year (for physicians \$68,700). Physicians may also be eligible for Physician's Comparability Allowance up to \$10,000 a year.

Candidates must meet educational and experience requirements as defined by the U.S. Office of Personnel Management. Further information about this position and qualification requirements may be obtained by contacting Ms. Kathleen Hanratty at (301) 443-5407. An Application for Federal Employment (SF-171), accompanied by a curriculum vitae and bibliography should be submitted to:

**Ms. Kathleen Hanratty**  
Division of Intramural Clinical and Biological Research  
National Institutes of Health—Building 10, Room 3C103  
9000 Rockville Pike  
Bethesda, Maryland 20892

*Applications must be postmarked no later than October 31, 1986.  
U.S. Citizenship Required.  
NIAAA is an Equal Employment Opportunity Employer.*



**Murdoch  
University**

PERTH  
WESTERN AUSTRALIA

## CHAIR IN BIOTECHNOLOGY

### SCHOOL OF ENVIRONMENTAL AND LIFE SCIENCES

Applications are invited for appointment to the Foundation Chair in Biotechnology, funded jointly by the Western Australian State Government and Murdoch University.

Murdoch University is introducing a degree in Biotechnology, and the first students will be admitted in 1987 to a three-year programme with the option of a fourth, Honours year. The biotechnology programme will cover molecular and cell biology, fermentation, engineering, process chemistry and business practice.

Existing research areas in biotechnology at Murdoch University include plant cloning, algal biotechnology, monoclonal antibody production, ethanol fermentation processes and the development of animal vaccines.

This will be the sixth Professorial appointment in the School which has a strong commitment to research and has attracted substantial funds from government bodies and industry. The Professor will be expected to play a major part in the development of the new programme, to provide leadership in research, and to develop strong links with the biotechnology industry in Western Australia and elsewhere. Applicants from any area of biotechnology are invited to apply, especially those with strength in areas relevant to genetic engineering and its applications.

#### SALARY

\$A58,348 per annum.

Conditions of appointment include superannuation, long service leave, access to outside studies programmes, payment of fares to Perth for appointee and dependent family, removal and settling-in allowances.

#### PROCEDURE FOR APPLICATION

A statement of further information and the conditions of appointment are available from:

**The Personnel Officer**

**Murdoch University**

**MURDOCH WESTERN AUSTRALIA 6150**

with whom detailed applications including a curriculum vitae and the names and addresses of three referees will close on 15 November 1986.

Applicants resident in the United Kingdom, Europe or Africa, may obtain supporting statements from and should lodge one copy of any application with:

**The Secretary General**

**Association of Commonwealth Universities**

**36 Gordon Square**

**LONDON WC1H 0PF UNITED KINGDOM**

## RESEARCH TRIANGLE UNIVERSITIES PLANT MOLECULAR BIOLOGY Graduate and Postdoctoral Fellowships

Duke University, North Carolina State University at Raleigh, and the University of North Carolina at Chapel Hill together with the North Carolina Biotechnology Center have formed a Consortium to advance studies in plant molecular biology. With support from CIBA-GEIGY, R.J. Reynolds Industries, and the Biotechnology Center, the Consortium will provide a limited number of graduate and postdoctoral fellowships in 1987 for study and research in plant molecular biology at the three Triangle universities. Candidates must be U.S. citizens. Each fellow must be based in a plant molecular biology laboratory at one of the universities, but will participate in activities involving faculty and students at all institutions. The goal of the Consortium is to enhance the community of plant molecular biologists among universities and participating companies. Graduate and postdoctoral fellows appointed in 1984, 1985, and 1986 are already in place.

The graduate student stipend is \$10,000 plus tuition, with an allowance for supplies and travel. The award is renewable for an additional two years. The postdoctoral stipend is \$21,500, subject to university policies, with an allowance for supplies and travel, renewable for an additional year.

Predocoral candidates must apply directly to the departments and graduate schools of their choice; and must notify them of their interest in the Plant Molecular Biology Program. The student must send a copy of his/her application to the North Carolina Biotechnology Center and include: (1) a brief statement of research and career interests; (2) the departments of NC universities receiving applications; (3) transcripts and GRE scores; and (4) three letters of reference. For 3 and 4, a copy of a letter in which he or she requests the appropriate university to send these materials directly to the North Carolina Biotechnology Center is acceptable. Acceptance at one or more of the three universities is a prerequisite of the Fellowship Program.

Postdoctoral applications must be submitted by February 1 and should follow the format of NIH postdoctoral applications, complete with detailed research plan, and three letters of reference. Postdoctoral candidates must identify a suitable faculty sponsor at one of the three universities and develop a mutually acceptable research program with that sponsor. The applicant is responsible for the sponsor's submission of a statement to the North Carolina Biotechnology Center of what the sponsor will commit to the program. All materials must be received at the North Carolina Biotechnology Center by February 1, 1987. Award announcements will be made by March 15, 1987.



**NORTH CAROLINA  
BIOTECHNOLOGY CENTER**

Box 13547 • RESEARCH TRIANGLE PARK, NC • 27709

## POSITIONS OPEN

**POSTDOCTORAL OR RESEARCH ASSISTANT PROFESSOR**—3 years of NIH support for study of development and plasticity in the trigeminal system. Will use intracellular recording and HRP labeling techniques, as well as computer-assisted image analysis. Available immediately. Salary and rank commensurate with experience. Send curriculum vitae and names of three references to: **Dr. Mark Jacquin, Department of Neuroscience, New York College of Osteopathic Medicine, Old Westbury, NY 11568.**

**POSTDOCTORAL/RESEARCH ASSOCIATE IN NEUROIMMUNOLOGY** is available to study the immunological mechanism of viral and autoimmune diseases of the CNS. Candidates should have experience in immunological techniques such as T-cell and B-cell cloning and a background in recombinant DNA techniques. Send curriculum vitae and three references to: **Dr. S. Sriram, Department of Neurology, C450 Given Building, University of Vermont College of Medicine, Burlington, VT 05401. The University of Vermont is an Equal Opportunity/Affirmative Action Employer. Women and minorities are encouraged to apply.**

