

wishes, however, that there were more on this important subject.

Perhaps the most striking testimony to progress with respect to basic eukaryotic cellular functions is the demonstration by Carbon and Clarke that centromeres can be isolated as physical entities encoded in DNA and that small plasmids containing such centromeric sequences are then endowed with most of the biological properties of legitimate chromosomes.

The principal shortcoming of the book is one that is unavoidable: rapid progress renders much of what is said already significantly out of date. This volume is clearly not a source for the most recent developments. Yet it contains a balanced collection of, in most cases, well-written papers that bear witness to a minor revolution brought about by the convergence of genetic and biochemical methods in the study of this simple eukaryotic organism. The excitement of the time is captured. It is perhaps fitting that the majority of these papers have been dedicated to Herschel Roman, one of the pioneers and sustaining forces of yeast genetics, on his 65th birthday. Roman is largely responsible, through his own efforts as well as through his encouragement of others, for the preeminence of *Saccharomyces* in the genetic analysis of cellular processes in eukaryotes. This volume is an appropriate tribute.

STEVEN I. REED

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Virus-Receptor Interactions

Virus Receptors. In two volumes. Part 1, Bacterial Viruses. L. L. RANDALL and L. PHILIPSON, Eds. xii, 148 pp., illus. \$39.50. Part 2, Animal Viruses. K. LONBERG-HOLM and L. PHILIPSON, Eds. xii, 218 pp., illus. \$39.50. Chapman and Hall, London, 1980-1981 (U.S. distributor, Methuen, New York). Receptors and Recognition, Series B, vols. 7 and 8.

These two slim volumes attempt to bring together the available knowledge concerning the structure and function of receptors for both bacterial and animal viruses.

The first volume contains five chapters, one dealing with the receptors of Gram-positive bacteria and the remaining four surveying various aspects of bacteriophage receptor biology in Gram-negative bacteria. Rather than provide an exhaustive (and exhausting) catalog of known phages and their receptors, the

authors have attempted to emphasize general principles and to offer interesting speculations about receptor function. For example, Maxime Schwartz, writing about the interaction of phages with receptor proteins, proposes that phages bind irreversibly only if the host cell membrane is in an energized state, thus providing a mechanism whereby phages can recognize a "healthy" cell. A. R. Archibald reviews the receptors of Gram-positive bacteria, Andrew Wright and colleagues discuss the role of the lipopolysaccharide of Gram-negative bacteria as a phage receptor, and T. Palva and D. Bamford review the lipid-containing bacteriophages. Although functional analogies between receptors for phages and viruses infecting eukaryotic cells are mentioned by Palva and Bamford, this issue does not receive the full attention it deserves. Consequently, the two volumes remain separate and will probably be purchased separately by bacteriologists and animal virologists.

The subject of animal virus receptors, reviewed in the 11 chapters of part 2, embraces a much greater variety of experimental systems. There is also considerable variation in the amount of detailed knowledge about the receptors for the major taxonomic groups of viruses. Some aspects of the subject are dealt with rather summarily, and there is some redundancy in chapters on related topics. For example, there is considerable overlap in the chapters that review receptors for picornaviruses (R. L. Crowell *et al.*) and the myxo- and paramyxoviruses (A. S. Scheid) and those devoted to the role of glycoprotein as a virus receptor (A. T. H. Burness), methods for receptor isolation and characterization (K. V. Holmes), and the role of lipids in virus-cell interactions (J. Bramhall and B. Wisniewski). One also experiences a feeling of déjà vu on reading certain chapters. For example, the chapter by Scheid, on the properties of envelope glycoproteins isolated from myxo- and paramyxoviruses, though well written, is a virtual copy of his many other reviews of the last few years. On a more positive note, Burness presents some new ideas about the possible role of sialic acid as a virus receptor and the lucid chapter by Crowell and co-authors makes a useful effort to relate virus receptor function and cellular properties to the pathogenesis of disease.

Because of the diversity of the topics covered in the volume on animal viruses an introductory chapter would have been helpful. The final chapter, "Evaluation and conclusions" (L. Philipson), attempts to develop a unified view of virus

receptors in prokaryotic and eukaryotic cells and to define certain avenues for future research, but it is far too brief to be of any real value.

The papers in these volumes contain few literature references later than 1979, and virtually no mention is made of how advances in recombinant DNA technology and new methods for the production of monoclonal antibodies will be exploited in the study of virus-receptor interactions. The editors can be criticized for not making a greater effort to integrate information derived from studies of prokaryotes and eukaryotes. Despite these criticisms, the volumes provide the best survey of this important topic to be published to date.

GEORGE POSTE

Smith Kline & French Laboratories,
Philadelphia, Pennsylvania 19101

Books Received

An Atlas of Distribution of the Freshwater Fish Families of the World. Tim M. Berra. University of Nebraska Press, Lincoln, 1981. xxx, 198 pp. Cloth, \$26.50; paper, \$12.50.

Automatic Transaction Decomposition in a Distributed CODASYL Prototype System. Frank Germano, Jr. UMI Research Press, Ann Arbor, Mich., 1981. xvi, 134 pp. \$27.95. Computer Science: Distributed Database Systems, no. 6.

Basic Reproductive Medicine. Vol. 1, Basis and Development of Reproduction. David Hamilton and Frederick Naftolin, Eds. MIT Press, Cambridge, Mass., 1981. xvi, 174 pp., illus. Paper, \$12.50.

Beyond the Age of Waste. A Report to the Club of Rome. D. Gabor and U. Colombo with A. King and R. Galli. Translated from the Italian edition. Pergamon, New York, ed. 2, 1981. xviii, 240 pp., illus. Paper, \$19.

Bibliography of New Mexico Paleontology. Barry S. Kues and Stuart A. Northrop. University of New Mexico Press, Albuquerque, 1981. x, 150 pp. Paper, \$9.95.

The Biochemistry of Silage. Peter McDonald. Wiley-Interscience, New York, 1981. 226 pp., illus. \$42.

The Biology of Mosses. D. H. S. Richardson. Halsted (Wiley), New York, 1981. xii, 220 pp., illus. \$29.95.

Biomagnetism. Proceedings of a workshop, Berlin, May 1980. S. N. Ern , H.-D. Hahlbohm, and H. L bbig, Eds. Walter de Gruyter, New York, 1981. xviii, 558 pp., illus. \$72.

Biomedical Innovation. Papers from a conference, Mt. Pocono, Pa., Mar. 1980. Edward B. Roberts, Robert I. Levy, Stan N. Finkelstein, Jay Moskowitz, and Edward J. Sondik, Eds. MIT Press, Cambridge, Mass., 1982. xx, 396 pp., illus. \$27.50. MIT Press Series in Health and Public Policy, 3.

Biosynthesis of Isoprenoid Compounds. Vol. 1. John W. Porter and Sandra L. Spurgeon, Eds. Wiley-Interscience, New York, 1981. xvi, 558 pp., illus. \$59.50.

Bone Marrow Transplantation in Europe. Vol. 2. Proceedings of a symposium, Courchevel, Savoie, France, Mar. 1981. Jean-Louis Touraine, Eliane Gluckman, Claude Griscelli, Ren  Triau, and Ferry Zwaan, Eds. Excerpta Medica, Amsterdam, 1981 (U.S. distributor, Elsevier North-Holland, New York). xii, 310 pp., illus. \$53.25.

Climatology. Selected Applications. John E. Oliver. Halsted (Wiley), New York, and Winston, Silver Spring, Md., 1981. x, 260 pp., illus. \$34.95. Scripta Series in Geography.

Closed-Conduit Flow. Papers from a course, Fort Collins, Colo., June 1980. M. Hanif Chaudhry and Vujica Yevjevich, Eds. Water Resources Publications, Littleton, Colo., 1981. xii, 416 pp., illus. \$35.

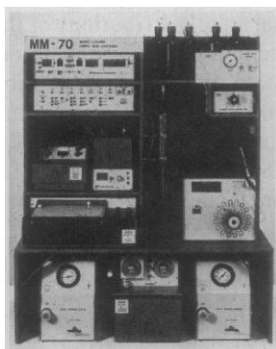
Compendium of Immunology. Vol. 2. Lazar M. Schwartz. Van Nostrand Reinhold, New York, ed. 2, 1981. xxxii, 722 pp., illus. \$45.

Le Comportement Maternel. Rudolph Schaffer. Translated from the English by G rard de Valck.

(Continued on page 1312)



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(subject to be announced); W. Chupka (subject to be announced).

15 July. A. Albrecht, "Multiphoton ionization in liquids"; K. C. Smyth, "Multiphoton ionization in flames: A new variation on optogalvanic spectroscopy." Poster session for late-breaking developments.

16 July. P. M. Johnson, "High resolution 2-photon spectroscopy of supercooled benzene and isotopically substituted species"; M. Ito, "Multiphoton ionization of NO."

Water and Aqueous Solutions

Holderness School

David Chandler, chairperson; Jacques Desnoyers, vice chairperson.

9 August. Scattering probes of structure and dynamics of aqueous systems (A. Narten, chairperson): G. W. Neilson, "Hydration and motion of ions in water by neutron scattering, or the second zone in aqueous ionic solutions"; S. H. Chen, "Local structure and dynamics of low temperature water as seen by neutrons"; M. L. Klein, "Comparison of theoretical and simulation models with scattering results from liquid water." Spectroscopic probes of structure and dynamics of aqueous systems (M. C. R. Symons, chairperson): M. G. Sceats, "Cooperative vibronic spectroscopy—a probe of rare ion hydration and ion-pair formation"; R. Cole, "Static and kinetic ion-solvent dielectric effects by time domain spectroscopy."

10 August. Micelles and microemulsions, I—theoretical (A. Ben-Naim, chairperson): H. Wennerstrom, "Principles of surfactant assemblies in aqueous systems"; F. H. Stillinger, Jr., "Field theory of micelles"; L. R. Pratt, "Monte Carlo study of simple models for micelles." Micelles and microemulsions, II—experimental (W. Kauzman, chairperson): K. Shinoda, "Thermodynamic aspects of surfactant phase"; J. H. Fendler, "Characterization and utilization of polymeric surfactant aggregates"; D. F. Evans, "Micelle formation in exotic hydrophobic solvents."

11 August. Protein assembly and stability (John Edsall, chairperson): M. Karplus, "Dynamics of macromolecules"; C. C. F. Blake, "The interface of water with proteins"; John A. Rupley, "Protein-water interactions." Poster session: Clustered according to subject matter. In addition to the topics of the main lecture sessions, we also encourage posters on (a) computer simulations of aqueous systems and (b) hydrophobic effects.

12 August. Aqueous systems at high pressures and/or temperatures (E. U. Franck, chairperson): R. Wood, "Hydration of apolar solutes at supercritical temperatures by high temperature calorimetry"; H. D. Holland, "Aqueous solutions in the earth's crust"; J. Jonas, "High pressure nuclear magnetic resonance studies of the dynamic structure of water." Metastable water (Felix Franks, chairperson): C. A. Angell, "New data on supercooled water including microemulsion experiments"; J. Teixeira, "X-rays and neutron data in supercooled water: Recent results."

13 August. Electrons and electron transfer in water (N. R. Kestner, chairperson): H. Haberland, "Observation of free hydrated electrons, negatively charged water clusters in the gas phase"; M. Newton and H. L. Friedman, "Theory of electron transfer reactions in water"; G. Kenney-Wallace, "Dynamics of optically induced electron transfer in aqueous solutions and micelles."

