

from Ottawa) with subacute sclerosing panencephalitis, convulsions apparently were precipitated by administration of intravenous poly(I) · poly(C). Although poly(I) · poly(C) is not oncogenic in hamster or mouse tissue in vitro or in vivo, a strain of rat cells that is highly susceptible to transformation was transformed by poly(I) · poly(C).

Local administration of interferon can prevent cutaneous infection with vaccinia virus in monkeys and in man. Human interferon can retard systemic viral infection of monkeys. In volunteers receiving influenza or rhinovirus, intranasal administration of increasing amounts of interferon gives either no protection or a small protective effect. With even larger doses in monkeys there is significant reduction in the excretion of a parainfluenza virus and of equine rhinovirus. Studies with increased amounts of interferon given intranasally to volunteers are being made. Partial protection against rhinovirus and influenza virus infections and low levels of induced interferon is reported in volunteers given poly(I) · poly(C) as nose drops. Poly(I) · poly(C) administered in eye drops can ac-

celerate healing of herpetic dendrite ulcers; this effect may be due to the influence on corneal cells of interferon induced in the conjunctiva. Tilorone derivatives, which induce interferon in rodents but not in monkeys, prevent viremia in monkeys given Venezuelan equine encephalitis vaccine.

Live infectious bovine rhinotracheitis virus vaccine, which induces interferon if given into the respiratory tract of calves, dramatically reduces symptoms of and subsequent death from respiratory disease occurring in calves kept in feed lots. Rhinovirus infection of man interferes with the take of a live influenza vaccine, and prior injection of rubella vaccine prevents respiratory virus infection; but attenuated influenza virus infection does not protect against experimental parainfluenza infection 1 week later.

Poly(I) · poly(C) treatment of rabbit skin protects against tumors induced by Shope fibroma virus. It also protects against experimental rabies and induces the local production of interferon and a greater amount of antibody. This is an example of the multiple actions brought about by chemical inducers.

Interferon preparations and inducers administered to animals limit the growth of tumors or leukemia and prevent metastases. In patients with severe disease (malignancies, leukemia, and subacute, sclerosing panencephalitis) poly(I) · poly(C) treatment induces low levels of interferon and has no effect on the primary disease.

In man, large amounts of interferon have been detected at the sites of certain, but not all, infections. Long-term production of interferon has been observed in a case of congenital rubella infection. Studies to exploit these phenomena for prophylactic or therapeutic purposes are planned or under way.

SAMUEL BARON
NORMAN B. FINTER
GEORGE J. GALASSO*
LOWELL A. GLASGOW
HILTON B. LEVY
JULIUS S. YOUNGER

*Antiviral Substances Program,
Infectious Disease Branch,
Collaborative Research Program,
National Institute of Allergy and
Infectious Diseases, Building 31,
Bethesda, Maryland 20014*

* Address requests for reprints to G.J.G.

Personnel Placement

POSITIONS WANTED

Instrument-oriented **Analytical Chemist**, Ph.D. 1968, seeks opportunity to apply carbon-13, NMR, and tracer techniques to studies of biological systems or structure of organic molecules. Box 267, SCIENCE. X

Anatomist / Histologist / Electron Microscopist (transmission and scanning), Ph.D., woman. Desires senior academic teaching-research position. Numerous publications. Broad research interest—ultrafine morphology, normal and pathological. Innovative teacher; teaching experience; histology; comparative histology, histochemistry; electron microscopy. Box 268, SCIENCE. X

Atmospheric Physicist, Ph.D. 1973, general atmospheric science background, research experience in aeronomy and magnetosphere physics. Desires teaching or research position. Box 269, SCIENCE. X

Biochemist, Ph.D. 1971. Protein structure, function. Immunochimistry. Publications. University teaching. Interested also in clinical chemistry, genetics. Seeks academic, industrial, governmental, research or hospital position. Box 270, SCIENCE. X

Biochemist. Currently American Cancer Society postdoctoral fellow. Broad interests, experience with plant viruses, virus genetics, properties of proteins, nucleoproteins, nucleic acids. Seeks permanent position in United States, but will consider animal virus postdoc. Write, L. C. Lane, John Innes Institute, Colony La., Norwich, England. X

Biochemist / Molecular Biologist / Bacteriologist. Teacher, Ph.D., postdoc, 4 years of independent research and teaching. Left to teach Elementary Age Free Schools. Now seek college teaching or lab position. West Coast preferred. Box 271, SCIENCE. X

