

tems (the Ahuachapán, El Salvador, and Takinoue, Japan, regions), and the geothermal system of the Jemez Mountains in New Mexico. It is disappointing that such areas as the Geysers, Lardarello (Italy), or one of the New Zealand fields could not have been included. One does not really see from these case histories how the principles developed in the first section can be applied.

In general, the book is well written and the subject is clearly presented. The material is somewhat out of date, but this is probably due to publishing delays. I would recommend the book as a good overview of the behavior and varied nature of geothermal systems.

ERNEST L. MAJER

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## Mutation Processes

**DNA Repair and Mutagenesis in Eukaryotes.** Proceedings of a symposium, Atlanta, June 1979. W. M. GENEROSO, M. D. SHELBY, and F. J. DE SERRES, Eds. Plenum, New York, 1980. xii, 458 pp., illus. \$49.50. Basic Life Sciences, vol. 15.

This volume of symposium proceedings attempts to bring to bear on eukaryotes an understanding of the molecular basis of mutagenesis such as has been developed in studies of prokaryotes.

After three review papers, beginning with a summary by Kimball of the concepts of mutagenesis in bacteria, that are intended to set the scene, there are five groups of papers, each ending with a short "summary and perspective" paper.

The fungi are represented by *Neurospora crassa* (three papers) and *Saccharomyces cerevisiae* (four papers). The profitable idea of using the "mutagen-sensitive repair-deficient mutant" as a research tool has been applied extensively in these two lower eukaryotes, in particular the yeast. The paper by Lemontt is an especially useful summary of the impressive progress already made. To date some 70 mutagen-sensitive loci have been identified in yeast.

A phylogenetic quantum jump is then made to *Drosophila* (four papers). The emphasis is again on the use of repair-deficient mutants. In the case of *Drosophila*, however, ultraviolet-sensitive mutants have yet to be isolated, though mutants defective in excision repair of pyrimidine dimers induced by ultraviolet

can be found in both bacteria and humans. Culture of somatic cells is now feasible with *Drosophila* and, coupled with the extensive knowledge of the cytogenetics of this organism, should make it possible to achieve a precise analysis of the genetics and biochemistry of mutation.

The most extensive section of the book is devoted to studies of mammalian somatic cells (eight papers) and deals with such diverse matters as chromosome aberrations, the biochemistry of DNA repair, and somatic cell mutations. Again the main message is the utility of repair-deficient mutants.

A penultimate section deals with studies of mouse germ cells (three papers). The importance of repair processes is stressed again, but of course no repair-deficient mouse stocks are available.

Although it is suggested on the dust cover that the volume contains an evaluation of the risk to human health posed by various physical and chemical agents, this is not to be found in it. Apart from the summary and perspective paper the final section, which is concerned with this subject, contains only one paper, by German. In the summary and perspective paper Langley refers to contributions by Paterson and by Swift that are not included. I can only assume that both authors felt that yet another rewrite of their albeit very interesting work was uncalled for.

This point draws attention to a question that confronts contributors to a symposium, particularly when they are working with material or systems where progress is slow—how often does a particular study merit reporting? In this book, to choose examples from the areas with which I am most familiar, the paper by German has inevitable similarities to a paper he presented at the sixth International Congress of Radiation Research in May 1979, and Sasaki and Trosko use data from their earlier papers.

Nevertheless, though I see nothing new in the papers where familiarity breeds contempt, the material is well presented and some, at least, of the discussion (notably that by Bender) controversial. In those areas where I have less experience the papers appear more interesting. If I apply the criteria of excellence that fit the former papers to the latter then I am bound to commend this volume as a useful and worthwhile summary to help those mere mortals who cannot know everything.

C. F. ARLETT

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University of Sussex,  
Brighton BN1 9RH, England

## Books Received

**Advances in Archaeological Method and Theory.** Vol. 4. Michael B. Schiffer, Ed. Academic Press, New York, 1981. xii, 444 pp., illus. \$38.

**Advances in Biophysics.** Vol. 14. Masao Kotani and Haruhiko Noda, Eds. Japan Scientific Societies Press, Tokyo, and University Park Press, Baltimore, 1981. x, 270 pp., illus. \$39.50.

**Advances in Cancer Research.** Vol. 34. George Klein and Sidney Weinhouse, Eds. Academic Press, New York, 1981. x, 328 pp., illus. \$38.50.

**Advances in Carbohydrate Chemistry and Biochemistry.** Vol. 38. R. Stuart Tipson and Derek Horton, Eds. Academic Press, New York, 1981. xii, 578 pp., illus. \$64.

**Advances in Cell Culture.** Vol. 1. Karl Maramorosch, Ed. Academic Press, New York, 1981. xviii, 340 pp., illus. \$36.

**Advances in Chemical Engineering.** Vol. 11. Thomas B. Drew, Giles R. Cokelet, John W. Hoopes, Jr., and Theodore Vermeulen, Eds. Academic Press, New York, 1981. xvi, 452 pp., illus. \$58.

**Advances in Marine Biology.** Vol. 18. J. H. S. Blaxter, Frederick S. Russell, and Maurice Yonge, Eds. Academic Press, New York, 1980. x, 682 pp., illus. \$93.

**Advances in Polyamine Research.** Vol. 3. Papers from a symposium, Rimini, Italy, Sept. 1980. Claudio M. Calderera, Vincenzo Zappia, and Uriel Bachrach, Eds. Raven, New York, 1981. xviii, 494 pp., illus. \$55.

**Advances in the Mechanics and Physics of Surfaces.** Vol. 1. R. M. Latanision and R. J. Courtel, Eds. Harwood, New York, 1981. viii, 254 pp., illus. \$54.50.

**Advice to a Young Scientist.** P. B. Medawar. Harper and Row, New York, 1981. xvi, 112 pp. Paper, \$3.95. Reprint of the 1979 edition. Harper Colophon Books.

**The Aerobic Endospore-forming Bacteria.** Classification and Identification. Papers from a symposium, Cambridge, England, Apr. 1979. R. C. W. Berkeley and M. Goodfellow, Eds. Published for the Society for General Microbiology by Academic Press, New York, 1981. xvi, 374 pp., illus. \$36. Special Publications of the Society for General Microbiology, 4.

**Aging in Mass Society.** Myths and Realities. Jon Hendricks and C. Davis Hendricks. Winthrop (Prentice-Hall), Cambridge, Mass., ed. 2, 1981. xviii, 492 pp., illus. \$15.95.

**Airconditioning and Ventilation of Buildings.** Vol. 1. Derek J. Croome and Brian M. Roberts. Pergamon, New York, ed. 2, 1981. xxii, 576 pp., illus. \$60. International Series of Monographs in Heating, Ventilation and Refrigeration.

**Aleuts.** Survivors of the Bering Land Bridge. William S. Laughlin. Holt, Rinehart and Winston, New York, 1980. viii, 152 pp., illus. Paper, \$5.95. Case Studies in Cultural Anthropology.

**Alkaloid Chemistry.** Manfred Hesse. Translated from the German edition (1978) by I. Ralph C. Bick. Wiley-Interscience, New York, 1981. xiv, 232 pp., illus. \$28.50.

**Amorphous Solids.** Low-Temperature Properties. W. A. Phillips, Ed. Springer-Verlag, New York, 1981. xii, 168 pp., illus. Paper, \$32. Topics in Current Physics, 24.

**Anaesthesiology.** Proceedings of a congress, Hamburg, Sept. 1980. E. Rügheimer and M. Zindler, Eds. Excerpta Medica, Amsterdam, 1981 (U.S. distributor, Elsevier North-Holland, New York). xxxvi, 1068 pp., illus. \$155.50. International Congress Series 538.

**Analytical Archaeology.** David L. Clarke. Columbia University Press, New York, ed. 2, 1981. xxii, 526 pp., illus. Paper, \$12.50. Reprint of the 1978 edition.

**Analytical Chemistry of Polycyclic Aromatic Compounds.** Milton L. Lee, Milos V. Novotny, and Keith D. Bartle. Academic Press, New York, 1981. xii, 462 pp., illus. \$60.

**Animal Suffering.** The Science of Animal Welfare. Marian Stamp Dawkins. Chapman and Hall, London, 1981 (U.S. distributor, Methuen, New York). viii, 150 pp. Cloth, \$17.95; paper, \$9.95.

**Animals in Research.** New Perspectives in Animal Experimentation. David Sperlinger, Ed. Wiley, New York, 1981. x, 374 pp. \$46.50.

**Bioluminescence and Chemiluminescence.** Basic Chemistry and Analytical Applications. Papers from a symposium, La Jolla, Calif., Aug. 1980. Marlene A. DeLuca and William D. McElroy, Eds. Academic Press, New York, 1981. xxx, 782 pp., illus. \$44.

**Biomass Energy Projects.** Planning and Management. Louis J. Goodman and Ralph N. Love, Eds. Pergamon, New York, 1981. xiv, 184 pp., illus. \$27.50. Pergamon Policy Studies on Energy.

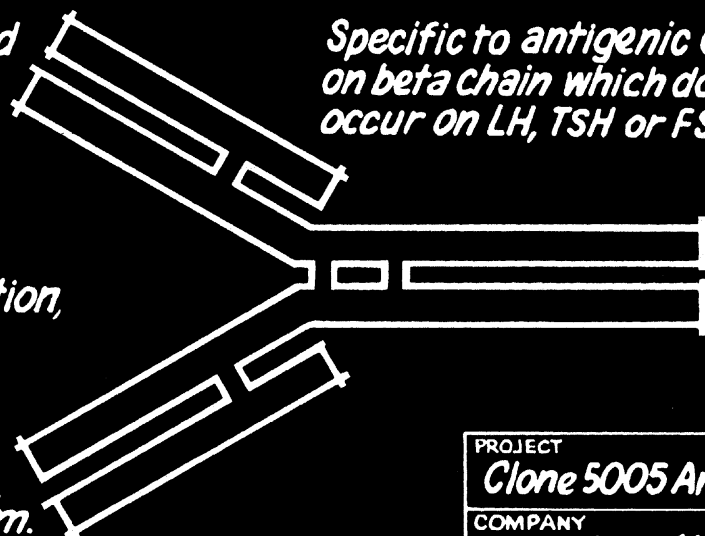
**Bioorganic Chemistry.** A Chemical Approach to Enzyme Action. Hermann Dugas and Christopher Penney. Springer-Verlag, New York, 1981. xii, 508 pp. (Continued on page 1536)

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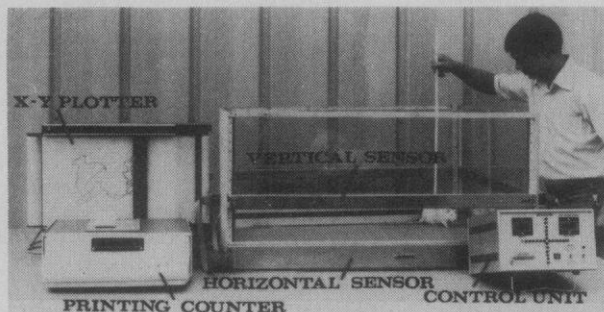
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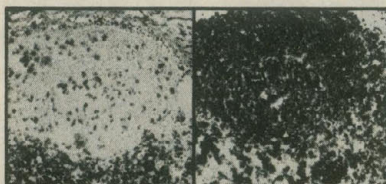


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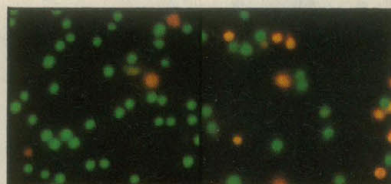
Anti-Leu-1

Anti-HLA-DR

Anti-Leu-1 identifies T cells; Anti-HLA-DR identifies B cells, dendritic cells, and macrophages in normal lymphoid tissue. Cell sample: frozen section of normal lymph node. Data courtesy of Roger Warnke, M.D., Dept. of Pathology, Stanford University.

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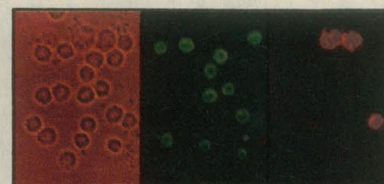
Anti-Arsanilate  
+ Complement  
(control)

Anti-Leu-3a Arsanilate  
+ Anti-Arsanilate  
+ Complement

Dead cells (Leu-3a<sup>+</sup>) fluoresce orange with ethidium bromide; live cells (Leu-3a<sup>-</sup>) fluoresce green with acridine orange. Cell sample: normal peripheral blood mononuclear cells. Data from Becton Dickinson Monoclonal Antibody Center.

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Direct Immunofluorescence:  
Microscopy\*



Phase

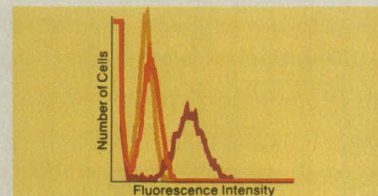
FITC  
Excitation

RITC  
Excitation

Anti-Leu-1 FITC (green) identifies T cells; Anti-HLA-DR RITC (red) identifies B cells and monocytes. Cell sample: normal peripheral blood mononuclear cells. Data courtesy of John Kearney, Ph.D., Dept. of Microbiology, University of Alabama, Birmingham.

