

Natural Products in Chemical Biology

Natural products chemistry has achieved enormous progress during the past few years. Not only has the synthetic repertoire of chemists expanded greatly, there have also been important increases of knowledge in the broader scope of investigations and in the understanding of natural products biosyntheses. This book is devoted to answering three important questions of natural products chemistry: Where does biodiversity come from? What is the current status in the field of natural products biosyntheses? Which natural products are important for drug development?

These questions provide the basis for the central theme of the book and the arrangement of the contents, which consist of 14 chapters. For each chapter the editor has managed to gather a team of high-profile researchers, mostly from academia but also from industry. The introductory chapters on biodiversity begin with a systematic presentation of plant natural products, classified according to their biosynthetic origin. The following two chapters comprise an extensive survey of marine natural products arranged according to their structures (Chapter 2), and microbial natural products arranged according to their bioactivities (Chapter 3). Thus prepared, the reader learns in the subsequent chapters about non-ribosomally synthesized peptides and their biosynthesis (Chapter 4), plant terpenoid biosyntheses (Chapter 5), and polyketide biosyntheses (Chapters 6–8). In each case the biosynthetic pathways are described with the help of clear illustrations. By devoting three chapters to polyketides, the book emphasizes the importance of this particular biosynthetic pathway. These chapters deal with the biosynthesis of fungal polyketides (Chapter 6) and of modular polyketides (Chapter 7), and with complex polyketide polyethers (important enough to be treated separately in Chapter 8). Only the order of these chapters is disputable, and it may have been more

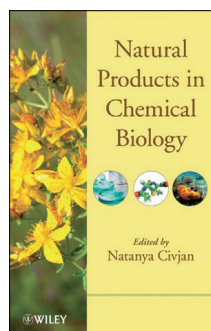
appropriate to begin with Chapter 7. These contributions are followed by an article on alkaloid biosynthesis (Chapter 9). Chapter 10 on co-factors is especially interesting, because this important topic is rarely covered in books about natural products. The second big theme of this book is represented by an article on antibiotics (Chapter 11), which describes investigations of the biosynthesis and, most importantly, ways to increase the structural diversity by engineering of biosynthetic pathways.

The final part of the book is devoted to natural products of pharmacological relevance; it contains one contribution from industry (Chapter 12), with a discussion of various natural products classes, their target areas, and the most recent developments in the field. This is complemented by two contributions from academia. Chapter 13 describes anti-cancer drugs derived from natural products, and Chapter 14 discusses plant natural products, their origins, and their significance for drug development.

In summary, this is a really good book from a number of prominent research groups who have made important contributions to their fields. Some chapters are well suited for newcomers to the subject, as well as for teaching or for reading by interested students. Experts can also acquaint themselves with related topics in other natural products areas. Regrettably, it has to be noted that the recently rapidly developing field of ribosomally synthesized and post-translationally modified peptides (RiPPs) is not recognized in a chapter of its own. Likewise, with regard to polyketides synthesis, recent developments about tetracycline antibiotics are not mentioned. It is somewhat unfortunate that the publishing house did not put much effort into unifying the style of structure formulas according to common standards.

Roderich D. Süssmuth
Department of Chemistry
Technische Universität Berlin (Germany)

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