POSITIONS WANTED

Biophysical Chemist, Ph.D. 1966. Teaching and/or research position in college or junior college. Research experience in water quality, enzyme mechanisms, mercury pollution, nutrition, sulfur bacteria, and extractive metallurgy. Box 272, SCIENCE. X

Educator, Ph.D. 41, outstanding teacher of biological and physical sciences to nonmajors. Stifled in old position, seeks rewarding new one. Available immediately. Box 273, SCIENCE. X

Energetic Ph.D., 30 (1969—Reproductive Pharmacology), with teaching and research publication background in physiology, pharmacology, and biology, seeks teaching or teaching/research position. Will consider nonacademic positions. Box 262, SCIENCE. X

Geologist, Ph.D. Senior faculty member, an outstanding teacher of elementary courses. Research award, several books, and many journal articles. Box 274, SCIENCE. X

Gross Anatomist, Ph.D. Teaching experience, ultrastructure research. Desires teaching/research position. Box 275, SCIENCE. X

Innovative, Excellent, University-Level Biologist, 37, Ph.D. (genetics 1965), postdoctoral. Special interests experimental teaching, curriculum planning; 15 years of professional experience. Desires academic position. 2266 Lake Circle, Jackson, Mississippi 39211. X

Instrumentation RD&D, electronic and electromechanical. Engineering physics and physiology training, 18 years of electronics design experience, government-approved consultant in biomedical electronics. Run anything from a soldering iron to a project. Salary: soldering iron—\$17K, project—\$22. P.O. Box 12311, Raleigh, N.C. 27605. X

Marine Biologist/Oceanographer. M.S. 1967. Eight years' experience in oceanography, invertebrate zoology, benthic ecology, ecosystem dynamics, fisheries, and biofouling. Publications. Desires marine, estuarine research and/or teaching. E. R. Long, 1810 Plymouth Ct., Bowie, Md. 20715. X

POSITIONS WANTED

Microbiologist, Ph.D. Strong background microbial physiology and microbial ecology. Publications. Desires teaching/research at institution emphasizing former. Box 276, SCIENCE. X

Microbiologist, Ph.D., Broad postdoctoral research experience, publications. Seeks training in clinical microbiology. Box 277, SCIENCE. X

Microbiologist (environmental), M.S. Desires research position in industry or private laboratory. October 1973. Box 278, SCIENCE. X

Microbiologist, M.S. biochemistry minor. Four years of study beyond master's. Broad biology background. Experience: 5 years of college teaching, 4 years of varied research. Desires research position in industry. Interests: quality control, drugs, cosmetics, environmental protection, health oriented research, and so forth. Available: immediately. M. J. Brennan, 141 Cricket Ave., Ardmore, Pa. 19003. X

Molecular Biologist, Ph.D. 1970. Excellent academic credentials. Extensive background in cellular and molecular biology. Research experience in microbiology, genetics, virology, nucleic acid chemistry, and electron microscopy. Publications. Seeks research and/or teaching position in university or industry in the Los Angeles metropolitan area. Box 279, SCIENCE. X

Ph.D. Candidate (Medical Virology), enjoys motivating and communicating with students, seeks teaching position in microbiology. Lecture experience and broad science background. Available 1 June 1973. Box 93, SCIENCE. X

Pharmacology Ph.D., veteran, medical undergraduate teaching research experience, seeks pharmacology / physiology / biology / paramedical teaching; foundation/industry considered. Box 280, SCIENCE. 5/25

Scientific Illustrator. Three years' experience in biological, paleontological, and archaeological illustration. Published examples of work and references available on request. Will illustrate any shippable material. Hansen, Box 548, ISU, Pocatello, Idaho 83201. X

POSITIONS OPEN

ASSISTANT PROFESSOR OF ANATOMY

Applications are invited for two teaching posts available 1 September 1973. Applicant should possess a Ph.D. degree. Submit a curriculum vitae, transcripts, and two letters of recommendation to: **Ormond G. Mitchell, Chairman, Department of Anatomy, Brookdale Dental Center, New York University College of Dentistry, 421 First Ave., New York, N.Y. 10010.**

A nondiscriminatory affirmative action employer

CANCER RESEARCH CENTER

The Medical College of Virginia, Virginia Commonwealth University, an equal opportunity employer, is developing plans for a comprehensive cancer research center. Persons should have background in administration and scientific leadership. Interested persons should send full curriculum vitae to **Richard P. Elzay, Department of Oral Pathology, Medical College of Virginia, Box 637, Richmond, Virginia 23298.**