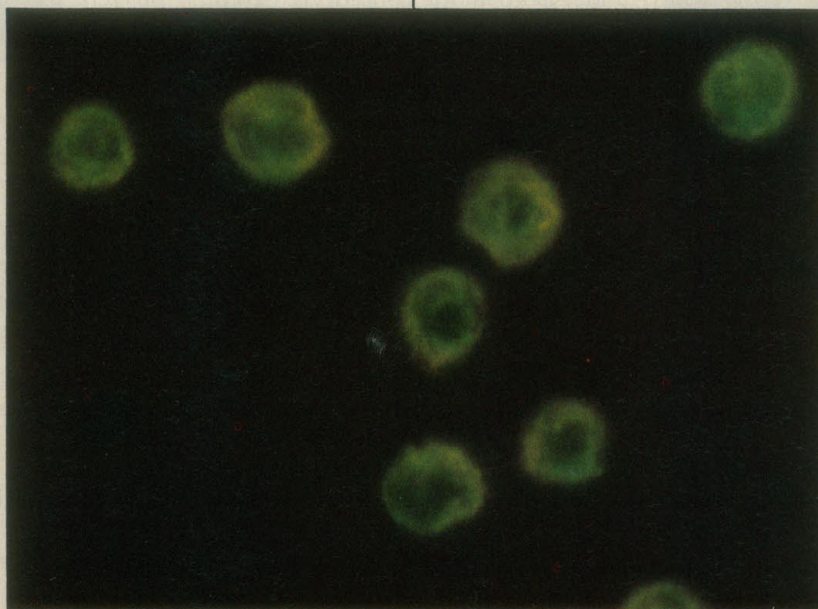
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Anti-Leu-3b (T helper/inducer; T4 equivalent)	Anti-Lambda
Anti-Leu-4 (pan T, mitogenic; T3 equivalent)	<b>Anti-IgG</b>
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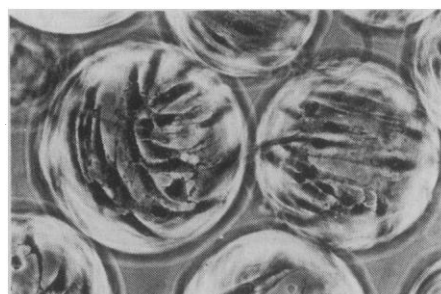
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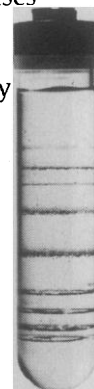
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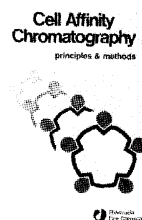
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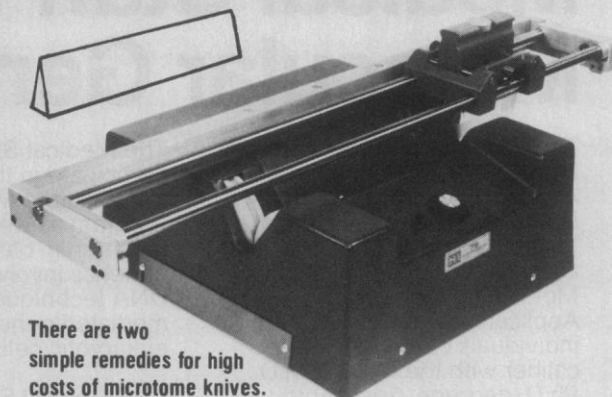


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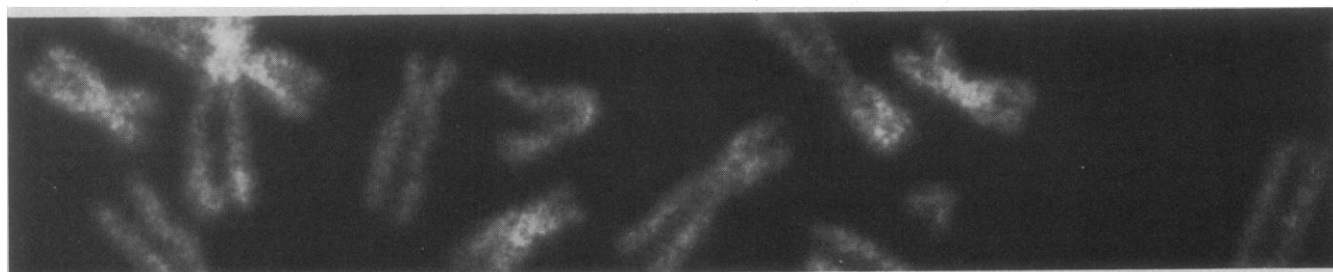
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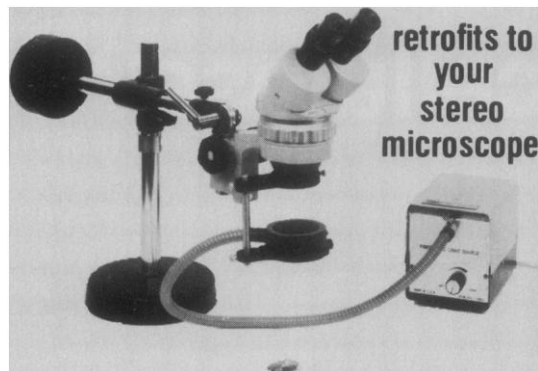
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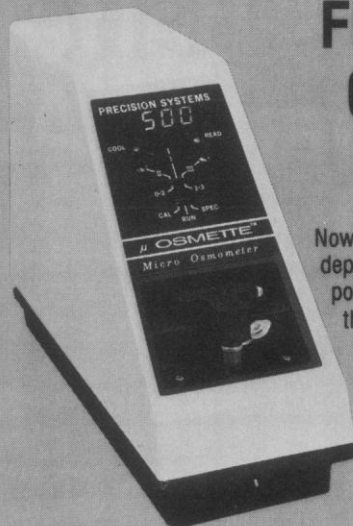


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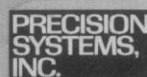
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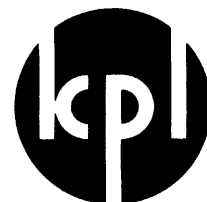
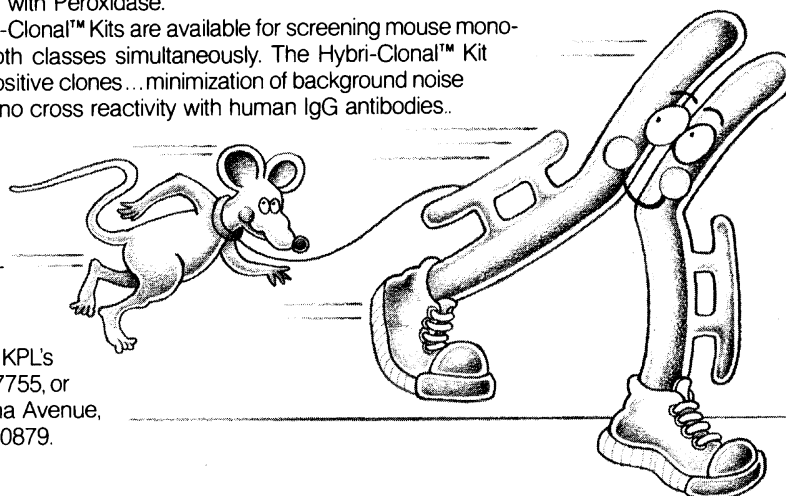
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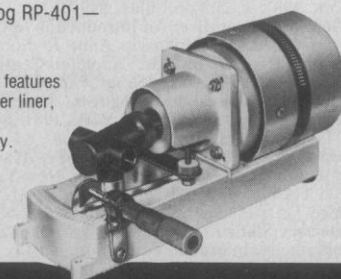
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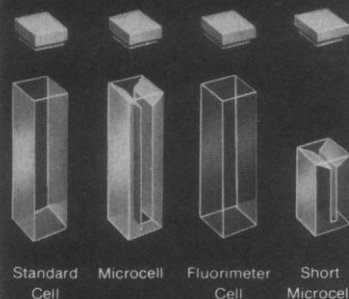
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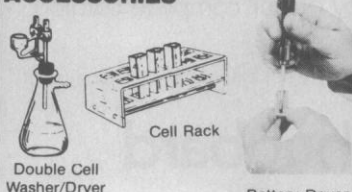


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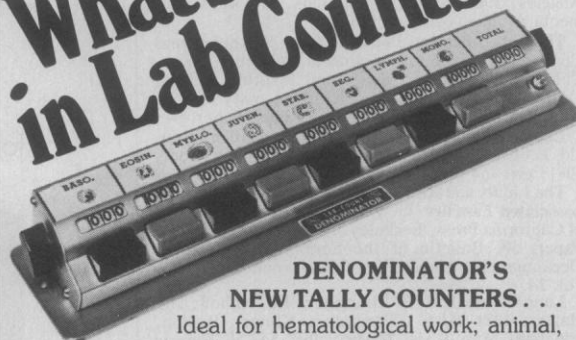


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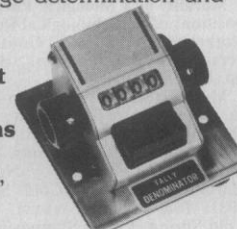
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Revolution. Edward Grant. Cambridge University Press, New York, 1981. xiv, 456 pp. \$59.50.

**N-Nitroso Compounds.** Analysis, Formation and Occurrence. Proceedings of a symposium, Budapest, Oct. 1979. E. A. Walker, L. Gričič, M. Castegnaro, M. Börzsönyi, and W. Davis, Eds. International Agency for Research on Cancer, Lyon, 1980 (U.S. distributor, WHO Publications Centre USA, Albany, N.Y.). xxvi, 842 pp., illus. \$40. IARC Scientific Publications No. 31.

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**Protein-Protein Interactions.** C. Frieden and L. W. Nichol, Eds. Wiley-Interscience, New York, 1981. xii, 404 pp., illus. \$49.95.

**Psychiatric Records in Mental Health Care.** Carole Siegel and Susan Krupnick Fischer, Eds. Brunner/Mazel, New York, 1981. xiv, 334 pp., illus. Paper, \$29.95.

**Scientific Relevance and the Rehabilitation of the Goal Concept.** John S. Pot. Stabo/All-Round, Groningen, The Netherlands, 1981. 352 pp. Paper, \$22.50. Stabo's Scientific Series 12.

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**Sitosterol.** O. J. Pollak and David Kritchevsky. Karger, Basel, 1981. viii, 220 pp. \$88.75. Monographs in Atherosclerosis, vol. 10.

**Sociology.** Ian Robertson. Worth, New York, ed. 2, 1981. xvi, 680 pp., illus. \$18.95.

**Solar Selective Surfaces.** O. P. Agnihotri and B. K. Gupta. Wiley-Interscience, New York, 1981. xxii, 216 pp., illus. \$35. Alternate Energy.

**Solitons.** Mathematical Methods for Physicists. G. Eilenberger. Springer-Verlag, New York, 1981. viii, 192 pp., illus. \$29. Springer Series in Solid-State Sciences, 19.

**Le Temps.** Perspectives Psychophysiologiques. F. Macar. Mardaga, Brussels, 1980. 270 pp. Paper, 620 BF. Psychologie et Sciences Humaines.

**The Three Mile Island Nuclear Accident.** Lessons and Implications. Papers from a conference, Apr. 1980. Thomas H. Moss and David L. Sills, Eds. New York Academy of Sciences, New York, 1981. x, 344 pp. Cloth or paper, \$66. *Annals of the New York Academy of Science*, vol. 365.

**Weather Modification.** Australia's Role in the World Science. G. R. McBoyle. University of Queensland Department of Geography, St. Lucia, Australia, 1980. x, 184 pp., illus. Paper, A\$6.

**Wheat Science.** Today and Tomorrow. L. T. Evans and W. J. Peacock, Eds. Cambridge University Press, New York, 1981. x, 290 pp., illus. \$39.95.

# Personnel Placement

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## POSITIONS WANTED

**Biochemist/Physiologist.** Ph.D. 1981. Research background in phospholipid metabolism of phagocytes. Experience in enzyme purification, cell fractionation, cell culture, TLC, and HPLC. One year of postdoctoral experience. Seeks industrial, teaching, or research position. Will relocate. References on request. Box 234, SCIENCE. 9/25; 10/2

**Immunochemist.** Expertise: protein fractionation, radioiodination, affinity separations, immunoelectrophoresis, membrane antigens. Seeks position. Ph.D. Box 241, SCIENCE. X

**Immunologist/Immunochemist.** Ph.D. 1981. Three years of experience in development of hybridoma monoclonal antibodies, purification and modification of antibody and antigen, FACS, virology, enzymology, and tissue culture. Excellent publications. Seeking industrial position. Box 237, SCIENCE. X

**M.B.A./Ph.D.** Graduated top 2 percent of M.B.A. class, University of Washington, and has Harvard Ph.D. in microbiology; very hardworking. Is seeking administrative position in pharmaceutical or biotechnology company. Write: Resident, 3027 North-east 92 Street, Seattle, Washington 98115. X

**Science Writer.** Ph.D. degree; experienced in manuscript preparation for grant application and journal publication. Interested in individual and institutional requests. Box 203, SCIENCE. X

**Surgeon and Anatomist** (human anatomy). M.D., 15 years of experience in clinical and teaching. Skilled at practical and teaching and academic; excellent teaching skills. Seeking position in teaching, research, and medical education development. Box 240, SCIENCE. X

**Veterinarian/Research Associate:** foreign graduate 1975. Trained in dairy, poultry management, preventive medicine diagnostic pathology, laboratory animal care, breeding, management, routine laboratory diagnostic procedures. Seeks academic/medical research/industry position. Contact: Dr. D. Deoras, 1986 South Forestlawn Drive, Apartment 35, Gretna, La. 70053. Telephone (office): 504-588-5212. X

## POSITIONS OPEN

### ANATOMIST SEARCH REOPENED

Applications are invited for a faculty position available immediately. The Ph.D., D.O., or M.D. degree is required as well as prior teaching experience in the anatomical sciences. Research interests open. Rank and salary dependent upon qualifications and experience. Send curriculum vitae and names of three references to: **William J. Dyche, Ph.D., Associate Dean for Pre-Clinical Affairs, University of Osteopathic Medicine and Health Sciences, 3200 Grand Avenue, Des Moines, Iowa 50312. Equal Opportunity Employer.**

**The Thomas C. Jenkins Department of Biophysics, The Johns Hopkins University, 34th and Charles Streets, Baltimore, Md. 21218, is seeking an ASSISTANT PROFESSOR** whose research is on biomacromolecular structure. Send curriculum vitae to: **Chairman, Search Committee**, at the above address.