**Water and Solute Exchange
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Plymouth State College

Harris J. Granger, chairperson; F. Chinard, C. Goresky, F. Vargas, co-vice chairpersons.

14 June. Regulation and exchange in the microcirculation (C. Crone, session chairperson): J. Rhodin, P. Johnson, B. Zweifach, speakers. Determinants of microvascular perfusion (P. Johnson, session chairperson): A. Groom, B. Klitzman, B. Fleming, H. Lipowsky, speakers.

15 June. Oxygen exchange (E. Renkin, session chairperson): R. Pittman, A. Popel, G. Bohlen, R. Prewitt, speakers. Endothelial cells (F. Chinard, session chairperson): U. Ryan, W. Joyner, J. Harlan, speakers.

16 June. Permeability of single microvessels—methodology (B. Zweifach, session chairperson): R. Gore, C. Michel, C. Crone, speakers. Permeability to small molecules (F. Vargas, session chairperson): R. Curry, C. Crone, J. Friedman, speakers.

17 June. Mathematical models (C. Goresky, session chairperson): J. Anderson, W. Deen, R. Curry, speakers. Macromolecular permeability (J. Diana, session chairperson): E. Svensjo, C. Michel, W. Joyner, and P. Harris, speakers.

18 June. Transcapillary fluid balance (A. Taylor, session chairperson): K. Aukland, M. Davis, R. Hogan, A. Hargens, speakers.

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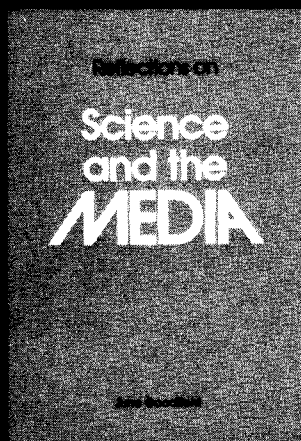
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AAAS NEWS

(Continued from page 1228)

"brain drain" to more developed countries.

After the development-related session, plenary sessions were held in all traditional areas of science. All foreign delegates were invited to present specialized lectures at the appropriate sessions. In addition, evening "Popular Science Lectures" were arranged in order to provide an opportunity for the general public to meet and learn about the work of both the foreign and Sri Lankan scientists.

Burnett presented both technical and popular lectures concerning his work on phosphate deposits on the ocean floor. While in Sri Lanka, he visited the Eppawala apatite deposit. This phosphate deposit of 40 million to 50 million tons promises to be an important source of phosphorus for agricultural use in the near future.

New Report Assesses Employment Prospects for Scientists and Engineers

Will the supply and demand of scientists and engineers be in fairly good balance in the coming years? The answer is especially important to young people trying to plan their educations toward particular careers; to scientists and engineers already at work in the labor force who need to know where changes in balance are likely to occur; to colleges, universities, and other training institutions; and to the employers of scientists and engineers.

Unfortunately, no perfect system for forecasting has been developed. But a new report, *Supply and Demand for Scientists and Engineers* from the Scientific Manpower Commission, provides an in-depth picture of the present and probable future supply of and demand for scientists and engineers. It finds bright prospects for engineers, computer scientists, and other technical professionals, but a significant oversupply of most life scientists and social scientists relative to the number of available jobs in those fields.

The report points out that our increasingly technological society will create new jobs for scientists and engineers over the coming decade, but the number of those jobs as well as the mix of

specialists required to fill them depends in part on both the levels of funding and the direction of that funding in both industry and government.

Report findings include:

- As a percent of all degrees awarded by U.S. universities, those in science and engineering have been dropping since 1975, and are projected to continue to drop through 1989.

- A severe shortage of computer science graduates persists and is worsening, despite a 626 percent increase in first-level degrees since 1970.

- In the life sciences, degree production at all levels appears to exceed job openings and this oversupply is expected to grow larger over the decade of the 80's as degrees in both the biological and agricultural sciences hold steady despite the lack of growth in academic and government employment.

- Social and behavioral science degrees have been dropping since 1975. Even so, employment opportunities have not kept up with degree production, and even larger excesses of graduates over jobs are anticipated in these fields.

- In addition to new graduates from U.S. universities, a continuing infusion of scientists and engineers from other countries will add to the science and engineering manpower pool. Since 1966, almost 1.3 million scientists and engineers from abroad have enriched the U.S. labor force.

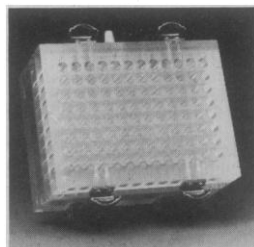
The report examines the needs of various populations for information about both the recent and future balances of supply with demand for scientists and engineers and provides a statistically based assessment, field by field, of the supply and demand for these specialists over the past decade, at present, and anticipated through the eighties. Thirty tables and 21 figures illustrate the text.

Supply and Demand for Scientists and Engineers by Betty M. Vetter (January 1982, 52 pp.) is available from the Scientific Manpower Commission, 1776 Massachusetts Avenue, NW, Washington, D.C. 20036, for \$25 per copy.

BETTY M. VETTER
Scientific Manpower Commission

For more information about the activities and publications described in "AAAS News," write to the appropriate office, AAAS, 1776 Massachusetts Avenue, NW, Washington, D.C. 20036, unless otherwise indicated.

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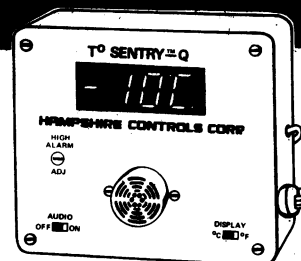
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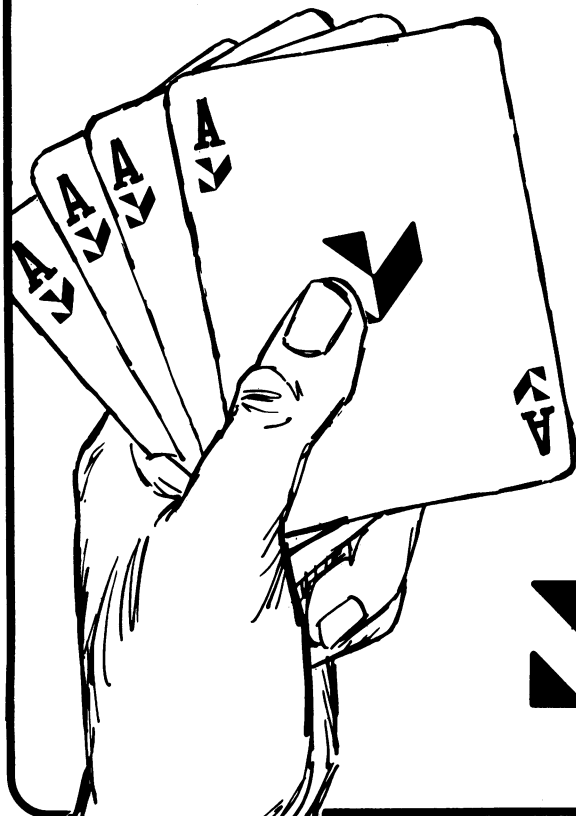
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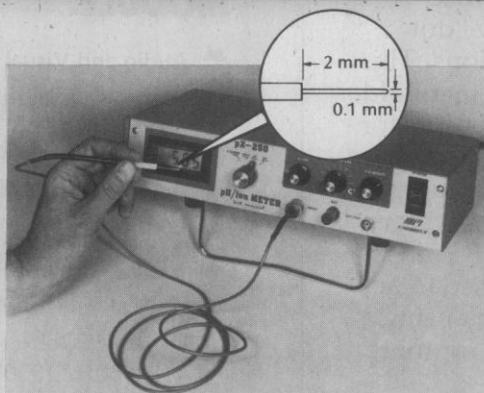
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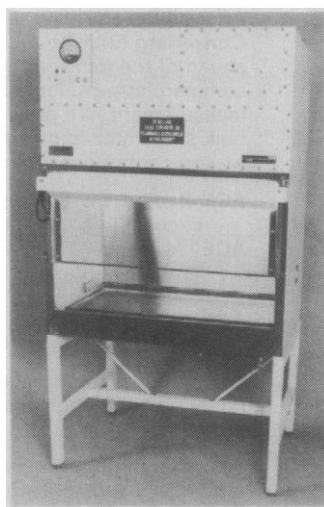
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BOOKS RECEIVED

(Continued from page 1234)

Mardaga, Brussels, 1981. 170 pp. Paper, 430 BF.
Computers and Embryos. Models in Developmen-
tal Biology. Robert Ransom. Wiley-Interscience,
New York, 1981. xii, 212 pp., illus. \$33.50.

Consequences of Climatic Change. Papers from a
conference, Nottingham, England, July 1980. Cath-
erine Delano Smith and Martin Parry, Eds. Univer-
sity of Nottingham Department of Geography, Not-
tingham, 1981. iv, 144 pp., illus. Paper, \$10.

Control of Cellular Division and Development. Pro-
ceedings of a symposium, Keystone, Colo., Mar.
1980. Dennis Cunningham, Eugene Goldwasser,
James Watson, and C. Fred Fox, Eds. Liss, New
York, 1981. Two volumes. Part A, xxii, 614 pp.,
illus. \$72. Part B, xx, 438 pp., illus. \$60. Progress in
Clinical and Biological Research, vols. 66A and 66B.

Copper in Animal Wastes and Sewage Sludge.
Proceedings of a workshop, Bordeaux, France, Oct.
1980. P. L'Hermite and J. Dehantschutter, Eds.
Reidel, Boston, 1981 (distributor, Kluwer Boston,
Hingham, Mass.). xiv, 378 pp., illus. \$42.

The Cosmogonic Chart on Phobos. D. G. Lahoz.
Published by the author, 7 Minto Street, Toronto,
Canada, 1981. iv, 164 pp., illus. Paper, \$10.

Current Topics in Elementary Particle Physics.
Proceedings of an Institute, Bad Honnef, Germany,
Sept. 1980. K. H. Müller and K. Schilling, Eds.
Plenum, New York, 1981. viii, 344 pp., illus. \$45.
NATO Advanced Study Institute Series B, vol. 70.

**Cytogenetics and Breeding of Pearl Millet and
Related Species.** Prem P. Jauhar. Liss, New York,
1981. xx, 290 pp., illus. \$48. Progress and Topics in
Cytogenetics, vol. 1.

Defects in Semiconductors. Proceedings of a meet-
ing, Boston, Nov. 1980. J. Narayan and T. Y. Tan,
Eds. North-Holland, New York, 1981. xiv, 538 pp.,
illus. \$65. Materials Research Society Symposia
Proceedings, vol. 2.

**Design of Models for Testing Cancer Therapeutic
Agents.** Papers from a workshop, Warrenton, Va.,
Mar. 1980. Isaiah J. Fidler and Richard J. White,
Eds. Van Nostrand Reinhold, New York, 1981. x,
278 pp., illus. \$27.50. Technology Assessment
Workshop Titles.

Eighth International Congress of Nephrology. Ad-
vances in Basic and Clinical Nephrology. Athens,
June 1981. W. Zurekzogl, M. Papadimitriou, M.
Pyrpasopoulos, M. Sion, and C. Zamboulis, Eds.
University Studio, Thessaloniki, Greece, and
Karger, Basel, 1981. xxiv, 1240 pp., illus. \$194.75.