### POSTDOCTORAL POSITION BIOLOGICAL INDICATORS OF MARINE POLLUTION PUGET SOUND INSTITUTE UNIVERSITY OF WASHINGTON

**Research Associate (postdoctoral) position** in marine toxicology. Person will work with scientists at the U.S. Environmental Protection Agency's Manchester, Washington, laboratory on the development of biological relationships to marine chemical contamination. Term of appointment is 1 year, with the option to renew for a second year. Starting date is January 1987 or later. Send curriculum vitae and a list of three references to: **Marsha L. Landolt, Puget Sound Institute, HA-40, University of Washington, Seattle, WA 98195. Closing date: 30 November 1986.**

*An Equal Opportunity/Affirmative Action Employer*

**VIRUS CRYSTALLOGRAPHY.** We have **Two Openings at the POSTDOCTORAL LEVEL** to join our group studying the high resolution structure of polio and related viruses. In addition to continuing characterization of the recently solved structure of the Mahoney strain of type 1 poliovirus, we have initiated crystallographic studies of the Sabin (attenuated vaccine) strains of type 1 and type 3 poliovirus, the Lansing (mouse-adapted) strain of type 2 poliovirus, and of Theiler's murine encephalomyelitis virus, and have begun characterizing assembly intermediates and altered conformational states of poliovirus. Applicants with experience in macromolecular crystallography or in a relevant field of virology are encouraged to apply. Applicants should send curriculum vitae and names of three references to: **Dr. James Hogle, Department of Molecular Biology, Research Institute of Scripps Clinic, 10666 North Torrey Pines Road, La Jolla, CA 92037.**

**POSTDOCTORAL POSITION** now available in plant molecular biology to study organization, sequence, regulation, and evolution of genes encoding glycolytic enzymes. The system is described in [*Genetics* 113, 101 (1986)]. Appropriate laboratory experience essential. Previous work with plants not required. Position funded by U.S. Department of Agriculture Competitive Grants/Plant Molecular Biology. Send curriculum vitae and names of three references to: **Dr. L. D. Gottlieb, Department of Genetics, University of California, Davis, CA 95616. An Equal Opportunity/Affirmative Action Employer.**

**A POSTDOCTORAL POSITION** is available immediately for recent Ph.D. to participate in studies on enzyme specificity and regulation. Research methods in this laboratory include: kinetics, structural analysis, site-directed mutagenesis, stable isotopic probes of enzyme-substrate complexes, and NMR and EPR techniques. Candidates should have background in molecular enzymology and protein chemistry. Experience in synthesis and magnetic resonance techniques is desirable. Send résumé and three references to: **Dr. L. C. Kuo, Department of Chemistry, Boston University, 590 Commonwealth Avenue, Boston, MA 02215.**

## POSITIONS OPEN

### POSTDOCTORAL POSITIONS

**MOLECULAR BASIS OF CELL MOTILITY.** Areas currently under study include structure/function relationships in nonmuscle myosins, regulatory role of myosin phosphorylation in enzymatic activity and filament formation, in situ functions of myosin isozymes, molecular biology of myosin isozymes, mechanism of actin polymerization, and the regulatory functions of actin-binding proteins. Experience in protein chemistry or enzymology preferred. Salary will range from \$19,000 to \$22,000 per annum. Send curriculum vitae and three letters of references to: **Dr. Edward D. Korn, Laboratory of Cell Biology, National Heart, Lung, and Blood Institute, NIH, PHS, DHHS, Building 3, Room B1-22, Bethesda, MD 20892.**

*NIH Is An Equal Opportunity Employer*

### POSTDOCTORAL POSITION MOLECULAR VIROLOGY (Search Reopened)

A position is available to study the molecular biology of flaviviruses (plus-stranded RNA genome) that cause Japanese encephalitis and dengue fever, both substantial problems in world health. This program, co-directed by **Drs. M. J. Fournier and T. L. Mason**, utilizes cloned cDNA and monoclonal antibodies to study different aspects of virus gene expression and replication. Development of genetically engineered vaccines and diagnostic reagents are also major goals. Current emphasis is on cDNA expression from prokaryotic, eukaryotic and viral vectors, epitope mapping and in vitro and in vivo evaluation of vaccine-candidate proteins. Future phases will include studies of polyprotein maturation, RNA replication, and virus assembly. Experience with relevant methodologies preferred. Salary up to \$25,000, depending on qualifications. Application deadline: 1 November 1986. Send résumé and names of three references to: **Dr. M. J. Fournier or Dr. T. L. Mason, Department of Biochemistry, University of Massachusetts, Amherst, MA 01003. An Affirmative Action/Equal Opportunity Employer.**

### POSTDOCTORAL POSITION

Available immediately for molecular biologist with experience/interest in cellular immunology or regulation of hemopoiesis to join program of marrow transplantation and transplantation biology. Will also interface with active histocompatibility research group. Send curriculum vitae and names of three references to: **H. Joachim Deeg, M.D., Bone Marrow Transplantation Program, V. T. Lombardi Cancer Research Center, Georgetown University, 3800 Reservoir Road NW, Washington, DC 20007.**

**TWO POSTDOCTORAL POSITIONS** available for research on molecular mechanisms of spontaneous and carcinogen-induced mutations using purified replication proteins in vitro. A Ph.D. in biochemistry, genetics, or molecular biology required. Prior experience in enzymology and nucleic acid biochemistry useful. Send application and three letters of recommendation to: **Dr. Navin Sinha, Waksman Institute of Microbiology, Rutgers, The State University of New Jersey, P.O. Box 759, Piscataway, NJ 08854.**

*Equal Opportunity/Affirmative Action Employer.*

**POSTDOCTORAL POSITION IN IMMUNOLOGY** to study the development and composition of the T-cell receptor repertoire and the basis for determinant recognition by T cells. Candidates should be recent Ph.D.'s with experience in one or more of the following: cellular immunology, molecular biology, and immunochimistry. Send curriculum vitae and three letters of reference to: **Dr. Linda Sherman, IMM-16, Research Institute of Scripps Clinic, 10666 North Torrey Pines Road, La Jolla, CA 92037.**

**POSTDOCTORAL RESEARCH** at The National Center For Toxicological Research. NCTR's research mission is to study the biological effects of potentially toxic chemicals. Doctoral degree within last 3 years preferred. Stipend is \$23,000 to \$30,000, depending on research area and experience. Contact: **ORAU Postgraduate Program at NCTR, University Programs Division, Oak Ridge Associated Universities, P.O. Box 117, Oak Ridge, TN 37831; telephone 615-576-3190. Equal Opportunity Program open to U.S. citizens or PRA.**

