

#### Contributing Consultants

Preston Adams, Ph.D., DePauw University  
Thomas Peter Bennett, Ph.D., University of Kentucky  
Konrad E. Bloch, Ph.D., Nobel Prize, Harvard University  
John Tyler Bonner, Ph.D., Princeton University  
Susan Bryant, Ph.D., University of California, Irvine  
Sir Frank Macfarlane Burnet, M.D., Ph.D., LL.D., Sc.D.,  
D.Sc., Nobel Prize, University of Melbourne  
Michael Crichton, M.D., Salk Institute for Biological Studies  
Elizabeth G. Cutter, Ph.D., University of California, Davis  
Max Delbrück, Ph.D., Nobel Prize, California  
Institute of Technology  
Joyce A. F. Diener, Ph.D., Del Mar, California  
John E. Dowling, Ph.D., Harvard University  
Sir John C. Eccles, Ph.D., Sc.D., Nobel Prize, State University  
of New York, Buffalo  
Leland N. Edmunds, Jr., Ph.D., State University of New York,  
Stony Brook  
J. S. Finlayson, Ph.D., National Institutes of Health  
William Fishbein, Ph.D., City University of New York  
Paul Gebhard, Ph.D., Institute for Sex Research,  
Indiana University  
Terrell H. Hamilton, Ph.D., University of Texas  
Peter H. Hartline, Ph.D., University of California, San Diego  
J. Woodland Hastings, Ph.D., Harvard University  
Jonathan Hodge, Ph.D., University of California, Berkeley  
John Holland, Ph.D., University of California, San Diego  
Yashuo Hotta, Ph.D., University of California, San Diego  
Tom D. Humphreys II, Ph.D., University of California,  
San Diego  
Daniel H. Janzen, Ph.D., University of Chicago  
William A. Jensen, Ph.D., University of California, Berkeley  
Robert W. Kistner, M.D., Boston Hospital for Women  
Sir Hans Adolf Krebs, M.D., Nobel Prize, Oxford University  
Lee H. Kronenberg, Ph.D. candidate, University of California,  
San Diego  
Richard C. Lewontin, Ph.D., University of Chicago  
Robert D. Lisk, Ph.D., Princeton University  
William F. Loomis, Jr., Ph.D., University of California,  
San Diego  
Vincent T. Marchesi, M.D., Ph.D., National  
Institutes of Health  
Peter Marler, Ph.D., Rockefeller University  
Donald M. Maynard, Ph.D., University of Oregon  
James L. McGaugh, Ph.D., University of California, Irvine  
Stanley L. Miller, Ph.D., University of California, San Diego  
James V. Neel, M.D., Ph.D., University of Michigan  
David M. Phillips, Ph.D., Washington University  
David M. Prescott, Ph.D., University of Colorado  
Eugene Rabinowitch, Ph.D., D.Sc., State University of  
New York, Albany  
Roberts Rugh, Ph.D., Columbia University  
Howard A. Schneiderman, Ph.D., University  
of California, Irvine  
Michael Soulé, Ph.D., University of California, San Diego  
Paul S. G. Stein, Ph.D., Washington University  
Payson R. Stevens, M.A., Del Mar, California  
Albert Szent-Györgyi, M.D., Ph.D., Nobel Prize, Marine  
Biological Laboratory  
J. Herbert Taylor, Ph.D., Florida State University  
Kenneth V. Thimann, Ph.D., University of California,  
Santa Cruz  
Jared R. Tinklenberg, M.D., Stanford University  
Gordon M. Tomkins, M.D., Ph.D., University of California  
Medical School, San Francisco  
Harold C. Urey, Ph.D., D.Sc., LL.D., Nobel Prize, University  
of California, San Diego  
James D. Watson, Ph.D., D.Sc., LL.D., Nobel Prize,  
Harvard University  
J. S. Weiner, M.D., Ph.D., Medical Research Council,  
University of London  
Robert H. Whittaker, Ph.D., Cornell University



**William F. Loomis, Jr.**, a recipient of a Ph.D. from the Massachusetts Institute of Technology, is an assistant professor of biology at the University of California at San Diego. His main research interests lie in the chemical basis of the control of gene activity, and he is studying this phenomenon in the cellular slime mold *Dictyostelium discoideum*.



**Vincent T. Marchesi** received his Ph.D. from Oxford University in 1961 and his M.D. from Yale University in 1963. After an internship and residency in pathology at Washington University, Dr. Marchesi was a research associate at Rockefeller University. He is presently chief of the Section on Chemical Pathology at the National Institute of Arthritis and Metabolic Diseases. His research interests include cell interactions in inflammatory reactions, the chemistry and structure of cell membranes, and the properties of tumor cells.



**Peter Marler** first earned a Ph.D. in botany at the University of London in 1952, then pursued studies at the University of Cambridge, England, where he later took a Ph.D. in zoology. He is presently a professor at Rockefeller University and maintains extensive research interests in the field of animal behavior—particularly relative to the function and evolution of animal communication systems. He has a special interest in the vocalizations of birds and the ontogenetic basis of bird song, and he is a member of several professional ornithological societies.



**Donald M. Maynard**, professor of biology at the University of Oregon, earned his A.B. degree in biology at Harvard College and received his Ph.D. in zoology from the University of California at Los Angeles in 1955. He was a recipient of a postdoctoral fellowship from the National Science Foundation and received the Guggenheim Fellowship in 1964. His primary research interests include comparative neurophysiology, invertebrate physiology, and the physiology of behavior, and he has contributed numerous papers in these areas.