Electrical and Electronic Technologies. A Chronol-
ogy of Events and Inventors to 1900. Henry B. O.
Davis. Scarecrow Press, Metuchen, N.J., 1981. viii,
214 pp., illus. \$16.

**Electron Bombardment Induced Conductivity and
Its Applications.** W. Ehrenberg and D. J. Gibbons.
Academic Press, New York, 1981. x, 348 pp., illus.
\$96.

Electroneurophysiology and Psychopathology. Pa-
pers from a symposium, Capri, Sept. 1980. C. Perris,
D. Kemali, and L. Vacca, Eds. Karger, Basel, 1981.
viii, 200 pp., illus. Paper, \$33. Advances in Biologi-
cal Psychiatry, vol. 6.

The Emergence of an Iron Age Economy. The
Mecklenburg Grave Groups from Hallstatt and
Sticna. Peter S. Wells. Illustrations by Symme Bur-
stein. Peabody Museum of Archaeology and Ethnol-
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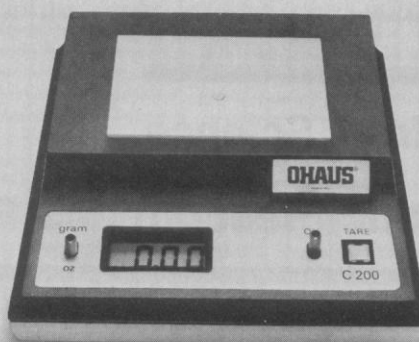
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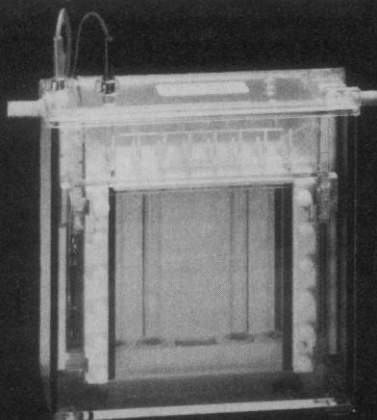
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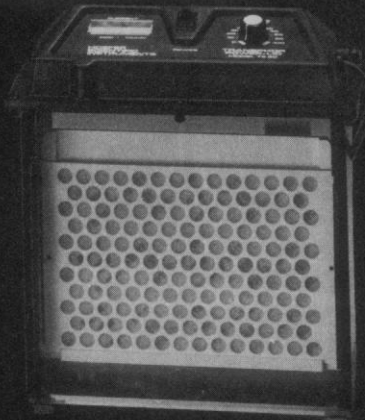
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Candidates should have or expect the Ph.D. and be committed to teaching at the undergraduate level. Bethel is committed to the philosophy and goals of evangelical Christian liberal arts education. Interested individuals should write to: **Dr. George K. Brubaker, Vice President and Dean, Bethel College, 3900 Bethel Drive, St. Paul, Minn. 55112.**

The University of California, Los Angeles (UCLA), Mental Retardation Center, invites applications for a "hard money" **ASSISTANT PROFESSORSHIP.** The successful candidate will be a social or behavioral scientist who will conduct research at Lanterman State Hospital, a large institution for the developmentally disabled, and will teach undergraduate students in the UCLA "immersion" program at Lanterman and graduate students on campus. Interest in psychological anthropology would be helpful but is not crucial. Please send curriculum vitae and the names of three references by 15 May 1982 to: **Professor L. L. Langness, Mental Retardation Research Center, Neuropsychiatric Institute, 1010 Westwood Boulevard, Los Angeles, Calif. 90024.**

ASSISTANT PROFESSOR OF BIOCHEMISTRY

A new tenure-track position will become available in September 1982. Preference will be given to candidates with two or more years of postdoctoral experience, established record of productivity, funded or pending research grant, and teaching experience. Candidates conducting research in any area are encouraged to apply but preference will be given to individuals with a strong interest in the area of nucleic acids (including protein synthesis). Duties will involve teaching graduate and/or introductory level biochemistry and molecular biology courses. The appointment is for 9 months at a salary commensurate with experience. Please submit curriculum vitae, research synopsis (two to three pages), and names and addresses of three references as soon as possible. Send material to: **Dr. Wesley Wicks, Department of Biochemistry, University of Tennessee, Knoxville, Tennessee 37996-0840.**

ASSISTANT PROFESSOR, BIOCHEMISTRY

Applications are invited for position at the assistant professor level (tenure-track) in the Department of Biochemistry, New York University School of Medicine. Duties will include teaching medical and graduate students.

Applicants must be strongly motivated towards research. Preference will be given to those interested in genetic recombination, chromosome structure, molecular genetics, and mechanisms of gene expression at the genetic and molecular level in prokaryotic or eukaryotic systems.

In applying, please send curriculum vitae, a brief statement of research interests (one to two pages only), and names of four referees to: **Professor G. Nigel Godson, Chairman, Department of Biochemistry, New York University Medical Center, 550 First Avenue, New York, N.Y. 10016.** Deadline: 15 April 1982. *An Equal Opportunity/Affirmative Action Employer.*

BIOCHEMIST—MOLECULAR BIOLOGIST. Haverford College has available a 1-year, nontenure-track position at the assistant professor level beginning September 1982. Teaching duties will include teaching the section on macromolecules in the introductory and junior-level courses. The senior-level course involves directing research for a number of senior majors. The department has a strong commitment to teaching and research in molecular, cell, and biochemical biology and has equipment to support research needs of the new faculty person. Send curriculum vitae and names of three references to: **Dr. Melvin Santer, Biology Department, Haverford College, Haverford, Pa. 19041.** *An Equal Opportunity/Affirmative Action Employer.*

DIRECTOR

CANADIAN CENTRE FOR TOXICOLOGY

The Universities of Guelph and Toronto have jointly established a Canadian Centre for Toxicology which will function as a consortium of universities, industries and governments. The main foci of the Centre will be research, analytical and testing services, graduate training and information dissemination.

The position is established at the rank of full professor, with recognition in the field of toxicology, plus demonstrated skill in the management of a complex enterprise, as prerequisites. The central administration offices of the Centre will be located on the main campus of the University of Guelph. The term of appointment will be either 5 or 7 years (to be determined), renewable at the pleasure of the Board of Directors of the Centre. In accordance with Canadian immigration requirements, this advertisement is directed to Canadian citizens and permanent residents.

Applications for this position should be accompanied by a curriculum vitae and submitted in confidence to:

**Dr. D. A. Chant, Director,
Canadian Centre for Toxicology and
Professor of Zoology,
University of Toronto and
the University of Guelph,
121 St. Joseph Street, Room 103,
University of Toronto,
Toronto, Ontario. M5S 1A1**

Research in Biology

The University of Calgary

Opportunities for Biomedical Research exist in Alberta under the auspices of the Alberta Heritage Trust Fund for Medical Research. Categories include Studentships for graduate students, Fellowships for postdoctoral fellows, and Scholarships for highly qualified researchers who will be appointed to academic staff for up to five years. The Department of Biology at The University of Calgary is recruiting candidates in the following fields: developmental biology; genetics and biochemical genetics; structure and function of proteins; parasitology; animal physiology; endocrinology; embryology; virology; bacterial cell walls.

Citizens and permanent residents of Canada will be given preference.

Interested applicants should forward their curriculum vitae prior to July 1, 1982 for October competition to:

**Dr. J.D. Bewley
Department of Biology
The University of Calgary
2500 University Drive N.W.
Calgary, Alberta T2N 1N4**

TECHNICAL SPECIALIST

The Department of Mineral Sciences at the AMERICAN MUSEUM OF NATURAL HISTORY is seeking a Technical Specialist to oversee the electron microprobe. Primary responsibilities are maintenance, repair, user instruction, operation and upgrading of an automated 9-channel ARL-SEMQ microprobe. To a lesser extent, duties include support for X-ray diffraction equipment, other departmental equipment, sample preparation facilities, and an inter-departmental SEM. Some supervisory responsibility may also be assigned.

Candidates should have a solid background in electronics and a working knowledge of high-vacuum technology and minicomputer programming. Experience and/or knowledge of materials analysis and geology would be helpful. In addition, a college degree or equivalent experience is required. Salary will be competitive dependent upon qualifications and experience. Benefits include 4 weeks vacation annually, a liberal sick leave policy, and paid major medical and dental coverages.

Applicants must submit resume along with salary requirements to:

**Dr. Martin Prinz, Chairman
Dept. of Mineral Sciences
American Museum
of Natural History**

Central Park West at 79th Street
New York, New York 10024

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affirmative action employer

MATERIALS SCIENTIST

The Office of Naval Research is seeking a materials scientist to plan and manage a contract research program. This is a Civil Service position at the GM-13 (\$33,586 — \$43,666) or GM-14 (\$39,689 — \$51,596), depending on qualifications.

This position is that of materials scientist with principal responsibilities in basic research on emerging materials. Areas of special interest include rapidly solidified non-equilibrium systems and amorphous alloys, composite materials and processing science.

Candidates are required to have a PhD or equivalent with three years of progressively responsible professional experience. In addition, all applicants must have one year of experience comparable to the next lower level in the federal service. It is desirable that applicants have demonstrated research experience in at least two of the materials classes listed above.

Interested persons should send a Standard Form SF-171, Personal Qualifications Statement (available at Federal Job Information Centers) to:

**OFFICE OF NAVAL RESEARCH
Code 722, Room 823
800 North Quincy Street
Arlington, VA 22217
Announcement #82-16 (S)**

Applications will be accepted through 15 March 1982 and must be postmarked by that date.

U.S. Citizenship Required

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POSITIONS OPEN

ASSISTANT PROFESSOR—BIOCHEMICAL VIROLOGIST. Applications are invited for a tenure-track position at the rank of assistant professor. Candidates must show demonstrated research productivity in biochemical virology. Substantial ability and interest in teaching (virology, biochemistry, general microbiology, and biology) are required. Responsibilities will include teaching, research, and supervision of undergraduate and graduate student research. A Ph.D. with postdoctoral experience is required. Submit curriculum vitae, names of at least three professional references, and representative publications to: **Chairman, Search Committee, Division of Life Sciences, The University of Texas at San Antonio, San Antonio, Texas 78285**, prior to 1 May 1982. *The University of Texas at San Antonio is an Affirmative Action/Equal Opportunity Employer.*

ASSISTANT PROFESSOR OF BIOCHEMISTRY

Individual with doctoral degree and postdoctoral experience and with the ability to establish independent and creative research program is sought for a fully funded, tenure-track position. Although applicants with outstanding potential in all areas of biochemical research will be considered, we prefer an individual with demonstrated interest in the regulation of eukaryotic transcription or translation. New faculty are given maximum opportunities to develop their research potential. Ability to teach biochemistry to medical and graduate students is required. The University relocated in 1981 to a new facility 38 miles north of downtown Chicago. Submit curriculum vitae, three references, and a statement of research plans and experience by 10 April 1982 to: **Dr. Robert G. Kemp, Department of Biochemistry, University of Health Sciences/The Chicago Medical School, 3333 Green Bay Road, North Chicago, Ill. 60064.** *An Equal Opportunity/Affirmative Action Employer.*

ASSISTANT PROFESSOR OF MICROBIOLOGY

Department of Microbiology, College of Physicians and Surgeons, Columbia University, has an opening for an assistant professor with strong research accomplishments in molecular virology. Applicants must have appreciable postdoctoral experience and capacity to establish a strong, independent research program. In addition to research, the successful candidate will be required to participate in courses for medical students and Ph.D. candidates. The tenure-track position can begin anytime within the next 12 months. Interested persons should send résumé, summary of research interests, and names of four references to: **Harold S. Ginsberg, M.D., Chairman, Columbia University, College of Physicians and Surgeons, Department of Microbiology, 701 West 168 Street, New York, N.Y. 10032.**

Columbia University is an Equal Opportunity/Affirmative Action Employer.

