predicted and mapped two other nonstructural proteins. These nonstructural proteins plus the coat protein and the VPG account for the entire coding capacity of the potyviral genome.

The nominees have worked together effectively by combining cytological, serological, and molecular approaches to achieve results not attainable by any single approach. The early cytological investigations of Edwardson and Christie showed cylindrical inclusions were uniquely and consistently associated with potyviruses and created the impetus for the molecular studies that followed. Edwardson compiled and organized the literature on potyviruses in monographs that are used worldwide; he defined key issues to resolve relationships in the potyvirus group. Christie developed and refined light microscopic techniques that were essential for monitoring cylindrical and nuclear inclusions during purification. Hiebert developed purification procedures for the structural and nonstructural proteins of potyviruses, demonstrated that limited proteolytic degradation of potyviral capsid protein was important in potyviral serological analysis, directly associated cylindrical, amorphous, and nuclear inclusions with the viral genome, and delineated a potyvirus gene map. Puricuff detected cylindrical inclusions and associated structures in leaf extracts by electron microscopy and then contributed essential serological studies of structural and nonstructural proteins on the basis of his expertise with the detergent-based immuno-diffusion technique. This procedure allowed simple and reliable detection of structural and nonstructural viral proteins and provided valuable information on their relationships.

The purification of the cylindrical inclusions demonstrated that nonstructural proteins associated with plant virus infections could be studied and used in virus characterization. Serological studies of the purified inclusions indicated that the inclusions were virus-specific and unrelated to coat protein and normal host proteins. This was confirmed convincingly by in vitro translation analysis. Additional nonstructural proteins were identified and serologically characterized. The in vitro translation analyses have provided a detailed map of the potyviral genome and identified seven out of eight known genes on the genome. This indicated that the entire coding region of the genome was fully expressed and that all genes were synthesized in equimolar amounts via a polypeptide, which was subsequently processed. The inhibition of the proteolytic processing during in vitro translation by the small nuclear inclusion protein antiserum indicated this protein had a protease function. Thus, the study of the nonstructural proteins associated with potyviruses has led to an understanding of the organization and expression of the potyviral genome.

Dr. Hiebert’s recognition that potyviral capsid proteins readily undergo limited proteolysis with a loss of unique serological determinants has been utilized in the preparation of highly specific potyviral antisera useful in potyvirus taxonomy. Sequence analyses of a number of potyviruses indicate that potyviral capsid proteins differ primarily in 20-30 amino acid residues at the amino terminus, which can readily be lost by limited proteolysis during virion purification.

The research accomplishments of the nominees have been documented in numerous publications. Their cooperative interaction is reflected in more than 70 publications in which two or more of the nominees are co-authors. The research of the nominees has been cited in Markham’s publication entitled, “Landmarks in Plant Virology: Genesis of Concepts” (Annu. Rev. Phytopathol. 15:17-39) and in Brakke’s publication entitled, “Perspectives on Progress in Plant Virology” (Annu. Rev. Phytopathol. 26:331-350). Some of the technology generated by this research on potyviruses and potyviral nonstructural proteins has been summarized by Hiebert, Puricuff, and Christie in a paper entitled, “Purification and immunological analyses of plant viral inclusion bodies,” published in Methods in Virology Vol. 8. Recognition of the increasing role of viral inclusions in virus detection and diagnosis is shown in Christie and Edwardson’s feature article for Plant Disease (April 1986), “Light microscopic techniques for detection of plant virus inclusions.” Edwardson and Christie have also just published a four volume monograph on the potyviruses.

The technology developed by the nominees for inclusion studies is widely used by other workers. Their efforts have contributed not only to basic knowledge of the potyviruses and stimulated potyvirus research worldwide, but have fundamentally improved potyvirus diagnosis and disease control. The validity of diagnosis of potyviruses on the basis of cytological characteristics of inclusions originally proposed in 1966 has been confirmed, and the nominees are actively continuing their highly productive cooperative research on potyviruses at Gainesville.

Distinguished Service Award

The Distinguished Service Award honors individuals who have provided sustained outstanding leadership to the Society, while also furthering the science of plant pathology.