## POSITIONS OPEN

**POSTDOCTORAL RESEARCH ASSOCIATES**, (two) available for studies of (i) insect cuticle structure and chitin metabolism, and (ii) molting enzyme gene structure and regulation. Experience in molecular biology, protein, nucleic acid or carbohydrate chemistry, or enzymology desirable. Salary: \$18,000 to \$20,000 per year. Send résumé and three or four letters of references to: **Karl J. Kramer, Department of Biochemistry, Kansas State University, Manhattan, KS 66506. An Affirmative Action/Equal Opportunity Employer.**

Department of Biology  
University of Puerto Rico  
Rio Piedras, Puerto Rico 00931

**George V. Hillyer, Ph.D. Telephone: 809-764-0000**  
Professor and Chairman Extension 2569, 2596

**The Parasitic Diseases Research Program of Puerto Rico at the Department of Biology, University of Puerto Rico, Río Piedras Campus is seeking TWO POSTDOCTORAL RESEARCH ASSOCIATES** for investigations involving the application of molecular genetics and basic immunology to immunity and immunodiagnosis of schistosomiasis and fascioliasis. Preference will be given to those candidates with strong credentials for, and commitment to, developing an independent research program. For one of the postdoctoral positions experience in molecular cloning is an absolute requirement. The appointments will be for 1 year, with renewal option for 1 or more years, depending on progress. Interested individuals should send curriculum vitae and a letter stating past, present, and future research interests, and have three letters of recommendation transmitted to: **George V. Hillyer, Professor and Chairman, Department of Biology, University of Puerto Rico, Río Piedras, PR 00931.**

### RADIATION BIOLOGY FACULTY

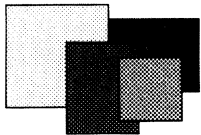
**The Department of Radiation Oncology of the University of Michigan** invites applications for a tenure-track faculty position in cellular radiation biology. Candidates must have a Ph.D. degree in radiation biology or a related field and must have demonstrated potential for independent radiobiology research. Experience in the field of radiosensitizers, especially with halogenated pyrimidines, is highly desirable. The position involves collaboration with cell biologists and clinical pharmacologists, as well as radiation oncologists and physicists on a multidisciplinary approach directed towards increasing the clinical radiosensitivity of tumors. The department currently has ten faculty, three of whom are full-time laboratory researchers. Clinical activity is housed in 24,000-square-foot department in the new university hospital. Renovations are under way to convert the former clinical facility into approximately 9000 square feet of new laboratory space. Applicants should send their curriculum vitae, a letter summarizing their research experience and interest, and the names of three references to: **Dr. Allen S. Lichter, Chairman, Department of Radiation Oncology, University of Michigan Medical Center, AGH-B2C490 Box 0010, Ann Arbor, MI 48109. University of Michigan is an Equal Opportunity Employer.**

### REGULATORY AFFAIRS SPECIALIST

**The New York Blood Center's (NYBCN) Blood Derivatives Program** is seeking a highly qualified person to maintain effective liaison between the NYBCN Plasma Laboratories and federal, state, local, and foreign regulatory authorities. A bachelor's degree in a chemical or biological science is required. An advanced degree will be considered as an additional qualification. Excellent written and oral communication skills, including computer literacy, are essential. Knowledge of the code of federal regulations for biologics, current good manufacturing practices regulations, and good laboratory practices regulations is necessary. Experience in the biologics or pharmaceutical industries is required. Regulatory affairs experience is preferred.

**The New York Blood Center**, a not-for-profit institution, is a leading manufacturer of human plasma derivatives at its Melville, Long Island, facility. Excellent salary and benefits are offered. Applicant should send curriculum vitae, including salary history, and names of three references to: **Department of Human Resources, The New York Blood Center, 155 Duryea Road, Melville, NY 11747. Equal Opportunity/Affirmative Action Employer.**





**More  
Than A  
Step Ahead**

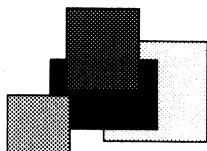
## **Research Scientist Wound Healing**

A move to Collagen Corporation is more than a step forward in your career. It's a step into the future of biotechnology. With the successful research, production and marketing of Zyderm®I and Zyderm®II Collagen Implants, Zyplast® Implant and Keragen™ Implant, we are now leading the way to new applications in the areas of dentistry, otolaryngology and orthopedics. If you're looking for a progressive, high-energy environment where creativity counts, join the innovators — at Collagen Corporation.

We are currently recruiting for a Research Scientist (PhD plus a minimum of 2-5 years' experience) to become a member of our dermal wound healing research team. The successful candidate will be responsible for extending our research efforts in the correlation of *in vitro* and *in vivo* activities of certain biologically active peptides (e.g., growth factors). Our final objective is to use these biologically active peptides therapeutically to promote wound healing in certain clinical applications. This position requires graduate or post-doctoral experience in growth factor biochemistry and/or cell biology.

Collagen Corporation offers excellent growth potential and attractive salaries and benefits. To apply, please send your resume to: M. Ruselink, Human Resources, Collagen Corporation, 2500 Faber Place, Palo Alto, CA 94303. We are an equal opportunity employer.

**Collagen  
Corporation**



# **KENDALL:**

## **We've Got It Down To a Science.**

The Kendall Company, the largest subsidiary of Colgate-Palmolive, created its Lexington, Massachusetts Laboratory in 1949 to explore new concepts and new technological areas in a radical, long-range, venturesome manner. Our success in reaching this goal has been extraordinary and the advances initiated by the Laboratory have made significant contributions to the fields of polymer science, adhesives and adhesion.

Ours is a dynamic environment where outstanding professionals in a wide variety of scientific and technical disciplines work closely together to create a better future for Kendall, for the medical and industrial areas they deal with, and for themselves. Appropriately, their efforts take place in a historic Lexington, Massachusetts setting, birthplace of the American Revolution, major focal point of the high tech revolution, and an area unsurpassed for its quality of life.

The research we have planned for the future demands that we attract and retain the best R&D Professionals today. That's why we invite you to join us in one of the following positions.