Applicants sought for a tenure-track position at the **ASSISTANT PROFESSOR** level in the Division of Reproductive Biology, Johns Hopkins University. We are particularly interested in applicants with backgrounds in immunology, cell, or developmental biology who employ cell culture and/or monoclonal antibody methods in their research. Applicants must have a Ph.D. or M.D. degree and postdoctoral training. A faculty member is expected to maintain a funded research program as well as to participate in teaching. Application deadline: 1 November 1981. Starting date: negotiable. Please send curriculum vitae, a description of proposed research, and the names of four references to: **Dr. Barry R. Zirkin, Chairman, Search Committee, Division of Reproductive Biology, Department of Population Dynamics, The Johns Hopkins University School of Hygiene and Public Health, Baltimore, Maryland 21205. The Johns Hopkins University is an Equal Opportunity/Affirmative Action Employer. Applications are encouraged from women and members of minority groups.**

**ASSISTANT PROFESSOR.** The Department of Chemistry, University of Virginia, invites applications for full-time tenure-track appointments beginning September 1982. Candidates with research interests in any area of organic or biological chemistry are invited to apply for these research-oriented positions. Applicants should submit curriculum vitae, an outline of proposed research, and at least two letters of recommendation to: **Dr. Oscar R. Rodig, Department of Chemistry, University of Virginia, Charlottesville, Virginia 22901. An Equal Opportunity/Affirmative Action Employer.**

**ASSISTANT PROFESSOR, ECOLOGY/ZOOLOGY.** Begins fall 1982. Tenure track; Ph.D. required; experience preferred. Teach quantitative general ecology plus three other courses in area of expertise; pursue vigorous research program. Send résumé, official transcripts, and names of three references to: **Search Committee, Department of Biology, University of Santa Clara, Santa Clara, Calif. 95053.** Closing date: 15 January 1982. *The University of Santa Clara is a Jesuit Institution and an Equal Opportunity Employer.*

### ASSISTANT OR ASSOCIATE PROFESSORS—MATHEMATICS (Two Positions)

Tenure-track positions to begin 2 January 1982 or 1 September 1982. Salary commensurate with educational background and experience. Excellent fringe-benefits package.

**Qualifications:** Ph.D. required with some background in one or more of the following areas preferred: applied mathematics, statistics, computer science, or operations research. Record of effective teaching at the college level and research desirable.

Complete job description available upon request. Send letter of application, curriculum vitae, and at least three letters of recommendation to: **Dr. Terrence Tripp, Chairperson, Division of Mathematics-Science, University of Maine at Presque Isle, Presque Isle, Maine 04769.** Application deadline is 15 October or until applicants are employed.

*The University of Maine at Presque Isle is an Equal Opportunity/Affirmative Action Employer and complies with Title IX Guidelines.*

## POSITIONS OPEN

**ASSISTANT PROFESSOR OF BIOCHEMISTRY**—Tenure-track position. Candidates for the position must have a Ph.D. or M.D. degree with relevant postdoctoral experience. Excellence in teaching and research are required. Teaching responsibilities will include both medical and graduate student courses. The establishment of an independent research program is essential. The person selected must, in addition, be able and willing to collaborate with the other faculty in the department. Preference will be given to candidates whose research interests complement those of the current faculty. Send curriculum vitae and three letters of recommendation to: **Dr. Joseph G. Cory, Department of Biochemistry, Box 7, University of South Florida, Tampa, Fla. 33612.** *The University of South Florida is an Equal Opportunity/Affirmative Action Employer.*

**ASSISTANT PROFESSORS OF BIOCHEMISTRY.** The Department of Biochemistry and Molecular Biology, Louisiana State University (LSU) Medical Center in Shreveport, invites applications for three tenure-track positions at the assistant professor level. Candidates with a strong background in molecular biology are especially encouraged to apply but outstanding candidates in other areas will definitely be considered. Applicants should submit complete curriculum vitae and description of future research program and have three letters of reference sent by 15 November 1981 to: **Dr. Guilford Rudolph, Department of Biochemistry, LSU Medical Center, Box 33932, Shreveport, La. 71130.** *Equal Opportunity Employer.*

**ASSISTANT PROFESSOR OF PHARMACOLOGY.** The Department of Pharmacology, University of Florida, invites applications for a tenure-track position at the assistant professor level. Applicants must have an earned doctoral degree with postdoctoral experience in research. The position requires establishing a strong, independent research program and participating in the department's teaching efforts. Anticipated starting date is 1 September 1982; closing date for applications is 31 December. Please submit complete curriculum vitae, a description of future research plans, and three letters of reference to: **Dr. D. N. Silverman, Department of Pharmacology, Box J-267 Health Center, University of Florida, Gainesville, Fla. 32610.** *We are an Equal Opportunity/Affirmative Action Employer.*

### ASSISTANT PROFESSORSHIPS IN PHARMACOLOGY

The Department of Pharmacology at the University of Rochester School of Medicine and Dentistry invites applications for three faculty positions at the rank of assistant professor. Applicants should have a Ph.D. in pharmacology, an M.D., or both, postdoctoral research training, the potential to attract research support and to establish an independent research program, and an interest in professional and graduate education. Research interest and competence in the general area of biochemical pharmacology is desired.

Please forward curriculum vitae, a list of publications, three letters of reference, and a summary of research interests to: **Dr. M. W. Anders, Department of Pharmacology, School of Medicine and Dentistry, University of Rochester, 601 Elmwood Avenue, Rochester, N.Y. 14642.**

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### BIOCHEMIST/MOLECULAR GENETICIST

GENEX CORPORATION is seeking a Ph.D. with a background in research on mechanisms of protein secretion in prokaryotes in order to study protein export by *Bacilli*. The position is part of a research group applying genetic analysis and gene-cloning technology to construct Gram-positive bacterial strains of commercial importance. Submit curriculum vitae and names of three references to: **Dr. Mark Guyer, GENEX CORPORATION, 12300 Washington Avenue, Rockville, Md. 20852.**

**BIOLOGY.** Liberal arts college for women has tenure-track position at the **assistant professor** level, available August 1982. Ph.D. required and establishment of research program in animal behavior expected. Applicant will be responsible for teaching one semester of general biology for science majors (with responsibility for laboratory) and a course in animal behavior. Send transcripts, curriculum vitae, statement of research and teaching goals, and three letters of recommendation by 2 November to: **Dr. Eric Mould, Department of Biology, Saint Mary's College, Notre Dame, Ind. 46556.** *An Equal Opportunity/Affirmative Action Employer.*

## POSITIONS OPEN

Department of Physiology seeks candidates at **ASSISTANT OR ASSOCIATE PROFESSOR** level to conduct independent, funded research. Successful candidates must also be capable of teaching gastrointestinal, cardiovascular, or neurophysiology and/or cell biology and biophysics. Send curriculum vitae and summary of research plan to: **Chairman, Department of Physiology, Meharry Medical College, Nashville, Tenn. 37208.** *An Equal Opportunity/Affirmative Action Employer.*

### ASSISTANT PROFESSOR DEPARTMENT OF STRUCTURAL BIOLOGY

Applications are solicited for a 12-month, tenure-track faculty position at the assistant professor level. Preference will be given to individuals with a strong background in structural biology such as x-ray diffraction and image reconstruction. However, all qualified individuals with a strong molecular background interested in cell biological problems are encouraged to apply.

Research currently represented in the department includes energy transduction in biological processes, cell-cell intercommunication, cell motility and changes in cell shape, the structure and function of organelles such as ribosomes and nucleosomes, and the control of gene expression.

Send curriculum vitae, copies of your two most important publications, and a one-page outline of your future research goals to:

**Dr. James A. Spudich  
Department of Structural Biology  
Stanford University School of Medicine  
Stanford, California 94305**

*Stanford University is an Equal Opportunity Employer and welcomes nominations of women and minority group members and applications from them.*

### NATIONAL SCIENCE FOUNDATION (NSF)

NSF, Division of Ocean Sciences, is seeking qualified applicants for the position of **ASSISTANT PROGRAM DIRECTOR FOR BIOLOGICAL OCEANOGRAPHY**. This position will be filled on a rotational basis (1 to 2 years) EC-12/13 (equivalent to the GS-12/13 level) \$26,951 to \$41,660 per annum, depending on qualifications and experience. The Program provides support for scientists primarily from academic institutions to pursue fundamental and applied research in the biological aspects of marine science. The selected candidate will carry out program planning, proposal evaluation, administration of research grants, and liaison with other federal agencies. Candidates should have a Ph.D. in biological oceanography, a related biological science, or equivalent experience. Field experience in academic institutional program is highly desirable. Those interested in being considered for the position should send letters of interest and SF-171 or current résumé by 31 October 1981 to: **National Science Foundation, Personnel Administration Branch, Room 212, 1800 G Street, NW, Washington, D.C. 20550, attention: E. Paul Broglie, EX 81-49.** For further information, telephone: 202-357-7841. *NSF is an Equal Opportunity Employer.*

### ATMOSPHERIC SCIENTIST/OCEANOGRAPHER POSITION

**The Joint Institute for the Study of the Atmosphere and Ocean (JISAO)  
University of Washington**

**ATMOSPHERIC SCIENTIST/OCEANOGRAPHER** needed to undertake analysis of interannual and interdecadal climate-related fluctuations in the ocean and atmosphere as revealed by marine surface observations from ships of opportunity and island stations. Applicants should show evidence of published work on related topics and be adept at eliciting dynamical properties from the analysis of large data sets. The position is offered through the Joint Institute for the Study of the Atmosphere and Ocean, a cooperative research institute between the University of Washington and the National Oceanic and Atmospheric Administration (NOAA). The work will be carried out in conjunction with scientists at the university and at the NOAA Pacific Marine Environmental Laboratory, which is housed on the university campus. Appointment is for 1 year, with a possibility of renewal for subsequent years up to a 3-year term. Salary is negotiable, dependent on qualifications and experience. To apply or request further information, write to: **Director, JISAO, Department of Atmospheric Sciences, AK-40, University of Washington, Seattle, Wash. 98195.** Applications should include résumé, bibliography, and two letters of recommendation. Closing date: 15 November 1981.

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## POSITIONS OPEN

### BIOLOGISTS AND BIOCHEMISTS

The faculty of the College of Biological Sciences invites inquiries from qualified biologists and biochemists (new or recent Ph.D.) who wish to seek independent fellowship support from a federal granting agency or a foundation, or who wish to collaborate with a faculty member on a grant request to such an agency. Inquiries may be directed to individual faculty or to the address below.

Periodically, specific openings become available for postdoctoral trainees (Ph.D. required) to assist individual faculty members with federally sponsored research. Postdoctoral appointments range from 1 to 3 years in length; salary varies, dependent upon experience. Individuals wishing to receive information should send their names and addresses to: **The College of Biological Sciences, Office of the Dean, University of Minnesota, 1475 Gortner Avenue, St. Paul, Minn. 55108.**

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

**BIOMEDICAL RESEARCH.** A new staff scientist position is available in the Biology and Medicine Division of the Lawrence Berkeley Laboratory, beginning 1 November 1981. The appointee will be expected to perform research on magnetic field interactions with biological systems. The research program includes automated recording and computer analysis of physiological variables and circadian rhythms in laboratory animals, using biotelemetry and specialized transducer techniques. A Ph.D. in bioengineering or biophysics and postdoctoral experience are preferred. Extensive laboratory experience with electrophysiological recording techniques and a thorough knowledge of computers (including FORTRAN and Basic languages) are required. Prior experience with biotelemetry techniques is desirable. Salary commensurate with experience. Submit curriculum vitae, accompanied by a statement of research experience, reprints of published papers, and the names of three references, to: **Dr. Tom Tenforde, Biology and Medicine Division, c/o Ronald Lowder, Personnel Department, Lawrence Berkeley Laboratory, One Cyclotron Road, Berkeley, Calif. 94720.** *An Affirmative Action/Equal Opportunity Employer, M/F/H.*

### Department of Psychology Cornell University BIOPSYCHOLOGIST

The Department of Psychology of the College of Arts and Sciences at Cornell University seeks candidates for a tenure-track position, effective at the start of the 1982-1983 academic year. We are looking for a biopsychologist, preferably, but not necessarily, with a major interest in the neural bases of behavior. Applicants at all academic ranks will be considered.

Candidates should submit complete curriculum vitae, reprints and preprints of completed research, and letters of recommendation sent directly from three referees to:

**Biopsychology Search Committee  
Department of Psychology  
Uris Hall  
Cornell University  
Ithaca, New York 14853**

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### Department of Psychology Cornell University PROFESSORIAL POSITION IN EXPERIMENTAL PSYCHOLOGY—LEVEL OPEN

The Department of Psychology has an opening effective at the start of the 1982-1983 academic year for an experimental psychologist interested in cognition, language, and/or perception. We invite applicants with a wide variety of interests in experimental psychology, including cross-cultural, developmental, and differential perspectives. This is a tenure-track position. We will consider applicants at all academic ranks. Candidates should submit curriculum vitae and reprints or preprints of recent research as soon as possible and arrange for at least three letters of recommendation to be sent to:

**Experimental Psychology Search Committee  
Psychology Department  
Uris Hall  
Cornell University  
Ithaca, New York 14853**

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## NATIONAL SCIENCE FOUNDATION

The National Science Foundation is seeking qualified candidates for the position of **EXECUTIVE OFFICER, NATIONAL SCIENCE BOARD**. The incumbent is responsible for the agenda and proper operations of the National Science Board Office and the Board's immediate staff. The executive officer serves as the focal point for coordinating activities requiring Board attention, providing continuity for actions and policies through changes in membership, promoting and encouraging cooperative and supportive relationships between the Board and the director of the Foundation, and coordinating Board administrative affairs. The executive officer serves as executive assistant to the chairman and provides protocol guidance to the Board. This position, which will be filled on a career basis, is part of the Senior Executive Service with a salary currently limited by law to \$50,112 per annum.

