

Tsune Kosuge, 1925–1988

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Tsune Kosuge, professor of Plant Pathology at the University of California, Davis, died of cancer on 13 March 1988. Born 28 November 1925 in Merino, Colorado, Professor Kosuge served for two years in the U.S. Army with the 442nd Infantry Regiment in Italy during World War II. He farmed for one year following the war before entering Colorado State University in 1948. He subsequently earned a B.S. degree from the University of Colorado in horticulture, an M.S. from Washington State University in plant pathology, and was awarded the Ph.D. in comparative biochemistry from the University of California, Berkeley, in 1959.

During his Ph.D. thesis research on coumarin metabolism in *Melilotus alba* with Professor Eric Conn, he obtained the first experimental evidence for the existence of phenylalanine ammonia lyase—the key regulatory enzyme controlling the flow of carbon into phenylpropanoid metabolism. The several papers resulting from his doctoral thesis were among the first enzymatic studies ever performed in the field of secondary metabolism of plants. After obtaining his Ph.D. Dr. Kosuge returned to the discipline of plant pathology and began to use his skills in biochemistry to examine the molecular basis of plant-microbe interactions. He joined the Plant Pathology faculty at UC Davis in 1961 and was advanced to professor in 1971.

Dr. Kosuge was chair of the Department of Plant Pathology for seven years from 1974 through 1980; served as senior editor of *Phytopathology*; was on the Editorial Board of *Plant Physiology*; and was elected a fellow of the American Phytopathological Society in 1976. He was program manager of the Biological Stress Program of the Competitive Research Grants Office for the first two granting years in 1978 and 1979; served as chief scientist of CRGO during 1983–1984; and continued to serve on the Policy Advisory Committee of CRGO until his death. He also was a member of the Advisory Panel on New Developments in Biotechnology of the Congressional Office of Technology Assessment and served on the Board on Basic Biology of the National Research Council. He was the driving force on the Davis campus behind the development of the McKnight Training Grant, which received \$1.5 million over a six-year period from the McKnight Foundation for graduate education in molecular biology of plant-microbe interactions. At the time of his death he was associate dean for the Biotechnology Teaching and Research Program in the College of Agriculture and Environmental Sciences on the Davis campus.

Dr. Kosuge's interest in the biochemistry and developmental physiology of plant disease is evidenced by significant contributions in the area of fundamental mechanisms of pathogenicity and the role of secondary metabolism in expression of virulence in prokaryotic plant pathogens. His demonstration of the role of indoleacetic acid (IAA) in the tumorigenic diseases of olive and oleander caused by *Pseudomonas syringae* subsp. *savastanoi*

in 1962 laid the foundation for a series of pioneering studies on the role of IAA as a virulence factor for this pathogen. His laboratory demonstrated a unique pathway for IAA production by the bacterium involving the conversion of tryptophan to IAA via indoleacetamide and later showed that the IAA genes were encoded on a plasmid in oleander strains but are chromosomal in olive strains. When the sequence of the genes involved in IAA production by *P. s. savastanoi* revealed significant homology to analogous genes in the T-DNA of *Agrobacterium tumefaciens*, the attention of numerous laboratories was focused on Dr. Kosuge's two decades of work in this area. His current research was focused on the mechanisms regulating IAA production by the bacterium, the evolutionary origin, and ecological significance of the IAA genes. He also continued to explore mechanisms of regulation of secondary metabolism in plants and was involved in numerous collaborative studies in this area throughout his career. He was the author of more than 90 research publications and numerous invited book chapters. He co-edited six books and was the current co-editor with Dr. Eugene Nester of the three volume series *Plant-Microbe Interactions*.

His pioneering research contribution to fundamental concepts of plant disease over more than two decades was recognized by the announcement of his election to the National Academy of Sciences on 25 April 1988. He was told of his pending election one day before his death by representatives of the Academy. It was additionally rewarding to Dr. Kosuge to learn that his friend and former major professor, Dr. Eric Conn, was to be accorded the same honor at the same time.

Dr. Kosuge made additional important contributions to plant pathology through his extensive teaching, both in formal lectures and in discussions with graduate students and peers. He taught courses in both biochemistry and plant pathology at UC Davis. He is remembered for his unusual ability to convey concepts through rigorously organized lectures, easy manner of presentation, and approachability. In all of his personal interactions he was universally respected for his enthusiasm, dignity, and a disarming sense of humility. Dr. Kosuge was highly generous of his time, research ideas, and experience. His research contributions stand as a testimonial to his tenacity and skill for all to see, but, to those who knew him personally, his humanity will be remembered as equal to his science.

Professor Kosuge is survived by his wife of 37 years, June; son Byron and daughter Becky; and seven sisters. He was preceded in death by a brother and a sister. Contributions to a living memorial in his honor can be made to the T. Kosuge Memorial Fund, Payable to the Regents, University of California and sent to the Department of Plant Pathology, University of California, Davis CA 95616.