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BOOK REVIEW

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Review of Chemical Synthesis of Hormones, Pheromones and Other Bioregulators

Chemical Synthesis of Hormones, Pheromones and Other Bioregulators. By Kenji Mori (The University of Tokyo, Japan). John Wiley & Sons, Ltd.: Chichester. 2010. xiv + 300 pp. $145. ISBN 978-0-470-69724-5.

Three cheers, colleagues, for an authentic masterpiece! In *Chemical Synthesis of Hormones, Pheromones and Other Bioregulators*, Kenji Mori describes the synthesis of over 170 natural products, each of which plays an important role in the life of the organism that produces it. Syntheses of a vast array of polyketides, isoprenoids, alkaloids, and other bioactive compounds isolated from bacteria, fungi, plants, and animals are presented, and the strategy behind each synthesis is clearly explained. The extensive use of structural formulas makes each synthesis easy to follow. Many of these target compounds or analogs thereof have the potential for practical application in the realms of agriculture and medicine, and each of them serves an important physiological or ecological function. An excellent graduate course on the chemistry of natural products could be based on this volume.

An especially interesting chapter in this book, "Synthetic Examination of Incorrectly Proposed Structures of Biomolecules," illustrates the underappreciated role that synthesis sometimes plays in structure determination. In an age where many natural product structures are being proposed almost entirely on the basis of mass spectrometric and nuclear magnetic resonance analyses of microgram quantities of components present in complex mixtures, Mori demonstrates that synthesis becomes an increasingly important step in confirming proposed structures and stereochemistry as well as in identifying which components in an extract are actually responsible for the biological activity of interest. In this context, even the synthesis of incorrectly assigned structures actually provides valuable information.

What is remarkable about this book is that it summarizes essentially the entire life work of a single, outstanding synthetic chemist who has recognized the significance and potential scientific value of devising and carrying out syntheses of carefully chosen examples of naturally occurring signaling molecules. Mori has contributed more to this area of research than anyone else; he is literally without peer in this exciting field. His idiosyncratic, modest writing style and the occasional biblical quotation give this book a unique character.

This volume will reward the attention of anyone interested in organic synthesis, in natural products chemistry, or in chemical ecology. It should inspire more synthetic organic chemists to pay attention to current research on the roles played by small molecules in the lives of organisms, and it should encourage biologists and structural chemists to identify, contact, and collaborate with chemical colleagues who are mentally and physically equipped to carry out stereospecific syntheses of nature's signal molecules.

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