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

BIOCHEMIST. The Department of Biochemistry and Biophysics, Iowa State University, is seeking highly qualified candidates for a tenure-track faculty position in the College of Agriculture. Applicants must be capable of establishing a strong, creative program of fundamental research in biochemistry. Responsibilities also include undergraduate/graduate teaching. Applications should be received by 30 April. Send curriculum vitae, a statement of research accomplishments and interests, and three letters of reference to: **Dr. Carl L. Tipton, Chair, Search Committee, Department of Biochemistry and Biophysics, Iowa State University, Ames, Iowa 50011.** *Iowa State University is an Equal Opportunity/Affirmative Action Employer.*

CLONING

Recent Ph.D. required immediately as leader for plant molecular biology group. Recombinant DNA experience needed to study storage protein gene structure, expression, and transfer. Expressional cloning of deleterious cereal enzyme genes also covered by well-funded 3-year program. Involves considerable interaction with genetic engineering laboratories in industry and government. Please apply to: **Dr. I. Altosaar, Biochemistry Department, University of Ottawa, Ottawa, Ontario, Canada K1N 9B4.**

POSITIONS OPEN

The Research Service at the VA Medical Center in Albany, N.Y., is seeking a highly qualified physician to fill the position of **ASSOCIATE CHIEF OF STAFF for Research and Development.** This leadership position requires administrative and research skill. The individual selected is expected to continue own biomedical research at the Center and, at the same time, be an effective administrator. The Center has 22 principal and 5 co-principal investigators. A new Animal Research Facility has recently been completed. Academic appointment at a level appropriate to the applicant's previous accomplishments will be with a department at the Albany Medical College of Union University. Interested physicians should address their letter of intent and curriculum vitae to: **Dr. Arnulf H. Koeppen, Chairman, Search Committee (ACOS/R & D), VA Medical Center, Albany, N.Y. 12208.** *An Equal Opportunity Employer. English proficiency required by PL 95-201.*

POSITION IN BIOSTATISTICS AND/OR EPIDEMIOLOGY

Whitaker College of Health Sciences, Technology, and Management, MIT

The Massachusetts Institute of Technology (MIT) announces an opening for a junior faculty position in the new Program in Health Policy and Management of the Whitaker College of Health Sciences, Technology, and Management. Applicants should have training in statistics, epidemiology, genetics, or demography. The focus of their current research should be on one or more of the following areas: methodological problems in the design and interpretation of epidemiological studies; theoretical models of disease processes; and empirical studies of the relation between environmental factors and disease or of public policies related to health. It is anticipated that the successful candidate will also receive a joint appointment in another academic department at MIT.

Applicants should provide curriculum vitae, a short statement of the proposed research program, and the names of at least three scientists willing to write letters of recommendation.

Send applications to: **Dr. Peter Temin, Chairman of Search Committee and Professor of Economics, Building E52, Room 274C, Massachusetts Institute of Technology, 77 Massachusetts Avenue, Cambridge, Mass. 02139.**

MIT is an Affirmative Action/Equal Opportunity Employer.

This is a revised notice of a position advertised in the 22 January 1982 issue of *Science*.

CARDIAC ELECTROPHYSIOLOGIST

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

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

An Affirmative Action/Equal Opportunity Employer

DEPARTMENT OF MEDICINE CHAIRMAN

The University of Missouri—Columbia, School of Medicine, is seeking a **PROFESSOR AND CHAIRMAN** of the Department of Medicine to direct a program of excellence in education, research, and patient care. The clinical facilities of the School of Medicine provide a bed capacity of 1100 and include the University of Missouri Hospital and Clinics, the Rusk Rehabilitation Center, and the Harry S Truman Veterans Administration Hospital. The Columbia campus is the largest of the four University of Missouri campuses and serves 25,000 students in 15 colleges and schools, including a College of Veterinary Medicine. Columbia itself is an appealing university town of 60,000 residents in addition to the student population. It has excellent nearby recreational facilities and is equidistant from St. Louis and Kansas City.

Applications are invited from physicians who are capable of developing a strong academic program in medicine. Curriculum vitae, bibliography, and letter of application should be sent to:

**J. Donald Easton, M.D.
Department of Neurology
University of Missouri Health Sciences Center
Columbia, Mo. 65212**

The University of Missouri is an Affirmative Action/Equal Opportunity Institution.

POSITIONS OPEN

BIOLOGY, ASSISTANT OR ASSOCIATE PROFESSOR. Tenure-track position beginning 23 August 1982. Course responsibilities include human anatomy—physiology and other biology major courses, especially comparative anatomy. A modest research effort is encouraged. Ph.D. required. Send curriculum vitae, transcripts, and three letters of recommendation by 26 March 1982 to: **Dr. Melvin Denner, Chairman, Division of Science and Mathematics, Indiana State University—Evansville, Evansville, Ind. 47712.** *An Affirmative Action/Equal Opportunity Employer.*

CHAIRPERSON DEPARTMENT OF HUMAN BIOLOGICAL CHEMISTRY AND GENETICS THE UNIVERSITY OF TEXAS MEDICAL BRANCH IN GALVESTON

A chairperson is being sought for the Department of Human Biological Chemistry and Genetics. This is a large medical school department with Divisions of Biochemistry, Cell Biology, and Human Genetics. Qualifications of the chair should include an established reputation in research and teaching and the administrative ability to manage a complex department with teaching responsibilities in the medical and graduate schools. Applications or nominations should include curriculum vitae and bibliography and should be submitted by 1 June 1982 to: **Dr. William D. Willis, Jr., Chairman, Search Committee, Marine Biomedical Institute, 200 University Boulevard, Galveston, Texas 77550.** *Women and minorities are urged to apply. The University of Texas Medical Branch is an Equal Opportunity Employer.*

CHAIRMAN DEPARTMENT OF PHARMACOLOGY

The University of South Alabama is seeking a chairman for the Department of Pharmacology in the College of Medicine. The College of Medicine has adopted the policy that research and scholarly productivity are essential ingredients for a progressive program in medical education. We seek a chairman for pharmacology who enthusiastically subscribes to this policy.

Prospective candidates should have: an established record of achievement as an independent investigator; a strong commitment to medical and graduate education; an interest in faculty development; and proven administrative and leadership abilities.

Candidates who would welcome the challenge and opportunity of developing and maintaining a high quality department of pharmacology in a young, progressive college of medicine are invited to apply by direct submission of curriculum vitae and three letters of recommendation to:

**Dr. Charles M. Baugh, Associate Dean
University of South Alabama
College of Medicine
Room 1005 Medical Sciences Building
Mobile, Alabama 36688**

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

DAIRY NUTRITIONIST

Utah State University

Conduct basic research in ruminant nutrition. Teach dairy cattle nutrition and advise students. A Ph.D. in ruminant nutrition with a strong background in biochemistry and evidence of a strong research program are required. Rank and salary commensurate with qualification. Submit letter of application, detailed curriculum vitae, and three letters of recommendation by 15 April 1982 to: **Dr. Jeffery L. Walters, UMC 48, Logan, Utah 84322.** *An Affirmative Action/Equal Opportunity Employer.*

**DIRECTOR
INSTITUTE FOR HEALTH
PROMOTION AND FITNESS
THE UNIVERSITY OF TEXAS
MEDICAL BRANCH AT GALVESTON**

The University of Texas Medical Branch (UTMB) and the Moody Foundation seek an academic leader for the position of director of the new Institute for Health Promotion and Fitness which will be operated jointly by UTMB and the Foundation.

We welcome applications from candidates who are recognized for their academic and professional achievements in the cardiovascular and health promotion areas. Essential qualifications include: (i) Doctor of medicine or doctor of philosophy degree; (ii) nationally recognized research contributions; (iii) membership in the major academic societies; (iv) senior academic rank; (v) principal investigator at present or in recent past of grant(s) from major funding agencies; (vi) broad experience working with patients and normal subjects; (vii) extensive administrative experience and interests; and (viii) interest and competence in interdisciplinary research, rehabilitation, and the behavioral aspects of disease prevention.

The director will be responsible to the president of UTMB for working under the guidelines established by the UTMB Physical Fitness Center Advisory Committee and the Foundation for administration of the Institute. The Institute will be housed in a new building in Galveston and the director will contribute to its planning. The director will participate in recruiting program directors qualified for faculty positions in various fields to assist in developing the Institute.

Salary negotiable. Send letter of application and current curriculum vitae to:

**William C. Levin, M.D., President
The University of Texas Medical Branch
Galveston, Texas 77550-2774**

Deadline for applications is 5 April 1982.

UTMB at Galveston is an Affirmative Action/Equal Opportunity Employer. Women and minorities are encouraged to apply.

ENERGY ANALYST

Massachusetts Institute of Technology (MIT), Energy Laboratory, seeks an energy analyst to study international fuel availability and prices, with an emphasis on regional factors within the United States which affect the prices of coal, liquid fuels, and natural gas. Position is part of an established engineering/economic research group.

Candidates must have a Ph.D. in engineering economics or an allied field, along with 2 years of experience in international fuels analysis. Some engineering background and experience in working with international energy agencies are also essential. This individual will be called upon to work in an interdisciplinary environment, while showing strong and consistent research ability. Salary range is \$30,000 to \$36,000.

Please submit two copies of résumé to:

**Kenneth Hewitt
MIT Personnel Office
E19-239
77 Massachusetts Avenue
Cambridge, Mass. 02139**

(Attention: Job Number R692)

MIT is an Equal Opportunity/Affirmative Action Employer.

MIT

5 MARCH 1982

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SENIOR TECHNICAL MANAGER

The Navy's major research, development, test and evaluation activity located at the foot of the Sierra Nevada on the upper Mojave Desert has an opening for:

● DIRECTOR OF COMPUTER APPLICATIONS, and ASSISTANT RESEARCH DEPARTMENT HEAD FOR COMPUTER SCIENCE

○ QUALIFICATIONS:

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- EXPERIENCE MANAGING RESEARCH OR DEVELOPMENT PROGRAMS
- A HIGH DEGREE OF TECHNICAL ORIGINALITY, INITIATIVE AND CREATIVITY

Apply by 31 MARCH



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U.S. CITIZENSHIP REQUIRED

NRL

ELECTRONICS ENGINEER/ RESEARCH PHYSICISTS

**GS-13, (\$33,586-\$43,666) or GS-12 (\$28,245-\$36,723) per annum
(Salary & Grade dependent on qualifications)**

Naval Research Laboratory Optical Sciences Division

Performs applied experimental research, including vulnerability experiments and analysis associated with countermeasures in Navy sensor systems and preliminary electrical and optical engineering design in the area of electro-optical sensors. Investigates the susceptibility of focal plane arrays being developed for next generation E-O sensors to optical countermeasures employing laser sources. Investigates countermeasure techniques for existing E-O missile seekers, FLIR systems, and other E-O sensors. Builds laboratory demonstration systems involving sensors and sources. Responsible for systems analysis of advanced systems involving optics and low-level analog signal processing, as well as digital control and processing circuitry involving working knowledge of integrated circuit hardware.

