

of enhancing the efficiency of water use. The influence of soil fertility on water use and the interesting effect of water on the availability and uptake of soil nutrients and gases are adequately covered. Recent observations concerning the effect of carbon dioxide enrichment on the use of water are included in a chapter by Heichel.

A wide range of irrigation options are available where the investment can be justified and where a reliable supply of water of good quality is available. The strengths and limitations of a number of irrigation systems, approaches to determining the rate and timing of the application, the utility of computers and simulation models, and the allocation of water among crops varying in water requirement are discussed in three chapters. The few omissions in the book, among them discussion of the effect of use of water on seed quality, are largely a reflection of our lack of knowledge.

Each chapter is a competent evaluation of our current understanding. The only unqualified criticism that should be mentioned is that some new knowledge acquired during the four years between working session and publication is lacking. For the most part, however, principles are stressed in such a way that this work will serve well for some time the needs of scientists asking fundamental questions concerning how best to ensure and enhance efficient water utilization by crops. A unifying thread is the need felt by each author for the formation of research teams consisting of not only breeders and physiologists but also soil scientists, engineers, pathologists, entomologists, and others if significant progress on this subject is to continue.

R. P. PATTERSON

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The Magnetism of Rocks

Rock and Mineral Magnetism. W. O'REILLY. Blackie, Glasgow, 1984 (U.S. distributor, Chapman and Hall, New York). xii, 220 pp., illus. \$39.95.

The appearance of a new book on rock magnetism is something of an event, and a book reviewing both magnetic mineralogy and physical processes in the space of 220 pages is a rarity indeed. O'Reilly has written a book with comparatively broad appeal. Physicists looking for the latest information on cation distributions and intrinsic magnetic properties of the iron-titanium oxides will find it in abun-

dance in chapters 2, 7, and 8. Geologists and particularly paleomagnetists will find applications to subjects such as cooling histories, paleofield intensities, and demagnetizing techniques in chapter 9 and, with a little digging, elsewhere in the book.

Another strength of the book is its completeness. Nowhere else between hard covers will one find gathered definitive treatments of (microscopic) crystal-line anisotropy (chapter 3) and (macroscopic) shape anisotropy (chapter 4), step-by-step tracing of domain-wall motions and thermally activated reversals, complete with picture-story diagrams (chapters 4, 5, and 6), an account of the effect of thermal fluctuations on coercive force, including the Jaep theory (chapters 6 and 9), and a virtual encyclopedia of experimental data for titanomagnetites and other magnetic minerals (chapters 7 and 8).

Inevitably this book will be compared with its distinguished predecessor, Nagata's *Rock Magnetism* (1953; second edition 1961). Nagata's book still makes good reading today. Its usefulness to succeeding generations of rock magnetists is linked to its style—a sort of plumber's handbook, as it was once described as to me. Every aspect of the subject is covered and neatly shelved for easy reference. O'Reilly's book is nearly as complete, a signal achievement for a one-man effort (Nagata had the assistance of a team of gifted students), especially considering the explosion of knowledge in the intervening two decades. On the other hand, information is not as easily retrieved as it is in Nagata's book. Many more diagrams and tables could have been used to advantage in the experimental chapters to lighten the reader's burden in sifting through long, long paragraphs that merely catalog data.

Part of the problem is the nontraditional arrangement of topics. Theoretical models of thermal, detrital, chemical, and other remanences are developed in chapters 4, 5, and 6 in isolation from the experimental evidence pro and con, which follows in chapters 7 and 8. The bridge between theory and experiment is never satisfactorily established—as perhaps it is not in many rock magnetists' minds. The long gap between chapter 2, which deals with the structure and chemistry of magnetic minerals, and chapters 7 and 8, which review the magnetic properties of minerals, likewise disrupts the flow of the book.

Compared with Stacey and Banerjee's 1974 textbook *Physical Principles of Rock Magnetism*, which fairly bristles

with equations, this book gives the illusion of being non-mathematical. The essential equations are there, in fact, but are concealed in the middle of paragraphs, a space-saving device that makes them next to impossible to relocate when needed. There is a decided difference in philosophy between the two books. Stacey and Banerjee's incisive account of the latest theoretical models of the time backed a number of personal favorites (some now superseded) to the exclusion of some traditional mainstays, notably Néel's theories of thermoremanence.

O'Reilly has aimed instead for balance and perspective. His overviews treat all theories fairly, though he has an annoying tendency not to name the originators of the theories that have been seminal to rock magnetism. One shouldn't have to wait until p. 87 to learn that the model developed on pp. 69–73 is that of Stoner and Wohlfarth, and Néel's name should be placed squarely at the head of his thermal fluctuation theory, which is the bedrock of rock magnetism. (In fact, not one of Néel's three greatest papers is anywhere referenced in the book, a great loss to the coming generation of students.) In the effort to give equal time to all models, some of the excitement of this evolving subject has been lost (for example the controversy about the origin of pseudo-single-domain effects is glossed over), but the author's information is nonetheless very much up to date.

O'Reilly writes deftly and amusingly. The book flows along nicely until both author and reader begin to bog down in the data catalogs of chapters 7 and 8. The final chapter, on applications, is easy reading. The novice in rock magnetism, to whom the book is principally directed according to the preface, will require many sittings to digest its contents, but seasoned rock and paleomagnetists will find the book indispensable as a teaching text and handbook.

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Books Received

Adaptive Control of Ill-Defined Systems. Oliver G. Selfridge, Edwina L. Rissland, and Michael A. Arbib, Eds. Plenum, New York, 1984. x, 349 pp., illus. \$47.50. NATO Conference Series II, vol. 16. From an institute, Moretonhampstead, Devon, England, June 1981.

Advances in Chromatography. Vol. 23. J. Calvin Giddings *et al.*, Eds. Dekker, New York, 1984. xviii, 249 pp., illus. \$49.75.

Advances in Nitrogen Fixation Research. C. Veeger and W. E. Newton, Eds. Nijhoff/Junk, The Hague, and Pudoc, Wageningen, Netherlands, 1984 (U.S. distributor, Kluwer Boston, Hingham, Mass.). xxii, (Continued on page 1364)

• THE 1984 ROLEX AWA

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Each of the five winners, announced in Geneva on 26th April 1984, has received 50,000 Swiss Francs. Also, each winner has been presented with a specially inscribed gold Rolex Chronometer, itself a symbol of enterprise and achievement.

REINTRODUCING GRIFFON VULTURES TO FRANCE



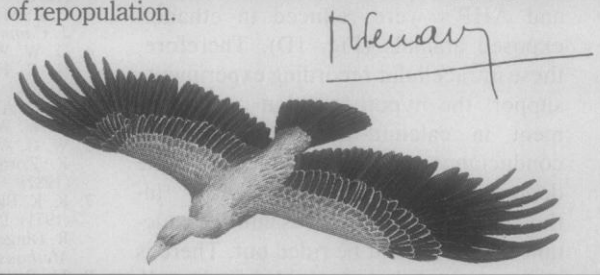
Between 1920 and 1940 guns and poison successfully and systematically wiped out the magnificent Griffon Vulture from the Massif Central area of France.

French biochemist Michel Terrasse has committed himself passionately to redressing the balance of nature, by re-introducing this impressive bird of prey to the Cevennes.

The Griffon Vulture, despite its wingspan of 2.8 metres, is harmless to man. In fact, these birds had been a valuable asset to French sheepherders there. Feeding only on dead animals, they rid the land of carcasses, thus saving shepherds the time and expense of burying dead livestock.

So far, Michel Terrasse, after much effort and patience, has succeeded in repopulating the area with a colony of 30 vultures, and in recording the births of two young vultures—the first to be born free in the area for 50 years.

Ecologists and ornithologists watch the work of Michel Terrasse with interest. His Rolex Award for Enterprise will help him with his fascinating programme of repopulation.



PLANTING ASPARAGUS TO PREVENT SOIL EROSION



Three years ago, Mr. Thean Soo Tee realised the opportunity of cultivating asparagus in the Mt. Kinabalu area of his native Malaysia, some 1,200 metres above sea level. Asparagus grows well and quickly on this irrigated land, reaching maturity nine months after sowing.

The enormous root system of the asparagus plant, set firmly by permanent cultivation, would hold back the soil and save the sloping fields from erosion.

With existing crops of cabbage, peas, carrots, etc., the earth must be turned over after each harvest for the next cropping cycle, exposing it to attack by wind and water, which turn it ultimately into stone-strewn, unproductive land.

Mr. Tee also recognised that, as asparagus fetches a higher price in the market-place, its cultivation would substantially increase the income of the local farmers.

Encouraged by early success, Mr. Tee

plans to develop five model farms where the local farmers could work and learn the cultivation techniques necessary and then, hopefully, abandon their traditional system for permanent agriculture.

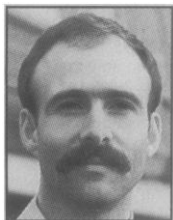
A careful evaluation of European and American species of asparagus is also planned with a view to providing a wider genetic base for the asparagus development programme in Malaysia.

For its originality and endeavour, Mr. Tee's project has earned a Rolex Award for Enterprise.



RDS FOR ENTERPRISE •

AN EXPLORATION OF BRABANT ISLAND IN ANTARCTICA



A specially picked team of men is currently over-wintering on Brabant Island—an island as yet unsurveyed.

It is the intention of Kenneth W. Hankinson, an Englishman, to ensure that a thorough study of the island will be made. A study which will yield a geological history of this gateway to the Bransfield and Gerlache Straits.

Flora and fauna will be studied to assess ecological balance and likely future development on the island.

In particular, a close study will be made of a seal species which feeds on planktonic shellfish. The major peaks will be scaled. The land mass charted. And the first circumnavigation of the island effected by canoe.

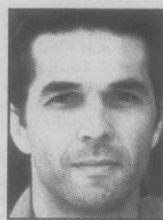
Throughout the entire stay, under canvas, a close observation will be kept on the psychological effect that close confinement, intense study and almost continual darkness and danger will have on the behaviour of individual team members.



The 1984 Rolex Award for Enterprise he won will help Kenneth Hankinson and his expedition to achieve their aim: putting Brabant Island comprehensively on the map.

KW Hankinson

EXAMINING THE TROPICAL FOREST CANOPY



The upper layer of tropical rain forest is one of the last unexplored frontiers known to man. This "canopy" is the home of several million species of plants and animals, most of which are still unknown to scientists.

A no-man's land between earth and sky. Its branches are too thin, too flexible, to bear the weight of eager research biologists.

Donald Perry, an American biologist, whose project is planned for Costa Rica, however, has devised an ingenious "spider's web" which can be suspended from the taller trees in order to carry a harness from a secure observation platform.

Biologists may thus study life processes, pollination, fruit bearing, etc., in relative safety.

As tropical rain forest is being cut down at an alarming rate, a Rolex Award for Enterprise couldn't have come at a better time for Donald Perry's project.

Donald R. Perry



AN INVENTORY OF ALL THE MAYAN WALL PAINTINGS



Eight years ago, Martine Fettweis-Vienot, a determined and dauntless Belgian archaeologist, decided to take on the gigantic task of compiling the first inventory of Mayan wall paintings.

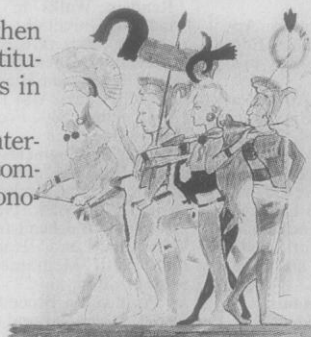
The last remnants of Mayan culture, which flourished between the 3rd and 15th centuries, are to be found in ruined temples and cities soon to crumble and disappear forever.

Mme. Fettweis-Vienot is reproducing the work done between the 7th and 15th centuries. Each painting must be traced on cellophane paper directly from the wall or ceiling. Every single one must be transferred with immense precision. Each colour intensity must be accurately reproduced.

Mme. Fettweis-Vienot then intends to analyse the constituents of the Mayan colours in special laboratories.

Her Rolex Award for Enterprise will help towards the completion of this important iconographic study.

M. V. V.



A book about the Rolex Awards for Enterprise, detailing the projects of the five Rolex Laureates and over 200 other projects, including the 26 winners in the "Honourable Mention" category, will be published in the Spring of 1984.

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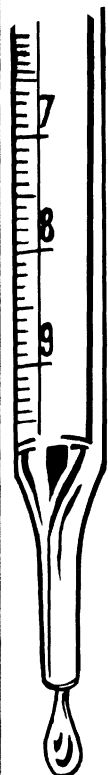
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BOOKS RECEIVED

(Continued from page 1333)

760 pp., illus. \$87.50. Advances in Agricultural Biotechnology. From a symposium, Noordwijkerhout, Netherlands, Aug. 1983.