## **ADHESIVE CHEMIST**

You will put your technical expertise and experience to their optimum use to assist in the development, processing and testing of rubber-based adhesives for use in anti-corrosion systems. To qualify, you must have an advanced degree in Polymer Science or equivalent experience in rubber based adhesive development.

## **POLYMER CHEMIST**

Here is an excellent opportunity to make a significant contribution to a wide variety of projects and products. You will be involved in the chemical and physical characterization of polymers to support the product development, manufacturing, and marketing activities related to Kendall's industrial and medical adhesive tapes. To qualify, you must have an advanced degree in Polymer Chemistry or its equivalent.

## **ORGANIC CHEMIST**

Yours are the innovations that will impact new industrial products. You will assist in the development of light-curable adhesives and coatings. Specifically, you will set up test programs, formulate new materials, and investigate structure/property relationships. To qualify, you must have a minimum of a BS in Organic Chemistry or a related field, plus R&D laboratory experience.

## **RESEARCH CHEMIST**

Our plans for future product developments are ambitious, so we'll depend heavily on your expertise and experience to make them a reality. And we'll support your important efforts with all the resources at our disposal. You will be responsible for applied research and development of new products for use in the medical and consumer markets. To qualify, you must have an MS or PhD in Chemistry or Chemical Engineering, plus significant experience in pressure-sensitive adhesives and/or controlled release technology.

**Kendall offers competitive salaries and an extensive benefits program. Interested and qualified candidates should send their resume to Charles Rose, The Kendall Company, 17 Hartwell Ave., Lexington, MA 02173.**

# **KENDALL**

a subsidiary of Colgate-Palmolive Company

An Equal Opportunity Employer M/F

## POSITIONS OPEN

### POSTDOCTORAL-RESEARCH ASSOCIATE POSITIONS

Available now to investigate mechanisms of regulation of lipoprotein lipase and hepatic lipase protein synthesis and catalytic activities. Cell culture (liver, adipocyte, and endothelial), molecular biology, immunochemical (monoclonal antibodies), and recombinant DNA technique approaches are employed. Applicants should have training in biochemistry or molecular biology. Experience with recombinant DNA desirable. Send résumé and names of three references to: **Dr. André Bensadoun, Division of Biological Sciences and Nutritional Biochemistry, 1422 Savage Hall, Cornell University, Ithaca, NY 14853.**

**POSTDOCTORAL RESEARCH ASSOCIATE, BROOKHAVEN NATIONAL LABORATORY.** Position available to study the role and location of histone H1/H5 in chromatin higher order structure. Work will involve expression of cloned histone, reconstitution, and structural studies. Brookhaven has excellent facilities for structural work, including instruments for STEM (scanning transmission electron microscopy) and x-ray and neutron scattering.

Applicants should submit curriculum vitae and names of three references to: **Dr. V. Ramakrishnan, Biology Department, Brookhaven National Laboratory, Associated Universities, Inc., Upton, L.I., NY 11973. Equal Opportunity Employer, M/F.**

### RESEARCH ASSISTANT MOLECULAR BIOLOGY

The Department of Obstetrics and Gynecology at Rush-Presbyterian-St. Luke's Medical Center has a postdoctoral position available immediately for an individual to investigate the human papillomavirus replication and expression in human cancers. A Ph.D. in molecular biology or virology is required. Previous experience in tissue culturing methods is highly desired. Send curriculum vitae, names of three references, and a brief statement of professional goals to: **Dr. George Willbanks, Professor and Chairman, Department of Obstetrics and Gynecology, Rush University, 600 South Paulina, Chicago, IL 60612. Equal Opportunity Employer, M/F.**

**RESEARCH ASSOCIATE.** Position available under 3-year NIH-sponsored research program investigating molecular basis of attenuation of human hepatitis A virus. Ph.D. or equivalent, with experience in molecular biology. Experience in cDNA cloning, DNA transfection assays, and/or DNA sequencing would be helpful. Salary range: \$19,000 to \$23,000 per year. Respond by 10 October to: **S. M. Lemon, M.D., Division of Infectious Diseases, 547 Burnett-Womack Building, University of North Carolina, School of Medicine, Chapel Hill, NC 27514. Telephone: 919-966-2536.** Include curriculum vitae and names of three references. *UNC-CH is an Equal Opportunity/Affirmative Action Employer.*

**RESEARCH ASSOCIATE AND POSTDOCTORAL FELLOW** with training in cell biology and biochemistry are invited to join a laboratory with a research focus on the biology of endothelial cells. Successful candidates will work on projects related to reciprocal cytoskeletal modulation of the arachidonic acid cascade and autocrine induced metabolic regulation of junctional permeability. Candidates must have experience with tissue culture. Research experience with phospholipid chemistry, protein isolation, or immunological procedures is desirable. Positions are immediately available with appointments for 2 years or longer. Recommendations and résumé should be sent to: **Dr. David Shepro, MICROVASCULAR RESEARCH, 2 Cummington Street, Boston University Biological Science Center, Boston, MA 02215.**

**RESEARCH BIOCHEMIST.** A Johns Hopkins School of Medicine appointment is available for a qualified Ph.D. biochemist interested in collaborating in research on gallstone pathogenesis and prevention. A background in related research is preferred, but not required. Applicants are requested to send their curriculum vitae to: **Dr. Henry A. Pitt, Vice-Chairman, Department of Surgery, Blalock 688, Johns Hopkins Hospital, 600 North Wolfe Street, Baltimore, MD 21205.**

## POSITIONS OPEN

**RESEARCH ASSISTANT PROFESSOR**—Research position for M.D. and/or Ph.D. with 2 to 3 years of postdoctoral experience with human brain tumor or neuroblastoma cells. Evidence of an ability to perform independent research is essential. Salary commensurate with qualifications. Write and send curriculum vitae: **Dr. R. S. Ertinger, Children's Cancer Research Laboratory, Division of Pediatric Hematology/Oncology, Department of Pediatrics, University of South Carolina (USC) School of Medicine, Columbia, SC 29203; telephone: 803-765-6484. Affirmative Action/Equal Opportunity Employer.**