Interested applicants should submit a Personal Qualifications Statement (SF-171) or detailed resume by 12 April 1982 to:

**NAVAL RESEARCH LABORATORY
Civilian Personnel Office
Attention: Code 65-001SK (S)
4555 Overlook Avenue, S.W.
Washington, D.C. 20375**

An Equal Opportunity Employer

U.S. Citizenship is required

1319

POSITIONS OPEN

CHAIRMAN, DEPARTMENT OF MICROBIOLOGY, Georgetown University School of Medicine. The School is conducting a search for a professor and chairman of the Department of Microbiology. Applicants should have demonstrated competence in teaching, research, and administration. *Georgetown University is an Affirmative Action/Equal Opportunity Institution in employment and admissions.* Letter from interested persons or proposals for the position should be addressed to: **Frank G. Standaert, M.D., Chairman, Microbiology Search Committee, Georgetown University School of Medicine, 3900 Reservoir Road, NW, Washington, D.C. 20007.**

DEAN, Engineering and Science Division, to provide leadership in nine technical programs. Applicant must have a master's degree (Ph.D. preferred), strong pedagogical skills, and teaching and administrative/supervisory experience in higher education. Also **FACULTY position.** Petroleum engineering technology. Send applications and résumés by 19 March 1982 to: **Dr. R. Libby, President, Muskingum Area Technical College, 1555 Newark Road, Zanesville, Ohio 43701.** *An Equal Opportunity/Affirmative Action Employer.*

DIRECTOR, LABORATORY OF BIOMEDICAL AND ENVIRONMENTAL SCIENCES, UCLA

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

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

POSITIONS OPEN

Applicants are sought for positions as **FACULTY MEMBERS** at all levels in a medical school department of academic pathology in anatomic and clinical pathology and in basic research including DNA cloning, immunochemistry, tissue culture, and cell biology. All applicants for clinical positions must be AC- or CP-certified and have a commitment to research. Applicants with proven track records in obtaining grant support will be given first consideration. Interested applicants should send their curriculum vitae and bibliography to: **Dr. Stewart Sell, Chairman, Department of Pathology and Laboratory Medicine, University of Texas Medical School at Houston, 6431 Fannin, P.O. Box 20708, Houston, Texas 77030.** *Equal Opportunity Employer.*

FACULTY POSITIONS

The Department of Zoology and Physiology, Louisiana State University (LSU), invites applications for four tenure-track positions, starting August 1982, in the following areas: **DEVELOPMENTAL BIOLOGY, VERTEBRATE SYSTEMS PHYSIOLOGY, CELL/MOLECULAR BIOLOGY, and GENETICS.** Successful candidates must demonstrate potential for initiating an extramurally funded research program. Establishment of an active graduate program and an excellence in undergraduate teaching are expected. Curriculum vitae, selected reprints, and three letters of reference should be sent to: **Chairman, Department of Zoology and Physiology, Louisiana State University, Baton Rouge, Louisiana 70803-1725.** Preference will be given to those applications received by 29 March 1982. *LSU is an Equal Opportunity/Affirmative Action Employer.*

LAND STEWARDSHIP DIRECTOR, Wisconsin Chapter, The Nature Conservancy (TNC), full-time. Begin early summer 1982. Maintain preserves; organize volunteers, researchers; develop long-range plans and stewardship capability with scientists, funding sources, public. Advanced degree, field experience, car, willingness to travel, work weekends. Send résumé by 5 April to: **Rex Boner, TNC Midwest Land Steward, 328 East Hennepin Avenue, Minneapolis, Minn. 55414; telephone: 612-379-2134.** *Affirmative Action/Equal Opportunity Employer.*

POSITIONS OPEN

FACULTY POSITIONS IN MICROBIOLOGY

The Department of Microbiology and Immunology, Tulane Medical School, invites applications for two tenure-track faculty positions at the assistant professor level available August 1982. Preference will be given to individuals who demonstrate excellent training and expertise in medical aspects of bacteriology and/or virology as well as strong interests in research aspects of host-parasite relationships or the molecular genetics of eukaryotes. An interest and ability to teach medical and graduate students is required, as is a desire for career development in a medical school/university setting. Applicants should submit curriculum vitae, bibliography, and names of three referees to: **A. Arthur Gottlieb, M.D., Professor and Chairman, Department of Microbiology and Immunology, Tulane Medical School, 1430 Tulane Avenue, New Orleans, Louisiana 70112.** All responses must be received by 15 April 1982. *Tulane is an Equal Opportunity/Affirmative Action Employer.*

FACULTY POSITION—ENVIRONMENTAL TOXICOLOGY, School of Public Health, The Medical Center, University of Alabama in Birmingham. The Department of Environmental Health in an accredited School of Public Health at the University of Alabama in Birmingham solicits applicants for one position. Qualifications include commitment to excellence in teaching public health graduate students, dedication to research, and a doctoral degree in a related field. Salary and fringe benefits highly competitive, with special consideration given to experience in research and teaching. **ASSISTANT OR ASSOCIATE PROFESSOR** (tenure-track). The major responsibilities of this position involve a significant role in the expansion of graduate level programs in environmental health and industrial hygiene with emphasis on developing introductory and advanced level, including doctorate courses. Collaborative as well as individual research opportunities will be encouraged. Send curriculum vitae, manuscripts or reprints of major work, and three letters of recommendation to: **Chairman, Search Committee, School of Public Health, University of Alabama in Birmingham, University Station, Birmingham, Ala. 35294.** *An Equal Opportunity/Affirmative Action Employer.*

PRODUCT DEVELOPMENT BIOCHEMIST

- **STRONG BIOCHEMISTRY AND IMMUNOLOGY EXPERIENCE PREFERRED**
- **SALARY NEGOTIABLE**
- **DYNAMIC, WELL-FINANCED TECHNOLOGY COMPANY IN MONOCLONAL ANTIBODY FIELD WITH ENORMOUS GROWTH POTENTIAL**
- **OPPORTUNITY TO BUILD AND DIRECT OWN GROUP**

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ATTN: DR. HUBERT SCHOEMAKER,
EXECUTIVE VICE PRESIDENT
244 GREAT VALLEY PARKWAY
MALVERN, PA 19355

VACANCY ANNOUNCEMENT

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

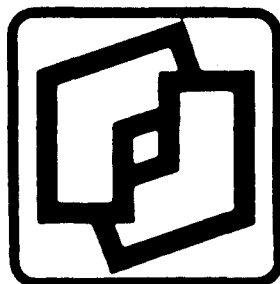
The National Institutes of Health invites nominations and applications for the position of **DIRECTOR, NATIONAL INSTITUTE OF DENTAL RESEARCH.** This is a Civil Service position in the Senior Executive Service with a salary range of \$54,755 to \$58,500 per annum. The person selected may be eligible for Physician's Comparability pay up to \$10,000 per year. A one-year probationary period must be served if the individual selected is not currently in the Senior Executive Service.

The Director, National Institute of Dental Research, provides leadership and direction for the national program relative to oral diseases and disorders. The Institute's staff embraces over 400 employees with a budget in excess of \$72 million.

Further information about the position and qualification requirements may be obtained by contacting **Mrs. Bonnie R. Kalberer at 301-496-6971.** Applications (SF-171, Personnel Qualifications Statement) accompanied by a current curriculum vitae and bibliography should be submitted to Mrs. Kalberer at: **NIDR Personnel, Building 31, Room 2C-23, National Institutes of Health, 9000 Rockville Pike, Bethesda, Maryland 20205.**

Applications must be postmarked not later than March 31, 1982. (The SF-171 form is available at all Federal Personnel Offices and Job Information Centers.) Applications from women and minority group candidates are solicited.

AN EQUAL OPPORTUNITY EMPLOYER



elf aquitaine biotechnology

RESEARCH CENTER TOULOUSE (FRANCE)

YOU ARE A SENIOR SCIENTIST (Ph. D OR EQUIVALENT) WITH 6 TO 12 YEARS EXPERTISE AND YOU ARE ABLE TO MANAGE A R AND D TEAM OF SCIENTISTS AND PROCESS ENGINEERS IN A MULTIDISCIPLINARY GROUP.

WHY DON'T YOU JOIN US IN ONE OF THE MOST DYNAMIC COMPANIES TO BE THE LEADER OF THE FOLLOWING DEPARTMENT :

GENETIC ENGINEERING

Molecular biologist expert in recombinant DNA technology for procaryotic and/or eucaryotic systems. Experience in yeasts and/or fungi and/or bacilli highly desirable.

ENZYME TECHNOLOGY

Biochemist expert in enzyme reactions. Research activities will be focused on the development of new biotransformations and will implicate the purification, characterization and modification of enzymes and/or cellular subunits. Industrial experience of immobilized enzymes or organisms would be appreciated.

PLANT GENETICS

Qualified in tissue culture and genetic engineering applied to plants. Industrial experience will be appreciated in haploids and various in vitro cultures. A strong formal training in molecular biology and classical plant breeding is required.

PILOT PLANT

Biochemical/chemical engineer expert in fermentation, product recovery, immobilized enzymes or cells bioreactors. Industrial experience in process development, improvement and scale-up is particularly required.

INDUSTRIAL MICROBIOLOGY

Expert in microbial physiology for procaryotes and/or eucaryotes. Industrial experience is particularly required in the fields of : isolation and identification of microorganisms, elucidation of biochemical pathways and strain improvement technologies.

English language is enough at the first stage. Qualified applicants are invited to submit resumes in confidence (No phone calls) including salary history, publications and professional references to
ELF Bio Recherches - Service du Personnel
Tour Aquitaine
92080 PARIS La Défense Cedex 4, France.

CONTESSE

POSITIONS OPEN

FACULTY POSITIONS NEUROPHARMACOLOGY AND TOXICOLOGY

Tenure-track faculty positions are available in newly expanded Department of Pharmacology with modern research facilities. Candidates should be committed to developing a strong, independent, funded research program in some aspect of biochemical or molecular neuropharmacology or toxicology, and should be able to teach in these disciplines. Rank is open, but assistant professor is the likely level of appointment. The Department of Pharmacology is part of a young and growing university with one of the most comprehensive health and research centers in the Southeast. Complete curriculum vitae, including a brief statement of research interests and plans, and three letters of recommendation should be sent to: Dr. Elias Meezan, Chairman, Department of Pharmacology, University of Alabama-Birmingham, Schools of Medicine and Dentistry, University Station, Birmingham, Alabama 35294. An Equal Opportunity/Affirmative Action Employer.

MATHEMATICS

Tenure-track position (assistant professor). Ph.D. required; teaching experience preferred. Review of applications will begin 31 March 1982. Send résumé and letter of application to:

Director of Personnel/AA
State University of New York
College of Technology, Box 205
811 Court Street
Utica, New York 13502

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

POSITIONS OPEN

GENETICIST/BIOLOGIST. The Department of Biology at the State University of New York (SUNY) at Oswego seeks a geneticist/biologist for a tenure-track position available 1 September 1982. Rank and salary negotiable. Ph.D. preferred. Teaching duties will include genetics, introductory biology, an advanced course in the specialty, and a nonmajor course in population and environmental biology. Application deadline: 19 March 1982. Send curriculum vitae, transcripts, and three letters of reference to: James L. Seago, Jr., Chairman, Department of Biology, SUNY College at Oswego, Oswego, N.Y. 13126. An Affirmative Action/Equal Opportunity Employer.