Aggression in Children and Youth. Robert M. Kaplan, Vladimir J. Konecni, and Raymond W. Novaco, Eds. Nijhoff, The Hague, 1984 (U.S. distributor, Kluwer Boston, Hingham, Mass.). viii, 367 pp. \$54. NATO ASI Series D, No. 17. From an institute, Maratea, Italy, June 1981.

Biostatistical Analysis. Jerrold H. Zar. 2nd ed. Prentice-Hall, Englewood Cliffs, N.J., 1984. xvi, 718 pp., illus. \$34.95.

Brain and Pituitary Peptides II. Pulsatile Administration of Gn-RH in Hypothalamic Failure: Basic and Clinical Aspects. G. Leyendecker, H. Stock, and L. Wildt, Eds. Karger, Basel, 1983. viii, 187 pp., illus. \$58.75. From a symposium, Kiel, Germany, June 1982.

Calcium Antagonists and Cardiovascular Disease. L. H. Opie, Ed. Raven, New York, 1984. xviii, 377 pp., illus. \$32. Perspectives in Cardiovascular Research, vol. 9. From two symposia, Cape Town, South Africa.

Cascade Aerodynamics. J. P. Gostelow. Pergamon, New York, 1984. xvi, 270 pp., illus. Paper, \$22.50. Thermodynamics and Fluid Mechanics Series.

Cerebral Diseases. Their Pathology and Control. D. Gareth Jones and Brian C. Clifford. 2nd ed. Wiley-Interscience, New York, 1984. xvi, 309 pp., illus. \$74.95.

Chemical Thermodynamics. Peter A. Rock. University Science Books, Mill Valley, Calif., 1983. xiv, 548 pp., illus. \$29.

Chemistry and Biochemistry of Amino Acids, Peptides, and Proteins. A Survey of Recent Developments. Vol. 7. Boris Weinstein, Ed. Dekker, New York, 1983. x, 395 pp., illus. \$69.75.

Chemistry for Changing Times. John W. Hill. 4th ed. Burgess, Minneapolis, 1984. xii, 560 pp., illus. \$25.95.

Childhood Cancer. Impact on the Family. Adolph E. Christ and Kalman Flomenhaft, Eds. Plenum, New York, 1984. xiv, 302 pp. \$45. Downstate Series of Research in Psychiatry and Psychology, vol. 5. From a symposium, Brooklyn, N.Y., Jan. 1982.

Children's Talk. Catherine Garvey. Harvard University Press, Cambridge, Mass., 1984. x, 241 pp. \$12.50; paper, \$4.95. The Developing Child Series.

Choice and Consequence. Thomas C. Schelling. Harvard University Press, Cambridge, Mass., 1984. xvi, 363 pp. \$20.

Chromosomes and Cancer. From Molecules to Man. Janet D. Rowley and John E. Ultmann, Eds. Academic Press, New York, 1983. xxii, 357 pp., illus. \$39.50. Bristol-Myers Cancer Symposia, 5. From a symposium, Chicago, Oct. 1982.

Clinical and Functional Histology for Medical Students. Richard S. Snell. Little, Brown, Boston, 1984. xiv, 856 pp., illus. \$42.50.

Drug, Set, and Setting. The Basis for Controlled Intoxicant Use. Norman E. Zinberg. Yale University Press, New Haven, Conn., 1984. xvi, 277 pp. \$22.50.

Dyslexia. A Global Issue. R. N. Malatesha and H. A. Whitaker, Eds. Nijhoff, The Hague, 1984 (U.S. distributor, Kluwer Boston, Hingham, Mass.). x, 590 pp., illus. \$80. NATO ASI Series D, No. 18. From an institute, Maratea, Italy, Oct. 1982.

Early Man and the Cosmos. Evan Hadingham. Walker, New York, 1984. x, 278 pp., illus. \$22.50.

Eddington. The Most Distinguished Astrophysicist of His Time. S. Chandrasekhar. Cambridge University Press, New York, 1983. vi, 64 pp., illus. \$12.50. Arthur Stanley Eddington Centenary Lectures.

An Elementary Primer for Gauge Theory. K. Moriyasu. World Scientific, Singapore, 1983 (U.S. distributor, Heyden, Philadelphia). xii, 177 pp., illus. \$28; paper, \$14.

End-Stage Renal Disease. An Integrated Approach. William J. Stone and Pauline L. Rabin, Eds. Academic Press, New York, 1983. xvi, 373 pp., illus. \$55.

Fundamentals in Computer Vision. An Advanced Course. O. D. Faugeras, Ed. Cambridge University Press, New York, 1983. x, 498 pp., illus. \$39.50. From a course, Paris, June 1982.

Fundamentals of Energy Storage. Johannes Jensen and Bent Sørensen. Wiley-Interscience, New York, 1984. xiv, 345 pp., illus. \$42.95. Alternate Energy.

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Immunobiology of Parasites and Parasitic Infections. John J. Marchalonis, Ed. Plenum, New York, 1984. xx, 497 pp., illus. \$59.50. Contemporary Topics in Immunobiology, vol. 12.

Kirtland's Warbler. The Natural History of an Endangered Species. Lawrence H. Walkinshaw. Cranbrook Institute of Science, Bloomfield Hills, Mich., 1983. xii, 207 pp., illus. Paper, \$11.95.

Krakatau 1883. The Volcanic Eruption and Its Effect. Tom Simkin and Richard S. Fiske, with the collaboration of Sarah Melcher and Elizabeth Nielsen. Smithsonian Institution Press, Washington, D.C., 1983. 464 pp., illus. \$25; paper, \$15.

Laboratory Studies of Chick, Pig, and Frog Embryos. Guide and Atlas of Vertebrate Embryology. Ray L. Watterson and Gary C. Schoenwolf. 5th ed. Burgess, Minneapolis, 1984. xii, 203 pp. Paper. \$14.95.

Motivation, Planning, and Action. A Relational Theory of Behavior Dynamics. Joseph Nuttin. Leuven University Press, Leuven, Belgium, and Erlbaum, Hillsdale, N.J., 1984. x, 251 pp. \$29.95. Louvain Psychology Series Studia Psychologica. Translated from the French edition (Paris, 1980) by Raymond P. Lorion and Jean E. Dumas.

Must We Grow Old. From Pauling to Prigogine to Toynbee. Daniel Hershey. Basal, Cincinnati, 1984. vi, 249 pp. Paper, \$10.

The Nature of Naturalization II. Studies in Naturalization: 1925-1980. The Introduced Flora of Aton Forest, Connecticut. Frank E. Egler. Delaware State College Claude E. Phillips Herbarium, Dover, 1983. x, 145 pp. Paper, \$5. Publication No. 6.

The Nature of Prosocial Development. Interdisciplinary Theories and Strategies. Diane L. Bridgeman, Ed. Academic Press, New York, 1983. xxii, 359 pp. \$34. Developmental Psychology Series.

Otto Hahn and the Rise of Nuclear Physics. William R. Shea, Ed. Reidel, Boston, 1993 (distributor, Kluwer Boston, Hingham, Mass.). x, 254 pp., illus. \$49.95. The University of Western Ontario Series in Philosophy of Science, vol. 22.

PCB Poisoning in Japan and Taiwan. A Collection of Papers Dealing with the Effects of PCBs and Related Compounds. Masanori Kuratsune and Raymond E. Shapiro, Eds. Liss, New York, 1984. viii, 155 pp., illus. \$30. Also published in *American Journal of Industrial Medicine*, vol. 5, No. 1/2.

Progress in Chemical Disinfection. New Concepts and Materials. State University of New York Chemistry Department, Binghamton, 1984. vi, 160 pp., illus. Paper, \$9. From a conference, Binghamton, N.Y., March 1982.

Progress in Medical Virology. Vol. 29. J. L. Melnick, Ed. Karger, Basel, 1984. x, 244 pp., illus. \$88.75.

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Psychoneuroendocrine Dysfunction. Nandkumar S. Shah and Alexander G. Donald, Eds. Plenum, New York, 1984. xxiv, 636 pp., illus. \$79.50.

Radiation Carcinogenesis. Epidemiology and Biological Significance. John D. Boice, Jr., and Joseph F. Fraumeni, Jr., Eds. Raven, New York, 1984. xx, 489 pp., illus. \$75. Progress in Cancer Research and Therapy, vol. 26. From a conference.

Random Walks in Biology. Howard C. Berg. Princeton University Press, Princeton, N.J., 1984. x, 142 pp., illus. \$16.50.

Recent Advances in Lignin Biodegradation Research. Takayoshi Higuchi, Hou-min Chang, and T. Kent Kirk, Eds. Uni Publishers, Tokyo, 1983. xiv, 279 pp., illus. \$30. From a seminar, Kyoto, Japan, May 1983.

Recent Developments in Alcoholism. Vol. 2, Learning and Social Models, Alcohol and the Liver, Aging and Alcoholism, Anthropology. Marc Galanter, Ed. Plenum, New York, 1984. xxiv, 427 pp., illus. \$52.50.

Receptor Biochemistry and Methodology. J. Craig Venter and Len C. Harrison, Eds. Liss, New York, 1984. Vol. 1, Membranes, Detergents, and Receptor Solubilization. xii, 225 pp., illus. \$46. Vol. 2, Receptor Purification Procedures. xii, 171 pp., illus. \$34. Vol. 3, Molecular and Chemical Characterization of Membrane Receptors. xii, 293 pp., illus. \$52.

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Reviewed in *Annals of Internal Medicine* 100:621, *Educational Computer* April 1984, *Immunology Today* 4:271.

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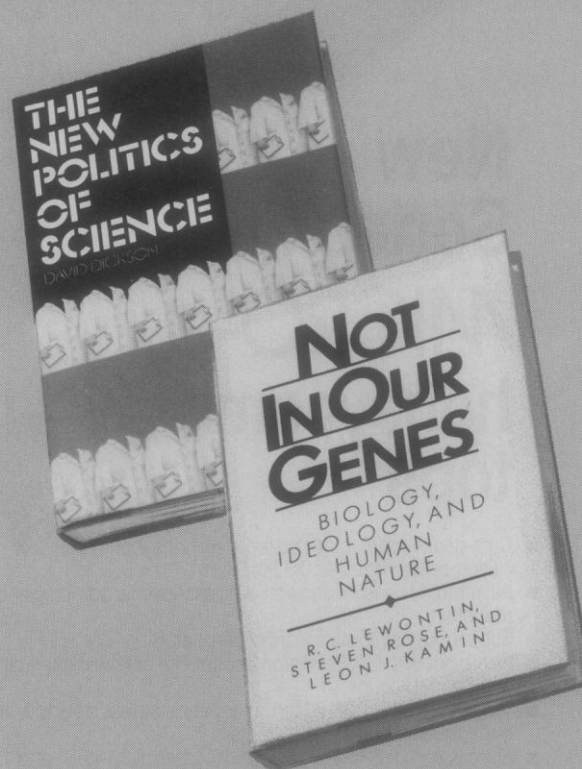
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Rehabilitation of the Coronary Patient. Nanette Kass Wenger and Herman K. Hellerstein, Eds. 2nd ed. Wiley, New York, 1984. xx, 563 pp., illus. \$35.

Reproductive and Developmental Toxicity of Metals. Thomas W. Clarkson, Gunnar F. Nordberg, and Polly R. Sager, Eds. Plenum, New York, 1983. xviii, 845 pp., illus. \$115. From a meeting, Rochester, N.Y., May 1982.

Retroviruses 2. P. K. Vogt and H. Koprowski, Eds. Springer-Verlag, New York, 1983. viii, 180 pp., illus. \$39.50. Current Topics in Microbiology and Immunology, 107.

Reviews of Physiology, Biochemistry and Pharmacology, 99. R. H. Adrian *et al.*, Eds. Springer-Verlag, New York, 1984. vi, 227 pp., illus. \$38.

The Role of Ascorbic Acid in Growth, Differentiation and Metabolism of Plants. J. J. Chinoy, N. J. Chinoy *et al.*, Eds. Nijhoff/Junk, The Hague, 1984 (U.S. distributor, Kluwer Boston, Hingham, Mass.). xiv, 322 pp., illus. \$46.50. Advances in Agricultural Biotechnology.

Root and Root System Terminology. R. F. Sutton and R. W. Tinus. Society of American Foresters, Bethesda, Md., 1984. vi, 137 pp., illus. Paper, \$6. Forest Science Monograph 24. Supplement to *Forest Science*, vol. 29, No. 4.

Same-Day Diagnosis of Human Virus Infections. Donald M. McLean and Kathleen K. Wong. CRC Press, Boca Raton, Fla., 1984. vi, 127 pp., illus. \$45.

Science as Intellectual Property. Who Controls Research? Dorothy Nelkin. Macmillan, New York, and Collier Macmillan, London, 1984. xii, 130 pp. \$15.95; paper, \$7.95. AAAS Series on Issues in Science and Technology.

The Scientific Basis of Flotation. Kenneth J. Ives, Ed. Nijhoff, The Hague, 1984 (U.S. distributor, Kluwer Boston, Hingham, Mass.). vi, 429 pp., illus. \$56. NATO ASI Series E, No. 75. From an institute, Cambridge, England, July 1982.