CELL BIOLOGIST/ ELECTRON MICROSCOPIST

Position available 1 June 1973 for Ph.D. to work out conditions for studying cytoplasmic streaming of cells in environmental chambers already operating on a light microscope, conventional and scanning microscope. Familiarity with tissue culture, and electron microscopy essential. Technical ability with optical equipment an advantage. Salary negotiable. Send curriculum vitae, reprints, and two letters of recommendation to **Dr. D. F. Parsons, Roswell Park Memorial Institute, 666 Elm Street, Buffalo, N.Y. 14203.**

CELLULAR IMMUNOLOGY

Applications are invited for a faculty position in the Department of Microbiology, The Medical College of Wisconsin, from independent investigators to direct research and teaching in cellular immunology. Academic qualifications will determine rank and salary. Curriculum vitae, most significant reprints, and three letters of recommendation should be sent to: **Dr. S. E. Grossberg, Chairman, Department of Microbiology, The Medical College of Wisconsin, 561 North 15 St., Milwaukee, Wisconsin 53233.**

DIRECTOR OF CLINICAL IMMUNOLOGY LABORATORIES OF THE RUSH MEDICAL CENTER

The Department of Immunology of Rush-Presbyterian-St. Luke's Medical Center is seeking a qualified individual to supervise its hospital laboratories. The procedures involved include radioimmunoassay, immunofluorescence, hemagglutination, immunoprecipitation, complement consumption, protein separation, cellular immunology, and so forth, with the supervision of 10 to 20 people. Individuals with doctoral degrees in medicine, microbiology, biochemistry, physiology, or engineering should respond to the address indicated below for further information. The individual selected will contribute to the teaching programs of the medical center, have facilities for investigation, and will receive appropriate rank in the Rush Medical College. For further information write the **Chairman, Department of Immunology, Rush Medical Center, 1753 West Congress Parkway, Chicago, Illinois 60612.**

UNIVERSITY OF QUEENSLAND AUSTRALIA CHAIR OF PALAEOONTOLOGY AND STRATIGRAPHY WITHIN THE DEPARTMENT OF GEOLOGY AND MINERALOGY

The University invites applications for a Chair to be known as "The Dorothy Hill Chair of Palaeontology and Stratigraphy." Applicants should be qualified to develop high-quality teaching and research in a wide range of Palaeontology and Stratigraphy. The successful applicant should be able to give special emphasis to the evolution of the biosphere and the interpretation of fossil organisms as indicators of the age of rocks and of changing environmental conditions throughout geological time. The permanent head of the department is Professor Allan Wilson, but the appointee will be expected to accept a share of the general administration of the department.

The current salary for a professor is \$A15,368 per annum (at present under review) and the University provides traveling and removal expenses, superannuation similar to F.S.S.U., housing assistance, and study leave.

Additional information and application forms are obtainable from the **Staff Officer, University of Queensland, St. Lucia, Q 4067, Australia**, with whom applications close on 30 June 1973.

POSITIONS OPEN

Chancellor—1 January 1974, University of Wisconsin-Oshkosh, third largest of 13 universities in University of Wisconsin System, has 11,000 students and 700 faculty. Nominations of persons with evidence of productive scholarship, significant administrative experience and leadership abilities should be sent immediately to **Dr. Stanley Linton, Chairman, Search and Screening Committee, Box AC-138, University of Wisconsin-Oshkosh, Oshkosh, Wisconsin 54901.**

Equal Opportunity/Affirmative Action Employer

POSITIONS OPEN

Opening September 1973 or January 1974 for **ENVIRONMENTAL STUDIES** faculty member with background in economics or social sciences. Required: Ph.D., teaching experience, strong interests in research and teaching. Administrative skills desirable. Rank assistant or associate professor. The 3-year-old program is interdisciplinary, undergraduate, and has had foundation support. Salary and benefits are competitive. The University of California is an equal opportunity employer. **Dr. R. Nash, Environmental Studies, University of California, Santa Barbara 93106.**

THE UNIVERSITY OF CALGARY

DEPARTMENT OF BIOLOGY

A position for an Ethnologist with interest in Ecology and the Vertebrates will be available 1 July 1973. Applicants should be interested in and committed to excellence in undergraduate teaching.

The appointment will be at the Assistant Professor level, with a base salary of \$11,220.00 per annum, and will be made for a 2-year term in the first instance.

