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.

Richard M. Lister

Richard M. Lister was born in 1928, in Sheffield, England. He received a B.Sc. degree from the University of Sheffield, and diplomas in agricultural science at Cambridge and Trinidad. He worked in West Africa for four years on cocoa swollen shoot, and did research in Cadman's laboratory at the Scottish Horticultural Research Institute. He received a Ph.D. degree from the University of St. Andrews in 1964. He was appointed professor of plant pathology at Purdue University in 1966, and named a Fellow of the American Phytopathological Society in 1973.

Dr. Lister has received recognition for his work with tobacco rattle virus, which elucidated the multipartite genome concept in plant virology. Previously, it was assumed that viruses were single, uniform, infective particles, and those that were not were considered defective. Dr. Lister's concept provided a key to explaining other multicomponent plant virus systems by validating an approach that challenged the traditional view of viruses.

By the early 1960's, it was clear that tobacco rattle virus usually produced both long and short particles in each infection, but the significance of this was not understood. Dr. Lister demonstrated that inoculations with only long particles produced infection in which copies of the RNA of long particles were replicated, but without coat protein. Although inoculations with only short particles produced no infections, he showed that the inclusion of short particles in inoculum was necessary to produce coat protein and coated virus particles of both lengths. He suggested that the RNA in long particles lacked the genetic information required for coating viral RNA and that the RNA in short particles lacked the information essential for initiating infection. This hypothesis led to our current understanding of multicomponent plant viruses as multipartite genome systems in which genetic information necessary for complete virus expression is present in two or more nucleoprotein particles. Later, Dr. Lister conducted genetic experiments with components of different strains of tobacco rattle virus that established the location of other genes on the short and long particles and provided evidence of the validity of his hypothesis. Confirmation of this concept has been obtained by others with the same and other viruses.

Dr. Lister's studies in Scotland established the importance of nematode-borne viruses in strawberry. He showed that such

viruses are seedborne, and that this was of epidemiological importance. At Purdue he worked on the mechanical transmission of apple viruses in herbaceous plants, and succeeded in isolating and characterizing major groups of filamentous viruses of apple and other tree fruits. He showed that rapid serological diagnostic methods for these viruses could be exploited in indexing programs and demonstrated that one group had structural properties of immunological significance. With S. A. Ghabrial and K. N. Saksena, Dr. Lister showed that tobacco streak virus and others are composed of spherical particles of different sizes with the same density. This was the first convincing demonstration of size differences in particles of a spherical plant virus, and it suggested that this property should be considered significant for classifying such viruses as ilarviruses.

Recently, Dr. Lister has become a leader in developing and extending applications of sensitive serological tests such as ELISA to screening plants and plant parts for virus infection, and he has applied this to studies of barley yellow dwarf viruses.