

Insect pathology is an essential component of entomology and provides a non-chemical alternative for insect pest management. There are several groups of organisms that can infect and kill insects, including viruses, fungi, microsporidia, bacteria, protists, and nematodes. The dilemma in insect pathology has been that even though there has been a steady increase in our knowledge of insect pathogens, their share of the market for insect control remains minuscule. Why is this? Is it perhaps due to a lack of understanding on specific aspects of the pathogens, e.g., their ecology in the field? Or is the current state of our knowledge — even after more than 100 years of research — a limiting factor in making these microbes effective, economically acceptable, and widely accepted?

The twentieth and early twenty-first centuries have brought incredible advances to the field of insect pathology. From the landmark books by Edward Steinhaus (Chapters 1 and 2) and his founding in 1959 of a scientific journal fully devoted to insect and invertebrate pathology, which to date has published over 5000 peer-reviewed articles, we have seen the development of molecular biology concepts and tools as the most revolutionary scientific breakthrough of our era. These advances have led to the sequencing of hundreds of genomes, including those of various viruses, bacteria, and fungi of importance to insect pathology (Chapter 2). Molecular biology has also led to the elucidation of phylogenetic relatedness that has clearly challenged many of our basic assumptions, such as in the placement of microsporidia in the kingdom Fungi.

Our discipline has moved very rapidly since the publication of "Insect Diseases", edited by G. E. Cantwell (1974), "Insect Pathology" by Y. Tanada and H. K. Kaya (1993), "Principles of Insect Pathology" by D. G. Boucias and J. C. Pendland (1998), and the second edition of "Controle Microbiano de Insetos", edited by Sérgio Batista Alves (1998). A number of other edited books in insect and invertebrate pathology have also been published with a focus on more specific areas, such as those edited or co-edited by L. A. Lacey, to whom this second edition is dedicated. The vast amount of new concepts and technologies, as well as the enormous complexity of insect pathogens, make it nearly impossible for any specific scientist

to master the field and write a book covering the topic. The large database has led to this edited second edition of "Insect Pathology", which consists of 13 chapters. The book should satisfy the needs of insect pathologists, entomologists, mycologists, nematologists, protistologists, ecologists, biological control researchers, and students interested in all aspects of insect pathology in a single up-to-date information source. It should also serve as a resource for others in any of the biological sciences who are interested in insect pathology.

We thank Y. Tanada for allowing the use of the title of the book as a second edition of "Insect Pathology" and all the authors for their tireless efforts in contributing to the book. All royalties from this book will be donated to the Chris J. Lomer Memorial Fund, which supports scientists from developing countries to attend the Society for Invertebrate Pathology annual meetings. We express our deepest appreciation to the following chapter reviewers: T. G. Andreadis, J. S. Cory, D. Cox-Foster, M. S. Goettel, G. Hoch, M. S. Hunter, A. Koppenhöfer, J. C. Lord, and R. D. Possee. Special thanks to Pat Gonzalez and Kristi Gomez at Elsevier for their help and support throughout this project. Thanks also to Ann Simpkins for meticulously cross-checking references in each chapter without losing her good sense of humor. Finally, F. E. Vega and H. K. Kaya are most grateful to Wendy S. Higgins, Ian G. Vega, and Joanne Kaya for their loving support.

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Fernando E. Vega
Harry K. Kaya