

# Book Reviews

**Medicinal Chemistry: Principles and Practice, 2nd edition.** Edited by F. D. King (GlaxoSmithKline, Harlow, UK). Royal Society of Chemistry, Cambridge, UK. 2002. xxvii + 450 pp. 15.5 × 23.5 cm. £39.50. ISBN 0-85404-631-3.

The first edition of *Medicinal Chemistry: Principles and Practice*, published in 1994, consisted of a collection of the lectures presented at the 7th Royal Society of Chemistry Medicinal Chemistry School, held at the University of Kent in Canterbury during June and July of 1993. It has served as an essential reference source for students of medicinal chemistry for almost a decade. There is little doubt that the newly updated and expanded edition will become a valuable successor to the first edition. The publisher promotes the new edition as both an introductory resource for students and scientists new to the discipline and a source for updates about new technology for more experienced scientists. After my review of the text I agree with the publisher's claims.

*Medicinal Chemistry: Principles and Practice* is a collection of 20 chapters written mostly by industrial scientists in the United Kingdom. Naturally, the general approach to topics in the text tends to take on an industrial, rather than academic, slant. It is this industrial viewpoint, in my opinion, that makes the text unique and most valuable. The key topics in drug design are presented from the perspective of the practicing industrial investigator, which results in a focus on practical applications. "Patentese", screening for optimization, compound libraries and arrays, and methods for estimating physicochemical and pharmacological properties are just a few of the areas covered that make the text unique.

In addition to updating topics covered in the first edition, this edition addresses several new topics including combinatorial chemistry, genomics, and chemoinformatics. Chapters are titled Drug-Receptor Interactions; An Introduction to Ion Channels; Intracellular Targets; Enzyme Inhibitors; Biological Evaluation of Novel Compounds; Pharmacokinetics; Drug Metabolism; Toxicology in the Drug Discovery Process; Chemical Development; Physicochemical Properties; Quantitative Structure–Activity Relationships; Computational Chemistry and Target Structure; Patent Medicine; An Introduction to Molecular Biology; Strategy and Tactics in Drug Discovery; Combinatorial Chemistry: Tools for the Medicinal Chemist; The Identification of Selective 5-HT<sub>2C</sub> Receptor Antagonists; A New Approach to the Treatment of Depression and Anxiety; The Identification of the HIV Protease Inhibitor Saquinavir; Discovery of Vioxx (Rofecoxib); and NK1 Receptor Antagonists.

*Medicinal Chemistry: Principles and Practice* should not be thought of as a comprehensive medicinal chemistry text; instead, it provides an overview or an advanced introduction to the field. The writers of this book take a no nonsense approach to describing the field, focusing on basic underlying principles coupled with practical examples. It is an excellent text, appropriate for advanced undergraduate students, graduate students, and postgraduates entering the field of medicinal chemistry and can serve as a very nice reference for those already established in the field. I can imagine that the text would also be a valuable asset

to scientists who are unfamiliar with medicinal chemistry but want to gain an understanding for and appreciation of the field.

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**Citrus: The Genus *Citrus*.** Edited by Giovanni Dugo (University of Messina, Italy) and Angelo Di Gaicomo (Stazione Sperimentale per l'Industria delle Essenze e dei Derivati degli Agrumi, Italy). Taylor & Francis, London. 2002. xiv + 642 pp. 7 × 10 in. £91.00. ISBN 0-415-28491-0.

This book, a recent contribution to the continuing series "Medicinal and Aromatic Plants—Industrial Profiles", reviews commercially important chemical constituents from *Citrus* sources. The primary focus of the book is the description of the origins, methods of industrial access, characterization, and quantification of commercially important essential oils from *Citrus* plant materials and citrus juice processing coproducts.

The book provides an extensive review of industrial processing methods for acquiring citrus essential oils from a variety of citrus raw materials and offers a comprehensive compilation of specific terpenoid profiles of the essential oils obtained from plant materials and processing coproducts of a variety of commercial *Citrus* species. The compiled citrus essential oil terpenoid data appear to represent the most complete centralized tabulation of citrus essential oil constituent composition currently available.

However, the book includes no description of citrus juice constituents and provides only a superficial review of nonvolatile natural citrus compounds with developing commercial interest (flavonoids, limonoids). The chapter organization significantly reduces its effectiveness in connecting the medicinal and aromatic properties of specific essential oils or specific terpenoids in citrus essential oil to citrus-derived consumer products. The lack of grammatical polish in some of the chapters impacts readability.

This book will be an important resource to readers desiring specific information about commercial access to citrus essential oils and to the characterization of citrus essential oils from defined citrus sources.

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**The Art of Scientific Writing, Second Edition.** By Hans F. Ebel (University of Heidelberg), Claus Bliefert (Wiley-VCH), and William E. Russey (Juniata College). Wiley-VCH, Weinheim, Germany. 2004. xii + 596 pp. 17 × 26 cm. €34.90 (paper). ISBN 3-527-29829-0.