James F. Tammen

James F. Tammen was born in Sacramento, California, on February 27, 1925. From 1943 to 1945, he served in the U.S. Army Corps, where he advanced to navigator-bombardier and completed 35 missions of heavy bombardment in the European Theater. In 1945, he attended Sacramento College as a freshman, then transferred to the University of California, Davis, and later went to Berkeley from which he received a B.S. degree in plant science with an option in plant pathology, with honors, in 1949. In 1947, he married Marilyn L. McDonald. They have two daughters and four grandchildren.

Dr. Tammen’s first job was as a junior plant pathologist for the California Bureau of Plant Pathology at Riverside; he worked primarily on the diagnosis of the quick decline virus in citrus. He soon realized, however, that he needed more training, so in 1950 he enrolled in the graduate program in plant pathology at the University of California, Berkeley, where he worked on Fusarium roseum and the diseases it causes in wheat and carnation. He was awarded the Ph.D. degree in January 1954.

Upon graduation, Dr. Tammen worked as plant pathologist and, later, as chief of the Plant Pathology Laboratory, the State Plant Board of Florida, Gainesville, with responsibility for clinical, regulatory, and extension aspects of the diseases of ornamental plants. In 1956, Dr. Tammen moved to the Department of Plant Pathology at The Pennsylvania State University, where he advanced through the ranks of assistant, associate, and full professor and, in 1965, to head of the department. In 1976, Dr. Tammen moved to Minneapolis, Minnesota, where he served as dean of the College of Agriculture until 1981. At that time, he became president of Oglevee Associates, Inc., an international corporation dealing with the development and licensing of new technologies and products pertaining to the pathogen-free production of vegetatively propagated horticultural and
floricultural crops. From 1986 to 1989, he served as research scientist and director, Technology Transfer Office, Institute of Food and Agricultural Sciences, University of Florida, with primary responsibility for the transfer of technology from the public to the private sector. In 1989, he returned to State College, PA, as a research scientist in Advanced Horticultural Systems; he is again involved in production of pathogen-indexed floricultural crops. He also serves as adjunct professor of plant pathology at Penn State, where he occasionally teaches.

Dr. Tammen's contributions to plant pathology and to agriculture have been numerous and varied. His research on diseases of floricultural crops resulted in numerous refereed and popular publications. His administrative abilities as department head helped transform the Department of Plant Pathology at Penn State University from a relatively small department to one of the largest and better departments in the country. As dean of the College of Agriculture at the University of Minnesota, he designed and implemented a faculty salary enhancement program, strengthened the faculty performance evaluation and reward system for assigned activities in teaching, research, and extension, including recognition and reward for international aspects of these activities, and obtained the first continuing state funding of international agricultural programs from the Minnesota legislature. As president of Oglevee Associates, he became involved with the commercial production and marketing of pathogen-indexed pelargoniums, a business that grew from his early work at Penn State. Among his key contributions was the development of an innovative system for the production of pathogen-indexed Easter lilies. As director of Technology Transfer for the University of Florida, Institute of Food and Agricultural Sciences, he pioneered efforts to strengthen the partnership with the agricultural industry through proprietary, for-profit collaborative research programs.

All along, Dr. Tammen has been a sought after speaker and lecturer at various meetings, seminars, and symposia relating to the various positions he has held. For these efforts he has been awarded the American Carnation Society Research Award, the Award of Distinction of the International Geranium Conference, and a U.S. patent for "Process for the Production of Lilium Species." The American Phytopathological Society also recognized the special qualities of and outstanding contributions to the profession by Dr. Tammen by electing him an APS Fellow.

Dr. Tammen has been an active and supportive member of The American Phytopathological Society throughout his career. He has served on numerous APS committees, including the Committee for Long Range Planning, Sustaining Associates Committee, and the Special Committee for the Plant Doctor Degree. He has served as chairman of the Committee for Epidemiology and Meteorology and was the organizer and chairman of the Committee for Public Responsibilities and also of the Past Presidents Committee. Dr. Tammen was elected councilor of the Northeast Division of APS (1968–1970), councilor-at-large of APS (1970–1972), and then vice president, president-elect, and president of APS (1972–1975). He also served as an organizer and chairman of the Inter-Society Consortium for Plant Protection, as co-chairman of the Program Committee of the Ninth International Congress of Plant Protection, as a member of the Editorial Board of the Annual Review of Phytopathology, and as associate editor of Plant Disease. In every committee and in each capacity he served, Dr. Tammen brought enthusiasm, strong support of new ideas, public relations skills, and a "can-do" attitude that became contagious to everybody around him. For these reasons, his efforts and the efforts of those associated with him were often synergistic.