**RESEARCH BIOCHEMIST/MOLECULAR BIOLOGIST.** Assistant research biochemist position available at the Cancer Center, University of California, San Diego (UCSD), to study mechanisms of resistance to cancer drugs. Appointee must have Ph.D. in a basic biological discipline, and experience with molecular biological techniques; must have record of research productivity. Salary related to rank and step of appointment within the established salary schedule of the Cancer Center, UCSD School of Medicine. Reply by 10 October 1986 to: **Stephen B. Howell, M.D., Department of Medicine, T-012, University of California, San Diego, La Jolla, CA 92093. The University of California, San Diego, is an Equal Opportunity/Affirmative Action Employer.**

**RESEARCH FELLOW:** Using GC, HPLC, and chemical transformation, mass spectroscopy, microbiological methods, and sterile techniques, engages in receptor-binding studies. Changes receptor chemically and follows binding patterns of various mutant viruses. Requirements: Ph.D. in microbiology or organic chemical, plus 1 year of experience on the job. Salary \$24,000 per year, D.O.T. 041.061.058. Send résumés to: **New York State Job Service, JO number NY8007311, 175 Remsen Street, second floor, Brooklyn, NY 11201.**

**RESEARCH FELLOW/ASSOCIATE.** Openings are available for research on molecular aspects of muscle contraction and regulation. Applicants should have a good background in one or more of the following areas: protein chemistry, physical chemistry, cell biology, electron spin/nuclear magnetic resonance, molecular genetics, and muscle physiology. Send curriculum vitae and names of referees to: **Dr. J. Gergely, Department of Muscle Research, Boston Biochemical Research Institute, 20 Staniford Street, Boston, MA 02114. Stipend/salary range \$17,000 to \$30,000. We are an Affirmative Action/Equal Opportunity Employer.**

**SCIENCE AND SOCIETY/HISTORY OF SCIENCE** to teach at Sarah Lawrence College from September 1987. Candidate should have expertise in political, economic, and social issues arising out of developments in modern science and technology, and ability and interest in developing a teaching program to deal with those issues in an undergraduate environment. Requirements: successful teaching experience, strong commitment to undergraduate teaching, and Ph.D. or equivalent commitment to scholarship. At Sarah Lawrence, a small liberal arts college near New York City, faculty teach in seminar classes and individual tutorials. One- or three-year, full-time appointment. Send curriculum vitae, references, outlines of two proposed courses with reading lists, and description of research interests to: **Science and Society Search Committee, c/o Janet Held, Sarah Lawrence College, Bronxville, NY 10708; deadline 15 November 1986. Equal Opportunity Employer.**

**SCIENTIST/TOXICOLOGIST.** Applicants must have Ph.D. in medical sciences/toxicology with 5 years of related experience in animal research. This contract laboratory position is responsible for designing protocols in compliance with regulations of U.S. and foreign agencies to determine toxicological effects of drugs, chemicals, and so forth, and preparation of comprehensive final reports regarding toxicological and carcinogenic findings. Expertise in TEM and SEM and computerized on-line literature searches using MEDLARS system is required. Full-time; some weekends; salary \$27,040. Job location: Rockville, MD. Mail résumé and copy of ad to: **Department of Employment and Training, 1123 North Eutaw Street, Room number 201-B, Baltimore, MD 21201. Job Order number 6018144.**

## POSITIONS OPEN

**RESEARCH SCIENTIST**—Research position to manage warmwater finfish project. Conduct applied research leading to commercial development. Ph.D. in fisheries science, oceanography, zoology, or related field. Prerequisite: demonstrated management and research experience in reproductive physiology or larval rearing. Mail résumé, applicable reprints, and statement of aquacultural accomplishments together with salary requirements and names, addresses, and telephone numbers of three references to: **O. I. Consultants, Inc., Makapuu Point, Waimanalo, HI 96795. Closing date 30 September 1986.**

### SENIOR RESEARCH SCIENTIST, Ph.D.

Position available immediately for senior research scientist in cardiovascular research. Primary responsibilities will be to provide research expertise and guidance to a research group working on cardiopulmonary research projects and to outline and write grant proposals. Time will be made available for work on independent research projects. Experience in areas of cardiovascular physiology and pathology is required. Please send curriculum vitae and three references to: **Lorenzo Gonzalez-Lavin, Director, DEBORAH RESEARCH INSTITUTE, Trenton Road, Browns Mills, NJ 08015. Equal Opportunity Employer.**

**STAFF SCIENTIST POSITIONS OPEN FOR NEW RESEARCH INSTITUTE.** The Biomembrane Institute of Seattle, Washington, will begin research operations in early 1987. The new facility will focus on the molecular biology and immunology of cell surface membranes and glycoconjugates. The following positions are open: (i) Synthetic organic chemists interested or experienced in the synthesis of complex carbohydrates. (ii) Molecular biologists interested in genetic engineering of immunoglobulins, pericellular molecules, and glycosyltransferases. (iii) A developmental biologist and/or cell biologist interested in cell surface glycoconjugates. Send curriculum vitae, publications list, and references to: **RECRUITMENT, P.O. Box 12344, Seattle, WA 98111. No telephone calls will be accepted.**

## CAL POLY

SAN LUIS OBISPO

### VICE PRESIDENT FOR ACADEMIC AFFAIRS AND SENIOR VICE PRESIDENT

Chief academic officer of the university and acting president in the absence of the president.

**Requirements:** doctorate; 5 years of full-time university teaching experience; 5 years of academic administrative experience. Closing date: 1 December 1986, or until filled. Applications/nominations/inquiries should be addressed to:

**Warren J. Baker, President**  
California Polytechnic State University  
San Luis Obispo, California 93407  
Telephone: 805-546-2111  
*Affirmative Action/Equal Opportunity Employer*

## COURSE

### MOLECULAR ENDOCRINOLOGY AND TECHNIQUES FOR HORMONE ACTION

22 to 27 February 1987

This course will consist of lectures in methodology with comprehensive syllabus covering receptors, gene transcription, mRNA and protein synthesis, recombinant DNA, protein hormones, and cyclic nucleotides.