**James L. McCaugh** earned his Ph.D. from the University of California at Berkeley in 1959. Before taking his present position as chairman of the Department of Psychobiology at the University of California at Irvine, he taught at San Jose State College and at the University of Oregon and did postdoctoral work in Rome. He is the author of numerous publications concerning the neurobiology of learning and memory. He is on the advisory boards of many journals in the field and is editor of *Communications in Behavioral Biology*.



**Stanley L. Miller** received his early training in chemistry and his Ph.D. at the University of California. Now a professor of chemistry at the University of California at San Diego, he focuses his research on the origin of life, enzyme mechanisms, and the mechanisms of general anesthesia.



**James V. Neel**, author of the chapter entitled "Human Possibilities," is chairman of the Department of Human Genetics at the University of Michigan Medical School. After receiving his Ph.D. and M.D. degrees from the University of Rochester, he did field work in Japan and then organized the Department of Human Genetics at the University of Michigan. Dr. Neel is a member of the National Academy of Sciences and the American Academy of Arts and Sciences, is past president of the American Society of Human Genetics, and is on the editorial boards of numerous journals.



**David M. Phillips** is an assistant professor of biology at Washington University in St. Louis, Missouri. He received his Ph.D. in zoology at the University of Chicago and was a postdoctorate fellow at Harvard Medical School. His research interests include the mechanisms of cellular motility and some aspects of cellular nucleic acid metabolism. His studies on motility involve cinematographic analysis of the swimming movement of spermatozoa from various species of insects and mammals and the correlation of these swimming movements with differences in structure.



**David M. Prescott**, who has been an exchange scientist to the USSR for a one-month lecture tour, is a professor in the Department of Molecular, Cellular, and Developmental Biology at the University of Colorado. After receiving his Ph.D. from the University of California at Berkeley, Dr. Prescott was an American Cancer Society Fellow at Carlsberg Laboratory in Copenhagen and a Markle Scholar in Medical Science. His research focuses on mechanisms of chromosome replication and function, chromatid exchanges during the cell cycle, exchange of proteins between the nucleus and cytoplasm, and the factors regulating the initial synthesis of DNA during cellular reproduction.



**Eugene Rabinowitch** was born in Russia and took his Ph.D. in chemistry at the University of Berlin. Throughout his distinguished career, he has been singled out for many honors, including the Guggenheim Fellowship, the honorary Doctor of Science from Dartmouth College and Brandeis University, and the 1965 Kalinga Prize from UNESCO. He has contributed numerous articles to professional journals and has authored several publications, including a multivolume work on photosynthesis (1945–1956). He is currently a professor at the State University of New York, with research interests in photobiology and photochemistry.



**Roberts Rugh** has taught and conducted research in embryology for 44 years. He received his Ph.D. from Columbia University, where he was, until his recent retirement, a professor of radiology in the College of Physicians and Surgeons. His research for the last 23 years has focused on the effects of radiation on the embryo and fetus, and the 221 titles and 6 books he has published are almost exclusively concerned with embryonic development. Dr. Rugh's most recent publication, *From Conception to Birth: The Drama of Life's Beginnings*, which he coauthored with Dr. L. B. Shettles, is illustrated with color pictures he has taken of human fetuses.



**Howard A. Schneiderman** is dean of the School of Biological Sciences, director of the Center for Pathobiology, and professor of biological sciences at the University of California at Irvine. Dr. Schneiderman received his Ph.D. in physiology from Harvard University in 1952. He was assistant and then associate professor of zoology at Cornell University between 1953 and 1961. In 1961 he joined Case Western Reserve University as professor and chairman of the Department of Biology and director of the Developmental Biology Center. He gave up the chairmanship in 1966 to accept the Jared Potter Kirtland Distinguished Professorship of Biology at Case Western Reserve University; this post was held until leaving for UCI in 1969. His principle research interests have been the physiology and development of insects. He has published more than 150 papers, particularly in the field of insect endocrinology and developmental biology. His recent research has been on mechanisms of determination, pattern formation and intercellular communication in imaginal discs and embryos of *Drosophila*, and mode of action of juvenile hormones and molting hormones.



**Michael Soule**, an assistant professor of biology at the University of California at San Diego, received his Ph.D. from Stanford University in 1964. He was a research associate in population biology at Stanford University and studied under Paul Ehrlich. Dr. Soule is primarily interested in reptilian thermoregulation, insular biogeography, and ecological and evolutionary theory with emphasis on the significance of intraspecific variation.



**Paul S. G. Stein** is an assistant professor of biology at Washington University. After receiving his Ph.D. in neurological sciences from Stanford University in 1970, he was a postdoctoral fellow at the University of California at San Diego.



**Payson R. Stevens** has studied molecular and biological science at the City University of New York and oceanography at Scripps Institution of Oceanography. He also took classes at the School of Visual Arts and worked with the Bread and Puppet Theater in New York. As a graphics consultant, he has used his skills in these fields to try to open the paths of curiosity to the poetry and music of biology. His DNA and Structure-Function interleaves are attempts to break away from the often alienating presentation of scientific material.



**Albert Szent-Györgyi** was born in Budapest, Hungary, and received his M.D. degree from the University of Budapest. In 1927 he took a Ph.D. at Cambridge University. He started research as a medical student in histology, then turned to physiology, pharmacology, bacteriology, and chemistry. In 1937 he was awarded the Nobel Prize for the elucidation and discovery of the catalytic functions of C<sub>2</sub>-dicarboxylic acids and the isolation of vitamin C. Dr. Szent-Györgyi has taught at universities in Holland, Hungary, and England. He is also a fellow of the National Academy of Sciences. He is currently director of the Institute for Muscle Research at the Marine Biological Laboratory in Woods Hole, Massachusetts.