Applicants must have an advanced degree or equivalent professional experience in public administration, policy analysis, or field of science related to the NSF mission. Also essential are (i) supervisory and managerial experience with responsibility for the achievement of organizational objectives through subordinates; (ii) experience in support of policy-making, policy-determining, and other executive functions of a major organization, and in establishing priorities for those activities; (iii) experience in the coordination of top-level activities of a major organization; (iv) experience in providing liaison with high-level officials of the Executive Office of the President, federal agencies, congressional committees, and the scientific/academic communities; and (v) demonstrated personal skills at motivating and relating to a wide variety of individuals in and out of government.

Applicants should telephone Margaret Cademartori on 202-357-7857 to request announcement EPB 81-21. Announcement contains additional qualification requirements as well as instructions concerning preparation of supplemental narrative required with SF-171 as application. Send SF-171 and narrative to: National Science Foundation, Executive Personnel Branch, Room 212, 1800 G Street, NW, Washington, D.C. 20550 (attention: EPB 81-21). Applications must be received by 16 October 1981.

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## GENETIC RESEARCH PROJECT SCIENTIST

Position available for individual with research experience in genetics. Requires PhD or MS plus 5 yrs. experience in the design and development of mutagenesis research program. Must be experienced in the development of methods to determine practical means of monitoring genetic change and identification of chemicals that cause mutations of cancer.

Requires experience allotypes mono-specific antibodies, and radio-immunoassay, fluorescence antibody techniques, plaque assay, and hemoglobin and LDH-X research. Salary to \$31,500 per year. Candidates should submit current resume to:

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Los Alamos National Laboratory has several openings for Staff Members to design and execute plasma physics experiments in inertial confinement fusion and the physics of hot dense matter. The plasmas to be studied are produced by lasers at the Helios and (in the future) Antares CO<sub>2</sub> laser systems and by magnetically imploded foils.

### RESPONSIBILITIES:

- Anticipate and conceive experiments and new diagnostic devices and methods
- Perform original research and some diagnostic development as a team member and individually
- Analyze data and report results

### QUALIFICATIONS:

- Ph.D. in physics, electrical engineering or related field such as pulsed power, or equivalent
- Understanding of related physics
- Demonstrated professional ability to perform and publish original high quality experimental research
- Demonstrated aptitude for original approaches to scientific research
- Record of publications will be considered in evaluation

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

For further information, call Dr. Sidney Singer at (505) 667-3643 and/or contact our representatives attending the APS Plasma Physics Division meeting in New York beginning on October 10, 1981.

Send complete resume, in confidence, to: Nancy Kimerly

DIV 81-CE

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The ideal candidate will have a research background with a PhD in Pharmacology, Toxicology or Veterinary Medicine (or a closely related field) in addition to at least 2 years experience in the pharmaceutical industry. An ability to write cohesive scientific reports based on laboratory data is also essential.

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Applicants should have an M.S. or B.S. degree in Biochemistry, cell biology, or a related field plus at least 3 years experience. This is an excellent opportunity to join a dynamic and expanding laboratory engaged in a clinical study of human genetic disorders. Salary commensurate with experience plus excellent fringe benefits. Please send your curriculum vitae to **Dr. Michael Tsai, Dept. of Laboratory Medicine and Pathology, Box 198, Mayo Memorial Bldg., University of Minnesota Hospitals, Minneapolis, MN 55455. (612) 373-8634.**

## MOLECULAR BIOLOGISTS

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

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

**MS or BS level:** Minimum of two years experience in recombinant DNA methods, especially *in vitro* translation systems, electrophoretic analyses of proteins and DNA fragments, cloning of cDNA, and hybridization techniques.

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

Send curriculum vitae to N.E. Biolabs, Inc., 32 Tozer Road, Beverly, MA 01915, USA.



NEW ENGLAND

**Biolabs**

32 Tozer Road  
Beverly, MA 01915

## POSITIONS OPEN

### UCLA MEDICAL SCHOOL—CARCINOGENESIS

The Laboratory of Biomedical and Environmental Sciences and the Department of Pediatrics of the University of California, Los Angeles (UCLA) Medical School are seeking an experienced scientist to fill a tenure-level appointment. The successful candidate should have an active and productive research program emphasizing the pharmacology, genetics, and biochemistry of carcinogenesis and drug metabolism. He or she should also be able to assume teaching responsibility in the pediatric training programs. The appointment will be made at the level of associate or full professor, depending on the qualifications of the applicant. Applications, including curriculum vitae and names of four references, should be sent to: **Recruitment Committee, Laboratory of Biomedical and Environmental Sciences, 900 Veteran Avenue, Los Angeles, California 90024. The University of California is an Equal Opportunity/Affirmative Action Employer.**

### ONTARIO CANCER TREATMENT & RESEARCH FOUNDATION LONDON CLINIC LONDON, ONTARIO, CANADA

Applications are invited for the position of  
**CAREER SCIENTIST**

From applicants with a minimum of 2 to 3 years of postdoctoral research experience in the field of

#### CELL GENETICS

This position is to join a recently formed multidisciplinary research group studying the biology of cancer metastasis. The research objectives of the group are to gain an understanding of how the tumor microenvironment may modulate the metastatic potential of tumor cell populations.

The successful candidate will have proven expertise in a relevant field of research and the ability to develop an interactive research program with other members of the group. Salary will be commensurate with experience.

Applications to: **Dr. K. Moore, The Ontario Cancer Foundation—London Clinic, c/o Victoria Hospital, London, Ontario, Canada N6A 4G5.**

### CELL BIOLOGY FACULTY POSITIONS

The University of Miami School of Medicine, Department of Anatomy, is seeking to fill a tenure-track position at the assistant professor level. Persons with research experience and interests in the cytoskeleton, or cell surface, particularly as related to cancer research, immunology or neurobiology, are encouraged to apply. Those with appropriate research interests will have the opportunity to benefit from and contribute to the University of Miami Comprehensive Cancer Center. The person selected for this position will be expected to establish and maintain a vigorous research program capable of attracting external support and to participate in teaching of the departmental graduate and/or medical school courses. Persons interested in the position should send curriculum vitae, appropriate reprints, a brief statement of research plans, and three letters of reference by 1 December 1981 to: **Dr. Robert W. Rubin, Department of Anatomy, University of Miami School of Medicine, P.O. Box 016960 (R124), Miami, Florida 33101.**

**CELL AND TISSUE SCIENTISTS—ASSISTANT OR ASSOCIATE LEVEL.** Growing Department of Anatomy with modern research facilities at a new state medical school campus seeks candidates for new faculty positions as assistant or associate professor. Candidates must have advanced postdoctoral training and the capability to successfully compete for research support. We are especially interested in experimental scientists who utilize molecular approaches to investigate subcellular and cellular structure and function (for example, cell surface, biomembranes, cytoskeleton, and so forth). The appointments emphasize research; teaching responsibilities will involve participation in team-taught courses and in advanced seminar courses. Salary level is very competitive and depends upon previous experience. Candidates should respond by 15 December 1981 with curriculum vitae and a statement of past and planned research activity to: **Dr. Anthony V. Boccabella, Chairperson, Department of Anatomy, COLLEGE OF MEDICINE AND DENTISTRY OF NEW JERSEY—New Jersey Medical School, 100 Bergen Street, Newark, N.J. 07103. Applications from women and minority candidates are encouraged. CMDNJ-NJMS is an Equal Opportunity/Affirmative Action Employer.**

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Send curriculum vitae and summary of professional interests to **ATC Employment, Cordis Corporation, P.O. Box 525700, Miami, Florida 33152.** All inquiries will be acknowledged. For out-of-state residents, call **TOLL FREE 1-800-327-8083** for a brief recorded message about Cordis.

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## POSITIONS OPEN

**BIOCHEMISTRY CHAIRPERSON**—The University of South Alabama, College of Medicine, located in Mobile, Alabama, is seeking highly qualified applicants for the position of chairperson in the Department of Biochemistry. This position represents an outstanding opportunity for an individual committed to excellence in service, research, and teaching. Candidates must have demonstrated leadership in research and administration. The College of Medicine is a state-supported, 4-year medical school which was established in 1970, and has a strong and developed basic science program, a growing clinical science program, full residency programs, a Ph.D.-M.D. program in basic medical sciences, and well-trained graduate physicians. Individuals with suitable academic training and experience are requested to forward their curriculum vitae and letter of interest to:

Dr. Joseph H. Cogglin, Jr.  
Chairman, Biochemistry Search Committee  
LMB Building  
University of South Alabama  
College of Medicine  
Mobile, Alabama 36688

Closing date for applications: 15 October 1981. The University is an Equal Opportunity/Affirmative Action Employer.

**CHAIRPERSON, DEPARTMENT OF PHYSIOLOGY AND PHARMACOLOGY, THE UNIVERSITY OF SOUTH DAKOTA SCHOOL OF MEDICINE.** The applicant should have a Ph.D. in pharmacology or an M.D. with acknowledged experience and competence in pharmacology. The individual should have training and experience in physiology. The applicant should have a strong record of academic achievement as indicated by scientific contributions, success in obtaining extramural funding, scholarly publications, and peer recognition. Experience in teaching medical and graduate students is required as is administrative experience. The successful candidate is expected to recruit high-quality faculty and graduate students and to maintain a vigorous research program. Interested individuals should submit a letter of application, curriculum vitae, and at least three letters of recommendation by 1 November 1981 to: Chairman, Physiology and Pharmacology Search Committee, Dean's Office, The University of South Dakota School of Medicine, Vermillion, South Dakota 57069. The University of South Dakota is an Equal Opportunity/Affirmative Action Employer.

### CHAIR DEPARTMENT OF BIOLOGICAL SCIENCES RUTGERS UNIVERSITY

Rutgers—The State University of New Jersey seeks a distinguished scholar to chair the Department of Biological Sciences in the newly reorganized Faculty of Arts and Sciences on the New Brunswick campus. The recent consolidation of the biological sciences into a unified department of 80 members offers a challenging opportunity for creative leadership. Candidates must have a strong commitment to research and graduate education. Nominations or applications (a letter of intent and curriculum vitae) should be submitted by 1 December 1981. Appointment effective 1 July 1982. Address correspondence to: Search Committee for Chair of Biological Sciences, Office of the Dean, Faculty of Arts and Sciences, Rutgers University, New Brunswick, N.J. 08903. Initial correspondence will be held in confidence. Rutgers University is an Equal Opportunity/Affirmative Action Employer.

The National Oceanic and Atmospheric Administration (NOAA) announces a Senior Executive Service Vacancy for the position of **DIRECTOR, GEODETIC RESEARCH AND DEVELOPMENT LABORATORY (GRDL)** in the National Geodetic Survey, a component of the National Ocean Survey. The duty location is Rockville, Maryland. The salary range is \$47,889 to \$50,112.50 per annum. Duties include: providing technical and administrative supervision over employees and activities of GRDL; advising officials on the state of scientific knowledge in geodesy and making recommendations for research and development; exercising scientific and technical knowledge of contributing publications to professional journals and making presentations at national and international meetings; and advising and consulting scientists and executives in improvement of geodesy and related fields. Experience in management of scientific programs, geodesy, and solid earth sciences is required. Apply to: NOAA/NOS, 6001 Executive Boulevard, Rockville, Maryland 20852, attention: MB/PER15:TR. NOAA is an Equal Opportunity Employer.

25 SEPTEMBER 1981

# PLANT GENETICS



Plant Genetics, Inc. announces the establishment of research and development laboratories in Davis, California. The company was founded to develop crop improvements through application of both current and emerging technologies in cell and molecular biology. Personnel are being sought with a background in somatic cell genetics, cell biology, plant breeding, plant pathology, molecular biology and biochemistry. Positions are available and present exciting employment opportunities for highly qualified, exceptional individuals who would like to participate in a fast growing new company.

### ● Research Scientists

These project leaders in various crop and technology programs will supervise a small team of researchers. Applicants should have a Ph.D. in plant sciences and one to two years research experience, ideally in industry.

### ● Research Associates

Covering key disciplines, these individuals will manage projects under the supervision of Research Scientists. Applicants should have an M.S. in biological sciences and one to two years of research experience is preferred.

### ● Research Assistants

These key team members will be responsible for research activities in cell tissue culture and crop improvement, under the supervision of Research Scientists. Applicants must possess a B.S. in life sciences and be able to demonstrate a broad background with some bench level laboratory skills.

The company offers competitive salaries and benefits in a stimulating work environment. Interested individuals should send their resume and salary history in confidence to:

# PLANT GENETICS



227 E Street, Suite 10  
Davis, California 95616  
An Equal Opportunity Employer



## DIRECTOR

### Laboratory of Clinical Pathology

#### The University of Chicago Pritzker School of Medicine

Applications are invited for the position of director of the clinical pathology laboratories at the University of Chicago-Pritzker School of Medicine. Send letter of application and supporting information to:

**Peter J. Dawson, M.D.**  
Chairman of the Search Committee  
Laboratory of Surgical Pathology

The University of Chicago  
Pritzker School of Medicine  
950 E. 59th Street  
Box 411  
Chicago, Illinois 60637

*affirmative action equal opportunity employer m/f*

## toxicologist

FMC's Chemical R & D Center, in Princeton, N.J. has an opportunity for a Toxicologist with PhD and 3 to 5 years of industrial or post doctoral toxicology experience. Must be familiar with the reproductive and teratological effects of agriculture chemicals as well as agriculture chemical registration requirements.