Co-directors: **W. T. Schrader and B. W. O'Malley**  
Fee: \$365 (\$245, fellow)

For further information, contact:

**Bonnie Cuthbert**  
Department of Cell Biology  
Baylor College of Medicine  
Houston, TX 77030  
713-799-6200

DEADLINE—30 January 1987

# BIOLOGIST

W.R. Grace & Co., the world's largest specialty chemical company, has an opening for a Biologist at its central Research Division in Columbia, Maryland. You will be responsible for:

- Establishing and analyzing experimental cultures in suspension, on tissue culture plastic, micro-carriers, membranes, ceramics and hollow fibers.
- Maintenance of mammalian cell cultures including preparation of sterile equipment, media, purified proteins, & pseudo-basement membranes. Serial propagation of laboratory cell stocks along with cryopreservation and cataloging of cell lines is also expected.
- General and project related chromatography, PAGE, ELISA, HPLC, AA analysis, RIA, RRA, and other analyses.

To qualify for the above position, you must have:

- A Bachelor's Degree in a relevant discipline and 2

years experience in cell culture projects. Experience in designing experimental protocols and analyzing results is highly desirable.

- A working knowledge of the biochemical processes of cellular physiology and experience characterizing mammalian cellular metabolism.

We can offer you a competitive salary and an outstanding benefits program. Our research facility is located in the picturesque, planned suburban community of Columbia, Maryland, midway between Baltimore and Washington, D.C. If you are interested in a rewarding and growth-oriented career, please send your confidential resume and salary requirements to:

Manager, Employment  
Department JJ

## W.R. GRACE & CO.

Washington Research Center  
7379 Route 32  
Columbia, Maryland 21044

One step ahead of a  
changing world

# GRACE

An equal opportunity  
employer M/F/H/V

chemicals • natural resources • consumer products

## Biosensor Breakthrough

Molecular Devices Corporation patented revolutionary silicon sensor technology this May. Our proprietary approach allows on-site analyses of ions, enzymes, drugs, proteins, and bacteria on the same sensor within minutes.

Imagine the potential applications in medicine and research.

**PhD Immunologist, Enzymologist or Biochemist** to investigate immunoassay applications. Experience in novel immunoassay development, ideally with membrane-based EIAs.

**PhD Biochemist, Biophysicist or Microbiologist** to investigate applications in microbiology. Familiarity with fluid handling, filtration and micro-organism metabolism is desired.

**PhD Microbiologist or Virologist** to develop procedures for the detection and identification of bacteria or viruses. Familiarity with bacterial physiology, antibiotics and immunology.

To apply, please send your résumé to Human Resources, Molecular Devices Corporation, Dept. SCI, 3180 Porter Drive, Palo Alto, CA 94304. An equal opportunity employer.

 **Molecular  
Devices**

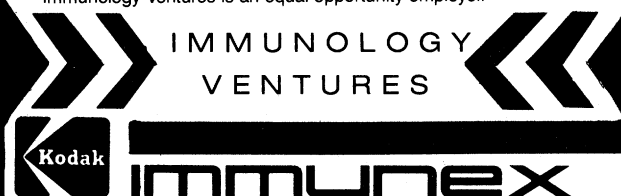
## Director Manufacturing

IMMUNOLOGY VENTURES, a Joint Venture between Immunex Corporation, a Seattle based biotechnology company, and Eastman Kodak Company, is seeking a professional to direct its emerging pharmaceutical manufacturing operation.

The Director of Manufacturing will have a broad range of responsibilities including start-up, validation and operation of a pilot facility under construction in the Immunex Building in Seattle with the potential to grow with the Joint Venture.

The successful candidate will have experience in product testing, production processes, manufacturing and scale-up in a pharmaceutical or biotechnology environment. A graduate degree in chemical engineering, pharmaceutical sciences or a related scientific field is required as is management and/or supervisory experience.

Immunology Ventures is administered by Immunex, located in the Immunex Building in downtown Seattle and offers a stimulating personal and professional environment. We offer an excellent compensation package and encourage you to submit your resume to the **Personnel Officer, Immunex Corporation, 51 University Street, Seattle, WA 98101**. Immunology Ventures is an equal opportunity employer.



## POSITIONS OPEN

**Environmental Monitoring and Services, Inc. (EMSI)** invites applications for a permanent position: **TOXICOLOGIST** with Ph.D. in toxicology (or closely related science) and two or more years' experience. The successful candidate will be expected to develop as a scientist and contributor on toxic substance contracts, human inhalation research, and the development of new business opportunities. Preference will be given to candidates with experience in risk assessment, biostatistics, waste management, business development, or air and/or water quality studies.

EMSI, a subsidiary of Combustion Engineering, Inc., is a consulting firm with a multidisciplinary staff and diverse contracts in many areas of environmental science and management. Our human inhalation research is conducted at the U.S. Environmental Protection Agency (EPA) Clinical Environmental Laboratory on the campus of the University of North Carolina in Chapel Hill. Our business in toxic substance programs with private and governmental clients is expanding. We offer a competitive salary, corporate benefits, and the opportunity for challenge and professional growth. Send curriculum vitae and the names of three professional references to: **Dr. L. Jack Roger, EMSI, 800 Eastowne Drive, Suite 200, Chapel Hill, NC 27514.**

*An Equal Opportunity Employer*

## CONFERENCES

### 1986 ANNUAL CONFERENCE SOCIETY FOR RISK ANALYSIS 9 to 12 November

Park Plaza Hotel Boston, Massachusetts

Session topics will cover current ISSUES IN RISK ANALYSIS, such as:

Chernobyl, Nuclear Winter  
Natural Disasters, Terrorism  
AIDS, Public Health, Epidemiology  
Hazardous Waste, Toxic Agents  
Role of Insurance, Regulatory Policy

A joint session on "Material Safety Data Sheets (MSDS's)" will be given with the American College of Toxicology.

For more information, registration forms, contact:

Society for Risk Analysis  
1340 Old Chain Bridge Road  
Suite 300  
McLean, VA 22101  
Telephone: 703-790-1745

### The New York Academy of Sciences Conference on BIOLOGICAL APPROACHES TO THE CONTROLLED DELIVERY OF DRUGS 13 to 15 January 1987 Marriott Marquis Hotel, New York City

This conference will deal with biological, technological, and therapeutic aspects of controlled drug delivery. Topics include: (i) biological barriers to drug delivery including the vascular endothelium and the reticuloendothelial system; (ii) endocytosis and intracellular processing of macromolecules; (iii) biodistribution of polypeptides; (iv) microparticles and monoclonal antibodies as therapeutic agents; (v) pro-drugs; and (vi) molecular approaches to drug delivery.