Applicants should submit curriculum vitae and ask three referees to send letters of reference to **Dr. D. Parkinson, Head, Department of Biology, The University of Calgary, 2920 - 24 Avenue N.W., Calgary, Alberta, Canada, T2N 1N4, by 23 May 1973.**



THE UNIVERSITY OF CALGARY

DEPARTMENT OF BIOLOGY

Two positions for biologists interested in and committed to excellence in undergraduate teaching will be available on 1 July 1973.

Instructor in Biology: to assist in organizing and teaching laboratory classes and tutorials in Introductory Ecology, Advanced Ecology, and Population Biology. Applicants should have a higher degree in an area of Ecology.

Instructor in Vertebrate Zoology: to assist in organizing and teaching of laboratory classes in a one-semester course in Comparative Anatomy and Embryology plus supervision of the laboratory portion of a one-semester course in Introductory Biology. Applicants must hold a Ph.D. degree.

Instructors are full-time teaching appointments with a base salary of \$8,500 per annum, and will be made for a 2-year term (in the first instance).

Applicants should submit curriculum vitae and ask three referees to send letters of reference to **Dr. D. Parkinson, Head, Department of Biology, The University of Calgary, 2920-24 Avenue N.W., Calgary, Alberta, Canada, T2N 1N4, by 23 May 1973.**



POSITIONS OPEN

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MANAGER

QC METHODS DEVELOPMENT

We seek a highly motivated Ph.D. with at least 2 years of industrial or academic experience in Virology and Immunology.

The position will report to the Director of Quality Assurance and be responsible for the development or improvement of QC testing methods as well as the active supervision of overall QC laboratory testing.

We are a biological manufacturing and research facility located in the Pocono Mountain region of northeastern Pennsylvania.

This position offers good growth potential in addition to a progressive salary and fringe benefit program. Please send résumé, including salary history and requirements, in confidence to Mr. D. H. Gattone, Personnel Mgr.

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COAGULATIONIST-HEMATOLOGIST

Research position directed toward the development and utilization of multiple coagulation assays. Experience in the isolation of therapeutic factors from human plasma desirable. Salary commensurate with training, experience and responsibilities.

Personnel Department

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Kankakee, Illinois 60901

THE DEPARTMENT OF BIOLOGICAL SCIENCES UNIVERSITY OF CALIFORNIA SANTA BARBARA

Invites applications for four faculty positions: (1) **Neuropharmacology** (molecular), (2) **Plant Cell Physiology** (membranes), (3) **Mammalian Virology** (molecular), and (4) **Aquatic Biology** (microbial or zooplankton ecology). The appointees will be expected to participate in undergraduate and graduate teaching and research. Positions available commencing July 1973.

Submit curriculum vitae and three letters of recommendation to: **Dr. William K. Purves, Department of Biological Sciences, University of California, Santa Barbara, California 93106.**

An Equal Opportunity Employer

PHYSICAL OCEANOGRAPHER

Applications are invited for the position of Associate Professor or Full Professor to teach and carry out research in physical oceanography starting August 1973, or thereafter. Applicants must have a Ph.D. and 6 to 10 years of relevant post-Ph.D. experience. Fields of interest could be geophysical hydrodynamics, turbulence, waves, tidal theory, numerical modeling, or other.

The Institute operates a 65-foot vessel, is housed in new quarters (20,000 square feet), and is focused on continental shelf and shallow water areas. A chair in Oceanography is presently vacant.

Applications should be sent to: **Dr. John C. Ludwick, Director, Institute of Oceanography, Old Dominion University, Norfolk, Virginia 23508.**

An Equal Opportunity Employer

RESEARCH/TEACHING ASSOCIATE

Predocutorial position available August 1973. Must have proven research/teaching capability and proposal writing experience. Teaching includes: systems analysis, simulation and pollution biology; research involves physical oceanography and biostatistics. Experience in navigation and vessel operation required. Send résumé to: **Dr. Thomas D. Wright, Department of Biological Sciences, Michigan Technological University, Houghton, Michigan 49931.**

An Equal Opportunity Employer

SENIOR FACULTY POSITION CORNELL UNIVERSITY

Position available in the Graduate School of Nutrition for an M.D. with research interests relating nutrition to disease. The University is an equal opportunity employer. Please submit curriculum vitae with most relevant publications to: **Office of the Dean, Graduate School of Nutrition, Cornell University, Ithaca, New York 14850.**