Will monitor the conduct of chronic toxicity studies, interface with operating groups and provide information for registration documentation.

We offer a salary commensurate with your experience, a full range of benefits plus opportunity and challenge in an industrial R & D environment. **Contact R. Schellinger, FMC CORPORATION, Chemical R & D Center, U.S. Route 1, P.O. Box 8, Princeton, N.J. 08540.** An Equal Opportunity Employer, M/F.



## POSITIONS OPEN

### CHEMICAL ENGINEERING FACULTY POSITIONS

Two tenure-track positions in chemical engineering are available. Assistant professor level preferred, but outstanding candidates at senior levels will be given full consideration. A distinguished record in research, a commitment to a dynamic research program, and ability to teach graduate and undergraduate courses are expected. Experience in petrochemicals, polymers, biotechnology, process control, or interfacial phenomena would be welcomed.

Application, including names of three references, should be sent to: **Professor Jerome S. Schultz, Chairman, Department of Chemical Engineering, University of Michigan, Ann Arbor, Mich. 48109.**

*The University of Michigan is a nondiscriminatory, Affirmative Action Employer and welcomes applications from women and minorities.*

### DIRECTOR OF EXPERIMENTAL LABORATORY

The Department of Neurosurgery at The Johns Hopkins University School of Medicine invites applications for laboratory/teaching position. Applicants should have B.S., Ph.D., D.V.M., or M.D. with at least 1 year of postdoctoral experience surgery. Applicants will be expected to teach an experimental microsurgery course to M.D.'s. A 4- to 6-month training program to acquire these surgical skills will be available. The position will offer adequate time for independent research as well. Level of academic appointment and salary commensurate with training and experience. Qualified applicants are invited to submit curriculum vitae, names and addresses of three references, and a letter describing research and teaching interests to: **Neurosurgery Administration, Blalock 1410, The Johns Hopkins University School of Medicine, 600 North Wolfe Street, Baltimore, Md. 21205.**

*Affirmative Action/Equal Opportunity Employer*

**ENVIRONMENTAL RADIOCHEMIST.** Career position is open for an assistant professor or above with a doctoral degree and research experience involving chemical, instrumental, and statistical analyses. Develop research program relating to radioactivity assessment in biological and environmental media; participate in graduate level teaching and research; and operate quality control radiochemical laboratory. Salary commensurate with qualifications. Send résumés to: **Dr. Niel Wald, Department of Radiation Health, RC510 Scaife Hall, University of Pittsburgh, Pittsburgh, Pa. 15261.** *The University of Pittsburgh is an Affirmative Action/Equal Opportunity Employer.*

Applications are invited for a tenure-track position in **EXPERIMENTAL PATHOLOGY** at the assistant professor level. Candidates must have an M.D. or Ph.D. and a minimum of 2 years of postdoctoral training. The successful candidate is expected to establish an independent research program in the area of experimental (for example, chemical, radiation, viral) or environmental carcinogenesis which would interact with existing research programs on campus. Candidates are expected to participate in the teaching of pathology to medical, graduate, and undergraduate students. Please send curriculum vitae, a description of career objectives and research plans, and the names of three references to: **Dr. Nelson Fausto, Chairperson of the Search Committee, Section of Pathology, Division of Biology and Medicine, Brown University, Providence, R.I. 02912.** *We especially encourage applications from women and minority candidates. Brown University is an Equal Opportunity/Affirmative Action Employer.* Deadline for applications: 1 December 1981.

**Note:** This announcement replaces a previous one printed in *Science*, 4 September 1981, page 1151.

### COLLEGE OF THE VIRGIN ISLANDS FACULTY POSITION—MARINE GEOLOGY

The College of the Virgin Islands will appoint an assistant or associate professor of marine science to start in January 1982. This position is supported by a 3-year NSF/CAUSE grant. An earned doctorate and college-level teaching experience are required. Interest in tropical shallow-marine ecosystems and invertebrates is desirable. Please send résumés and three letters of reference to: **Dr. William P. MacLean, Chairman, Division of Science and Mathematics, College of the Virgin Islands, St. Thomas, U.S. Virgin Islands 00801.**

*An Equal Opportunity/Affirmative Action Employer*

## POSITIONS OPEN

### JOINT APPOINTMENT IN ENVIRONMENTAL STUDIES AND GEOGRAPHY

Position available at the University of California, Santa Barbara, effective 1 July 1982. Assistant professor preferred; tenure-track position. Exceptionally well qualified persons whose background and experience warrant a tenure-level appointment are also encouraged to apply. Ph.D. will normally be required prior to appointment. Research and teaching interests in soils or physical aspects of land use planning/land cover analysis or field-oriented environmental impact analysis. Interest in mathematical or computer modeling also desirable.

Applicants to send curriculum vitae and names of three referees to: **Professor Edward Keller, Environmental Studies Program, University of California, Santa Barbara, Calif. 93106.** Closing date: 31 December 1981. *The University of California is an Equal Opportunity/Affirmative Action Employer.*

University of Nebraska-Lincoln, Department of Geology, seeks second tenure-track **FACULTY MEMBER IN CLASTIC SEDIMENTOLOGY** at the assistant or associate professor level, effective August 1982 as part of a plan to create a strong program in this area. Teaching duties can be arranged to reflect the specialty of the successful applicant, but will include courses in sedimentology and an introductory course in oceanography. The teaching load is two courses per semester. Requires Ph.D. and strong commitment to excellence in both teaching and research/publication. Salary and rank dependent upon experience; minimum salary: \$17,000. Apply by 1 February with application letter, curriculum vitae, and names of three references to: **Chairman, Geology Department, University of Nebraska-Lincoln, Lincoln, Nebraska 68588-0340.** *Affirmative Action/Equal Opportunity Employer.*

### FACULTY POSITIONS IN MOLECULAR GENETICS

The Department of Microbiology at the University of Cincinnati College of Medicine is undergoing a major expansion and invites applications for tenure-track positions at either the junior or senior faculty level. Candidates should be involved in a vigorous and creative research program and should have demonstrated independence as laboratory investigators. Also the applicant should be an effective teacher and be able to direct graduate students. Research interests can be either in prokaryotic or eukaryotic molecular genetics. Applicants should submit curriculum vitae, a short statement of research interests and accomplishments, and the names of three scientists willing to write letters of recommendation. These should be forwarded to: **Dr. Jerry B. Lingrel, Chairman, Department of Microbiology, University of Cincinnati College of Medicine, 231 Bethesda Avenue, Cincinnati, Ohio 45267.** *The University is an Equal Opportunity/Affirmative Action Employer.*

**GEOPHYSICAL FLUID DYNAMICIST/PHYSICAL OCEANOGRAPHER.** Applications are solicited for a junior faculty position in ocean physics or dynamics to begin in the academic year 1982-1983. Areas of interest to the department include analytical, numerical, and laboratory modeling of physical processes and phenomena in the sea.

*Yale University is an Equal Opportunity/Affirmative Action Employer and encourages women and members of minority groups to compete for this position.* Curriculum vitae, publications, and the names of three or more referees should be sent by 31 December 1981 to: **Robert B. Gordon, Chairman, Department of Geology and Geophysics, P.O. Box 6666, New Haven, Conn. 06511.**

### YALE UNIVERSITY DEPARTMENT OF GEOLOGY AND GEOPHYSICS

Applications are solicited for a faculty position in **SOLID EARTH GEOPHYSICS** to begin in the academic year 1982-1983. Areas of interest to the department include seismology, exploration geophysics, mechanical and physical properties of rocks and minerals, geomagnetism, and tectonophysics.

*Yale University is an Equal Opportunity/Affirmative Action Employer and encourages women and members of minority groups to compete for this position.* Curriculum vitae, publications, and the names of three or more referees should be sent by 31 December 1981 to: **Robert B. Gordon, Chairman, Department of Geology and Geophysics, P.O. Box 6666, New Haven, Conn. 06511.**

# Quality Assurance GLP-Toxicology

We are an ethical pharmaceutical company offering a challenging opportunity for a person with a BS or MS degree in Toxicology, Biochemistry, or Pharmacology, preferably with experience in laboratory studies, analysis, and animal experimentation. Exposure to G.L.P.'s is desirable.

The candidate should have good communication (oral and written) skills, and be able to interact effectively with other professionals. The position will have responsibility for the inspection of all phases of drug animal safety studies (acute toxicity, subchronic, chronic, reproduction and teratology studies). Auditing the study data and final study reports. The position will also monitor the toxicology department for compliance with G.L.P.'s. Some travel will be required.

The salary offered will be commensurate with experience and background and include an excellent benefit program.

*Please submit resume including salary history and requirements in confidence to:*

Personnel Department

**Endo Laboratories, Inc.**

Subsidiary of E. I. du Pont de Nemours & Co. (Inc.)

1000 Stewart Avenue

Garden City, New York 11530

An Equal Opportunity Employer M/F



## IMMUNOBIOLOGY

Ortho Pharmaceutical Corporation, a Johnson & Johnson company, has several immediate opportunities available due to expansion of our Immunobiology Department.

### SCIENTIST

Position requires a PhD in immunobiology or pathology and a minimum of 2 years laboratory experience. Knowledge of immunochemistry, immunofluorescent or immunoenzyme techniques particularly as applied to tissue sections required along with histochemical staining techniques and light microscopy. Individual will be involved with the application of monoclonal antibodies to histological specimens.

### ASSOCIATE SCIENTIST

MS in biochemistry or physiology required along with a minimum of 1 year experience in bioassay and electrophysiological study with opportunity to handle electronic equipment. Individual will be responsible for routine electromyographic assays.

### ASSISTANT SCIENTIST

MS in immunology or a related field with at least 1 year of relevant work experience is desirable for this opportunity in monoclonal antibody research. Knowledge of tissue culture, hybridoma research, immunofluorescent techniques, and handling of radioisotopes are required.

Ortho is located in central New Jersey and offers a competitive salary and benefits package coupled with a growth environment that provides realistic opportunities for advancement and personal growth. Interested candidates should send their curriculum vitae with salary requirements in confidence to R. A. Feldman, Personnel Administrator, Box F-22

**ORTHO PHARMACEUTICAL  
CORPORATION**

Route 202, Raritan, New Jersey 08869

A Johnson & Johnson Company

an equal opportunity employer (M/F)



# Biomedical Research

At the Lawrence Livermore National Laboratory, we have two new positions available for scientists with recent Ph.D.'s who are interested in developing new research areas studying the heritable consequences of induced spermatogenic damage in mammals.

## Mammalian Geneticist

We are seeking an experienced Mammalian Geneticist. Duties will encompass all aspects of experimentation, including cytogenetic and genetic analysis of offspring of treated mice. Initially, studies will focus on the development of quantitative genetic models of the inheritance of chemically induced sperm shape abnormalities. This is a 2-year appointment with the possibility of renewal or appointment to a senior staff position. The selected scientist will be part of an interactive group and will be responsible for own experiments. Experience in reproductive toxicology, germ cell mutation assays, biostatistics, and cytogenetics is desirable.

## Postdoctoral Cytogeneticist

We also have a postdoctoral opening for a Mammalian Cytogeneticist with a recent Ph.D. in Cytogenetics, Developmental Biology or Cell Biology. Experience in human cytogenetics and mammalian embryo culture is desirable. The selected scientist will be part of an interactive group studying the heritable consequences of chemically induced spermatogenic damage. Duties will encompass all aspects of the development and application of the human sperm/hamster egg system, with emphasis on the cytogenetic problems associated with analysis of human sperm chromosomes.

The Lab is located in the greater San Francisco Bay Area, and offers an excellent work environment; compensation is open to negotiation. Send your resume to: **Ted Wilson, Lawrence Livermore National Laboratory, P.O. Box 808, L-425, KSC-091, Livermore, California 94550. U.S. CITIZENSHIP REQUIRED.** An equal opportunity employer m/f/h.

University of California

**Lawrence Livermore  
National Laboratory**



## ASSISTANT/ ASSOCIATE PROFESSORS OF ANATOMY

The Department of Anatomy, University of Cincinnati College of Medicine, invites applications for two positions at the assistant/associate professor level. Candidates should be able to complement current research activities in metabolic or developmental biology. The department emphasizes molecular and cell biology approaches to research. The candidate should have 2 to 3 years of postdoctoral experience and be able to conduct an independent research program which is competitive for extramural funding. Teaching experience in the anatomical sciences with special emphasis on gross anatomy is required. Applicants should send a current copy of their curriculum vitae, a brief statement of their research interests, and three references to: **Dr. Robert R. Cardell, Jr., Professor and Chairman, Department of Anatomy,**

**University of Cincinnati  
College of Medicine  
231 Bethesda Avenue  
Cincinnati, Ohio 45267**

We seek an experienced plant molecular biologist to carry out research designed to lead to new plant host-vector systems. The applicant should have a Ph.D. degree and at least 5 years post-doctoral experience in plant molecular biology and tissue culture. Applicants with additional post-doctoral experience in yeast or fungal genetics will be given preference. Annual salary for this position is approximately \$30,000. Please send resumes to:

**I.D. #1140946  
Indiana Employment  
Security Division  
10 North Senate  
Indianapolis, IN 46202  
Attn: B. H. Anderson**

An Equal Opportunity Employer, M/F

## POSITIONS OPEN

**FACULTY POSITIONS IN BIOCHEMISTRY.** The Department of Biochemistry of the Texas Tech University Health Sciences Center in Lubbock invites applications for four tenure-track positions at the level of assistant, associate, or full professor. Applicants should have a Ph.D. or equivalent degree and postdoctoral experience in one or more of the following areas: gene regulation, recombinant DNA, molecular endocrinology, or immunochemistry, and be capable of developing an independent research program related to these areas. Faculty rank and salary will depend on training, experience, and achievements of the applicant. Teaching responsibilities include participation in medical and nursing biochemistry and in teaching graduate students. Qualified applicants should send curriculum vitae, a description of their intended research program, and the names of three references to: **Dr. Kenneth L. Barker, Chairman, Department of Biochemistry, The Texas Tech University Health Sciences Center, 601 4th Street, Lubbock, Texas 79430. Equal Opportunity/Affirmative Action Employer.**

### IMMUNOLOGY FACULTY POSITION

The Department of Microbiology invites applications for a faculty appointment at the University of Texas Medical Branch, Galveston, Texas; rank and salary commensurate with qualifications. The successful candidate would be expected to have postdoctoral experience in cellular immunology, immunogenetics, or immunochemistry and to develop an independent research program in those areas. The department provides an excellent environment for independent and collaborative research and for teaching graduate and medical students.