Scientific Communications and Informatics. A. I. Mikhailov, A. I. Chernyi, and R. S. Giliarevskii. Information Resources Press, Arlington, Va., 1984. xxx, 402 pp., illus. \$55.50. Translated from the Russian edition (Moscow, 1976) by Robert H. Burger.

Séminaire de Théorie des Nombres, Paris 1981-82. Séminaire Delange-Pisot-Poitou. Marie-José Bertin, Ed. Birkhäuser, Boston, 1983. vi, 354 pp. \$27.50. Progress in Mathematics, vol. 38.

Septic-Tank Systems. A Consultant's Toolkit. John H. Timothy Winneberger. Butterworth, Boston, 1984. Two volumes. xviii, 222 pp., illus., and xviii, 123 pp., illus. \$45.

Side-Effects of Antiinflammatory/Analgesic Drugs. K. D. Rainsford and G. P. Velo, Eds. Raven, New York, 1983. xiv, 306 pp., illus. \$39. Advances in Inflammation Research, vol. 6. From a meeting, Verona, Italy, Sept. 1982.

The Smiling Spleen. Paracelsianism in Storm and Stress. Walter Pagel. Karger, Basel, 1984. x, 213 pp., illus. \$91.75.

So Excellent a Fishe. A Natural History of Sea Turtles. Archie Carr. 2nd ed. Scribner, New York, 1984. xii, 280 pp. + plates. \$15.95.

Soil Mechanics. R. F. Craig. 3rd ed. Van Nostrand Reinhold, New York, 1983. x, 419 pp., illus. \$16.95.

Spatial Hearing. The Psychophysics of Human Sound Localization. Jens Blauert. MIT Press, Cambridge, Mass., 1984. xii, 427 pp., illus. \$40. Translated from the German edition (Stuttgart, 1974).

State of the World 1984. A Worldwatch Institute Report on Progress Toward a Sustainable Society. Lester R. Brown *et al.* Norton, New York, 1984. xx, 252 pp. \$15.95. Norton/Worldwatch Books.

The Technology of High-Level Nuclear Waste Disposal. Advances in the Science and Engineering of the Management of High-Level Nuclear Wastes. Vol. 1. Peter L. Hofmann and John J. Breslin, Eds. U.S. Department of Energy Technical Information Center, Oak Ridge, Tenn., 1983 (available from the National Technical Information Service, Springfield, Va.). xii, 396 pp., illus. \$18. From a meeting, Columbus, Ohio, Nov. 1979.

Topics in Molecular Pharmacology. Vol. 2. Arnold S. V. Burgen and Gordon C. K. Roberts, Eds. Elsevier, New York, 1983. viii, 210 pp., illus. \$69.25.

Viruses and the Environment. J. I. Cooper and F. O. MacCallum. Chapman and Hall, London, 1984 (U.S. distributor, Methuen, New York). x, 182 pp., illus. \$32; paper, \$15.95.

Weapons and Hope. Freeman Dyson. Harper and Row, New York, 1984. viii, 341 pp. \$17.95. A Cornelia and Michael Bessie Book.

Workers at Risk. Voices from the Workplace. Dorothy Nelkin and Michael S. Brown. University of Chicago Press, Chicago, 1984. xviii, 220 pp. \$20.

Working with Your Woodland. A Landowner's Guide. Mollie Beattie, Charles Thompson, and Lynn Levine. Illustrations by Nancy Kelley. University Press of New England, Hanover, N.H., 1984. xxiv, 310 pp. \$27.50; paper, \$12.95. Futures of New England.

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.

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POSITIONS WANTED

Bacterial/Plant Geneticist with current interest in *Agrobacterium* and nitrogen fixation seeks teaching and/or research position; 14 years of university teaching and supervisory experience. Box 162, SCIENCE. X

Biopsychologist (Ph.D. Rutgers), experimental, statistics bias. Knows anatomy, endocrinology, computer languages, including Assembly. Publications: feeding, obesity, exercise, aggression. Experienced teacher. Seeks teaching or postdoctorate, above or sensory research. Box 21047, Athens 11410, Greece. Telephone: 011 301 4134789. 6/22, 29; 7/6, 13

Cellular Immunologist. Ph.D. 1970. Experience in university research in infectious disease, lymphocyte cell biology, hybridomas, and lymphokines. Training in clinical immunology. Seeking academic faculty position. Box 140, SCIENCE. X

Microbiologist. M.S., 5 years of industrial R & D experience in vaccine development and licensing. Recent work in production of monoclonal antibodies. University and industrial research background in virology, bacteriology, fermentation technology, and animal work. Extensive cell and tissue culture experience. Presentations and publications. Desires a challenging position. Will relocate. Box 161, SCIENCE. 6/22, 29

Neuropharmacologist. B.S. Extensive medical research experience. Publications, languages, references. Clinically, high technology-oriented. Seeks position in pharmaceutical company/academia. Telephone: 212-490-5990, extension 703. X

Physician, recently qualified, seeks a research position to a preceptor in any basic medical research field (immunology/cardiovascular/cancer/others). The position to a preceptor in a nongovernmental-funded grant, either academic or industry. Forward correspondence by airmail to: Waran, Postfach 334, Zürich 8036, Switzerland. 6/22, 29

POSITIONS WANTED

Marine Biologist. Ph.D. Fish physiology/larval ecology, marine invertebrate/zooplankton biology, with strong background in hydrocarbon chemistry, CGC, pollution fate and effects. Seeks entry level research and/or teaching position. Box 157, SCIENCE. 6/22, 29; 7/6

Physical Biochemist—Cell Biologist; Ph.D. 1975; 12 years of technical experience; excellent technical and analytic skills; seeks entry-level position in molecular biology with opportunity to learn state-of-the-art techniques in genetic engineering—DNA technology. Will relocate. P.O. Box 607, Ingomar, Pennsylvania 15127. Telephone: 412-364-9376. X

POSITIONS OPEN

IOWA

College of Dentistry's Dows Institute for Dental Research. Full-time **ACADEMICIAN**, available 1 July 1984 to fill position responsible for administration, coordination, and further development of research activities of collegiate departments and the Dows Institute for Dental Research. D.D.S./Ph.D. or equivalent required. Preference given to applicants with demonstrated investigative and administrative experience and abilities. Salary, academic rank, and administrative title commensurate with experience and qualifications. *Equal Opportunity/Affirmative Action Employer*. Send curriculum vitae to: **Dr. John C. Montgomery, Executive Associate Dean, The University of Iowa, College of Dentistry, Iowa City, Iowa 52242.**

ASSISTANT/ASSOCIATE PROFESSOR—Applications are invited for a full-time faculty research position in the Pathology Department, Medical College of Georgia, Augusta, Georgia. Applicants should have a Ph.D. degree and broad based training in biological and biochemical sciences. Previous or current research funding experience desirable. An interest in protein synthesis and separation, cell separation and cell membrane chemistry, and sickle cell disease would be an advantage. Participation in Ph.D. graduate programs in the department will be expected. Send curriculum vitae and letter of inquiry to: **Dr. A. B. Chandler, Chairman, Pathology Department, Medical College of Georgia, Augusta, Georgia 30912.** *Equal Opportunity Employer, M/F.* J1729.

ASSISTANT PROFESSOR POSITION. Multidisciplinary cardiovascular research laboratory studying the cellular and molecular biology of lipoproteins and cell surface receptors seeking candidates with recombinant DNA/molecular biology experience. Send résumé and references to: **Personnel, Gladstone Foundation Laboratories for Cardiovascular Disease, University of California, San Francisco, P.O. Box 40608, San Francisco, Calif. 94140.** *The University of California, San Francisco, is an Equal Opportunity/Affirmative Action Employer. Women and minorities are encouraged to apply.*

ASSISTANT PROFESSOR OF HUMAN NUTRITION, 65 percent teaching and 35 percent research. Tenure-track, 9-month appointment. To teach undergraduate and graduate courses in human nutrition and to establish an active research program in an area of nutrition in the life cycle including supervision of M.S. and Ph.D. degree candidates. Required qualifications include Ph.D. in nutrition with up to 3 years of postdoctoral experience. Salary commensurate with qualifications and experience. To apply send curriculum vitae, undergraduate and graduate transcripts, statement of research interests, and three letters of recommendation by 15 July 1984 to: **Professor Peter L. Pellett, Department of Food Science and Nutrition, University of Massachusetts, Amherst, Mass. 01003.** *An Affirmative Action/Equal Opportunity Employer.*

FACULTY POSITION UNIVERSITY OF LOUISVILLE ASSISTANT PROFESSOR IN HYDROLOGY

The Water Resources Laboratory, College of Arts and Sciences, seeks an assistant professor in hydrology and watershed analysis, to begin January 1985. Includes secondary appointment in Department of Geology. Tenure-track. Requires teaching in advanced undergraduate and in graduate programs; research in specialization required. Must have Ph.D. or Sc.D. in appropriate field. Send curriculum vitae, representative publications, and three letters of reference by 15 August 1984 to: **Dr. Stuart E. Neff, Chairman, Hydrology Search Committee, Water Resources Laboratory, University of Louisville, Louisville, Ky. 40292.** *Affirmative Action/Equal Opportunity Employer.*

POSITIONS OPEN

ASSISTANT/ASSOCIATE PROFESSORSHIPS

Two tenure-track, state-funded positions are available for molecular virologists/biologists in the Section of Virology, Department of Tumor Biology, at the University of Texas Cancer Center, M.D. Anderson Hospital and Tumor Institute, Houston. Applicants must have demonstrated research productivity and a willingness to join the faculty of the University of Texas Graduate School of Biomedical Sciences. Experience in gene regulation, oncogene structure and function, or similar areas is desirable, and an interest in cancer research is required. Curriculum vitae, brief summary of research interests and future goals, reprints of recent publications, and names of five references should be sent to: **Professor Garth L. Nicolson, Chairman, Department of Tumor Biology, M.D. Anderson Hospital and Tumor Institute, Houston, Texas 77030.** *University of Texas is an Equal Opportunity/Affirmative Action Employer.*

ASSISTANT PROFESSOR position available for a neuroscientist with training and experience in both neuroanatomy and cellular neurophysiology, and interests in mammalian CNS. Should be familiar with intracellular recording and labeling techniques; LM, EM, autoradiography, and other neuroanatomic methods. Opportunities to collaborate with other faculty in anatomic and physiologic studies of properties of mammalian cortical neurons in slice and dissociated cell preparations. Departmental areas of programmatic interest include mammalian cortical development, effects of cortical injury, mechanisms of epileptogenesis, and transmitter and modulator actions. Candidates should send curriculum vitae and names of three referees to: **David A. Prince, M.D., Chairman, Department of Neurology, Stanford Medical Center, Stanford, California 94305.** *Stanford is an Equal Opportunity Employer and welcomes nominations of women and minority group members and applications from them.*

ASSISTANT PROFESSOR OF PHYSIOLOGY. The Department of Physiology and Biophysics of the University of Louisville School of Medicine invites applicants for a tenure-track assistant professor position. An applicant should have a Ph.D. or M.D. degree, 2 to 3 years of postdoctoral research training, and research expertise in one of the following: Neural control of cardiovascular, respiratory, or renal systems; control of GI, bone, or cerebral blood flow; or an endocrine control system (such as prostaglandins, renin-angiotensin, and so forth) with broad radioimmunoassay experience. This position will require development of an active, independent research program, some collaboration with ongoing departmental research programs, and participation in team teaching to meet departmental responsibilities. The state-funded salary is nationally competitive. Send curriculum vitae and the names of three references by 1 August 1984 to: **Patrick D. Harris, Ph.D., Professor and Chairman, Department of Physiology and Biophysics, Health Sciences Center, University of Louisville, Louisville, Ky. 40292.** *The University of Louisville is an Affirmative Action/Equal Opportunity Employer.*

ASSISTANT PROFESSOR OF PHYSIOLOGY, 12-month track position. Requirements include M.D., Ph.D., or equivalent, a sound background in general physiology, and ability to develop own research program. Will share responsibility for medical student physiology course. Physiology program currently has a strong orientation toward cardiovascular physiology. Opportunities exist for collaborative research and participation in graduate education. Submit curriculum vitae and names of three references by 31 July 1984 to: **Office of the Provost, Northeastern Ohio Universities College of Medicine, Rootstown, Ohio 44272.** *An Equal Opportunity/Affirmative Action Employer.*

ASSISTANT OR ASSOCIATE PROFESSOR—PLANT MOLECULAR BIOLOGY. Tenure-track position in the Department of Plant Pathology, University of Kentucky, to develop a program of research on the molecular biology of plant/pathogen interactions. Ph.D. required and postdoctoral experience desirable; training and/or experience in molecular biology essential. Experience in plant pathology not necessary for appointment at the assistant professor level. Submit applications, including curriculum vitae, transcripts, list and reprints of publications, and description of research interests to: **Dr. T. P. Pirone, Chairman, Department of Plant Pathology, University of Kentucky, Lexington, Kentucky 40546.** *An Equal Opportunity/Affirmative Action Employer.*



OTTAWA CIVIC HOSPITAL

This 925-bed teaching hospital (University of Ottawa) invites applications for the position of Chief of the Department of Laboratory Medicine. The department includes anatomical pathology, biochemistry, haematology/blood banking, and microbiology.