GEOLOGIST—The Department of Geosciences invites applications for a tentative position at the assistant professor level beginning August 1982. Tenure-track; Ph.D. in geology required; candidates near completion of degree will be considered. Teaching duties include mineralogy and petrology; an active interest in geochemistry is desirable. Successful candidate will share, on a rotational basis, teaching summer field camp in New Mexico—Colorado. Currently, the faculty has six full-time geologists; there are 180 undergraduates, 35 graduate students, and 20 graduate assistants. Application deadline is 15 April 1982. Send résumé, transcripts, and three letters of recommendation to: Dr. M. Kontrovitz, Head, Department of Geosciences, Northeast Louisiana University, Monroe, La. 71209. An Affirmative Action/Equal Opportunity Employer.

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

POSITIONS OPEN

IMMUNOLOGIST

A position for a postdoctoral fellow/research associate in the Departments of Microbiology and Immunology and Medicine is available beginning 1 April 1982.

The work involves use of monoclonal antibodies against orbital antigens to develop assays for the measurement of autoantibodies in the serum of patients with thyroid disorders.

Applicants should have a Ph.D. and expertise and background in molecular biology (or biochemistry) and cellular immunology. Experience with cloning or hybridization techniques would be an advantage. Salary is \$18,000 to \$22,000, depending on background and experience. For further information, contact: Dr. J. R. Wall, Department of Medicine, Queen's University, Kingston, Ontario, Canada K7L 3H6.

MICROBIAL GENETICIST, faculty position, tenure-track. Postdoctoral experience desirable. Applicants should be capable of establishing a strong research program utilizing the most recent molecular biology—recombinant DNA technologies. Teaching duties in introductory microbiology and microbial genetics with graduate teaching in field of expertise. Curriculum vitae, recent reprints, statement of research goals, and the names of three references should be sent to: Dr. Caryl E. Heintz, Chairman Search Committee, Department of Biological Sciences, Texas Tech University, Lubbock, Texas 79409. An Affirmative Action/Equal Opportunity Employer.

NEUROBIOLOGIST—Applicants are invited for an anticipated faculty position in the Department of Zoology. This a nontenure-track assistant professorship with possible extension to 5 years from September 1982. Excellent opportunities for collaboration in areas of developmental neurobiology and cellular neurophysiology exist in the department and on campus. Responsibilities include teaching of an intermediate-level neurophysiology course and a graduate seminar course. Send résumé and names of three references to: Dr. C.-F. Wu, Department of Zoology, University of Iowa, Iowa City, Iowa 52242. An Equal Opportunity/Affirmative Action Employer.

CLINICAL CYTOGENETICIST

The Children's Medical Center, a pediatric tertiary care facility located in Dayton, Ohio is currently recruiting for a Clinical Cytogeneticist. The major areas of responsibility include supervision of the cytogenetic laboratory including the procurement, processing, and study of specimens, and reporting of their results; teaching human cytogenetics; and research. Minimal qualifications for this position are MD or PhD with graduate and/or post graduate training in cytogenetics including human cytogenetics.

Send resume including salary requirements, list of publications and references to: Richard L. Blackstone, Employment Coordinator.

Affirmative action equal opportunity employer.



One Children's Plaza
Dayton, Ohio 45404

KING FAISAL UNIVERSITY COLLEGE OF MEDICINE DAMMAM, SAUDI ARABIA

Faculty Positions Open
1982-1983

King Faisal University College of Medicine, now in its eighth year, invites applications from qualified men and women for the 1982-1983 academic year in:

Chemistry	Pathology
Biology	Epidemiology
Physics	Microbiology
Biochemistry	Parasitology
Anatomy	Pharmacology
Physiology	Community Medicine

Doctorate or equivalent degree required. Language of instruction in English. Interviews to be held in London and Houston during spring 1982.

Salaries are highly competitive and negotiable; comparable to other Saudi universities.

Benefits include free furnished housing, educational allowances, air tickets to and from Saudi Arabia once each year for a family of four, 60-day paid vacation, and liberal overweight allowance. No Saudi income tax.

Send curriculum vitae with current telephone number and the names and addresses of three references to:

Dr. Tawfik Tamimi
Dean, College of Medicine
King Faisal University Office
Suite 540

2425 West Loop South
Houston, Texas 77027

OR

c/o Saudi Arabian Educational Office
29 Belgrave Square
London, S.W. IX 8QB, England

NMR SPECTROSCOPIST

(Greater Washington Area)

This leading biomedical research facility is located in an attractive, near rural setting where lifestyles are relaxed and the cost of living somewhat more economical than downtown Washington. Nevertheless, Frederick is within easy driving distance of D.C., with its many fine restaurants, recreational and cultural attractions.

The NMR Spectroscopist we seek will assist in the operation and maintenance of the NMR laboratory, which is equipped with R12B, XL-100 and NT-300 NMR spectrometers. Routine maintenance and operation of the XL-100 spectrometer are the primary responsibilities of this position, but in addition, opportunities for involvement in collaborative projects will be encouraged. A background in electronics and NMR spectroscopy with an MS or PhD in an appropriate field preferred.

Please submit your resume, including the names and addresses of three references, to:

Personnel Department

NCI-FREDERICK
CANCER RESEARCH FACILITY
LITTON BIONETICS, INC.



P.O. Box B
Frederick, MD 21701
An Equal Opportunity Employer

SCIENTIST Q.C. Procedure Validation

Genentech, Inc., a recognized leader in recombinant DNA research and manufacturing, is seeking an individual to join our Quality Control Department.

The successful candidate will be asked to develop, review, modify and validate test procedures for in-process and final products. The individual selected will possess a minimum of an M.S. in analytical biochemistry or biochemistry with emphasis on methods development and formulation of drug compounds. Must have 2-4 years experience in related research or analytical laboratory.

This position involves independent research and development in a team environment. We are located on the beautiful San Francisco Peninsula and offer competitive salaries and an excellent benefits package.

If you qualify, we invite you to send your curriculum vitae and three references to **Human Resources**. Please refer to **Position #11-116**

Genentech, Inc.
Genentech, Inc.
Genentech, Inc.
Genentech, Inc.
Genentech, Inc.

460 Point San Bruno Blvd.,
South San Francisco,
CA 94080.

We are an equal opportunity employer m/f



Faculty Positions in Molecular & Cellular Parasitology Research

Following the creation of a new laboratory for Research in Molecular and Cellular Parasitology, to be headed by Dr. G. A. M. Cross, several positions will be available from October 1, 1982 for Junior Faculty, Postdoctoral Fellows and Research Assistants.

The initial research program of the laboratory will focus on the study of membrane phenomena and genetic aspects of several protozoal parasites of biomedical and veterinary importance, including malaria parasites and African trypanosomes. The laboratory will be housed in modern and well equipped research facilities.

Applicants for faculty and postdoctoral positions should be able to show evidence of achievement and potential in the fields of molecular or cellular biology. Experience of parasitology could be an advantage but is not essential. Specific expertise in the areas of gene cloning, membrane biochemistry and monoclonal antibodies is being sought. In particular, we would like to recruit at least one scientist with experience in eucaryotic host-vector cloning systems, and one Research Assistant with good experience in techniques of cell cultivation, preferably including the generation of hybridomas.

Applications, enclosing a full CV and names of at least two Referees, should be submitted to Box #80

THE ROCKEFELLER UNIVERSITY

1230 York Avenue

New York, N.Y. 10021

An equal opportunity employer

National Institute of Alcohol Abuse and Alcoholism Division of Intramural Research Alcohol, Drug Abuse and Mental Health Administration Public Health Service Department of Health and Human Services

OPENING DATE: February 16, 1982

CLOSING DATE: March 16, 1982

Late applications will be accepted until the day before the Qualifications Review Board meets.

CHIEF, LABORATORY OF CLINICAL STUDIES

The National Institute of Alcohol Abuse and Alcoholism (NIAAA) is recruiting a Chief for its Laboratory of Clinical Studies, Division of Intramural Research. The Chief directs a clinical program designed to investigate the medical and psychological consequences of alcohol abuse and alcoholism and to evaluate the efficacy of new treatment modalities against alcohol-related physical and emotional disorders. The program promises substantial impact on the delivery of clinical services for alcoholic patients throughout the Nation. The Chief serves as Clinical Director for the NIAAA intramural research program, overseeing 10 beds established at the Clinical Center of the National Institutes of Health and laboratory and animal space in the Ambulatory Care Research Facility. The Chief will lead a staff of approximately 40 professional and support personnel and manage a budget of approximately 2.4 million dollars.

This is a Civil Service position in the Senior Executive Service (SES), with base salary from \$54,755 to \$58,500 per year. SES members are eligible for various bonuses and awards, and may be eligible for payments of up to \$10,000 per year under the Physicians Comparability Allowance Program. Alternatively, candidates may be eligible for appointment in the Commissioned Corps of the U.S. Public Health Service. The SES individual selected, if not presently in the Senior Executive Service, must serve a one-year probationary period.

Mandatory Professional/Technical Requirements: Minimum requirements include a degree of Doctor of Medicine or Doctor of Osteopathy with a current permanent and unrestricted license to practice medicine and surgery. All candidates must also have progressively responsible experience in scientific research administration and proven professional competence in the areas related to the intramural research function. Experience must show evidence of involvement in research programs directed toward increasing knowledge about the methods of diagnosis and treatment of alcohol-related disorders, and/or the effects of ethanol on the biological and behavioral processes related to normal and abnormal functioning. The experience must demonstrate a broad understanding of the biological, clinical, and behavioral sciences as they relate to the field of alcohol abuse and alcoholism. Professional background and/or education must indicate an extensive knowledge of alcohol treatment and research methodology.

In addition, candidates must meet the following **Mandatory Managerial/Executive Requirements:** Experience in the management of a basic or clinical research program, demonstrating competence to assume leadership responsibility in:

1. Planning, organizing, staffing, directing, coordinating, allocating resources; and selecting, developing, and utilizing subordinate staff.
2. Developing basic program goals (including long-term and short-term planning) assuring that national and agency goals and priorities are considered in carrying out the functions and responsibilities of the organization; conducting periodic analysis and evaluation of the program relative to goals set.
3. Establishing and maintaining relationships with key individuals and groups outside the organization.
4. Developing processes and overseeing activities to assure the fair and equitable employment of qualified persons, and implementing EEO objectives.

Candidates who meet the mandatory requirements will be further evaluated on the degree to which they exceed those minimum levels, and in addition, on the following desirable qualifications: scientific reputation/peer recognition, additional training and education in a directly related scientific discipline and scientific honors and awards.

Applications (Personnel Qualifications Statement, SF-171) are to be sent to: **Mrs. Rebecca H. Tran, National Institute of Alcohol Abuse and Alcoholism, DIR, Personnel Office, 9000 Rockville Pike, Building 36, Room 1810, Bethesda, Maryland 20205.** A current curriculum vita, bibliography, and letters of reference and/or appraisals of performance must accompany all applications.