Applicants should send curriculum vitae, bibliography, and names and addresses of three references to:

**Jan Cerny, M.D., Ph.D., Chairperson  
Immunology Search Committee  
Department of Microbiology J19  
The University of Texas Medical Branch  
Galveston, Texas 77550**

An Equal Opportunity/Affirmative Action Employer, M/F/H

**THE DIVISION OF SURGICAL ONCOLOGY, UNIVERSITY OF VIRGINIA** Medical Center, is seeking an **EXPERIENCED IMMUNOLOGIST** with a good background in tumor immunology who is well versed in classic and contemporary serology. This person should be knowledgeable in the area of tumor antigen solubilization and preparation and experienced in serologic analysis of antigens. We prefer a person with experience in some of the various techniques of demonstrating cell-surface antigens and internal antigens (fluorescence, mixed hemadsorption, immune adherence, radionuclear antibody labeling) and in other techniques showing antigen-antibody interactions (enzyme-linked immune assays, use of immunosorbent columns, and so forth). Experience with monoclonal antibody techniques is desirable but not essential. We are primarily interested in persons who have completed postdoctoral training and who have had a special interest in human tumor immunology. Please forward curriculum vitae and the names of three references to: **Harold J. Wanebo, M.D., Division of Surgical Oncology, Department of Surgery, University of Virginia Medical Center, Charlottesville, Virginia 22908. Equal Opportunity/Affirmative Action Employer.**

Assistant research scientist position is available for an **IMMUNOTOXICOLOGIST** to work on the immunochemical analysis of pesticides and other environmental contaminants of toxicological significance, protein toxins from *Bacillus thuringiensis*, and proteins involved in xenobiotic metabolism. Applicants should send curriculum vitae, transcripts, names of three references, and relevant publications to: **Dr. Bruce Hammock, Chair of Search Committee, Department of Entomology, University of California, Davis, Calif. 95616, by 31 October 1981. An Equal Opportunity/Affirmative Action Employer.**

**MEDICAL MICROBIOLOGIST.** 40 hours per week at \$6.72 per hour salary. Will primarily inoculate, isolate, and identify pathogenic bacteria from patient's specimens. Perform antibiotic sensitivity test for all pathogenic organisms. Supervise and analyze testing procedures and results of adherence to quality standards. Train new technicians and edit laboratory manual. Requires M.S. degree in microbiology. Apply to: **S. S. Lee, M.D., Director, Pathologist, Ligo Laboratory, Inc., 396 East 159 Street, Harvey, Ill. 60426.**

## POSITIONS OPEN

**INORGANIC CHEMISTRY.** Brandeis University seeks a talented, enthusiastic, and motivated chemist to join the faculty in a tenure-track, assistant professor position, and to pursue a strong research and teaching program in inorganic chemistry starting fall semester 1982. Preference in the areas of: (i) energy-related research, (ii) nonmolecular solids, (iii) heterogeneous catalysis, (iv) electrochemistry, and (v) modern coordination chemistry. Applicants should respond with résumé, transcripts, description of research plans, and three letters of recommendation by 1 December 1981 to: **Professor Bruce M. Foxman, Chairman, Inorganic Search Committee, Department of Chemistry, Brandeis University, Waltham, Massachusetts 02254. Brandeis University is an Affirmative Action/Equal Opportunity Employer.**

**INSTRUCTOR—CELLULAR AND MOLECULAR PHARMACOLOGY.** Applications are invited for a faculty rank position (instructor, \$22,355 annually, renewable for a 3-year period) to participate in research on cellular functions and molecular events related to cyclic nucleotides and calcium. Send curriculum vitae and names of three references to: **Dr. Donald J. Wolff, Department of Pharmacology, COLLEGE OF MEDICINE AND DENTISTRY OF NEW JERSEY—Rutgers Medical School, P.O. Box 101, Piscataway, New Jersey 08854. An Equal Opportunity/Affirmative Action Employer, M/F.**

There is a faculty position available at Duke University for a **MEDICAL RESEARCH ASSOCIATE** in mid-1982. The candidate will be required to assist in the teaching of virology and to develop research programs that involve the molecular and functional characterization of smallpox/orthopoxvirus-related virus genomes. Applicants must have a strong background in all aspects of the theory and practice of virology, including laboratory experience with poxviruses. They should have had several years of postdoctoral experience in recombinant DNA technology, and have expertise in both DNA sequencing technology and protein biochemistry. Applicants should send curriculum vitae and bibliography to: **Dr. W. K. Joklik, Chairman, Department of Microbiology and Immunology, Duke University Medical Center, Durham, N.C. 27712. References required. Salary: \$18,000. Duke University is an Equal Opportunity/Affirmative Action Employer.**

### MOLECULAR BIOLOGY

The Microbiology Department at Case Western Reserve University invites applications for several tenure-track faculty positions. We encourage applications from candidates with strong credentials in molecular biology, especially in areas relating to the regulation of gene expression. Experience in recombinant DNA techniques is desirable. These appointments provide excellent opportunities to develop independent research and teaching programs in an expanding medical school department. Send curriculum vitae, a statement of research and teaching interests, and the names of four references to: **Dr. Fritz Rottman, Chairman, Department of Microbiology, Case Western Reserve University, Cleveland, Ohio 44106. An Equal Opportunity/Affirmative Action Employer.**

**PEDIATRIC NEUROPATHOLOGIST—CALIFORNIA.** THE Childrens Hospital of Los Angeles (CHLA) is seeking a Board-certified neuropathologist for a newly created position. Strong interests in teaching and research with expertise in morphology are necessary. Faculty rank in pathology at the University of Southern California (USC) School of Medicine will be commensurate with experience. Address applications to: **Dr. Harry B. Neustein, Chairman Search Committee, Department of Pathology, Childrens Hospital of Los Angeles, 4650 Sunset Boulevard, Los Angeles, Calif. 90027. CHLA and USC practice Affirmative Action and are Equal Opportunity Employers.**

### POSTDOCTORAL FELLOW

Postdoctoral fellow (Ph.D. or M.D.) with primary interest in cell biology—biochemistry to join in established group investigating lung injury, repair, and fibrosis. This is a 2-year appointment. Applications with names of three referees should be sent to:

**Dr. Drummond H. Bowden  
Professor and Head  
Department of Pathology  
University of Manitoba  
Health Sciences Centre  
700 William Avenue**

Winnipeg, Manitoba, Canada R3E 0Z3



**THE INDUSTRIAL LIAISON PROGRAM  
OF  
THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
PRESENTS A COLLOQUIUM ENTITLED  
"MICROCAPSULES AND MICROCARRIERS IN BIOTECHNOLOGY"**

**Date:** October 15, 1981  
**Chairman:** Professor Robert S. Langer, Jr., MIT  
**Co-Chairman:** Professors Marcus Karel, Alexander Klivanov, William Thilly, MIT  
**Other Speakers:** Professor E. Katchalski-Katzir  
 Weizmann Institute of Science  
 Professor D. Papahadjopoulos  
 University of California, San Francisco  
 Professor T. Chang  
 McGill University  
 J. Salk, M.D.  
 Salk Institute

**Location:** MIT Kresge Auditorium  
 Cambridge, MA 02139

**Contact:** Maria Clara V. Suva Martin  
 Industrial Liaison Program  
 Tel. (617) 253-2691  
 Telex: 921473

**Attendance Fee:** Industrial Liaison Program (ILP) Members—free  
 Non-ILP Members—\$500

**Topics:** Immobilized Enzymes  
 Enzyme Stabilization  
 Controlled Drug Delivery Systems  
 Liposomes—Drug Targeting  
 Microcapsules  
 Diffusion Control in Food Systems  
 Microcarriers for Mammalian Cell Culture  
 Microcarriers in Vaccine Production

**Abstract:**

Major advances have been witnessed in the past few years in the area of biotechnology, which can be defined as the application of engineering principles to biological processes. In this colloquium, the use of novel systems—microcapsules and microcarriers—in biotechnology will be discussed. These particles possess significant potential in both basic and applied research. The applications in several important areas will also be discussed including their use as (i) supports for cells which make useful products, (ii) matrices for enzymes to be used as bioproducers or bioconverters, and (iii) important components in drug and food delivery systems.

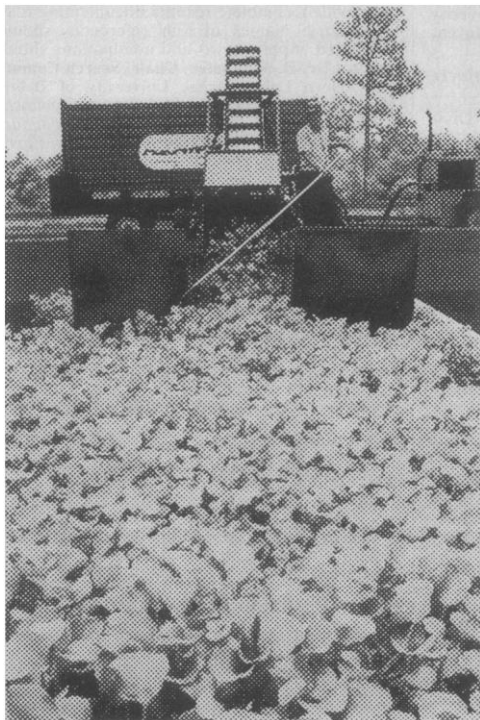
# Senior Environmental Specialist

The Agricultural Chemical Division of CIBA-GEIGY Corporation has an exceptional opportunity for a Senior Environmental Specialist. This position is responsible for the evaluation of risk associated with the exposure, fate and effects of pesticides in the environment.

The qualified candidate should possess a Ph.D. in Environmental Toxicology or Fisheries and Wildlife, with cross training in Chemistry. Field experience in Fish and Wildlife Biology with sufficient Environmental Chemistry and Toxicology knowledge to assess potential risks of chemicals to the environment is desirable. Knowledge of computers and associated mathematical risk models is also desirable. Knowledge of EPA/FIFRA and TSCA environmental chemistry and toxicology requirements would be helpful.

Please send resume with salary requirements in confidence to: Charles La Bella, Site Personnel, CIBA-GEIGY Corporation, P.O. Box 11422, Greensboro, N.C. 27409. An equal opportunity employer m/f.

## CIBA—GEIGY



## LAND BIOMASS ENERGY R&D Project Management

GRI, as an energy research organization, finances, plans and manages R&D programs related to the natural gas industry in a broad spectrum of energy areas for the benefit of the gas consumer. Current R&D efforts are dedicated to the production of methane by bacterial decomposition of biomass (plant material), a renewable energy resource which can be produced in dispersed locations near the point of use.

Position will involve technical management of research programs and projects related to the production of methane from herbaceous, woody, and fresh-water plants through bioconversion and thermo-chemical gasification. M.S./Ph.D. biological or agricultural engineering with directly related research experience required. GRI, under a jointly-funded project, is demonstrating the practicality of using a combination of sludge and water hyacinths from a wastewater purification pond as a methane-producing feedstock.