Candidates should hold F.R.C.P. (C) or equivalent in one of the above disciplines.

Applications and enquiries should be addressed to:

Dr. Finlay McKerracher
Vice President—Medical Affairs
Ottawa Civic Hospital
1053 Carling Avenue
Ottawa, Ontario, Canada K1Y 4E9
Telephone: 613-725-4203

Closing date for applications is 14 July 1984.

Note: In accordance with Canadian immigration requirements, this advertisement is directed to Canadian citizens and permanent residents.

IMMUNOLOGIST

BIO-RAD LABORATORIES, a leading biotechnology company located in the San Francisco Bay Area, has as a result of our continuing growth a new position to work as part of our research team in Clinical Diagnostics. We are seeking an Immunologist to be involved in all aspects of the research and development of new products related to lymphocyte surface markers and lymphocyte function assays.

Requires Ph.D. in immunology, biology, biochemistry or chemistry, or MS with 3+ years industrial research experience. Candidates must have experience in cell biology. Knowledge of basic immunochemical techniques a plus.

Please send resume with salary history to BIO-RAD LABORATORIES, Human Resources Department #287, 2200 Wright Avenue, Richmond, CA 94804. An equal opportunity employer.

BIO-RAD Bio-Rad Laboratories

POSITIONS OPEN

ASSISTANT PROFESSOR: Molecular interactions in diseases of crop plants. Tenure-track position in molecular aspects of fungal diseases of crop plants. Qualifications: Ph.D. in plant pathology, molecular genetics, or a related field, with experience in the application of recombinant DNA techniques. Applicants should submit curriculum vitae and three letters of reference by 15 July 1984 to: **Gregory Shaner, Head, Department of Botany and Plant Pathology, Purdue University, West Lafayette, Ind. 47907. Purdue University is an Equal Opportunity/Affirmative Action Employer.**

ASSISTANT PROFESSOR OF BIOCHEMISTRY. Tenure track, January or July 1985. Candidate should show promise of excellence in research and teaching. Research area not specified. Postdoctoral training required. Submit résumé, a one-page summary of research goals, three references, and a recent reprint by 1 September 1984 to: **G. C. Tremblay, Department of Biochemistry and Biophysics, THE UNIVERSITY OF RHODE ISLAND, Kingston, Rhode Island 02881-0812. An Affirmative Action/Equal Opportunity Employer.**

ASSISTANT PROFESSOR OF PHARMACOLOGY

The Department of Pharmacology at Tulane University School of Medicine invites applications for a tenure-track faculty position at the assistant professor level. Applicants should have at least 2 years of postdoctoral training and hold the Ph.D. and/or M.D. degree(s). They should exhibit potential for developing a strong independent research program in the area of renal pharmacology, toxicology, cardiovascular, or hematopharmacology. Excellence in teaching medical and graduate students is expected. Applicants should send curriculum vitae, list of publications, a brief statement of research interests, and at least three names of references to: **James W. Fisher, Ph.D., Professor and Chairman, Department of Pharmacology, Tulane University School of Medicine, 1430 Tulane Avenue, New Orleans, La. 70112.** Applications should be received by 1 September 1984 and the position is expected to begin by 1 January 1985.

Tulane University is an Equal Opportunity/Affirmative Action Employer.

ASSOCIATE DIRECTOR: Full-time position for a person committed to environmental stewardship and able to implement an expanding program at a Christian environmental center. Position requires demonstrated excellence in communication skills, an understanding of academic governance, procedures, and policies, and strong interpersonal, organizational, and managerial skills. An educational background appropriate to environmental studies is required. Graduate degree or equivalent combination of education and experience is necessary. All applications received by 20 July 1984 will be considered. Send curriculum vitae, transcripts, and names of three references to: **Dr. Calvin B. DeWitt, Director, AuSable Institute of Environmental Studies, RR Number 2, Mancelona, Mich. 49659.**

NATIONAL SCIENCE FOUNDATION

National Science Foundation (NSF), Directorate for Science and Engineering Education, Division of Precollege Education in Science and Mathematics, is seeking applicants for four positions as **ASSOCIATE PROGRAM DIRECTOR OR PROGRAM DIRECTOR** for activities in precollege science and mathematics education. The positions will be filled on a 1- or 2-year rotational basis and are excepted from the competitive civil service. The salary ranges from \$35,000 to \$55,000 per annum for the associate program director and from \$40,000 to \$66,000 for the program director. Applicants should have a Ph.D. or equivalent experience in mathematics/computer sciences; biological, behavioral, and social sciences; or physics. In addition, for the associate program director 4 to 6 years of experience beyond the Ph.D. and for the program director 6 to 8 years beyond the Ph.D. Research or teaching and expertise in materials development, research, or teacher development for precollege science and mathematics education is desired. Applicants should refer to **Announcement Number EX 84-545** when submitting résumé to: **The National Science Foundation, Personnel Administration Branch, Room 212, 1800 G Street, NW, Washington, D.C. 20550.** attendance **Catherine Handle.** Closing date for receipt of applications is 23 July 1984. Telephone: 202-357-7840 for further information. Hearing-impaired individuals should telephone: **TDD 202-357-7492. NSF is an Equal Opportunity Employer.**

POSITIONS OPEN

ASSISTANT/ASSOCIATE PROFESSOR, VIROLOGY

A 12-month, tenure-track position requiring a Ph.D. with a strong background in the cellular/molecular biology of animal viruses is now available in the Department of Medical Microbiology and Immunology. Candidates with primary research interests in the mechanisms of virus replication, virus gene expression, pathogenesis of viral infection, or tumor virology are encouraged to apply. The department is seeking an innovative person to establish and maintain a high-quality independent research program and to participate in medical and graduate student teaching. Interested candidates should submit curriculum vitae, a summary of research interests, and the names of three references by 1 August 1984 to:

Dr. Ram P. Tewari
Department of Medical Microbiology and Immunology
Southern Illinois University School of Medicine
P.O. Box 3926
Springfield, Ill. 62708

An Equal Opportunity/Affirmative Action Employer

ASSISTANT RESEARCH SCIENTIST position available to participate in a toxicological and neurochemical study of protection from acetylcholinesterase inhibitors afforded by pre- and postsynaptic modulators of cholinergic transmission. Experience in biochemical and physiological or behavioral aspects of central neurotransmission is desirable. Send curriculum vitae and names of three references to: **Dr. Jerry J. Buccafusco or Dr. Robert S. Aronstam, Department of Pharmacology and Toxicology, Medical College of Georgia, Augusta, Ga. 30912. Equal Opportunity/Affirmative Action Employer.**

Ph.D. IN BIOCHEMISTRY with experience in protein purification by column chromatography and electrophoresis, and in amino acid sequencing and HPLC techniques to work on characterization of proteins associated with hereditary forms of amyloidosis. Send curriculum vitae and recommendations to: **Dr. Martha Skinner, Arthritis Center, Boston University School of Medicine, 71 East Concord Street, Boston, Mass. 02118.**

BIOLOGY/ELECTRON MICROSCOPY

The Biology Department of Vassar College is seeking an electron microscopist for a 1-year position as a visiting assistant professor. Additional expertise in one or more of the following areas is desirable: Invertebrate biology, neurobiology, heredity, comparative vertebrate anatomy/physiology. Applicants should have a Ph.D. and some teaching experience. Send résumé and three references by 13 July to: **Leathem Mehaffey, Box 251, Vassar College, Poughkeepsie, New York 12601. An Affirmative Action/Equal Opportunity Employer.**

CANCER INVESTIGATOR: Mount Zion Hospital and the Cancer Research Institute, University of California, San Francisco, are seeking an M.D. cancer investigator with significant accomplishments in basic oncology research, preferably oncogene or retrovirus oriented. Salary/academic appointment commensurate with experience. Submit curriculum vitae to: **Alan B. Glassberg, M.D., Mount Zion Hospital, P.O. Box 7921, San Francisco, California 94120. Telephone 415-885-7330.**

CELL/MOLECULAR BOTANIST. Tenure-track position at the assistant professor level, beginning January 1985, or September 1985. To teach introductory and advanced-level courses, to develop a graduate program in cell and molecular botany, and to establish a strong research program, attractive to external funding. Ph.D. required, postdoctoral experience preferred. Submit curriculum vitae, reprints, and three letters of recommendation by 30 September 1984 to: **Richard L. Hauke, Cell/Molecular Botanist Position, Botany Department, THE UNIVERSITY OF RHODE ISLAND, Kingston, Rhode Island 02881-0812. Affirmative Action/Equal Opportunity Employer, M/F.**

CYTOGENETICS—M.D., pathologist preferred but qualified Ph.D. will be seriously considered to manage diagnostic laboratory and develop research programs. Board- or equivalent specialty certification highly desirable. Demonstrated accomplishment in basic research and teaching required. Minimum of 2 years of experience in human cytogenetics necessary. *Women and members of minority groups are encouraged to apply.* Please forward curriculum vitae to: **John E. Craighead, M.D., Department of Pathology, University of Vermont, Burlington, Vermont 05405.** Replies will be accepted until 1 August 1984.

POSITIONS OPEN

BIOMEDICAL ENGINEER/IMAGE ANALYSIS

A research scientist position is available in west-central Pennsylvania for a biomedical engineer with a Ph.D. and 2 years of experience in digital image processing. The position involves working closely with a group of scientists in applying digital image processing methods to fluorescence microscopy. The candidate must have training and experience in applied mathematics, digital image processing, statistical design of experiments, and programming of microprocessor-controlled digital display devices. Salary: \$31,000. Send résumé to: **Charles Wilson, Job Order Number 3511416, Office of Employment Security, 1302 State Office Building, Pittsburgh, Pa. 15222.**

SOUTHWESTERN UNIVERSITY Biology Department

Southwestern University seeks candidates for the **DISHMAN CHAIR IN SCIENCE** in the Department of Biology. This is a tenure-track position, to be filled at the professor or associate professor level, beginning with the 1985-1986 academic year. The successful applicant will exhibit a strong commitment to undergraduate education and teaching, maintain an active scholarly and professional life within the discipline, and be interested in establishing a research program which can involve undergraduate students. Preference will be given to candidates with broad teaching interests in an undergraduate program and with special competence in one or more of the following areas: Cell physiology, animal physiology, or molecular genetics.

Southwestern University is an undergraduate, liberal arts institution with an enrollment of over 1000 students, SAT scores well above the national mean for college-bound students, and a current market value endowment of over \$51,000,000. Applications and nominations should be sent to:

**G. Benjamin Oliver, Dean
The Brown College of Arts and Sciences
Southwestern University
Georgetown, Texas 78626**

An Affirmative Action/Equal Opportunity Employer

UNIVERSITY OF MAINE AT ORONO—CHEMISTRY DEPARTMENT. CHAIRPERSON, RE-OPENING OF SEARCH. The Department of Chemistry seeks a chairperson who will be a creative leader in helping a capable, enthusiastic faculty to further develop a research-based graduate program while maintaining high quality undergraduate teaching. The candidate must have demonstrated ability in research and teaching and show promise of developing administrative skills. Starting date: 1 January or 1 July, 1985. Closing date: 31 August, 1984 or until suitable candidate is found. Send curriculum vitae including three letters of reference to: **Search Committee, College of Engineering and Science, 101 Barrows Hall, University of Maine at Orono, Orono, Maine 04469.** *The University of Maine is an Equal Opportunity/Affirmative Action Employer.*

FACULTY POSITION for an established investigator with an M.D. and/or a Ph.D. degree, with a record of excellence in research related to thrombosis, atherosclerosis, and blood coagulation. Candidates should fulfill criteria for leadership role in a large research program in thrombosis and hemostasis. Departmental affiliation and salary negotiable. Reply to: **Harold R. Roberts, M.D., Director, Center for Thrombosis and Hemostasis, 416 Burnett-Womack 229H, School of Medicine, University of North Carolina at Chapel Hill, Chapel Hill, N.C. 27514.** *Qualified women and members of minority groups are encouraged to apply. The University of North Carolina is an Equal Opportunity Employer.*

FACULTY POSITION ANALYTICAL-ORGANIC CHEMIST

The Department of Chemical Oceanography, Virginia Institute of Marine Science, School of Marine Science, of the College of William and Mary invites applications for a 12-month, tenure-track assistant or associate professor position. Candidates must have a Ph.D. in analytical or organic chemistry and demonstrate competence with GC, HPLC, and GC-MS. They should have a keen interest in aqueous environmental organic chemistry. Duties will include graduate-level teaching, advising, and research.