VERTEBRATE PHYSIOLOGY

Position open in the Department of Biology of Rochester Institute of Technology. Candidate will be expected to teach undergraduate physiology courses and develop research program involving students. Ph.D. and teaching experience required. Rank and salary open. Send curriculum vitae and brief statement of research plans to: **Dr. James L. Baird, Jr., Head Department of Biology, Rochester Institute of Technology, Rochester, New York 14623.**

Equal Opportunity/Affirmative Action Employer

VIRAL ONCOLOGY-CELL BIOLOGY. Applications are invited for a faculty position in the Department of Microbiology, The Medical College of Wisconsin, from independent investigators to direct research and teaching in viral oncology-cell biology. Academic qualifications will determine rank and salary. Curriculum vitae, most significant reprints, and three letters of recommendation should be sent to: **Dr. S. E. Grossberg, Chairman, Department of Microbiology, The Medical College of Wisconsin, 561 North 15 St., Milwaukee, Wisconsin 53233.**

VIROLOGY, IMMUNOLOGY

B.S. or M.S. Expanding virus, tissue culture, and immunology laboratories require individual with basic tissue culture and virology background, as well as related field in immunology and biochemistry. Excellent growth potential in a new and dynamic basic and applied facility. Send résumé to: **Dr. S. Loker, Manager, Personnel, Frederick Cancer Research Center, P.O. Box B, Frederick, Md. 21701.**

An Equal Opportunity Employer M/F

WILDLIFE MANAGEMENT

Two positions, assistant and associate professor, Ph.D. desired. Duties: teaching wildlife management, wildlife ecology, big game management, advising students, and management-oriented research. Send résumé, transcripts, and three references, to **Dr. Hungerford, Chairman, Search Committee, College of Forestry, University of Idaho, Moscow, Idaho 83843.**

Equal Opportunity/Affirmative Action Employer

GRADUATE STUDY

PREDOCTORAL ASSISTANTSHIPS IN PHYSIOLOGY

Excellent opportunities for graduate students leading to the Ph.D. Stipends and free tuition. Training and research in cardiovascular, cellular, endocrine, gastrointestinal, energy metabolism, neurophysiology, respiration and transport physiology. Write for details to **Head, Department of Physiology, School of Basic Medical Sciences, University of Illinois at the Medical Center, P.O. Box 6998, Chicago, Illinois 60680.**

FELLOWSHIP

POSTDOCTORAL FELLOWSHIP PROGRAM CLINICAL AND LABORATORY IMMUNOLOGY RUSH MEDICAL COLLEGE

The Department of Immunology of Rush Medical College is offering 1- and 2-year fellowships to individuals interested in clinical and laboratory immunology and research in the role of the immune response in inflammation and certain diseases.

Problems currently under investigation include developmental, clinical, and experimental biology of the complement and kinin systems; humoral and cellular responses in the acute phase of inflammation; immunological injury in nephritis, hepatitis, chronic infections, and rheumatoid and collagen diseases; and transplantation and cancer immunology. For further information write the **Chairman, Department of Immunology, Rush Medical College, 1753 West Congress Parkway, Chicago, Illinois 60612.**

COURSES

DEVELOPMENTAL BIOLOGY FOR UNDERGRADUATES, MARINE BIOLOGICAL LABORATORY (MBL), WOODS HOLE, MASS.

7 JANUARY to 1 FEBRUARY 1974

A 4-week course at MBL for well-motivated college students with a sound background in introductory biology and with an interest in development, genetics, and variability will emphasize marine animals and the plant *Fucus*. Lectures on concepts of development and genetics will accompany laboratories emphasizing experimentation based on understanding normal development. The ecology of the organisms studied will be introduced. Instructors: **Lester and Lucena Barth, MBL; Annette W. and John R. Coleman, Brown University; Louis DeLaney, Ithaca College; James Ebert, Carnegie and MBL; David R. Walters, Boston University.**

Tuition \$400; 4 credit hours; dormitory, including board \$200 or less. For application blanks and further information communicate with **Instructor in Charge: L. E. DeLaney, c/o Marine Biological Laboratory, Woods Hole, Mass. 02543. Office phone: (607)-274-3169. Applications close 1 October 1973.**

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keep abreast of research's ever-changing requirements. When he finds one, he gets it incorporated *post haste* into the design. And, what's more, makes it available for incorporation into previously sold instruments. Because ease-of-modification is a feature inherent in the original uncomplicated design, a Zeiss Electron Microscope never gets old.

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