The expected high demand for natural gas reaffirms the need for talented professionals eager to address the energy challenges of the future. Your resume should be directed to: **J.R. QUILLINAN.**



**GAS RESEARCH INSTITUTE**  
 8600 West Bryn Mawr Avenue, Dept. LB-124  
 Chicago, IL 60631

equal opportunity employer m/f/h

## POSITIONS OPEN

**UNIVERSITY OF NEW MEXICO (UNM)—MOLECULAR BIOLOGIST.** Tenure-track assistant professor. Molecular biologist with interest in immunoglobulins preferred but not required. Three years of postdoctoral experience with demonstrated productivity and potential for independent granting required. Deadline for applications and starting dates extended. New dates: start 1 January through September 1982; applications by 15 November 1981. Send to: **Thomas Tomasi, M.D., Ph.D., Director, Cancer Research and Treatment Center, UNM Medical Center, Albuquerque, N.M. 87131. Affirmative Action/Equal Opportunity Employer.**

Brandeis University, faculty position (research and teaching) in the Rosensiel Research Center for a **MOLECULAR BIOLOGIST** with a strong research interest in immunology and a good record of publications. The level of the appointment will depend on the background and experience of the candidate. Excellent laboratory facilities and equipment available. Brandeis is located 10 miles west of Boston. *An Affirmative Action/Equal Opportunity Employer.* Please send résumé to: **Chairman, Search Committee, Rosensiel Research Center, Brandeis University, Waltham, Mass. 02254.**

### MOLECULAR BIOLOGIST/DEVELOPMENTAL GENETICIST

The Department of Biology of the University of Rochester invites applications for two tenure-track positions at the level of assistant or associate professor. Appointment to begin on or about September 1982. Candidates should have shown excellence in research in areas of developmental and/or eukaryotic molecular biology. Applicants should send curriculum vitae, a statement of research interests, and have three letters of recommendation sent to:

**Dr. Abraham Worcel**  
Chairman, Search Committee  
Department of Biology  
University of Rochester  
Rochester, N.Y. 14627

*The University of Rochester is an Affirmative Action/Equal Opportunity Educational Institution, M/F.*

### MOLECULAR BIOLOGY

**ASSISTANT or ASSOCIATE PROFESSOR**—The Department of Biochemistry, University of Mississippi Medical Center, invites applications for a tenure-track faculty position. Applicants whose research interests center on the molecular biology of gene expression are especially encouraged to apply but highly qualified candidates in other areas of biochemistry will also be considered. Established fields of investigation include developmental biology, nucleic acid and protein synthesis, membrane biochemistry, x-ray crystallography, and the structure and cloning of eukaryotic genes. Interested applicants should forward curriculum vitae and the names of three references by 20 November 1981 to: **Dr. Richard C. Hunt, Department of Biochemistry, University of Mississippi Medical Center, 2500 North State Street, Jackson, Miss. 39216. Equal Opportunity/Affirmative Action Employer.**

**POSTDOCTORAL FELLOW** to participate in a program investigating the barrier and transport properties of neural capillary endothelial cells in culture. Areas of interest include trans-cellular transport and tight junction formation. Send curriculum vitae and three letters of recommendation to: **Gary Goldstein, M.D., University of Michigan Medical Center, Ann Arbor, Michigan 48109. Equal Opportunity/Affirmative Action Employer.**

**POSTDOCTORAL POSITION** (research associate) available immediately for research on sympathetic nerve terminal and vascular smooth muscle function in hypertension. Experience in *in vitro* preparations and tyrosine hydroxylase assay preferred. Salary commensurate with qualifications. Send curriculum vitae, letter of interests, and three letters of recommendation before 10 October 1981 to: **L. T. Lais, Ph.D., School of Pharmacy, Oregon State University, Corvallis, Oregon 97331. An Equal Opportunity/Affirmative Action Employer in Compliance with Section 504 of the Rehabilitation Act of 1973.**

**POSTDOCTORAL POSITIONS.** Ph.D. in biochemistry or microbiology. Experience with protein purification and/or cell biology (immunobiology would be very helpful). To study factors which regulate hemopoiesis in a virus-induced leukemia. *Affirmative Action/Equal Opportunity Employer.* Send résumé to:

**Box 231, SCIENCE**

## POSITIONS OPEN

**NEUROBIOLOGISTS/NEUROPHYSIOLOGISTS.** The Yerkes Primate Center invites applications for two research positions in the Division of Neurobiology at the Assistant or Associate Research Professor level with the opportunity for a joint appointment in one of Emory University's academic departments. If an appointment is made in the Department of Anatomy, willingness to participate in the teaching of gross anatomy is desirable. Ph.D. required; postdoctoral experience expected; good overall background in neuroscience desirable. Applicants are expected to conduct independent and collaborative neurophysiologic research on the sensory and/or motor systems of primates. The center is committed to research in neurobiology, behavior, reproductive biology, and pathology in a wide variety of primates, including the great apes. Initial basic support is provided; however, researchers are expected to acquire grant support for their projects. Qualified applicants should send a description of future research goals, relevant reprints, curriculum vitae, and names of three references to: **Johannes Tigges, Ph.D., Chief, Division of Neurobiology, Yerkes Regional Primate Research Center, Emory University, Atlanta, Georgia 30322. Affirmative Action/Equal Opportunity Employer.**

A **POSTDOCTORAL POSITION** is available for a recent Ph.D. with interests in cancer chemotherapy. Study will involve examination of drug uptake, binding and isolation of bound species in childhood rhabdomyosarcomas. Candidates with training in biochemistry/pharmacology with experience using cell culture preferred. Send curriculum vitae and three letters of reference to: **Dr. Peter Houghton, Division of Biochemical and Clinical Pharmacology, St. Jude Children's Research Hospital, Memphis, Tenn. 38101.**

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**POSTDOCTORAL POSITIONS.** Immunobiology Division, Yale University, available immediately and supported by interdisciplinary NIH-supported training program. Research opportunities in cellular immunology, immunochemistry, and immunobiology of antigen-specific T-cell products and membrane receptors, immunogenetics, and physiology of lymphocyte membranes. Interdisciplinary approach requires collaboration with at least two faculty members of the Immunology Division. Send curriculum vitae and list of two references to: **Dr. Richard Gershon, Department of Pathology, Yale University School of Medicine, 310 Cedar Street, New Haven, Connecticut 06510.**

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**POSTDOCTORAL POSITION.** Immunology Division, Yale University, available immediately to study the biochemistry and immunobiology of antigen-specific T-cell products and their cell membrane analogs. Position involves collaboration between laboratories of Dr. R. K. Gershon, Dr. R. W. Rosenstein, and Dr. R. E. Cone. Experience in cellular immunology and/or immunochemistry preferred. Send curriculum vitae and list of two references to: **Dr. Robert Cone, Department of Pathology, Yale University School of Medicine, New Haven, Connecticut 06510.**

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**POSTDOCTORAL POSITION** available in laboratory investigating endocrinological variables in growth of normal and neoplastic breast tissue in athymic nude mice. Applicant with experience in cell biology and/or endocrinology preferred. Please send curriculum vitae and three references to: **Dr. C. M. McGrath, Department of Tumor Biology, Michigan Cancer Foundation, 110 East Warren Avenue, Detroit, Mich. 48201. An Equal Opportunity/Affirmative Action Employer.**

### RESEARCH ASSOCIATE

Position available for M.D. or Ph.D. to study molecular abnormalities of collagen biosynthesis in inherited connective tissue disorders and regulation of procollagen synthesis in human skin fibroblasts using gene technology. Experience in nucleic acid biochemistry and cell culture is desirable.

Send curriculum vitae and three letters of reference to:

**Sheldon R. Pinnell, M.D.**  
Division of Dermatology  
Box 3135  
Duke University Medical Center  
Durham, North Carolina 27710

*Duke University Medical Center is an Equal Opportunity Employer.*

## POSITIONS OPEN

Two **POSTDOCTORAL POSITIONS** available immediately on an NIH grant, approved through March 1984. One, to isolate and characterize lysosomal enzymes involved in fertilization and second, to study the localization of these enzymes on sperm-macrosomal membranes by histochemical, immunological methods and electron microscopy. Please write to: **Dr. P. N. Srivastava, Biochemistry Department, University of Georgia, Athens, Ga. 30602, within 1 month of this advertisement.**

**POSTDOCTORAL POSITIONS** available immediately in *Rhizobium*-and-plant cell molecular genetics and in physiology/biochemistry of *Rhizobium*-legume interaction. Please send curriculum vitae and three letters of reference to: **Dr. Aladar A. Szalay (Molecular Genetics) and Dr. Allan R. J. Eaglesham (Physiology/Biochemistry), Boyce Thompson Institute, Cornell University, Tower Road, Ithaca, New York 14853. Equal Opportunity/Affirmative Action Employer.**

**POSTDOCTORAL POSITION** will be available 1 October 1981 for a candidate with M.D. or Ph.D. degrees in biochemistry or molecular biology. The research involves the molecular biology of plasmid DNA transfer during bacterial conjugation, using gene cloning and DNA sequencing. Prefer applicants with experience in bacterial genetics and recombinant DNA techniques. Salary: \$13,000 to \$18,000. Send résumé and three references to: **Dr. Donald Guiney, University of California San Diego, University Hospital, H811F, 225 Dickinson Street, San Diego, Calif. 92103.**

### UNIVERSITY OF DELAWARE PROFESSOR AND DIRECTOR, SCHOOL OF LIFE AND HEALTH SCIENCES

Candidates should be established investigators in the life sciences with administrative and/or program leadership experience. Responsibilities include: instruction and research programs in the basic life sciences and the allied health sciences; administration of academic affairs, personnel, financial matters, and physical facilities; and leadership and coordination of intramural and extramural relations of the school. This position is open after 1 July 1982. Applications and nominations should be submitted by 20 November 1981. Qualified persons are invited to provide a complete résumé documenting relevant experience. Names of four references should be submitted. Applications and nominations should be sent to: **Dr. D. Wetlaufer, Chair, Search Committee, 111 Brown Laboratories, University of Delaware, Newark, Del. 19711. The University of Delaware is an Equal Opportunity Employer which encourages applications from qualified minority groups and women.**

### PROFESSOR OF OCEANOGRAPHY

Scripps Institution of Oceanography solicits applications for a professorship (assistant professor to professor) in biological oceanography. Candidate should have demonstrated interests in marine ecosystems (oceanic or coastal), understanding of modern ecology, the physics and chemistry of the ocean, and statistical design and interpretation of observations. Duties include teaching at the graduate level and original research. Rank and salary will depend upon qualifications. Send curriculum vitae, bibliography, statement of research and teaching interests and experience, and the names of three references to: **Chairman, Graduate Department, Mail Code A-008, Scripps Institution of Oceanography, La Jolla, Calif. 92093.** Closing date for applications is 1 January 1982. *The Scripps Institution is part of the University of California, an Equal Opportunity/Affirmative Action Employer.*

### RESEARCH ASSOCIATE

Postdoctoral research position in multidisciplinary training program available to study the role of androgens and estrogens in the normal and neoplastic growth of the prostate, using both biochemical and morphological techniques. The research is devoted to analyses of steroid hormone, nucleic acid, and connective tissue metabolism in prostatic epithelium and stroma. Salary is consistent with NIH guidelines. Please send curriculum vitae and names of three references to: **Dr. Michael Mawhinney, Department of Pharmacology and Toxicology, West Virginia University Medical Center, Morgantown, W.Va. 26506.** Applications will be accepted until 1 December 1981. *An Equal Opportunity/Affirmative Action Employer.*

## POSTDOCTORAL RESEARCH ASSOCIATE IN BIOCHEMISTRY



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We are seeking a Biochemist with a strong background in protein chemistry/enzymology to do research on phosphoprotein phosphatases. Experience in enzyme assay procedures, enzyme purification and separation techniques required. Candidates should possess a basic knowledge of intermediary metabolism and hormonal control of protein phosphorylation-dephosphorylation mechanisms.

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**DIVISION OF MOLECULAR GENETICS, IPRI, 853 Industrial Road, San Carlos, Calif. 94070.**

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Post-doctoral candidates must have completed their doctoral dissertation before arrival in Israel.

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The grant is intended to defray the cost of the Fellow's travel and tuition fees and to meet reasonable living expenses.

**Application:** Graduate candidates may apply during their senior undergraduate year or after they have undertaken study in a graduate school. Post-doctoral candidates may apply at an early stage of their professional career (not later than 3 years after completion of their doctoral dissertation).

Graduate and Post-doctoral candidates (including Israelis abroad) may obtain application forms from the Lady Davis Fellowship Trust at the above address, after they indicate the category of Fellowship for which they are eligible.

Completed applications must reach the office of the Trust not later than December 1, 1981.

### VISITING PROFESSORSHIPS

These fellowships are intended for candidates with the rank of Full or Associate Professor at their own institution. They are tenable for periods from one trimester (or semester) to a full academic year.

**Application:** Forms may be obtained from the Lady Davis Fellowship Trust at the above address. Completed application forms must reach the office of the Trust not later than December 1, 1981.

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## POSITIONS OPEN

The Faculty of Science of the University of Geneva has an opening for an **EXTRAORDINARY PROFESSOR OF STRUCTURAL CRYSTALLOGRAPHY**.

**Duties:** Courses on modern methods of structure determination including neutron diffraction; interaction with other groups to help on crystallographic problems; and direction of research and theses work as well as administration.

**Requirements:** Ph.D. in physics or crystallography. Several years of research experience.

**Application:** To be sent before 30 November 1981 to: **Faculté des Sciences, Université de Genève, 20, Quai Ernest Ansermet, CH-1211 Genève 4, Switzerland.**

Two **POSTDOCTORAL POSITIONS** available in the Department of Biochemistry at the Louisiana State University (LSU) Medical Center. One involves a study of cAMP-dependent protein kinase and the second involves a study of the regulation of the muscarinic cholinergic receptor in heart. Salary: \$14,000 to \$16,000 per year, depending upon experience. Send résumé and names and addresses of three references to the following:

**Robert Roskoski, Jr., Head  
Department of Biochemistry  
LSU Medical Center  
New Orleans, Louisiana 70112**

*The LSU Medical Center is an Affirmative Action/Equal Opportunity Employer.*

**QUANTITATIVE PSYCHOLOGIST—DEPARTMENT OF PSYCHOLOGY, THE UNIVERSITY OF ILLINOIS** at Urbana-Champaign, is seeking a quantitative psychologist with research and teaching interests in social or behavioral statistics, mathematical models, evaluation research methodology, or measurement. Candidates with interests in any substantive area of psychology or related fields who have a strong background in mathematics or statistics and who, for their level, have an outstanding record of research and scholarship in quantitative approaches, will be considered.

The position is tenure-track at the assistant professor level and is contingent upon availability of funds. Preference will be given to individuals with some postdoctoral experience and a record of research and teaching accomplishment. The appointment would begin on 21 August 1982. Salary is dependent upon experience and qualifications. While we are seeking an assistant professor, individuals with truly exceptional records of accomplishment who wish to apply for more senior appointments will be given consideration.

All inquiries and nominations, as well as complete applications (curriculum vitae, statement of interests, at least three letters of reference, and preprints or reprints of publications) should be sent to: **Lawrence E. Jones, Chairman, Quantitative Search Committee, University of Illinois, Department of Psychology, 603 East Daniel, Champaign, Illinois 61820 (telephone: 217-333-3457).** In order to ensure full consideration, applications should be received as soon as possible, but no later than 1 December 1981.