Send curriculum vitae and three letters of recommendation by 15 August to: **Dr. Robert J. Huggett, Virginia Institute of Marine Science, Gloucester Point, Virginia 23062.**

An Equal Opportunity/Affirmative Action Employer. Minorities and women are encouraged to apply.

POSITIONS OPEN

The Chemistry Department of the University of California, Los Angeles, has a newly endowed **SAUL WINSTEIN MEMORIAL CHAIR** in organic chemistry. The occupant of this chair will hold a state-funded regular faculty position; the income from the endowment is available to the holder as an unrestricted fund for purposes of research and teaching. This chair may be filled either by a new very senior appointment at the full professor level or from the present faculty; a search committee has been appointed to recommend the most outstanding candidate. Candidates are sought who give evidence of unusual distinction in scholarship and teaching, a truly exceptional record of research accomplishment, and demonstrated ability to obtain research funding in a competitive environment. *The University of California is an Equal Opportunity/Affirmative Action Employer and encourages applications from women and minority candidates.* Applications should be completed by 15 July 1984 and directed to: **Chair, Winstein Chair Search Committee, Department of Chemistry, University of California, Los Angeles, California 90024.**

ETHOLOGY/VERTEBRATE ZOOLOGY. The Department of Biological Sciences at Smith College seeks an individual to fill a tenure-track appointment at the assistant professor (Ph.D.) level. Candidates must be strongly committed to teaching as well as to conducting research in which undergraduates can participate. Teaching responsibilities would include an introductory course in vertebrate zoology and an advanced course in animal behavior. Interests in evolutionary biology and research that incorporates fieldwork with birds or mammals are preferred. The position opens in January 1985 but could be held for the successful candidate until the following September if necessary. Applications will be accepted until 30 September 1984. Please submit a résumé (including statements of research and teaching interests) and arrange for three letters of reference to be sent to: **Dr. Stephen G. Tilley, Department of Biological Sciences, Smith College, Northampton, Mass. 01063.** *An Equal Opportunity Employer.*

FACULTY POSITIONS IN CYTOGENETICS/ MOLECULAR AND CELL BIOLOGY

Applications are invited for tenure-track faculty appointments in one or more of the following areas: **CYTOGENETICS** in lymphoma-leukemia research; **IMMUNOBIOLOGY** emphasizing hybridoma methodology in cancer research; and **MOLECULAR BIOLOGY** in genetic aspects of neoplasia. Applicants with Ph.D. and/or M.D. and postdoctoral experience should be capable of developing an independent research program and will participate in training graduate students and fellows. Appointments will be at assistant professor level, although the cytogeneticist position may be at a higher level. Applicants should send curriculum vitae, date of availability, and names of three references by 1 September 1984 to: **Dr. Pradip Roy-Burman, Chairman, Search Committee, University of Southern California School of Medicine, Department of Pathology, HMR 204, 2025 Zonal Avenue, Los Angeles, California 90033.** *An Equal Opportunity/Affirmative Action Employer.*

IMMUNOPATHOLOGY FACULTY POSITION. The Department of Pathology, Medical College of Georgia, Augusta, Georgia, invites applications for a faculty position at the rank of assistant or associate professor. The candidate should have a Ph.D. or M.D./Ph.D. degree with demonstrated leadership in research and teaching. The position will have the responsibility of directing a hospital laboratory performing service in immunochemistry and immunopathology. The position is available immediately. Applicants should submit curriculum vitae and references to: **The Chief, Section of Anatomic Pathology, Medical College of Georgia, Augusta, Georgia 30912.** *Equal Opportunity Employer, M/F. J1417.*

INSECT MOLECULAR GENETICIST: Assistant professor, tenure-track position. Responsibilities: 100 percent research in insect molecular genetics emphasizing the development of improved plant protection strategies through the genetic manipulation of insects, entomopathogens, and plants. Ph.D. in molecular genetics or biology. Preference will be given to candidates with education and experience in insect molecular genetics. Send curriculum vitae, transcripts, and names of five references to: **Professor W. S. Bowers, Chairman, Molecular Geneticist Search Committee, Department of Entomology, New York State Agricultural Experiment Station, Cornell University, Geneva, New York 14456.** Position available 1 January 1985. Application deadline is 1 October 1984.

ALLEGHENY-SINGER RESEARCH INSTITUTE

affiliate of and located at

**ALLEGHENY GENERAL HOSPITAL
320 East North Avenue
PITTSBURGH, PA. 15215**

Allegheny-Singer Research Institute is seeking candidates for five professional level and 6-10 technical level positions for research contingent upon anticipated funding July 1, 1984, in its newly formed cancer cluster program.

ASRI Biostatistician—This position is responsible for supporting a statistical resource for all ASRI investigative teams. Responsibilities include assistance in design of new research projects having a statistical component, and development and implementation of computer software programs for routine and advanced statistical analyses of clinical research data. Twenty-five percent of effort could be directed to independent research.

Cancer Cluster Program

ASRI also is seeking candidates for key positions in its new cluster program in cancer diagnosis and treatment. Investigational areas include:

- The detection and quantitation of disease using radiolabeled monoclonal antibodies;
- The enhanced diagnosis of lymphomas and Leukemias utilizing cell surface marker technology and immunochemical techniques;
- Precise definition of tumor and normal tissue response to treatment using functional inhibition, cellular pharmacologic and cloning assays; and
- Regional hyperthermia in combined-mode therapies including hyperthermia; emphasis on heat induction, precision thermometry, tumor and normal tissue responses.

The overall program involves the collaborative activities of twenty-two investigators and physicians of ASRI and AGH. Resumes will be accepted for the following positions:

- PHYSICIST/ENGINEER**—M.S. or Ph.D. Primary responsibility is to develop new and innovative methods for measuring and producing heat in human tumors. The position requires an M.S. or Ph.D. in physics or engineering or veterinary science and two years experience in thermal studies involving radiofrequency, microwaves and ultrasound.
- CELLULAR PHARMACOLOGIST**—Ph.D. Treatment response evaluation. Pharmacology-pharmacokinetic background; 3-4 years postdoctoral experience in oncology setting. Experience in detection and quantitation of chemotherapeutic agents essential. HPLC, gas chromatographic and fluorimetric experience desirable.
- IMMUNO-CHEMIST**—Ph.D. Monoclonal Antibody Programs. Immunology-biochemistry background; 2-3 years postdoctoral experience in clinically-related monoclonal antibody applications. Experience in protein purification, analysis of immune-specificity, and surface marker technology essential. Monoclonal production experience helpful.
- TECHNICIAN POSITIONS**—MS or BS. Various programs. Experience in biomedical research applications essential. Experience with immunological procedures, cell kinetics, pharmacology, biochemistry, hematology, physiology, histopathology or radionuclide techniques helpful.

Medical Physics and Engineering Research Programs

Senior Medical Physicist—M.S. or Ph.D. in Physics, ABR Certification in Radiological Physics and 3-5 years experience in radiation oncology, diagnostic radiology or nuclear medicine are desirable. Participation in clinical disciplines, the Mideast Center for Radiologic Physics, the Accredited Dosimetry Calibration Laboratory and ASRI Hyperthermia Research Projects are available, depending on background and interests of the successful candidate.

Salary and classification commensurate with experience. Applications encouraged from men and women of all ethnic, racial and religious backgrounds.

Reply in confidence to:

**SEARCH COMMITTEE
Allegheny Singer Research Institute
at Allegheny General Hospital
320 East North Avenue
Pittsburgh, Pennsylvania 15212**

AN EQUAL OPPORTUNITY EMPLOYER M/F/H

POSITIONS OPEN

EDITOR UTAH STATE UNIVERSITY

The editor is responsible for production of Experiment Station publications. Specific activities include interacting with authors, editing technical manuscripts, and writing and producing scientific materials for specific audiences and uses.

Requires a graduate degree in a field of science, communications or journalism. An undergraduate degree with 4 to 5 years of successful experience in writing about science is also acceptable. Experience in agricultural journalism is desirable.

Application deadline: 6 July 1984, or until suitable applicant is found.

To apply, send letter of application, résumé, and the names of three professional references to:

**Chairman, Screening Committee
Agricultural Experiment Station
Utah State University, UMC 48
Logan, Utah 84322**

An Affirmative Action/Equal Opportunity Employer

FACULTY POSITIONS IN MICROBIOLOGY AND MOLECULAR GENETICS

The Department of Microbiology and Molecular Genetics at the University of Cincinnati College of Medicine has four faculty openings in the area of molecular genetics. These positions are in the tenure-track and one or more will be filled with a molecular immunologist. Applicants should submit curriculum vitae and a short statement of research accomplishments and direction for future research, along with the names of three scientists willing to write letters of recommendation. These should be forwarded to: **Dr. Jerry B. Lingrel, Chairman, Department of Microbiology and Molecular Genetics, University of Cincinnati College of Medicine, Cincinnati, Ohio 45267-0524.** *The University of Cincinnati is an Equal Opportunity/Affirmative Action Employer.*

HEMOGLOBIN GENETICIST to assume supervision of Sickle Cell Center Research Laboratory in the Department of Pediatrics. Some postgraduate level teaching. Faculty appointment at the assistant professor or associate professor level. Requirements include Ph.D. degree in genetics or biochemistry and a minimum of 3 years of experience in hemoglobin research, with a substantial background in globin gene DNA analysis. Contact: **George R. Honig, M.D., Ph.D., Professor and Head, Department of Pediatrics, University of Illinois, 840 South Wood Street, Chicago, Ill. 60612.** *The University of Illinois is an Affirmative Action/Equal Opportunity Employer.*

PLANT BIOLOGIST: Full-time appointment for the 1984-1985 academic year, starting 1 August. Teaching responsibilities include lectures in the introductory biology course. Ph.D. required; research background in plant physiology, molecular biology, or genetics preferred. Send curriculum vitae and arrange for three letters of recommendation by 6 July to: **Dr. R. L. Vadas, Department of Botany and Plant Pathology, University of Maine, Orono, Maine 04469.** *An Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL ASSOCIATES, INSECT BIOCHEMISTRY: Available August 1984. Photoaffinity labeling and active-site peptide mapping of juvenile hormone binding proteins. Affinity labeling of catabolic proteins and receptors of pheromones in moths and termites. Please send curriculum vitae and two or three letters of reference to: **Professor Glenn D. Prestwich, State University of New York (SUNY), Stony Brook, Stony Brook, N.Y. 11794-3400.** *SUNY, Stony Brook, is an Affirmative Action/Equal Opportunity Educator and Employer. AK number 105-84.*

POSTDOCTORAL POSITION. One-year federal appointment with possibility of an additional year for a **biochemist/plant physiologist** with the Agricultural Research Service (ARS) in Pasadena, California. Incumbent to study regulation of abscisic acid biosynthesis, the mode of action of specific inhibitors of ABA biosynthesis, and their physiological effects in plants. Applications must have experience in radioisotope studies of plant biosynthesis, metabolism, or transport, with knowledge of immunoassay, HPLC and GC/MS techniques. Salary based on qualifications and experience, GS-11/12, \$25,366/\$30,402. Must be U.S. citizen. For application procedures, contact: **RITA MILLARD, U.S. Department of Agriculture, ARS, BARC-WEST, Building 003, Room 107, Beltsville, Maryland 20705,** or telephone: 301-344-3138. *An Affirmative Action/Equal Opportunity Employer.*

POSITIONS OPEN

MOLECULAR VIROLOGIST

Ph.D. or equivalent degree with an interest in pathobiology of HERPES SIMPLEX latency and reactivation in animal models, using in situ hybridization and related techniques. Assistant professor level research associate with demonstrated ability to carry out independent research and postdoctoral candidates sought for PERMANENTLY ENDOWED, private, nonprofit, UCLA-affiliated hospital. Salary and benefits competitive based on qualifications. Send curriculum vitae, letter outlining research interests, and names of three references to:

**Anthony B. Nesburn, M.D.
c/o Research Administration
Cedars-Sinai Medical Center, Room 2211
8700 Beverly Boulevard
Los Angeles, Calif. 90048**

An Equal Opportunity/Affirmative Action Employer

Ph.D. with postdoctoral experience in MOLECULAR GENETICS to participate in a research program designed to develop in vitro diagnostics products that utilize DNA probe technology. Applicants should have experience in computer-based instrumentation and an interest in automated analytical procedures. Submit curriculum vitae, names of three references, salary requirements, and availability by 6 July to: **Scientific Director, Microbiological Research Corporation, P.O. Box 308, Bountiful, Utah 84010.**

