

PREFACE

When Elsevier published the seven-volume series "Comprehensive Molecular Insect Science" in 2005, the original series was targeted mainly to libraries and larger institutions. While this gave access to researchers and students based at those institutions, it has left open the opportunity for a new volume, one tailored more specifically to aspects of insect development comprising morphogenesis, molting and metamorphosis. Such a volume would be of considerable value to an additional audience in the insect research community – individuals who either had not had access to the larger work or desired a more focused treatment of these topics.

As the creator and Editor-in-Chief of the original series, not to mention someone who has been involved with editing almost 30 volumes and who edited a major journal in the area for some 19 years, I had a paternal view of this volume. The chapters selected for the noted theme of development have previously been edited with vigor by me and my two co-editors (Kostas Iatrou and Sarjeet Gill) of the Comprehensive series and they are presented here as a strong combination of articles on development, newly available to the individual insect researcher. I felt that the volume should be diverse in the sense that it includes sample chapters from each volume of the series, and the major theme of Development was chosen in part because of my own research interests and experience but also because of the obvious interest of the biological and biomedical research communities in that topic. A significant portion of this new volume is involved with insect hormones that control many aspects of insect development. Only the major hormones are noted here, but the references in those chapters should prove invaluable to researchers and students in both the fields of development and its hormonal control.

Each chapter chosen for this volume has a developmental twist, some more obvious than others. The chapters on "Homeotic Genes," "Drosophila Limb Development," "Early Embryonic Development," "Hormonal Control of Form and Function of the Nervous System," and "Programmed Cell Death" deal primarily with embryonic development. Chapters on "The Prothoracicotropic Hormone," "The Ecdysteroid Receptor," "The Juvenile Hormones," and "Circadian Organization of the Endocrine System" are endocrinological in nature, hormones being so very important for the control of post-embryonic morphogenesis, molting and metamorphosis. The latter contribution explores the circadian control of these processes, a subject of great relevance to almost every phylum of organisms on this planet. The chapters on "Transposable Elements for Insect Transformation," "Chitin Metabolism in Insects," "Cuticular Proteins," and "Insect Cytochrome" are of critical importance because the chitinous exoskeleton is a major reason for the success of insects on this planet and because the molting process involves both the breakdown of the old exoskeleton and the synthesis of a larger or different type of exoskeleton leading to growth and/or differentiation. Chapters on "Insect G Protein-Coupled Receptors," "Insect Transformation for Use in Control," and "Insect Growth- and Development-Disrupting Insecticides" have been selected for their emphasis on the use of technologies affecting growth processes or phenomena at the cell and molecular levels.

Several years of effort was expended by me and my colleagues in choosing topics for the seven-volume series, in the selection of authors and in the editing of the original manuscripts and galley proofs. Each and

every chapter in those volumes was important, and even essential, to make it a Comprehensive series. Nevertheless, I feel strongly that having this volume with the accumulated material and many references on these important aspects of insect development will be of great help to professional insect biologists, to graduate students conducting research for advanced degrees and even to undergraduate research students contemplating an advanced degree in insect science.

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