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### RESEARCH FELLOWS ENERGY AND ENVIRONMENTAL POLICY CENTER KENNEDY SCHOOL OF GOVERNMENT

A multidisciplinary study at Harvard University to assess the health effects of exposures to airborne particles is presently seeking to fill up to four postdoctoral/research positions. Candidates should have advanced degrees in one or more of the following areas: atmospheric chemistry, aerosol physics, toxicology, epidemiology, or biostatistics. Other advanced degrees such as engineering, chemistry, physics, mathematics, biology, or medicine will be considered if dissertation/research experience is related to air pollution health effects and/or atmospheric aerosols.

Please send a résumé, including transcript, abstract of thesis, reprints of papers, and references, to:

**J. D. Spengler  
Department of Environmental Health Sciences  
Harvard School of Public Health  
665 Huntington Avenue  
Boston, Mass. 02115**

## POSITIONS OPEN

**RESEARCH ASSOCIATE IN MEMBRANE PHYSIOLOGY.** Postdoctoral position available 1 March 1982 to study H ion transport and intracellular pH regulation with microelectrodes and tracers. The laboratory is part of an active group studying ion regulation in cells. Interested candidates should send résumé and three letters of recommendation to: **Dr. Albert Roos, Department of Physiology, Washington University School of Medicine, 660 South Euclid Avenue, St. Louis, Missouri 63110.** An Equal Opportunity/Affirmative Action Employer.

### RESEARCH ASSOCIATE

Ph.D. or equivalent with training in tissue and cell culture to work on research related to experimental liver carcinogenesis. Postdoctoral position available immediately. Salary negotiable. Send résumé to: **A. David Gibson, Research Administrator, Department of Pathology, School of Medicine, University of Pittsburgh, Pittsburgh, Pa. 15261.**

*An Equal Opportunity/Affirmative Action Employer*

**SENIOR RESEARCH ASSOCIATE** position available in October for a Ph.D. in immunology, biochemistry, or microbiology with a minimum of 2 years of postdoctoral experience. Research projects would deal primarily with the biochemical and immunopathological activities of bacterial endotoxins. Individual would supervise the research of graduate students, postdoctoral fellows, and technicians. Individuals with enthusiasm for basic research and an ability to work independently are encouraged to apply. Beginning salary about \$20,000 per year with some adjustments allowable for past experience. Please submit curriculum vitae and names and addresses of three references to: **Dr. David C. Morrison, Department of Microbiology, Emory University, Atlanta, Ga. 30322.** Closing date: 9 October 1981.

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## FELLOWSHIPS

**SMITHSONIAN TWO-YEAR POSTDOCTORAL FELLOWSHIP** starting June 1982 to conduct a field study of the social behavior and ecology of *Iguana iguana* in the llanos of Venezuela. Stipend: about \$17,000 per year. Field experience, some Spanish desirable. For information, write, enclosing curriculum vitae, to: **A. S. Rand, Smithsonian, APO Miami 34002 and G. M. Burghardt, Department of Psychology, University of Tennessee, Knoxville, Tenn. 37916,** by 30 October 1981.

### FELLOWSHIPS

**Postdoctoral fellowship in neural control of the cardiovascular system.** A limited number of fellowship positions are available, funded by an NIH training grant. Clinical and basic scientists participate in the program with major emphasis on neural pathways, hypertension, cardiovascular pharmacology, exercise, electrophysiology, cardiac biochemistry, and biofeedback. The positions are open to U.S. citizens and permanent residents who have Ph.D., M.D., or equivalent degrees in a basic biomedical discipline.

Applicants should send curriculum vitae with three references and specific area of interest to: **Dr. H. Lowell Stone, Department of Physiology and Biophysics, University of Oklahoma Health Sciences Center, P.O. Box 26901, Oklahoma City, Oklahoma 73190.** *We are an Equal Opportunity Employer.*

## FELLOWSHIPS

### UNIVERSITY OF COLORADO VISITING FACULTY AND POSTDOCTORAL FELLOWSHIPS

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ENVIRONMENTAL AND ATMOSPHERIC  
CHEMISTRY,  
ENVIRONMENTAL BIOCHEMISTRY AND  
GEOCHEMISTRY**

One-year awards offered by the Cooperative Institute for Research in Environmental Sciences (CIRES). Awards may be made to senior scientists, including those on sabbatical leave, or to recent Ph.D. recipients. Stipend is scaled to experience, and the program is open to scientists of all countries. CIRES is supported by NOAA and the University of Colorado. Applications for the 1982-1983 academic year awards should be sent to: **The Director, CIRES Visiting Fellows Program, Campus Box 449, University of Colorado, Boulder, Colorado 80309,** before 1 December 1981, and should include curriculum vitae, publications list, and a brief outline of the proposed research. In addition, applicants should request that three persons familiar with their qualifications send letters of recommendation by 1 December. *The University of Colorado is an Affirmative Action/Equal Opportunity/Section 540 Employer.*

### THE HEBREW UNIVERSITY OF JERUSALEM Jerusalem 91000, Israel

The Hebrew University of Jerusalem offers a small number of **POSTDOCTORAL FELLOWSHIPS** for the 1982-1983 academic year in the humanities, social sciences, natural sciences, agriculture, and medicine.

Candidates may apply at an early stage of their professional career (not later than 3 years after completion of their doctoral dissertation) to: **P.O. Box 1255, Jerusalem 91000, Israel.**

Completed application forms must be returned by 1 December 1981.

## SYMPOSIUM

**GENETIC TOXICOLOGY: AN AGRICULTURAL PERSPECTIVE.** A symposium sponsored by the Associated Universities, Inc., Council for Research Planning in Biological Sciences, to be held at the University of California, Davis, from 1 to 5 November 1981, page 1419. For program and registration information: **Raymond A. Fleck, Food Protection and Toxicology Center, University of California, Davis, Calif. 95616,** or telephone: 916-752-1142.

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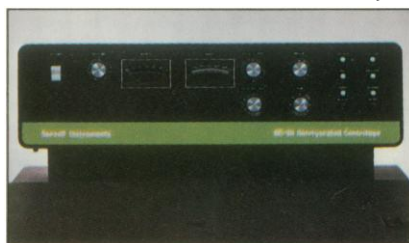


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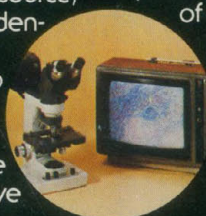
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## Information for Contributors

### The Editors of *Science*

Papers published in *Science* often receive far more attention than papers published in specialty journals. As a consequence, the rate of submission of papers is high—about 5000 manuscripts are submitted each year. The rejection rate of about 80 percent contrasts with that of most specialty journals, which is usually about 30 percent. Most of the material submitted to *Science* is of good quality and worthy of publication, and virtually all the scientific papers are eventually published somewhere. In selecting papers for *Science*, the editors must consider the needs of a broad audience. Insofar as the input of manuscript permits, preference is given to items that seem to be of general significance.

### General Information

Four types of signed papers are considered: Articles, Reports, Letters, and Technical Comments. The author's membership in the AAAS is not a factor in selection. Papers are considered with the understanding that they have not been published and are not under consideration elsewhere. Authors will usually be notified of acceptance, rejection, or need for revision in 6 to 8 weeks (Reports) or 8 to 10 weeks (Articles).

**Outside reviews.** Almost all Articles and Reports, including those solicited by the editor, are sent to two or more outside referees for evaluation. Referees suggested by authors are used at the discretion of the editors. Papers that depend on statistical inferences for their conclusions may be sent to statisticians (in addition to other referees) for review.

**Length limits.** Papers that exceed the length limits cannot be handled expeditiously and in some cases will be returned without review. The limits are stated below in number of pages based on standard-size pages (8½ by 11 inches) typed with double spacing throughout (including the references and notes) and with 1-inch margins.

1) Articles: Up to 20 pages of text, including the references and notes, and

one table or figure for approximately every three manuscript pages.

2) Reports: Up to seven pages of text, including references and notes, and two tables or figures that together will occupy no more than half a printed page.

3) Letters: Up to 250 words.

4) Technical Comments: Up to two pages of text, including references and notes.

### Selection of Manuscripts

1) Articles: About half the Articles published in *Science* are solicited by the editor. Both solicited and unsolicited Articles undergo outside and in-house review. Articles are expected to (i) provide a review of new developments in one field that will be of interest to readers in other fields, (ii) describe a current research problem or a technique of interdisciplinary significance, or (iii) present a study of some aspect of the history, logic, philosophy, or administration of science or a discussion of science and public affairs. Readers should be able to learn from a technical Article what has been firmly established and what are significant unresolved questions; speculation should be kept to a minimum. Preference is given to Articles that are well written, well organized, and within the length limit. Balance of subject matter in *Science* is an important consideration when a choice is made between acceptable Articles.

2) Reports: Reports are selected on the basis of reviewers' comments and an in-house review. Reports are expected to contain solid research results or reliable theoretical calculations. Preference is given to those that describe departures or discoveries that will be of broad interdisciplinary interest or of unusual interest to the specialist. In making the final selection, the editors take into consideration (i) the reviewers' comments: reports most likely to be accepted are those that receive persuasive outside reviews favoring publication; (ii) clarity of presentation within the prescribed length

limit; and (iii) subject matter in relation to that of other papers on hand. An attempt is made to balance the subjects of Reports so that one discipline is not overrepresented to the exclusion of others.

3) Letters: Letters are selected for their pertinence to material published in *Science* or because they discuss significant problems of interest to most scientists. Letters of a highly technical nature are usually transferred to the Technical Comments section. Letters pertaining to material published in *Science* may correct errors, provide support or agreement, offer different points of view, clarify, or add information. Outside reviewers may be consulted on questions of accuracy. Insinuations and conjecture about another author's motives, abilities, or intelligence are considered inappropriate for publication. The selection of letters is intended to reflect the range of opinions received.

4) Technical Comments: Technical Comments may be selected for publication if they express significant criticisms of papers published in *Science* or offer useful additional information. Technical Comments are usually sent for an opinion to the authors of the original papers before being reviewed. Discussions of minor issues or priority claims are not deemed appropriate, nor are questions that can be resolved by correspondence between the critic and the original authors.

5) Book Reviews: The selection of books to be reviewed and of reviewers is made by the editors.

### Submission of Manuscripts

Submit an original and two duplicates of each manuscript together with a letter of transmittal giving:

- 1) the name(s) and telephone number(s) of the author(s);
- 2) the title of the paper and a statement of its main point;
- 3) the names, addresses, telephone numbers, and fields of interest of four to six persons in North America but outside your institution who are qualified to referee your paper;
- 4) the names of colleagues who have reviewed your paper; and
- 5) the fields of interest of readers who may want to read your paper.

### Manuscript Preparation

**Typing.** Use double spacing throughout the text, tables, figure legends, and references and notes.



**Units of measure.** Use metric units. If measurements were made in English units, give metric equivalents.

**Symbols and abbreviations.** Define all symbols, abbreviations, and acronyms.

**References and notes.** Number references and notes in the order in which they are cited in the text. Place references cited only in tables or figure legends after the text references. Gather all acknowledgments into a single, brief statement at the end. Use *Bibliographic Guide for Editors & Authors* (American Chemical Society, Washington, D.C.) for abbreviations of journal titles. For journals not listed there provide the full title. Use the following forms:

For a journal paper: H. Smith, *Am. J. Physiol.* **98**, 279 (1931).

For a book: F. Dachille and R. Roy, *Modern Very High Pressure Techniques* (Butterworth, London, 1961), pp. 163-180.

For a paper in a compilation: F. Dachille and R. Roy, in *Reactivity of Solids*, J. H. de Boer, Ed. (Elsevier, Amsterdam, 1960), p. 502.

For unpublished material: A. Giraud, paper presented at the American Nuclear Society Conference, Washington, D.C., November 1976.

**Illustrations.** For each illustration submit three copies of a quality suitable for reproduction. Label each on the back with the name of the author and the figure number. Plan figures for the smallest printed size consistent with clarity. Color may be used if necessary but authors are billed accordingly. Cite all illustrations in the text and provide a brief legend for each.

**Tables.** Type each table on a separate sheet, give it a number and title, and cite it by number in the text. Give each column a heading. Indicate units of measure in parentheses in the heading for each column, and do not change the unit of measure within a column.

**Equations and formulas.** Use quadruple spacing around equations and formulas that are to be set off from the text. Define all symbols.

## Special Requirements and Procedures

1) Articles: Provide a title of one or two lines of not more than 26 characters and spaces each; a brief author note giving your position and address; and a summary of 50 to 100 words. The summary should convey to the general reader the main point of the paper and outline the results or conclusions. The introduction should portray the broad significance of the work, and the whole text should be intelligible to scientists in different disciplines. Explain all technical terms likely to be known in only one field. Insert short subheadings at appropriate places in the text to mark your main ideas. Provide a reference list in accord with *Science* style. Reference lists should not be exhaustive; citation of a single review article can often replace many references. A maximum of 40 references is suggested.

2) Reports: Provide a title of one or two lines of not more than 54 characters and spaces each, and an abstract of 50 to 75 words. The abstract and the first portion of the report should portray for the general reader the results described and their significance. The body of the report should be intelligible to scientists in other fields of expertise. Complete documentation need not be presented but should be available in cited references.

3) Letters: Letters should be short (up to 250 words) and to the point; they should be carefully phrased, free of technical jargon, and nonrepetitive. When a Letter refers to an Article published in *Science* the original author is usually given an opportunity to reply. Letters are frequently shortened and edited. Letters are acknowledged by postcard; authors are notified if their letters are accepted for publication. Letters must be typed with double spacing.

4) Technical Comments: Technical Comments on Reports or Articles are published at the end of the Reports section. When a Technical Comment is accepted for publication the authors of the

original paper are usually given an opportunity to reply.

5) Book Reviews: Instructions accompany review copies when they are sent to reviewers.

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