

HOY, M. A. 1994. *Insect Molecular Genetics*. Academic Press; San Diego. xxii + 546p. ISBN 0-12-357490-0. Paperback. \$39.95.

This book introduces entomologists who have had limited training in genetics, biochemistry, and molecular biology to the field of insect molecular genetics. It was written for the expressed purpose of making this complex discipline both accessible and palatable to the DNA novice and, to this end, the author succeeds smashing.

The 15 chapters of this book are organized in 3 parts. Each chapter begins with an overview of the material to be covered and ends with relevant references. Part I, Genes and Genome Organization in Eukaryotes (five chapters), presents the “nuts and bolts” of molecular genetics and establishes a general framework for understanding the more difficult concepts developed in later chapters. The first 3 chapters teach the “ABC’s” of DNA and cell biology. Chapters 4 and 5 focus specifically on insect genomes and provide basic information on chromosomal and mitochondrial DNA, genes, genome organization, and development in insects. As a matter of necessity, many of the examples used throughout this book to illustrate various aspects of insect molecular genetics are drawn from the *Drosophila* literature. The author has made a special effort, however, to emphasize recent molecular studies on other insect species.

Part II, Molecular Genetic Techniques (also 5 chapters), describes the methods used by molecular biologists to manipulate and analyze nucleic acids. Chapters 6-9 cover the fundamentals of DNA cloning, sequencing, and the polymerase chain reaction (PCR). Essential concepts are portrayed by simple flow charts, tables, and diagrams, and many of the procedural details are presented in “cook book” format. This wealth of technical information is presented in such an organized and straightforward manner that the DNA neophyte should be able to digest the material without feeling overwhelmed or intimidated. The final chapter of Part II (Chapter 10) provides general information on the use of a transposable element (P-element) for transferring modified genes to *Drosophila* and, thereby sets the stage for later discussions on insect genetic engineering.

The "meat" of the book from the entomological perspective is contained in Part III (Applications to Entomological Problems). This part builds on the conceptual foundation that was established in previous sections and offers something for the experienced and budding insect molecular geneticist, alike. The material presented is a blend of what has been done in the past, present research needs, and what could be accomplished in the future. The molecular details of sex determination and behavior in insects are explored in Chapters 11 and 12. Chapters 13 and 14 describe various molecular genetic techniques, explain how these molecular tools have been used to answer questions relevant to insect systematics and ecology, and discuss which type of molecular analysis is best suited for particular applications. As a finale, Chapter 15 takes the reader on an entomological tour of "Jurassic Park". It is an imaginative exposition on the future role of genetic engineering for modifying both pest and beneficial arthropods for use in pest management programs. A comprehensive glossary and a brief historical summary of significant events and accomplishments in genetics and molecular biology are included at the end of the book.

As the author points out in the preface, entomologists have been reluctant to embrace the discipline of molecular genetics, primarily because of fears about technical difficulty and a complete inability to relate to the *Drosophila* literature. This attitude is certainly understandable, considering the fact that many entomologists have had little or no training in genetics and/or molecular biology. This book cracks open the molecular door and gives those entomologists who are bold enough to peek inside a glimpse of how these powerful techniques can be used to study practical problems in insect systematics, ecology, physiology and pest management. The motivational carrot has been offered. It is now up to the entomological community to pull the cart forward.

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