

Insect Molecular Genetics

An Introduction to Principles and Applications

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(Retired)

Insect Molecular Genetics: An Introduction to Principles and Applications, Fourth Edition discusses the most recent advances and research in entomology and molecular genetics. It demonstrates the role that molecular genetics plays in pest management and basic insect biology research, assuming readers have little to no prior knowledge of the subject.

The newest edition of this internationally renowned book features updates on the latest trends and discoveries, such as CRISPR-Cas genome editing methods, epigenetic inheritance, DNA amplification techniques, and molecular phylogenies. Certain chapter topics, including P-element-mediated transformation and insect population molecular techniques, are condensed and updated to create a more comprehensive and concise read.

This is a foundational text and valuable resource for entomologists with limited training in molecular genetics. It will also be of use to pest-control advisors who need to understand the vocabulary and methods used to solve entomological issues.

Key Features

- Contains a new chapter on CRISPR-Cas and the basic biology of these systems related to arthropods
- Includes new and updated methods and examples of insect gene modification, with discussion of regulatory and ethical issues
- Offers compiled and comprehensive terminology at the introductory level
- Illustrated with diagrams and tables to explain key topics and concepts further

About the Author

Marjorie A. Hoy, Ph.D., is an emeritus eminent scholar in the Department of Entomology and Nematology at the University of Florida (UF) and professor emerita from the University of California-Berkeley. She was elected a Fellow of the Entomological Society of America and the American Association for the Advancement of Science. She is internationally recognized for her research that used genetic tools to improve biological control in agricultural crops, including classical biological control in citrus. She released a transgenic strain of *Metaseiulus occidentalis* (Acari: Phytoseiidae) in 1996, and helped define some of the risk issues associated with releasing genetically modified arthropods into the environment.

Hoy's laboratory conducted basic and applied research on natural enemies, and recently sequenced the transcriptome and genome of the predatory mite *M. occidentalis*. She pioneered the use of genetics to develop improved natural enemies of pest insects and mites. Hoy has published more than 350 scientific papers. In 2011, she published *Agricultural Acarology: Introduction to Integrated Mite Management*. Books edited by her include *Biological Control in Agricultural IPM Systems*, *Biological Control of Pests by Mites*, and *Recent Advances in Knowledge of the Phytoseiidae*.



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