The conference will feature a limited number of poster presentations. The deadline for submission of abstracts is **1 November 1986**. The abstracts should include the name of the author(s), institution, and a 200-word summary of the work to be presented. Send abstracts to the conference chairman: **R. L. Juliano, Ph.D., Department of Pharmacology, University of Texas Medical School, P.O. Box 20708, Houston, TX 77225**. After review, a selected number of these short manuscripts, as well as those of the invited speakers, will be published as a volume of the *Annals of The New York Academy of Sciences*.

For program and registration information, contact:

Conference Department  
The New York Academy of Sciences  
2 East 63 Street  
New York, NY 10021

## CONFERENCES

### THE JULIA McFARLANE DIABETES RESEARCH UNIT FACULTY OF MEDICINE WILL PRESENT AN INTERNATIONAL CONFERENCE ON INSULIN ACTION AND DIABETES 26 TO 27 MARCH 1987 AT THE UNIVERSITY OF CALGARY

The conference, designed to bring together scientists with diverse interests in insulin action and diabetes, will aim to promote small group interactions, and will aim to generate new directions for diabetes-related research. Submission of abstracts for poster presentation are invited. For further information, write to:

Dr. H. J. Goren  
The University of Calgary  
Health Sciences Centre  
Calgary, Alberta, Canada T2N 4N1  
Telephone: 403-220-6870

## AWARDS

### American Society for Mass Spectrometry

#### Announces

Research Awards for Junior Faculty  
Sponsored by Finnigan MAT and V. G. Instruments  
Up to \$25,000

For further information, write:

ASMS  
Research Awards  
P.O. Box 1508  
East Lansing, MI 48823

## SYMPOSIUM

### PLANT SENESCENCE: ITS BIOCHEMISTRY AND PHYSIOLOGY

Tenth Annual Symposium in Plant Physiology at the University of California, Riverside. 8 to 10 January 1987. For information, contact: **Cindi McKernan, Department of Botany and Plant Sciences, University of California, Riverside, CA 92521.**

## FELLOWSHIPS

### MOUNT DESERT ISLAND BIOLOGICAL LABORATORY MARKEY FELLOWSHIPS

The Mount Desert Island Biological Laboratory (MDIBL), an internationally renowned research institute for comparative physiology and marine biology, offers research fellowships sponsored by the Lucille P. Markey Trust. Applications are invited from postdoctoral investigators in the biological/biomedical sciences who are in the early phase of their careers and have a record of productive, independent research. Fellowship recipients will receive laboratory space for all or part of the summer, plus a housing and research supply allowance. The MDIBL is a nonprofit research institute which emphasizes the use of marine organisms as tools for basic and applied biological research including pharmacology and toxicology. Applications may be obtained by contacting: **Dr. David L. Wynne, Administrative Director, MDIBL, Salsbury Cove, ME 04672. Telephone: 207-288-3605.** Deadline for receipt of completed applications is 1 December 1986.

**POSTDOCTORAL FELLOWSHIP IN NEUROIMMUNOLOGY.** Studies in neuropeptide modulation of the immune response. Ph.D. in biochemistry, molecular biology, or immunology required; experience in receptor biochemistry, protein phosphorylation, or molecular genetics desirable. New ideas welcome; independent work encouraged. Apply to: **M. Sue O'Dorisio, M.D., Ph.D., Pediatrics and Immunology, Ohio State University, 700 Children's Drive, Columbus, OH 43205.**

## FELLOWSHIPS

### SMITHSONIAN INSTITUTION FELLOWSHIP PROGRAM

**Graduate Student, Pre-, Post-, and Senior Postdoctoral Fellowships** in American history and material culture, anthropology, biological sciences, earth sciences, history of art, and history of science and technology. Tenable in residence at the Smithsonian and its research facilities. Stipends and tenures vary. Deadline: 15 January annually. Contact: **Office of Fellowships and Grants, Smithsonian Institution, Desk S, L'Enfant Plaza, Suite 7300, Washington, DC 20560; telephone: 202-287-3271.** Awards are based upon merit, without regard to race, color, religion, sex, national origin, age, or condition of handicap of applicant.

**POSTDOCTORAL FELLOWSHIP** available for studies of spontaneous and age-related hypertension. Our program emphasizes research of mechanisms of endocrinological and nutritional influences on the development of hypertension in rodent models. Areas of interest include: tissue metabolism of calcium, vascular smooth muscle contractility, and tissue macromolecule synthesis. Applicants should send curriculum vitae with the names of three references to: **Gary L. Wright, Ph.D., Department of Physiology, School of Medicine, Marshall University, Huntington, WV 25704-2901.** Affirmative Action/Equal Opportunity Employer.

### TERRY FOX LABORATORY VANCOUVER, CANADA POSTDOCTORAL FELLOWSHIPS

Two fellowships are available in a highly interactive multidisciplinary cancer research group of eight scientists studying the regulation of cell growth and differentiation in hemopoiesis and lymphopoiesis. Research projects are available in the following areas: the biochemistry of growth factors and their receptors, the use of monoclonal antibodies to characterize stem cell populations, the use of special cell culture systems to study stromal cell influences on myelopoiesis and lymphopoiesis, the immunology of T cells and T-cell receptors, studies of regulatory mechanisms using retroviral mediated gene transfer, and studies of the role of oncogenes and naturally occurring human retroviral-like gene sequences.

Applicants should have a background in cell biology, immunology, biochemistry, molecular biology, or biophysics. Duration of support will be for 2 to 3 years at \$20,000 to \$36,000 (Canadian) per annum, depending on previous training and according to pay scales of the National Cancer Institute of Canada.

Applications including curriculum vitae, a statement of research interests, the names of three references, and copies of university transcripts of courses taken and grades achieved should be sent to: **Dr. Allen C. Eaves, Director, Terry Fox Laboratory, British Columbia Cancer Research Centre, 601 West 10 Avenue, Vancouver, British Columbia, Canada V5Z 1L3. Telephone: 604-877-6070.**

### THE BLAUSTEIN INTERNATIONAL CENTER FOR DESERT STUDIES

**POSTDOCTORAL FELLOWSHIPS** available in arid zone research covering meteorology, architecture, solar energy, ecology, agriculture, sociology, plant and animal physiology, economics, hydrology, and so forth. One year, with possible extension for a second year. For application information, contact: **Chairman, Postdoctoral Fellowship Committee, Jacob Blaustein Institute for Desert Research, Ben-Gurion University of the Negev, Sede Boqer Campus, 84990 Israel.**

### POSTDOCTORAL FELLOWSHIP IN REPRODUCTIVE BIOLOGY

The University of Miami (UM) multidisciplinary training program in cellular and molecular reproductive biology has an immediate opening for a postdoctoral fellow. Only U.S. citizens and permanent residents are eligible for appointment as NIH NRSA trainees. For further information, write: **Dr. J. David Puett, Program Director, REPCEND Laboratories (D-5), University of Miami School of Medicine, P.O. Box 016960, Miami, FL 33101.** UM is an Equal Opportunity Employer.