One of Dr. Tammen's greatest contributions to APS has been his role in establishing the APS Foundation. He served first as a member of the Special Committee for an APS Endowment Fund, which was established in 1984. The Special Committee recommended the formation of the APS Foundation and this was approved by the APS membership in 1986. Dr. Tammen was elected the first chairman of the APS Foundation and immediately, with the help of the Foundation Board members and the APS executive vice president, started organizing both the fundraising activities of the Foundation and the ways in which Foundation funds would be used to "make a difference" through projects of the Foundation, including the Genesis Program, which recognizes and promotes creative and innovative ideas in research, teaching, and extension; the Program for Enhancement of Graduate Education; and the Program to Enhance International Activities. Dr. Tammen worked tirelessly to organize and promote an APS Foundation Endowment-APS Building Fund Drive with a goal of $500,000 over five years. A good part of this goal had been achieved by August 1991, when Dr. Tammen completed his fifth year as chairman of the APS Foundation and turned the chairmanship over to his successor, Dr. B. G. Tweedy.

Today, The American Phytopathological Society thanks Dr. Tammen by honoring him with the Award of Distinguished Service. Dr. Tammen has served our profession and our Society as a professional plant pathologist, as a superb, dedicated colleague, as a capable administrator, and as a talented pathfinder of new ideas and goals for our Society. We owe him a great deal of gratitude for his time, effort, and dedication to our Society. Thank you Dr. Tammen. Congratulations. And, all the best from all of us.

**AWARDS**

**Award of Distinction**

1967 E. C. Stakman*  
1969 J. C. Walker  
1972 J. G. Horsfall  
1980 H. H. Flor  
1983 A. Kelman  
1983 G. A. Zentmyer  
1987 R. G. Grogan  
1988 M. K. Brakke  
1971 Tatsui Ishihara  
1971 Michiaki Tanaka  
1971 Kiyoshi Yoda  
1972 R. L. Stere  
1973 F. M. Latrell  
1974 A. C. Coheen  
1974 W. B. Hewitt  
1974 D. J. Raski  
1975 I. A. M. Cruickshank  
1976 T. O. Diener  
1977 J. W. Gerdesmann  
1977 D. H. Marx  
1978 L. M. Black  
1979 J. E. Vanderplank  
1980 H. H. Murakishi  
1981 R. J. Shepherd  
1982 Allen Kerr  
1983 S. Bartnicki-Garcia  
1983 C. E. Brakke  
1983 J. Ruiz-Herrera  
1984 Wen-Hsiung Ko  
1985 W. F. Ruchow  
1986 Richard M. Lister  
1987 Deane C. Arny  
1987 Steven E. Lindow  
1987 Christen D. Upper  
1988 Paul G. Alquist  
1989 Thomas P. Prone  
1990 Roger N. Bracey  
1991 George E. Templeton  
1992 B. J. Jacobson  
1980 H. J. Hopen  

**CIBA-Geigy Award**

1975 D. J. Hagedorn  
1975 A. L. Shigo  
1976 W. W. Hare  
1977 G. S. Abawi  
1978 A. L. Jones  
1979 A. A. MacNab  
1980 W. J. Moller*  
1981 S. M. Mirrettich  
1982 J. M. Dunaway  
1983 G. R. Safir  
1984 R. C. Rowe  
1985 S. E. Lindow  
1986 T. J. Burr  
1987 M. A. Ellis  
1988 C. T. Stephens  
1974 R. D. Berger  
1976 Karen Kearney  
1976 Joseph Kuc  
1976 Gary Shockley  
1978 J. F. Shepard  
1978 R. E. Totten  

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