— An Equal Opportunity Employer —

POSITIONS OPEN

IMMUNOCHEMIST

SENIOR SCIENTIST

GIBCO is seeking a professionally trained immunochemist to be located at our tissue culture media and diagnostics manufacturing facility at Grand Island, N.Y. This position is responsible for implementing commercializations of a new line of hybridoma-derived products. Requirements are a Ph.D. in immunochemistry or related discipline, a strong cell biology background, and extensive experience in hybridoma technology and separation and purification of monoclonal antibodies and standardization of reagents. Experience related to clinical applications as well as management experience and capabilities would be valuable. Send résumé and salary requirements to: Joyce Coleman, Gibco Division, The Dexter Corporation, P.O. Box 200, Chagrin Falls, Ohio 44022. An Equal Opportunity Employer, M/F.

MICROBIOLOGY

SENIOR SCIENTIST

GIBCO is seeking a professionally trained microbiologist to be located at our microbial media manufacturing facility in Madison, Wisconsin. This position is responsible for implementing commercialization of new ideas in the clinical and industrial microbial media line. Requirements are a Ph.D. in microbiology, knowledge of culture media formulations and preparations, and their applications in the clinical, research, and industrial settings. Experience related to the clinical laboratory as well as management capabilities would be extremely valuable. Send résumé and salary requirements to: Joyce Coleman, The Gibco Division, The Dexter Corporation, P.O. Box 200, Chagrin Falls, Ohio 44022. An Equal Opportunity Employer, M/F.

PEDIATRIC CARDIAC SURGEON

Lansing, Michigan—Ingham Medical Center and Michigan State University

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

PHARMACOLOGIST INDIANA UNIVERSITY SCHOOL OF MEDICINE

The Department of Pharmacology invites applications for a tenure-track position at the ASSISTANT PROFESSOR level. Interest in cardiovascular pharmacology, molecular pharmacology, and computers is desirable. Applicants should have a Ph.D. or M.D. degree in pharmacology with postdoctoral research experience. Job requirements include direction of an independent research program and participation in departmental teaching activities. *Indiana University is an Equal Opportunity Employer.*

Applicants please send: (i) curriculum vitae, (ii) reprints of papers, (iii) names of three references, and (iv) a short summary of research interests and goals to:

Henry R. Besch, Jr., Ph.D., Chairman
Department of Pharmacology and Toxicology
Indiana University School of Medicine
1100 West Michigan Street
Indianapolis, Indiana 46223

Applications should be received by 19 March 1982.

POSTDOCTORAL POSITION available in experimental psychology starting before 30 July 1982, with concentration in one of the following areas: physiological psychology, mathematical psychology, cognition, developmental psychology, animal learning and behavior, or visual science. Applicants should have Ph.D. in any area of experimental psychology or in computer science, mathematics, or biological science. Yearly stipend is \$13,380 and up, depending on years of relevant experience. Send résumé, statement of research interest, publications, and three letters of recommendation by 30 March 1982 to: T. J. Matthews, Department of Psychology, New York University, 6 Washington Place, New York, New York 10003. An Equal Opportunity/Affirmative Action Employer.

POSITIONS OPEN

PHYSICIAN SCIENTIST—Opportunity to conduct fundamental research in basic science department and engage in limited clinical activities. A new Clinical Pharmacology Program in the Department of Pharmacology and Therapeutics at the University of Florida is searching for an assistant professor-level, tenure-track faculty member with major responsibilities in research and teaching. Anticipated starting date is 1 September 1982. Area of basic research is unrestricted but special consideration given to individuals whose work relates to **CELL BIOLOGY**. Position requires an M.D., eligibility for Board-certification, and includes active dual appointment in appropriate clinical department with commensurate salary. Applicants may apply by sending curriculum vitae, outline of academic interests, and names of three references to: Warren Ross, M.D., Box J-267, JHM Health Center, Gainesville, Florida 32610, by 1 May 1982. *Equal Opportunity/Affirmative Action Employer.*

PLANT BIOCHEMIST. Assistant professor, beginning 1 September 1982. Applicants from all areas of plant biochemistry will be considered. Development of an active research program, attraction of extramural funding, and supervision of graduate students at both the M.S. and Ph.D. level are expected. Postdoctoral experience preferred. Teaching duties in introductory botany and field of expertise. Letters of application should be accompanied by curriculum vitae and reprints. Applicants should also have three referees submit letters of recommendation. Send application to: Dr. Larry S. Roberts, Chairman, Department of Biological Sciences, P.O. Box 4149, Texas Tech University, Lubbock, Texas 79409. An Affirmative Action/Equal Opportunity Employer.

PLANT PHYSIOLOGY/PLANT MORPHOLOGY

The University of North Carolina at Charlotte (UNCC) has a tenure-track position starting fall 1982. It is expected that this individual will teach courses in the specialty that will complement the offerings of the undergraduate and graduate program, particularly as appropriate in introductory courses, and develop an active research program compatible with individual goals and those of the department. Position requires the earned doctorate and will be at the beginning rank. Salary is competitive. Letters and résumés are to be sent to: Dr. Roger H. Trumbore, Chairman, Department of Biology, UNCC Station, Charlotte, N.C. 28223. Deadline is 30 March 1982. *UNCC is an Equal Opportunity/Affirmative Action Employer.*

POSTDOCTORAL FELLOWS. Positions available to study human and animal lung mechanics and environmental defense mechanism. Complete aerosol and nuclear laboratory including gamma camera, whole body counter, and PFT equipment, all dedicated to research. Contact faculty directly or via FASEB Meeting, New Orleans, 19 to 23 April. Dr. W. M. Foster and Dr. G. C. Smaldone, State University of New York (SUNY), Stony Brook, HSC, T17-040, Stony Brook, N.Y. 11794. Telephone: 516-246-2468. *SUNY, Stony Brook is an Equal Opportunity/Affirmative Action Employer.* AK Number 318.

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

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

An Equal Opportunity/Affirmative Action Employer

RESEARCH ASSOCIATE responsible for the design, synthesis, and characterization of new compounds for evaluation as antiepileptic drugs. Also responsible for conducting research in the areas of organic photochemistry and polymer synthesis. In addition, the responsibility of overseeing the day-to-day operation of a research group of six to seven chemists. This position requires a Ph.D. in organic chemistry plus 5 years of research experience beyond the Ph.D. in the areas of synthetic organic chemistry, drug design, organic photochemistry, and modern methods of separation and spectroscopy. Forty hours per week; \$13,000 per year. Take this ad and apply to:

Virginia Employment Commission
206 Third Avenue
Radford, Va. 24141

POSITIONS OPEN

OCEANOGRAPHY

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

POSTDOCTORAL POSITION available 1 September to study contractile protein genes of *Drosophila* and their expression. Experience in molecular biology and recombinant DNA desirable. Salary: \$16,000, plus benefits. Send curriculum vitae and names of three references to: Dr. Robert Storti, Department of Biochemistry, University of Illinois Medical Center, 1853 West Polk Street, Chicago, Ill. 60612.

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

POSTDOCTORAL RESEARCH ASSOCIATE position available immediately. Position involves studying the regulation of cytochrome P-450-mRNA synthesis. Experience in the molecular biology of nucleic acids and recombinant DNA technology is desirable. Send résumé and names of three references to: Dr. A. W. Steggle, c/o Business Office, Northeastern Ohio Universities College of Medicine, Rootstown, Ohio 44272. An Equal Opportunity/Affirmative Action Employer.

Rice University. **POSTDOCTORAL RESEARCH ASSOCIATE IN NEUROPHYSIOLOGY.** Available immediately for 18 to 36 months, to carry on experiments regarding the synaptic physiology of visual interneurons. Study the cellular morphology and ultrastructure of the same synapses and carry out pharmacological and neurochemical studies on the synapses. Requires visual physiology and cellular electrophysiology background. Compensation is at the NIH established postdoctoral level of \$1,115 per month. The applicant must have a Ph.D. with major field of study in psychobiology. Apply at the Texas Employment Commission, Houston, Texas, or send résumé to: Texas Employment Commission, TEC Building, Austin, Texas 78778, Job Order Number 2930337. *Ad paid by Equal Opportunity Employer.*

UPJOHN POSTDOCTORAL RESEARCH POSITION. Available starting August 1982 with Dr. Robert R. Gorman, Experimental Sciences Department, for a pharmacologist or biochemist interested in **ARACHIDONIC ACID METABOLISM**. Projects include regulation of prostacyclin biosynthesis in endothelial cells, platelet-endothelial cell interaction, and prostaglandin-thromboxane receptor studies. Please send curriculum vitae and names of three references to: Jerry Potratz, Department 14082, The Upjohn Company, Kalamazoo, Mich. 49008. An Equal Opportunity Employer, M/F.

RENAL/EPITHELIAL PHYSIOLOGIST—The Department of Physiology at the University of Maryland School of Medicine invites applications for a tenure-track position in renal/epithelial physiology at the assistant or associate professor level, depending on qualifications. Applicants must hold a Ph.D. and/or M.D., and have completed at least 2 years of postdoctoral research training. Candidates with outstanding research credentials and teaching abilities are sought. The successful candidate will be expected to establish an independent, externally funded research program, and will participate in medical and graduate student teaching. Send curriculum vitae, an outline of research interests, and three letters of reference by 19 March 1982 to: Mordecai P. Blaustein, M.D., Chairman, Department of Physiology, University of Maryland School of Medicine, Baltimore, Maryland 21201. An Equal Opportunity/Affirmative Action Employer.

RESEARCH ASSOCIATE. Department of Human Genetics. To study the structure and organization of the genes within the human major histocompatibility complex and also to develop efficient procedures for cloning mammalian genes of immunological importance. Candidates must have experience in chemical approaches to oligonucleotide synthesis, molecular genetics, and recombinant DNA techniques, including DNA/RNA sequencing, cloning, and expression of foreign genes in *Escherichia coli*. Ph.D. in area of genetics or organic chemistry required. Full-time position with salary of \$17,450 per year. Interested applicants should send their résumés to: Job Service Technical Unit, State Labor Department, Hartford, Conn. 06115, and refer to Job Order Number 0216181.

RESEARCH in BIOCHEMISTRY

Under the auspices of the University Biochemistry Group comprised of members of the Faculties of Medicine and Science, the University of Calgary offers an interdisciplinary environment for graduate and post-doctoral research on a broad range of problems in modern Biochemistry. Highly qualified students with training in biochemistry, chemistry, biology, or related disciplines may be admitted to programmes leading to the MSc and PhD degrees. Research/teaching assistantships (\$8350.00 to \$9700.00/yr) are available from the university. Studentships (\$10,000/yr plus \$2500.00 research allowance) and post-doctoral fellowships (\$17,000/yr plus \$5000.00 research allowance) are available from the newly created Alberta Heritage Foundation for Medical Research and may be applied for via The University of Calgary. Removal allowances are also available. For further details send resume to:

Dr. George Drummond, Chairman, University Biochemistry Group, Division of Biochemistry, The University of Calgary, 2500 University Drive, North West, Calgary, Alberta, Canada. T2N 1N4

ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA

RESEARCH POSITIONS

The Academy of Natural Sciences of Philadelphia invites applications for two endowment-funded research positions in its recently established Ruth Patrick Scholars in Environmental Research Program. This program is intended to support excellence in environmental research especially as it addresses concerns of society. The first appointments will be for 2 years with subsequent consideration for appointment to the continuing scientific staff.