PHYSICAL SCIENCE: Tenure-track position teaching interdisciplinary physical science to non-science majors. Requirements: Facility in communicating ideas, Ph.D. in one of the physical sciences, evidence of academic breadth, and desire to teach nonscientists. Submit letter of intent, curriculum vitae, all transcripts, and letters of reference by 6 July to: **Dr. Bruce MacLaren, Chair, Natural Science Department, Eastern Kentucky University, Richmond, Ky. 40475.** *Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL POSITIONS to participate in ongoing studies of cytochromes and metalloproteins from mammalian and microbial sources. Preference will be given to candidates with a background in biochemistry, biophysics, inorganic chemistry, or microbiology. Salary range: \$17,000 to \$18,000. Send curriculum vitae and names of three references to: **Dr. David C. Wharton, Department of Biology, Northeastern University, 360 Huntington Avenue, Boston, Mass. 02115.** *Northeastern is an Equal Opportunity/Affirmative Action/Title IX University.*

POSTDOCTORAL POSITION available 1 September 1984 to study the role of the pig major histocompatibility complex (MHC) in reproduction. Studies are in basic molecular genetics, using recombinant DNA technology, but have potentially interesting application to the swine industry as well. Send curriculum vitae and names of three references to: **Dr. Carol Warner, Department of Biochemistry, Iowa State University, Ames, Iowa 50011.**

An Equal Opportunity/Affirmative Action Employer

POSTDOCTORAL POSITIONS—BIOCHEMICAL GENETICS

Merck Sharp & Dohme Research Laboratories has immediate openings for three postdoctoral scientists in its Department of Biochemical Genetics. Candidates with experience in molecular biology are desired. Positions involve basic research projects in eukaryotic gene expression, cell biology and molecular virology, employing recombinant DNA, DNA-mediated gene transfer, and microinjection techniques. Salaries, benefits, and career growth are excellent. Send curriculum vitae to:

**S. R. Jenkins
P.O. Box 2000
Rahway, N.J. 07065**

An Equal Opportunity Employer, M/F

POSTDOCTORAL POSITIONS (TWO) available immediately in research-intensive department for Ph.D. in biochemistry, cell biology, or related field. Research deals with the mechanism of expression and action at the receptor or postreceptor level of polypeptide growth factors that induce phenotypic transformation. Experience in the following areas is desirable: receptor biochemistry; enzyme biochemistry; protein and peptide purification immunochemistry; hormonal regulation of gene expression. Send curriculum vitae and names of three references to: **Dr. J. Massagué, Department of Biochemistry, University of Massachusetts Medical School, 55 Lake Avenue, North, Worcester, Mass. 01605.** *An Equal Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

POSTDOCTORAL FELLOW/ASSISTANT PROFESSOR (Ph.D. or M.D.) in molecular biology to join basic gastrointestinal research laboratory. Applicant should have strong background in **molecular biology.** Candidate will join group with ongoing interest in malignant transformation, intestinal cell function and transport, molecular biology involving viral hepatitis and hepatoma, and studies of oncogenes in gastrointestinal malignancy. Individual will be encouraged to conduct independent research but will be expected to participate in collaborative projects. Send curriculum vitae, bibliography, references, and statement of research interests to: **Dr. Kurt J. Isselbacher, Chief, Gastrointestinal Unit, Massachusetts General Hospital, Boston, Mass. 02114.** *An Equal Opportunity Employer.*

POSTDOCTORAL POSITION

Available September. Postdoctoral position in experimental cancer chemotherapy involving molecular pharmacology and biochemistry. Research will involve basic, mechanistic studies of the natural folates and their influence on the cytotoxicity of antineoplastic agents in human tumors. A strong background in biochemistry or molecular pharmacology is an advantage. Send curriculum vitae and names of three references to:

**Janet A. Houghton, Ph.D.
Division of Biochemical
and Clinical Pharmacology
St. Jude Children's Research Hospital
332 North Lauderdale
Memphis, Tennessee 38101**

An Equal Opportunity Employer

POSTDOCTORAL POSITION available in August. Research on cellular aspects of the generation and processing of electrical signals in the vertebrate retina, with emphasis on studies of isolated photoreceptors. Previous experience in electrophysiology useful. Write: **Gary G. Matthews, Department of Neurobiology and Behavior, State University of New York (SUNY), Stony Brook, Stony Brook, N.Y. 11794.** *SUNY, Stony Brook, is an Affirmative Action/Equal Opportunity Educator and Employer. AK number 93-84.*

POSTDOCTORAL POSITION: Protein chemistry and/or immunochemistry background. This person will provide the biochemical expertise for a small team developing synthetic membrane-bound ion-channel receptors. Experience with crosslinking or affinity labeling and lipid membranes would be helpful. This position is for an independent, self-motivated scientist. It is an academic research position in a major university in western New York.
Box 160, SCIENCE

POSTDOCTORAL POSITIONS IN MEDICAL MYCOLOGY AND MOLECULAR BIOLOGY OF FUNGI: A number of postdoctoral positions are available in the Medical Mycology Program at Washington and St. Louis University Schools of Medicine. Participating faculty and research interests are: **Gerald Medoff**—Molecular pharmacology of antifungal agents; biochemical and structural changes during morphogenesis of *Histoplasma capsulatum*; gene isolation and regulation of morphogenesis in *H. capsulatum*. **Alan M. Lambowitz**—Plasmids, gene isolation, genetic engineering procedures, mitochondrial RNA splicing in *Neurospora*. **J. Russ Little**—Cellular immunology and macrophage functions. **George S. Kobayashi**—Host-parasite interaction of medically important fungi. **David Schlessinger**—RNA processing and metabolism in bacteria and mammalian cells. **William E. Goldman**—Molecular basis of pathogenicity of *Histoplasma capsulatum* and *Bordetella pertussis*. Applicants should send curriculum vitae and names of three references directly to the individuals listed above or to: **Dr. George Kobayashi, Washington University School of Medicine, Infectious Diseases Division, Campus Box 8051, 660 South Euclid, St. Louis, Mo. 63110.**

POSTDOCTORAL POSITIONS: METABOLIC/PHYSIOLOGIC NMR to work on problems of metabolism, transmembrane ion distributions, tumor detection and characterization by NMR spectroscopy/chemical shift imaging. Background in biochemistry, physiology, and/or NMR spectroscopy desirable. Send curriculum vitae and names of three references to: **Dr. Eric T. Fossel, Department of Radiology, Beth Israel Hospital, Boston, Mass. 02215; telephone: 617-735-3350.** *An Equal Opportunity/Affirmative Action Employer.*

**NATIONAL INSTITUTE OF ARTHRITIS, DIABETES,
AND DIGESTIVE AND KIDNEY DISEASES
OFFICE OF THE DIRECTOR**

**DIRECTOR
DIVISION OF
DIGESTIVE DISEASES**

**(and Associate Director for
Digestive Diseases)—Dual Position**

Incumbent must be a recognized and respected leader in the field of digestive diseases related research, with experience and expertise in the development of new knowledge and new technology in digestive diseases. Responsibilities include identifying research needs and opportunities; planning, developing and implementing a high quality extramural research and research training program in the field; and conducting laboratory investigations in digestive diseases related research.

Salary Range—\$58,938 to \$66,400 per annum

Position information, SF-171 (application), and qualifications requirements may be obtained by contacting:

**Mr. Clifford Moss, Executive Secretary
Search Committee for Director,
Division of Digestive Diseases
Building 31, Room 9A34
National Institutes of Health
Bethesda, Maryland 20205
(301) 496-4231**

Applications must be postmarked no later than July 31, 1984.

AN EQUAL OPPORTUNITY EMPLOYER

National Institute of Environmental Health Sciences
National Institutes of Health
Public Health Service
Department of Health and Human Services

SCIENTIFIC DIRECTOR.

The National Institute of Environmental Health Sciences (NIEHS), located in Research Triangle Park, North Carolina; conducts, fosters, and coordinates research and research training on the biological effects of chemical, physical, and biological substances in the environment. In addition to directing, developing and evaluating the NIEHS Intramural Research Program, the incumbent serves as an expert consultant to the Institute Director, Federal agencies and other organizations in the field of environmental health. The Intramural Research Program currently is allocated 177 of the Institute's 567 permanent positions and an operating budget of approximately \$14 million.

This is a Civil Service position in the Senior Executive Service (SES) with a salary range from \$58,938 to \$66,000 per annum, depending on qualifications. Physicians may be eligible for an additional comparability allowance up to \$10,000 per year. (Alternatively, candidates may be eligible for appointment in the Commissioned Corps of the U.S. Public Health Service.) The individual selected, if not presently in the SES, must serve a one-year probationary period.

Position information and qualification requirements may be obtained by contacting:

**Alvin L. Wade, Jr.
NIEHS Personnel Office, P.O. Box 12233
Research Triangle Park, NC 27709
(919) 541-4318**

Applications consisting of a Personal Qualifications Statement, SF-171 (available at all Federal Job Information Centers and Federal Personnel Offices); a curriculum vitae; and a bibliography, should be submitted to the above address and postmarked not later than 7/13/84.

An Equal Opportunity Employer

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

National Program Leaders

Highly qualified scientists are needed to assume the duties of national program leaders on the Agricultural Research Service's National Program Staff in the following seven areas:

Plant Physiology	Entomology
Veterinary Medicine	Fiber Technology
Ruminant Nutrition	Weed Science
Forage and Range	

The successful candidates will focus on building broad multidisciplinary research programs to solve national agricultural problems. ARS's research programs are conducted throughout the United States and in several foreign countries. These positions require sound scientific credentials and a broad knowledge of scientific disciplines involved in ARS's extensive research program in the respective disciplines. Candidates must demonstrate skills for program planning, setting research priorities, allocating resources, and evaluation programs.

These positions are located at Beltsville, Maryland. Grade level is GM-15. Salary range is \$50,252 to \$65,327, based on qualifications and experience. U.S. citizenship is required. *USDA is an Equal Opportunity/Affirmative Action Employer.* Send SF-171 by 16 July to:

**Judi Ruth (Code NPS)
Agricultural Research Service, USDA
Room 318D, Building 003, BARC-West
Beltsville, Maryland 20705
Telephone: 301-344-2701**

Applicants will be informed of eligibility or ineligibility. Eligible candidates will be informed when positions have been filled.

**INTEGRATED
GENETICS**

Integrated Genetics of Framingham, Massachusetts is a leading biotechnology firm specializing in the health care field with emphasis on DNA probe diagnostic technology and production of complex therapeutic proteins.

Bioengineer

We are seeking a qualified scientist with post-doctoral experience for our bioengineering group. Responsibilities will include scale-up in fermentation, mammalian tissue culture including media optimization.

**Send C.V. and names of three references to:
Charlotte Gregory, Personnel Manager
Integrated Genetics, Inc.
31 New York Avenue
Framingham, Massachusetts 01701**

An Equal Opportunity Employer

POSITIONS OPEN

POSTDOCTORAL POSITION available immediately to study post-translational modification of calmodulin (*N*-methylation, carboxylmethylation, protein processing). Candidate should have experience in protein chemistry and enzymology. Send curriculum vitae and names of three references to: **Dr. Frank L. Siegel, Neurochemistry Section, Waisman Center, University of Wisconsin, Madison, Wis. 53706.** *An Affirmative Action/Equal Opportunity Employer.*

POSTDOCTORAL POSITION available immediately to study three-dimensional architecture of chromosomes using optical and electron microscopy and computerized, three-dimensional reconstruction schemes. The candidate should have strong background in computer science/computer graphics and/or macromolecular crystallographic experience. Send résumé with names of three references to: **Dr. David A. Agard or Dr. John W. Sedat, Department of Biochemistry and Biophysics, University of California, San Francisco, California 94143.**

POSTDOCTORAL POSITION available to study the mechanism of coupling of muscarinic cholinergic receptors to the adenylate cyclase and phosphoinositide systems or the molecular basis of agonist induced desensitization of muscarinic cholinergic receptors in cultured cells. Send curriculum vitae and three letters of reference to: **Dr. T. K. Harden, Department of Pharmacology, University of North Carolina at Chapel Hill, School of Medicine, Chapel Hill, N.C. 27514.**

POSTDOCTORAL POSITION is available immediately to study the mechanism of action of 1,25-dihydroxyvitamin D₃. Studies are examining the interaction of the 1,25(OH)₂D₃ receptor with nucleic acids (*PNAS* 81: 2337) and the control of cell growth and differentiation (*Fed Proc* 43: 855). Send résumé and three references to: **Dr. R. T. Franceschi, Harvard School of Public Health, 665 Huntington Avenue, Boston, Mass. 02115.**

POSTDOCTORAL POSITION starting fall 1984, to study HLA associated immunological abnormalities predisposing to autoimmunity, using cell separation methods and assays of interleukin production and response. Minimum salary: \$16,000. Three-year funding. Send résumé and names of three references to: **Dr. Joseph Michalski, Department of Medicine, Louisiana State University Medical Center, 1542 Tulane Avenue, New Orleans, La. 70112.** *An Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL RESEARCH ASSOCIATE: Position open in the Biomedical Engineering Laboratory, a laboratory dedicated to interdisciplinary bio-rheological research involving personnel of Rice University and those of Texas Medical Center. Candidates should have training in biophysics, bioengineering, biochemistry, or related fields. The research program is on the response of blood platelets to shear stress at known, controlled levels applied by use of rheological equipment. The focus is on the biochemical mechanism of platelet response. There may be openings in several other biorheological projects. Inquiries should be sent to: **J. D. Hellums, Dean of Engineering, Rice University, P.O. Box 1892, Houston, Texas 77251.**

