Ruth Allen Award

The Ruth Allen Memorial Fund was established in 1965 by means of gifts from the estate of Dr. Ruth Allen through the generosity of her heirs: Sam Emsweller, Mabel Nebel, Hally Sax, and Evangaline Yarwood. The award, consisting of a certificate and income from the invested fund, is given for outstanding contributions to the science of plant pathology.

Robert J. Shepherd

Robert James Shepherd is awarded the Ruth Allen Award for his pioneering discovery of a plant virus (cauliflower mosaic virus) harboring a genome of double-stranded deoxyribonucleic acid.

This discovery was published in 1968 when RNA was regarded as the characteristic genomic component of all plant viruses. It therefore directed attention to other genomic possibilities for plant viruses and stimulated work confirming Dr. Shepherd's discovery and extending the range of economically important plant viruses known to contain DNA. This and the development of recombinant DNA technology and its potential for genetic engineering of plants added even more significance to the discovery of the DNA viruses. The possibility of using cauliflower mosaic as a cloning vector in the genetic modification of crop plants has led to efforts in several laboratories, including Dr. Shepherd's, to do transduction experiments with foreign genetic material covalently attached to the viral DNA.

Fundamental to this effort is an understanding of the structure and replicative strategy of DNA plant viruses. This has been the goal of Dr. Shepherd and his colleagues in a series of studies on cauliflower mosaic virus. The virus, its constituent capsid proteins and nucleic acid, and its associated inclusion body proteins have been characterized. Special attention has been paid to the structure of the viral genome that has been analyzed by restriction endonuclease mapping. The results of these studies have been reported in a series of significant papers and have also been reviewed by Dr. Shepherd (see Adv. Virus Res., Vol. 2, 1976; Annu. Rev. Plant Physiol. Vol. 30, 1979).

With this foundation established, Dr. Shepherd is ready to probe the host cell for viral constituents and precursors in relation to viral DNA replication. He and his co-workers have examined the nucleus as a site for viral DNA replication and the inclusion body as a cytoplasmic encapsidation site.

Born June 5, 1930, in Clinton, OK, Dr. Shepherd received a B.S. degree in 1954 and an M.S. degree in 1955 in botany and plant pathology from Oklahoma State University. From September 1955 to August 1956, he worked at the Virus Research Unit, Cambridge, England, as a Fulbright Scholar with Kenneth Smith and Roy Markham. He resumed graduate study at the University of Wisconsin, where he earned a Ph.D. degree in plant pathology in 1959. He remained at Madison on a postdoctoral appointment and joined the faculty of the Department of Plant Pathology as assistant professor from July 1959 until February 1961. Since March 1961, except for a brief assignment at the University of Arkansas (September 1965–February 1966), he has been with the Department of Plant Pathology, University of California at Davis, where he advanced to full professor.

At Davis, Dr. Shepherd and co-workers have studied the biological and biochemical characteristics of a number of economically important plant viruses besides cauliflower mosaic. His work has advanced our knowledge of viruses of the potyvirus group and of pea enation virus. He provided an early identification of maize dwarf mosaic virus and defined its carry-over reservoirs and insect vectors. His studies on the epidemiology of sugar beet viruses provided the basis for an area-wide host-free period for a successful virus disease control program.

Throughout his career, Dr. Shepherd has been a leader in applying new techniques to the study of plant viruses. Contributions resulting from this include the development of purification procedures for "difficult" viruses and the

application of various analytical techniques such as molecular cloning and DNA sequencing. The complete DNA sequence of an infectious bacterial clone of cauliflower mosaic virus has been determined recently in his laboratory. His knowledge of the rapidly developing technology of modern molecular biology has enhanced his outstanding abilities as a classroom teacher and research adviser for students and has made him a valuable resource to colleagues.

Dr. Shepherd has been a member of several APS committees and of the editorial boards of *Phytopathology, Virology,* and other journals dealing with plant viruses. He has also served as a member and chairman of the Plant Virus Subcommittee of the International Committee on the Taxonomy of Viruses. He has written several book chapters and reviews, and has participated in numerous national and international meetings on virology.