NUTRIENT CYCLING

Applicants should have a primary research interest in nutrient transformations and fates in freshwater and estuarine systems, including sediment-water and sediment-biota transfer processes. A strong interest in carbon flux (energy transfer) in these aquatic systems is also desirable.

RIVER ECOLOGY

Applicants should possess research interests in the dynamics of large river systems and should be knowledgeable in all aspects of river ecology, including hydrodynamics. The precise area of biological specialization is open.

Candidates for both positions should have established research credentials and be dedicated to working in collaboration with others. Salary will be commensurate with experience but will be comparable to that of an assistant or associate professor at a large state university.

Applicants should state the position they seek and send comprehensive curriculum vitae, reprints, and at least three letters of recommendation by 15 April 1982 to: **Dr. Kenneth L. Heck**, Division of Environmental Research, Academy of Natural Sciences, Philadelphia, Pa. 19103.

An Equal Opportunity Employer

VACANCY ANNOUNCEMENT

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

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

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

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

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

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

AN EQUAL OPPORTUNITY EMPLOYER

REWARDING RESEARCH OPPORTUNITIES IN CARDIOTONICS AND BIOMETRICS

Sterling Winthrop Research Institute, the research center for Sterling Drug, a Fortune 300 Company, has opportunities for individuals to be involved in meaningful research in our Cardiovascular Section and our Biometrics Department.

CARDIOVASCULAR SCIENTIST

Our expanding cardiotoxic program offers an excellent opportunity for a Cardiovascular Pharmacologist with a minimum of 2 years related experience. The candidate should have a PhD or equivalent with specific experience in hemodynamic and biochemical pharmacology with an interest in cardiotoxic drug development.

SENIOR STATISTICAL SCIENTIST

Our biometrics department has an opening for a group leader/senior statistical scientist. The candidate should have a PhD or equivalent with at least 5 years of related experience and a strong record of effective interpersonal and administrative skills.

We offer an attractive salary and benefit package with the opportunity for career growth. The Institute is located near Albany, New York, which is the center of major summer and winter recreational activities.

Please send your Curriculum Vitae including salary requirement in confidence to:

Mr. John G. Barry
Employment Administrator
**STERLING WINTHROP
RESEARCH INSTITUTE**
A Division of Sterling Drug Inc.
Columbia Turnpike, Rennselaer, NY 12144
An Equal Opportunity Employer M/F/H



POSITIONS OPEN

RESEARCH ASSISTANT PROFESSOR IN ELECTROPHYSIOLOGY. Individual with experience and training in electrophysiology to study effects of phospholipases on various preparations including heart and phrenic nerve-diaphragm. Minimum of a 2-year position; longer may be possible. Salary: \$17,000. Forward curriculum vitae and arrange for three letters of recommendation to be sent to: **Dr. Philip Rosenberg, Chairman, Section of Pharmacology and Toxicology, The University of Connecticut, School of Pharmacy, Storrs, Conn. 06268. Telephone: 203-486-2213, 2129. An Equal Opportunity/Affirmative Action Employer.** (Search Number S-147)

RESEARCH NEUROSCIENTIST

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

RESEARCH POSITION

RESEARCH POSITION, at university hospital, to study cell-mediated immunity in human cancer. Doctorate required. Candidates must have experience in immunological and cell culture techniques, background in tumor immunology, and personality suitable for some patient contact. Excellent salary and benefits. Please send résumé to: **Herta Tegtmeyer, Immunochimistry Research, Evanston Hospital, 2650 Ridge Avenue, Evanston, Ill. 60201.**

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

SENIOR RESEARCH ASSOCIATE POSITION IN PROTEIN CRYSTALLOGRAPHY

Protein crystallographer with Ph.D. and extensive research experience, to direct investigation into use of synchrotron radiation in this field at Stanford Synchrotron Radiation Laboratory; scientific/working knowledge in design of complex computer-controlled data acquisition systems. Projects include: (i) development of a fast multiwire area detector system, for efficient protein crystallographic data acquisition at multiple x-ray wavelengths across elemental absorption edges, to investigate use of enhanced anomalous scattering for phase determination, (ii) design and implementation of a tunable high-intensity wiggler beam-line and rotation camera system, optimized for macromolecular crystallography, for high speed/high resolution photographic data collection, and (iii) improvements to existing CAD-4 diffractometer system. In addition to pursuing own structural studies in biophysics, responsibilities include development of above national facilities, advising visiting user groups, and coordinating facility improvements. Additional projects include development of an energy dispersive EXAFS spectrometer and to investigate kinetic EXAFS studies in biophysics and materials science. Physics background and experience in anomalous scattering techniques and synchrotron radiation research desirable. Extensive experience in electronic, mechanical, software, and x-ray optics design essential. Salary determined by years of applicable experience with a range from \$34,000 to \$36,000.

Send résumé to: **Mary C. Clark, Bechtel International Center, P.O. Box 5816, Stanford University, Stanford, Calif. 94305.**

POSITIONS OPEN

POSTDOCTORAL POSITION—Biochemist to study the interaction of environmental chemicals with biological membranes and membrane proteins. Research background in membrane or protein biochemistry and microsomal enzymes preferred, as is experience with biochemical and biophysical characterization of cytochrome P-450. Salary range: \$13,000 to \$15,000. Send curriculum vitae and three letters of recommendation before 26 March 1982 to: **Dr. Terry L. Miller, Department of Agricultural Chemistry and Environmental Health Sciences Center, Oregon State University, Corvallis, Oregon 97331. An Equal Opportunity/Affirmative Action Employer, in compliance with Section 504 of the Rehabilitation Act of 1973.**

SENIOR RESEARCH ASSOCIATE IN BIOLOGY, WASHINGTON UNIVERSITY, ST. LOUIS, MISSOURI. The position requires an experienced scientist capable of working on an advanced research program without supervision. A minimum of 2 years of previous postdoctoral research experience in the field of chromatin structure is required. The duties involve research into the relationship of chromatin structure to gene activity in *Drosophila*. Familiarity with gene cloning and manipulation of chromatin and DNA (including use of nucleases) is essential, as is a command of tissue culture techniques. Previous experience utilizing *Drosophila* as an experimental system is highly desirable. Aside from the research activity, there will be some obligation in directing routine daily laboratory operations, including radiation safety supervision. An ability to instruct and supervise other laboratory personnel is expected. Salary will be \$16,750 per year. Interested persons should send a complete résumé to: **June Carroll, Missouri Division of Employment Security, 505 Washington Avenue, St. Louis, Missouri 63101, referring to Position Number 639436.**

COURSE

COURSE IN PHYSIOLOGY AND PATHOLOGY FOR OUTSTANDING PH.D. CANDIDATES IN MOLECULAR OR CELLULAR BIOLOGY. 27 June to 6 August 1982, College of Physicians and Surgeons of Columbia University. Costs of attending covered by stipend. Supported by a grant from the Josiah Macy, Jr., Foundation. Deadline for completed applications is 9 April. Please write to: **M. Shemesh, Department of Pathology, College of Physicians and Surgeons of Columbia University, 630 West 168 Street, New York, N.Y. 10032.**

GRADUATE STUDY

GRADUATE STUDY IN BIOLOGY

Lamar University, Biology Department, is accepting qualified applicants for fall 1982. Teaching fellowships are available at \$4250 per academic year. The master of science in biology program offers diverse thesis specialties in aquatic biology, cell biology, botany, ecology, behavior, electron microscopy, and other areas. Send applications or requests for additional information to: **Dr. R. C. Harrel, Graduate Adviser, Department of Biology, Lamar University, P.O. Box 10037, Beaumont, Texas 77710. An Equal Opportunity/Affirmative Action Employer**

ASSISTANTSHIPS

PREDOCTORAL ASSISTANTSHIPS are available for students in a Ph.D. Program in Biomedical Sciences (microbiology and immunology). University of South Carolina School of Medicine. Research includes comparative immunology, immune regulation, bacterial cell walls, NK cells, molecular virology, and carcinogenesis. Starting stipends: \$6000 per year. For further information, contact: **Dr. R. B. Luftig, Microbiology and Immunology, University of South Carolina School of Medicine, Columbia, S.C. 29208. Affirmative Action/Equal Opportunity Employer.**

FELLOWSHIPS

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

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FELLOWSHIPS

POSTDOCTORAL FELLOWSHIPS in environmental toxicology available summer 1982. These are institutional fellowships funded by an NIH-sponsored training grant. Strong background in basic biomedical sciences preferred. Wide choice of research training experiences available, including neurobehavioral, carcinogenic, inhalational, renal, reproductive, and biotransformational aspects of toxicology. To apply or obtain further information, write: **Dr. P. B. Hammond, Department of Environmental Health, University of Cincinnati Medical Center, Cincinnati, Ohio 45267. An Affirmative Action/Equal Opportunity Employer.**

POSTDOCTORAL RESEARCH TRAINING FELLOWSHIPS for M.D. or Ph.D. graduates are available in the areas of endocrinology, metabolism, and diabetes under the guidance of one of 13 training faculty in six basic or clinical departments of Emory University School of Medicine. Send curriculum vitae, area of research interest, and names of two references by 15 April 1982 to: **Dr. Mario DiGirolamo, Program Director, Emory University School of Medicine, 69 Butler Street, Atlanta, Georgia 30303. An Equal Opportunity/Affirmative Action Employer.**

POSTDOCTORAL FELLOWSHIPS

Two postdoctoral fellowships are available at the Osborn Laboratories of Marine Sciences for studies in the following disciplines: fish pathology and fish genetics.

Send résumé and names of three references to:

**Dr. George D. Ruggieri
Director
Osborn Laboratories of Marine Sciences
New York Aquarium
Brooklyn, New York 11224**

PROGRAM

POSTDOCTORAL TRAINING IN ENDOCRINOLOGY at West Virginia University Medical Center. An interdisciplinary program supported by NIH. Positions filled as available, depending on candidate qualifications and vacancies in laboratories involved. Participating faculty, department affiliation, and research areas are: Margaret J. Albrink, M.D., Medicine, hyperlipidemia/insulin resistance; James B. Blair, Ph.D., Biochemistry, liver carbohydrate metabolism; Fred R. Butcher, Ph.D., Biochemistry, stimulus-secretion coupling; Roy L. Butcher, Ph.D., Obstetrics/Gynecology, pituitary-ovarian function; Howard D. Colby, Ph.D., Physiology, adrenal/hepatic monooxygenases; Robert A. Dailey, Ph.D., Animal Science, gonadotropins and follicular development; Robert L. Goodman, Ph.D., Physiology, reproductive neuroendocrinology; George A. Hedge, Ph.D. (program director), Physiology, thyroid/adrenal neuroendocrinology; E. Keith Innskeep, Ph.D., Animal Science, utero-ovarian relationships; Michael G. Mawhinney, Ph.D., Pharmacology, androgen/estrogen action; and John A. Thomas, Ph.D., Pharmacology, androgen actions/endocrine toxicology. Application information and more detailed descriptions of these research programs are available on request from: **Dr. George A. Hedge, Professor and Chairman, Department of Physiology, West Virginia University Medical Center, Morgantown, W.Va. 26506. This University is an Equal Opportunity/Affirmative Action Employer.**

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