TWO POSTDOCTORAL RESEARCH POSITIONS IN IMMUNOCHEMISTRY open immediately at Institut National Recherche Agronomique (INRA) at Tours, to study proteins involved in cell adherence. Salary between \$12,000 and \$14,000 per annum. Send curriculum vitae and names of references to: **Dr. A. Paraf, Station de Virologie, INRA, 78850 Thiverval-Grignon, France.**

POSTDOCTORAL TRAINING POSITIONS are available for qualified candidates interested in blood coagulation, fibrinolysis, thrombosis, and hemostasis. Training is offered in several disciplines including biochemistry, cell biology, pharmacology, and physiology to study the role of thrombogenesis of plasma factors, platelets, megakaryocytes, and vascular cells. The goals are to explain etiology and pathogenesis of human thrombosis and hemorrhagic disease and to develop new diagnostic and therapeutic measures. The interested candidates must have fulfilled M.D. or Ph.D. training and be citizens or permanent residents of the United States. Positions are offered for up to 3 years. Salary is commensurate with NIH guidelines for the postdoctoral trainees plus an institutional supplement. Send application and curriculum vitae to: **Dr. Andrei Budzynski, Thrombosis Research Center, Temple University School of Medicine, Philadelphia, Pa. 19140.** *Equal Opportunity/Affirmative Action Employer.*

POSITIONS OPEN

POSTDOCTORAL RESEARCH ASSOCIATE position available for studies on drug transport mechanisms in gastrointestinal epithelia. Experience of synthetic membrane system, kinetic modeling, or epithelial physiology. Send curriculum vitae and names of three references to: **Dr. Michael J. Jackson, Department of Physiology, George Washington University Medical Center, 2300 Eye Street, NW, Washington, D.C. 20037.**

POSTDOCTORAL or a RESEARCH ASSOCIATE available 1 July 1984 to study structure-function relationships in isozymes of human aldehyde dehydrogenase. The research involves localization of amino acid residues involved in catalysis via chemical modification by affinity and suicide reagents. Ph.D. in biochemistry or chemistry required. Postdoctoral experience in a related field is an advantage. Send curriculum vitae and names of three references to: **Dr. Regina Pietruszko, Center of Alcohol Studies, Rutgers University, Piscataway, New Jersey 08854.** *An Affirmative Action/Equal Opportunity Employer.*

POULTRY NUTRITIONIST: Assistant/associate professor, Department of Avian Sciences, and assistant/associate nutritionist in the Experiment Station, University of California, Davis; 25 percent undergraduate, graduate teaching, and advising; 75 percent research; 11-month, tenure-track appointment. Ph.D. in nutrition (poultry) or closely related area. Background in biochemistry, physiology, and avian sciences required. Submit résumé with teaching experience, transcripts (if fewer than 5 years post-graduation), reprints, and names and addresses of four references by 1 September 1984 to: **C. R. Grau, Avian Sciences, University of California, Davis, Calif. 95616.** *The University of California is an Affirmative Action/Equal Opportunity Employer.*

PROTEIN CHEMIST

The W. Alton Jones Cell Science Center invites applications for the position of head of the protein chemistry laboratory. The candidates should be willing to collaborate closely with the recombinant DNA laboratory and with several tissue culture laboratories that are engaged in the isolation, characterization, and modification of bioeffectors produced by various differentiated cell types. Expertise in modern microtechniques of protein sequencing is expected. Particular consideration will be given to candidates with background in conformational studies of proteins and experience in synthetic peptide chemistry. Synthetic peptides will be used for structure-function studies in cell cultures and for raising antibodies. Salary negotiable. Applicants should send curriculum vitae and references to: **Dr. Gordon Sato, W. Alton Jones Cell Science Center, 10 Old Barn Road, Lake Placid, New York 12946.**

REPRODUCTIVE BIOLOGIST

Tenure-track research position in the Department of Obstetrics and Gynecology for investigator with Ph.D. in biochemistry, physiology, or anatomy and a minimum of 2 years of postdoctoral experience in female reproductive function. Ability to collaborate with physicians, train clinical fellows, and obtain external research funding is required.

Salary and rank open. *Women and minorities are encouraged to apply and to voluntarily identify themselves.* You may apply to:

Mary G. Hammond, M.D.
Director of Reproductive Endocrinology
4012 Old Clinic Building
University of North Carolina
School of Medicine
Chapel Hill, N.C. 27514

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

RESEARCH ASSISTANT PROFESSOR position available immediately to study gastrointestinal (GI) hormones in relation to various GI disorders and diabetes. Requirements include a Ph.D. in biochemistry, immunology, or in related area, plus three or more years of research experience. Research involves characterization of GI hormones in the tissue and biological and biochemical methods. The study also includes characterization of the receptors for these GI hormones present in the target cells and possible alteration of these receptors in various GI disorders. Salary range is negotiable but competitive, depending upon applicant's qualification. Interested applicants should send résumé and names of three references to: **Kemal Akdamar, M.D., Department of Medicine, Tulane University School of Medicine, 1430 Tulane Avenue, New Orleans, La. 70112.**

POSITIONS OPEN

RESEARCH ASSISTANT PROFESSOR position available 1 July 1984 for a molecular biologist with at least 2 years of postdoctoral experience in recombinant DNA techniques, DNA sequencing, and cloning. Research project involves the study of the genetic basis of rare human variants currently studied at the biochemical level. Salary based on experience. Send curriculum vitae and names of three references to: **Dr. Angelo M. Scanu, The University of Chicago, 5841 South Maryland Avenue, Box 231, Chicago, Ill. 60637.** *The University of Chicago is an Equal Opportunity/Affirmative Action Employer.*

RESEARCH ASSOCIATE (calendar year). Oversee and participate in ongoing projects, develop research projects, serve as a statistical consultant, and conduct independent research in infant memory with emphasis on categorization within framework of grant proposal. Serve as liaison with local pediatricians and infant interest groups, establishing new sources of infant subjects. Must have expertise and experience in use of microcomputers, programming and statistical analyses, and research training in conditioning/memory. Ph.D. required; postdoctoral experience desirable. Send curriculum vitae, three letters of recommendation, and copies of best papers to: **Dr. Carolyn Rovee-Collier, Psychology Department, Busch Campus, Rutgers University, New Brunswick, New Jersey 08903.** Deadline: 1 August 1984.

RESEARCH ASSOCIATE with the Mineral Metabolism Research Unit, National Animal Disease Center, U.S. Department of Agriculture (USDA), Agricultural Research Service (ARS), Ames, Iowa. Temporary federal appointment—1 year, may be extended. Candidate will work on cloning of cDNA's corresponding to 1,25-dihydroxyvitamin D-regulated messenger RNA's. Ph.D. desirable. Position requires experience in molecular biology/recombinant DNA techniques and skill in preparation and characterization of cDNA. Salary: GS-11, \$25,489. For applications: **Jerrie Brooks, USDA-ARS-B88, Personnel Operations Branch, Building 003, Room 318H, BARC-West, Beltsville, Maryland 20705.** Telephone: 301-344-4567. Candidates must be U.S. citizens. *An Equal Opportunity Employer.*

SENIOR RESEARCH FACULTY—NEUROBIOLOGY AND BEHAVIOR. The Department of Psychiatry of the Albert Einstein College of Medicine and Montefiore Medical Center seeks to recruit a new senior research faculty member in neurobiology and behavior, preferably with specialization in **NEUROPSYCHOPHARMACOLOGY.** This position is physically located at the Montefiore Medical Center. Applicants must have a Ph.D. or M.D., currently be at or eligible for promotion to the associate professor level, and have an outstanding record of research publications and grant funding by outside agencies. The successful applicant will receive 2 years of initial support, after which he/she will be expected to provide own support from outside grant sources. Send curriculum vitae and representative publications to: **Dr. Elliot L. Gardner, Senior Faculty Search, Albert Einstein College of Medicine, 1300 Morris Park Avenue, Bronx, N.Y. 10461.** *An Equal Opportunity/Affirmative Action Employer.*

VETERINARY PATHOLOGIST

International Research and Development Corporation (IRDC) has an opening for a pathologist. Board-certification plus experience in toxicologic pathology is desired. However, Board-qualified candidates with significant experience will be considered. Responsibilities include histopathologic evaluation of studies and service as a pathology study monitor for ongoing studies. Ability to analyze data and write reports is essential.

Our pathology division is responsible for clinical and anatomic pathology for our extensive program of toxicological research for the pharmaceutical, agricultural, chemical, and consumer industries as well as governmental agencies.

IRDC is located a few miles from Kalamazoo, Michigan, midway between Chicago and Detroit, an area affording a broad range of urban or rural life styles with excellent cultural and recreational opportunities. We offer excellent benefit programs and a starting salary commensurate with experience. Send your résumé to:

Dr. Ward R. Richter
Director, Division of Pathology
International Research and Development Corporation
500 North Main Street
Mattawan, Michigan 49071
Equal Opportunity Employer

The MX Missile and the Strategic Balance of Power

A collection of recent articles from SCIENCE on contemporary strategic ideology is now available for use by professionals, teachers, and researchers interested in the nuclear arms race.

"Anyone seeking a better understanding of the MX debate would do well to look at [this] series of brief, clearly written analyses."

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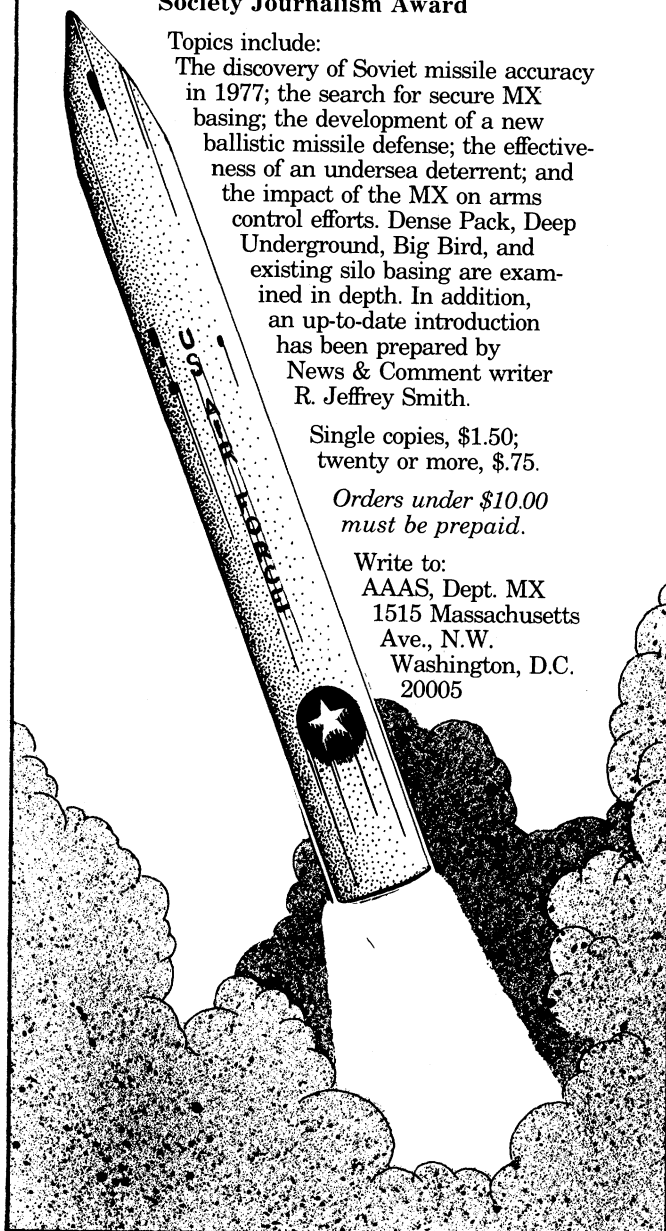
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POSITIONS OPEN

TWO RESEARCH ASSOCIATE/POSTDOCTORAL fellow positions available in experimental diabetes beginning 1 September 1984. Projects involve: (i) viral-induced diabetes and other autoimmune endocrine disease in animal models in vivo and in vitro (Dr. Elliot J. Rayfield); (ii) cell-mediated and humoral-mediated anti-beta cell immune response in insulin-dependent diabetic man and animal models (Dr. McEvoy). Candidates with experience in immunology and tissue culture techniques preferred. Salary: \$20,000 per year. Send curriculum vitae and names of three references to: **Robert C. McEvoy, M.D., Department of Pediatrics, Division of Pediatric Endocrinology, THE MOUNT SINAI SCHOOL OF MEDICINE, One Gustave L. Levy Place, New York, N.Y. 10029.** An Equal Opportunity Employer.

