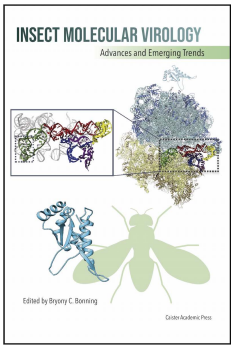
Insect Molecular Virology

Advances and Emerging Trends



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The substantial costs of insect-associated viruses, ranging from honey bee decline to human, animal and plant disease, have driven investment in molecular research toward mitigation. Interest in insect viruses extends beyond these negative impacts however with biotechnological insect virus-based tools used to produce recombinant proteins, for gene therapy, vaccine production, and virus-induced gene silencing.

The volume opens with a description of the insect virome and the explosion in discovery of new viral taxa. The following four chapters focus on anti-viral immunity including endogenous viral elements some of which may provide the molecular basis for long-term anti-viral immunity, the discovery of new viral suppressors of RNA interference, the role of new classes of small RNA molecules in dictating infection outcomes, and the *Drosophila* -dicistrovirus model as a powerful resource for insect molecular virology. The application of omics tools to insect-vectored plant viral disease, recent advances in tetravirus, polydnavirus, and baculovirus research are then described. The final chapters review progress in baculovirus expression vector and surface display technologies for use in laboratory and therapeutic applications.

Written by leading experts, this work is essential reading for students and scholars of insect virology and immunology and provides a valuable resource for users of baculovirus-derived tools.

Chapter 1. The Insect Virome: Opportunities and Challenges *(Bryony C. Bonning)*
Chapter 2. The Widespread Occurrence and Potential Biological Roles of Endogenous Viral Elements in Insect Genomes *(Carol D. Blair, Ken E. Olson and Mariangela Bonizzoni)*
Chapter 3. Sensing Viral Infections in Insects: A Dearth of Pathway Receptors *(Loïc Talide and Jean-Luc ImlerÂ and Carine Meignin)*
Chapter 4. miRNA Modulation of Insect Virus Replication *(Verna Monsanto-Hearne and Karyn N. Johnson)*
Chapter 5. Dicistrovirus-Host Molecular Interactions *(Reid Warsaba, Jibin Sadasivan and Eric Jan)*
Chapter 6. Looking Through the Lens of 'Omics Technologies: Insights Into the Transmission of Insect Vector-borne Plant Viruses *(Jennifer R. Wilson, Stacy L. DeBlasio, Mariko M. Alexander and Michelle Heck)*
Chapter 7. Advances in Tetravirus Research: New Insight Into the Infectious Virus Lifecycle and an Expanding Host Range *(Rosemary Ann Dorrington, Meesbah Jiwaji, Janet Awino Awando and Mart-Mari de Bruyn)*
Chapter 8. Polydnaviruses: Evolution and Function *(Michael R. Strand and Gaelen R. Burke)*
Chapter 9. Advances in Molecular Biology of Baculoviruses *(Manli Wang and Zhihong Hu)*
Chapter 10. Recent Developments in the Use of Baculovirus Expression Vectors *(Robert D. Possee, Adam C. Chambers, Leo P. Graves, Mine Aksular and Linda A. King)*
Chapter 11. Baculovirus as Versatile Vectors for Protein Display and Biotechnological Applications *(Chih-Hsuan Tsai, Sung-Chan Wei, Huei-Ru Lo and Yu-Chan Chao)*

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