# FMC continues to be “...the leaders in the agarose field...”

## We listen:

We recently received a particularly interesting inquiry from an investigator in the United Kingdom regarding problems he had encountered with Southern blotting:

“I have observed that some batches of agarose are adequate for gel electrophoresis of DNA, but do not allow the DNA to be blotted to nitrocellulose.”

Although the agarose samples this scientist had used were *not* FMC BioProducts brand materials, he had turned to us for help because he felt that “FMC (is) established as the leaders in the agarose field . . .”

## We learn:

We turned the problem over to our R&D staff. After studying many different agaroses, we determined that certain batches of agarose can exhibit “running inhibition” or binding of the DNA to the agarose (Figure 1). We believe this binding can interfere with the transfer of the DNA from the agarose to a nitrocellulose membrane.

The next challenge was to find out why. Our studies revealed that the DNA binding was closely correlated with the amount of residual metal ion we found in the agaroses studied (Figure 2).

## We share:

Residual agarose metal ion content appears to create serious, unfavorable interactions with DNA.

Residual metal ion may not, however, be the *only* cause of the problem.

## We act:

As a result of this study, FMC BioProducts has established a DNA binding test for SeaKem® GTG agarose. Each lot is screened first for DNA binding as part of our rigorous quality control tests. In this way, we can assure the users of our certified SeaKem GTG agarose that they will be able to conduct important DNA studies *without* fear of binding problems.

## We reply:

For further information, please call us. We want you to continue to regard FMC as “. . . the leaders in the agarose field . . .”

FMC BioProducts, 5 Maple Street, Rockland, ME 04841-2994  
1-800-341-1574 In ME: 207-594-4436

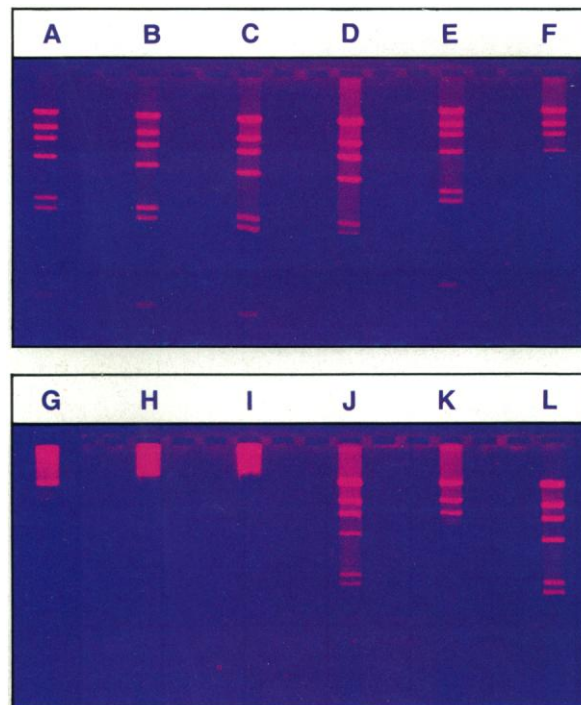


Figure 1

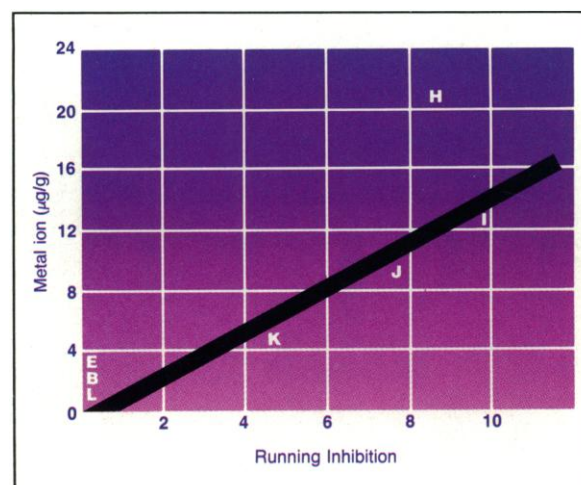


Figure 2

FMC and SeaKem are trademarks of FMC Corporation.  
© FMC Corporation, 1986



# THE RIGHT STUFF

for cutting large and hard specimens



Polycut S

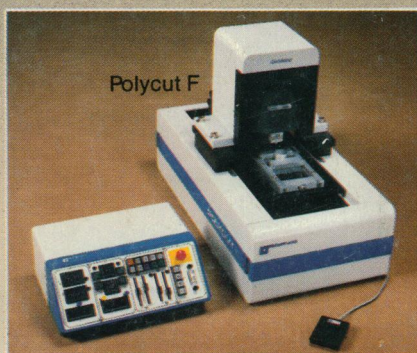
## Quickly. Easily. Precisely.

Reichert has the right stuff for cutting whole organs, animals, metallurgical or industrial specimens with the greatest of ease, with the greatest precision. The Polycut Series offers the greatest cutting force of any microtome available today.

**Polycut S** — Sections large and hard paraffin or plastic embedded specimens.

**Polycut F Ultramiller** — Produces planed surfaces for a wide range of specimens.

**Polycut C** — Cuts large frozen sections including materials such as undecalcified bone.



Polycut F



Polycut C

Reichert has the right stuff for all unusual cutting applications. Call 800-828-1200 (in NYS 800-462-1221) or write for information on applications and for a demonstration.

For literature circle reader service number 38  
For a demonstration circle reader service number 39

**Reichert**<sup>®</sup>

Reichert Scientific Instruments  
Warner-Lambert Technologies, Inc.  
Box 123, Buffalo, N.Y. 14240-0123

We've Changed  
Our Name From  
AO to Reichert