RESEARCH NUTRITIONAL SCIENTIST. Career Federal Service. The Western Human Nutrition Research Center, U.S. Department of Agriculture, in San Francisco, California, is seeking an independent scientist to study the interrelationship of body composition, physical performance, and nutritional requirements and assessment methodologies. Must be U.S. citizen. Salary based on qualifications and experience; GS-11/12, \$25,366/\$30,402. For application procedures, contact: Rita Millard, telephone: 301-344-3138, Beltsville, Maryland, by 13 July 1984. An Equal Opportunity Employer.

University of Alberta, Department of Medicine. Applications are invited for a **RESEARCH SCHOLAR** at the rank of **assistant professor** (salary: \$29,720 to \$41,820). The successful candidate should have a Ph.D. with at least 2 years of appropriate postdoctoral training and must have demonstrated outstanding potential for an independent research career in the area of blood pressure control. This is a long-term academic appointment which, though funded through an external agency, ensures the incumbent the privileges of the University academic rank at which the appointment is made. The granting of these awards is by competition and is made on the basis of excellence. Applicants should forward their curriculum vitae, an outline of their research interests, and the names of three references to: **Dr. J. B. Dossetor or Dr. S. Kaufman, Department of Medicine, 8-121 Clinical Sciences Building, University of Alberta, Edmonton, Alberta, Canada T6G 2G3.** Closing date: 1 October 1984. *The University of Alberta is an Equal Opportunity Employer, but in accordance with the Canada Employment and Immigration regulations, this advertisement is directed particularly to Canadian citizens and permanent residents.*

SCIENTIFIC ADMINISTRATIVE ASSISTANT

Challenging position for an individual possessing a bachelor's degree in the sciences working directly with the executive director, New Jersey State Commission on Cancer Research. The Commission is seeking an energetic person with experience in research grants management in the biomedical sciences. Requires effective communication skills, a working knowledge of scientific terminology, and an understanding of the grant review process. Other duties involve coordinating business meetings, budget planning, and fund-raising. Salary: \$24,000. Forward letter of interest, complete résumé, and names of three references to: **S.A.A. Search Committee, New Jersey State Cancer Commission, 28 State Street, Trenton, N.J. 08625.** An Affirmative Action/Equal Opportunity Employer.

TEACHING AND RESEARCH ASSISTANT—NEUROPHYSIOLOGY. Job Order Number 416822; 40 hours per week, \$20,000 per year. **Duties:** perform duties and tasks required of teaching and research assistant in Medical Center Department of Psychiatry and Neurology, including the following: (i) teach methodology and techniques for taking electroencephalographic (EEG) recordings to medical school research assistants and laboratory technicians; (ii) assist medical staff in neurological research in the following areas: EEG recordings, sleep recordings, electromyographic records, and analyses of nerve conduction velocities; (iii) perform computer analysis of EEG recordings; (iv) perform evoked potential, visual, somatosensory, and auditory recordings for research and clinical functions; and (v) program computers for various neurological research purposes. **Requirements:** medical technician course, 2 years; medical technician neurophysiology, 5 years; must have some training or practical experience in computer technology or utilization of computers for research or clinical purposes. Contact: **Louisiana Office of Employment Security, 617 St. Charles Avenue, New Orleans, Louisiana 70130.**

POSITIONS OPEN

PROTEIN SEQUENCER: A staff position is available to operate a protein sequencing facility within the Howard Hughes Medical Institute at Duke University Medical Center. Applicants with prior experience in gas phase sequencing and HPLC techniques will be given preference. Send curriculum vitae to: **Brenda Evans, Business Manager, Howard Hughes Medical Institute, P.O. Box 3287, Duke University Medical Center, Durham, North Carolina 27710.**

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YEAST GENETICIST, with Ph.D. plus postdoctoral experience, to carry out independent and creative research in the general areas of DNA repair and meiosis. Strong background in classical genetics required, and must be able to construct and genetically analyze yeast hybrids and construct strains of designated genotypes. Requires experience in tetrad analysis, survival curve analysis, work with temperature-conditional mutants and their use in sequencing cellular reactions, induction of mutations, analyses of intergenic and intragenic recombination, and genetic mapping. Please specify Job Number A/2940. Applicants should send two copies of curriculum vitae and names and addresses of three references to: **Lawrence Berkeley Laboratory, Employment Office 90-1042, One Cyclotron Road, Berkeley, Calif. 94720.**

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FELLOWSHIPS

POSTDOCTORAL FELLOWSHIPS IN BIOMEDICAL SCIENCE. The University of Tennessee College of Veterinary Medicine has two funded positions for postdoctoral fellows in a variety of funded projects including toxicology, hematology, reproductive physiology, animal models of human genetic diseases, metabolic livestock diseases, molecular biology, microbiology, and immunology. Appropriate candidates will include individuals with professional medical degrees or a Ph.D. in biological sciences. Stipends commensurate with qualifications. Available 1 July 1984. Applications accepted until filled. Contact: **Dr. R. L. Michel, Office of Research and Graduate Programs, P.O. Box 1071, Knoxville, Tenn. 37901-1071. Telephone: 615-546-9230.** *The University of Tennessee is an Equal Opportunity/Affirmative Action/Title XI/Section 504 Employer.*

POSTDOCTORAL FELLOWSHIP UNIVERSITY OF PENNSYLVANIA DEPARTMENT OF ANATOMY

Cell biology and electron microscopy background required; expertise in freezing and shadowing techniques preferable. To study unusual filaments and microtubules interactions in cultured cells. Available immediately. Send curriculum vitae to: **Dr. Clara Franzini-Armstrong and Howard Holtzer, Department of Anatomy and Structural Biology/G3, University of Pennsylvania, Philadelphia, Pa. 19104.** *The University of Pennsylvania is an Equal Opportunity Employer.*

POSTDOCTORAL FELLOWSHIP, to start July to December 1984, for 2 years to study: (i) the structure of mammalian Na,K-ATPase, or (ii) cardiac calcium transport proteins. Previous experience with protein/peptide chemistry, recombinant DNA techniques, synthetic organic chemistry, or reconstitution of transport activities is desirable but not essential. Stipend: \$16,000 to \$17,000 per year, plus dependent allowance and medical benefits. Respond to: **Dr. Robert Farley, Department of Physiology and Biophysics, University of Southern California School of Medicine, 2025 Zonal Avenue, Los Angeles, Calif. 90033.**

GRADUATE STUDY

GRADUATE STUDY IN CELL BIOLOGY, NEUROSCIENCE, DEVELOPMENTAL BIOLOGY, AND IMMUNOLOGY

Louisiana State University Medical Center in Shreveport offers graduate programs leading to either the Master of Science or Doctor of Philosophy degree in the Department of Anatomy. Annual stipends of \$7200 with waiver of tuition fees are available to qualified students. For application forms and additional information, contact: **Dr. John A. Beal, Coordinator of Graduate Studies, Department of Anatomy, Louisiana State University School of Medicine, Shreveport, Louisiana 71130.**

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TRAINING PROGRAM

ENGINEERING AND PUBLIC POLICY IN THE NEW LIBERAL ARTS: A program of graduate support to train perspective faculty. In collaboration with an ongoing national initiative to promote a higher level of science, technology, and quantitative reasoning in 4-year undergraduate liberal arts curricula, the Department of Engineering and Public Policy (EPP) at Carnegie-Mellon University plans a program of forgivable loans to support EPP Ph.D. students who upon graduation pursue careers as faculty in liberal arts colleges. Applicants must hold a bachelors degree in engineering or science. Preference will be given to persons who hold an M.S. and/or have teaching experience. Contact: **Dr. Indira Nair, Engineering and Public Policy, Carnegie-Mellon University, Pittsburgh, Pennsylvania 15213; telephone: 412-578-2670.**

WORKSHOP

WORKSHOP ON ABNORMAL CELLS, NEW PRODUCTS, AND RISK

Co-sponsored by
FDA, NCI, NIAID, NHLBI, and CDC
will be held on 30 and 31 July 1984
at the NIH in Bethesda, Maryland

The meeting has been organized to review issues and data relating to the use of abnormal cells in the production of drugs and biologics. Particular attention will be focused on three areas: (i) residual cellular DNA in products; (ii) viruses endogenous to cell substrates; and (iii) residual cellular proteins in products. Discussions will follow the presentation of data, and there will be an attempt to develop consensus in each of the three areas during the afternoon of the second day. The Public Health Service Agencies cosponsoring this workshop believe it will assist them in making decisions on the support of research, the regulation of products, and the use of products derived from abnormal mammalian cells. The meeting is open to the public. However, individuals planning to attend should send their names and addresses to: **Mary Ann Tourault, Food and Drug Administration, 8800 Rockville Pike, Bethesda, Md. 20205,** so that additional information can be sent in advance of the meeting.

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The Cardiac Diseases Branch, Division of Heart and Vascular Diseases, National Heart, Lung, and Blood Institute, is inviting applications for a staff position in the extramural program to participate with clinician and nonclinician scientists in the implementation of national objectives in cardiologic research.

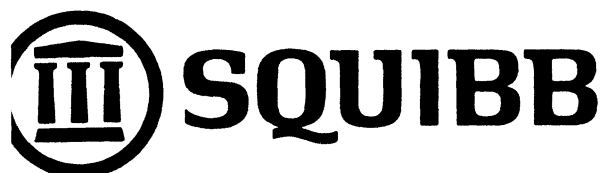
The Cardiac Diseases Branch is responsible for planning and administration of cardiac disease-oriented research in both clinical and fundamental areas. Major targeted programs in ischemic heart disease are the Thrombolysis in Myocardial Infarction Study (TIMI), a multicenter clinical trial of thrombolytic therapy in acute myocardial infarction, the Multicenter Investigation of the Limitation of Infarct Size (MILIS), the Coronary Artery Surgery Study (CASS), the NHLBI Percutaneous Transluminal Coronary Angioplasty Registry, the Specialized Centers of Research in Ischemic Heart Disease (multidisciplinary investigations of fundamental principles and clinical applications in ischemic heart disease), and fundamental studies of sudden cardiac death and lethal arrhythmias.

Applicants must have the M.D. degree or equivalent and experience in research. A background in cardiovascular research is desirable.

Appointment will be made in the federal civil service or the U.S. Public Health Service Commissioned Corps. Salary and benefits will be commensurate with qualifications and method of appointment. A qualifying candidate in the civil service would receive a minimum of \$44,242 and may be eligible for a comparability allowance up to \$10,000 per year.

Those interested in being considered for this position should submit their Personal Qualifications Statement (SF-171) which is available in Federal Personnel Offices and Federal Job Information Centers, along with a Curriculum Vitae and Bibliography by July 9, 1984 to Ms. Donna Brooks, NHLBI Personnel Office, National Institutes of Health, Public Health Service, 9000 Rockville Pike, Building 31, Room 5A-34, Bethesda, MD 20205, or call (301) 496-6477.

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R&D DIRECTOR Japan

Squibb, a major international pharmaceutical company, currently is seeking candidates for the position of R&D Director in its Japanese affiliate with offices in Tokyo. The Director must provide strong intellectual and administrative leadership to a staff of about 50 scientists who have responsibility for the registration in Japan of new human ethical and animal health products. In meeting these responsibilities, the department monitors Japanese regulatory requirements, oversees preclinical and clinical studies conducted in Japan, and prepare the necessary registration documents. Throughout this process, close liaison is maintained with the central research laboratories in the United States.

The successful candidate will have at least 15 years experience in the health care field after receiving an MD or PhD degree (or equivalent) and must be fluent in both Japanese and English.

Interested candidates should send their current resume directly to: **Mrs. Anne V. Corey, International Personnel Director, Squibb Corporation, P.O. Box 4000, Princeton, NJ 08540.** An equal opportunity employer.

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GERMAN CANCER RESEARCH CENTER HEIDELBERG

CELL/MOLECULAR BIOLOGIST

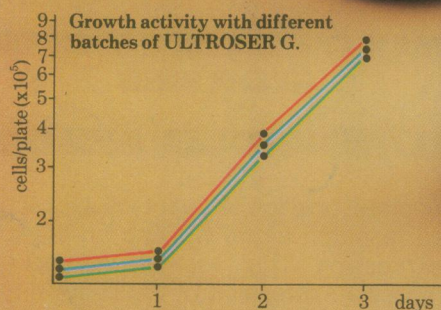
A postdoctoral position (2 years initially) is available to join a research group working on the control of gene expression. The research will focus on the tissue specific expression of the chicken lysozyme gene and the rat tyrosine aminotransferase gene and its control by steroid hormones and cAMP. Applicants with experience in molecular and cell biology and/or somatic cell genetics will be preferred.

Applications with full CV, description of scientific experience and the names of two referees should be sent to: Prof. Dr. Günther Schütz, Institute of Cell and Tumor Biology, German Cancer Research Center (DKFZ), im Neuenheimer Feld 280, D-6900 Heidelberg, F.R.G.

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