Since the electronic revolution has dramatically changed the way we communicate science, this completely revised and updated second edition of *The Art of Scientific Writing* by Ebel, Bliefert, and Russey should be welcomed with open arms. The authors acknowledge that today's writing techniques are "radically different" from those of yesteryear while making clear that good writing is still the foundation of effective scientific communication. The book provides a comprehensive review of how to produce quality written scientific work in the modern world, from its conception in the laboratory notebook to finished works including dissertations, reports, journal articles, and books. There is something here for everyone, from the undergraduate student writing up his or her first research project to the senior scientist writing a ground-breaking communication.

The book is divided into two sections. Part I focuses on how to put together the most common forms of published work, with great attention to detail and plenty of practical advice. At the start of each chapter the authors pose interesting points for consideration, present some history and options, and then proceed to lay out a set of practical guidelines for preparation of the document. The authors establish in Chapter 1 that one of their principal goals is to help raise the typical scientist's "level of consciousness" toward what constitutes effective professional communication. They begin with the generation of accurate and detailed reports from lab notebook entries, a basic skill that must be instilled in students early in order to prevent confusion and frustration later on! The production of a well-organized and thorough dissertation (thesis) is addressed in Chapter 2, providing another very useful resource for graduate students and research advisors. Journal articles are discussed in detail in Chapter 3, where considerable space is devoted to the use of word-processing programs to prepare a manuscript. For scientists just beginning their writing careers, the entire submission and review process is also explained in this chapter. For those further along, helpful tips for preparation and publication of books can be found in Chapter 4.

Part II deals with materials, tools, and methods. Chapter 5, entitled "Writing Techniques" might also have been named "An E-publishing Tutorial", as the authors provide direction on many computer-related topics from literature search engines to page formatting. The chapters that follow give widely accepted and practical guidelines for preparation of those essential elements used to express scientific concepts and present data: formulas, figures, and tables. A discussion of how to properly cite the literature and manage one's own reference collection rounds out the volume. The authors approach their topic with a philosophical yet practical attitude, leaving few stones unturned. *The Art of Scientific Writing* is a worthwhile addition to anyone's laboratory reference shelf.

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**Protein Crystallography in Drug Discovery.** Edited by R. E. Babine and S. S. Abdel-Meguid (Suntory Pharmaceutical Research Laboratories). Wiley-VCH Publishers, Weinheim. 2004. xvi + 262 pp. 7 × 10 1/2 in. \$175. ISBN 3-527-30678-1.

The book is a follow-up of another volume on structure-based ligand design that appeared in the same series in 1997. This book is a state-of-the-art overview of relevant results and techniques for structure-based drug design, from a slightly different perspective. The main goal of this volume is to offer an overview of protein crystallography in drug design. The editors did not intend to create a comprehensive review of every aspect of drug design; rather, they present a few up-to-date results and techniques that are more likely to stimulate the reader.

The book is divided into 11 chapters. Some chapters are very focused and summarize a very large amount of information, whereas other chapters address a broader, general audience. The chapters on novel techniques present particular methodologies that are becoming common in the field of structure-based drug design.

The first two chapters review nuclear hormone receptors and protein kinases. Both chapters are focused and present a very large amount of information. The illustrations are very helpful, although more figures showing the proteins discussed could make the text even clearer, especially in the second chapter. The next two chapters present the proteasome and the ribosome as drug targets. These are very large, challenging macromolecules from the drug design point of view. Both chapters are well written and illustrated, although some figures are cluttered.

Chapter 5 presents details of drug design for cathepsin K and provides a clear description of the iterative structure-based design process, whereas Chapter 6 focuses on protein-based virtual screening of chemical databases. Both chapters are very clearly written and address a broader audience. Chapter 7 describes the protease inhibitor ecotin, especially its use in the study of serine protease–substrate interactions. This chapter emphasizes some practical aspects such as expression, purification, and crystallization of ecotin–protease complexes. Chapter 8 presents orthogonal ligand–receptor pairs that might have future application in gene therapy. The examples illustrate the use of crystallography for the design of mutant proteins for additional studies.

The last three chapters describe methodologies: protein engineering to promote crystallization, high-throughput crystallography, and microcrystallization. Many ideas presented here are very useful for structural biologists. The use of microfluidic devices for crystallization is an emerging technology, and while it is useful because it employs small sample quantities, it is not yet as widespread as classic crystallization techniques.

In conclusion, this book can be a useful resource for crystallographers, medicinal chemists, and people in the field of structure-based drug design. The majority of the chapters are well written and very appropriate for the framework of the volume, addressing problems beyond basic drug design. Some of the chapters are very specialized and therefore of limited relevance for broader audiences, but the book contains ideas useful to anybody in the field of structural biology.

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**Biodiversity.** By Christian Lévêque (CNRS) and Jean-Claude Mounolou (Université d'Orsay). John Wiley & Sons, Inc., Hoboken, NJ. 2004. xi + 284 pp. 6 × 9 in. \$45.00. ISBN 0-470-84957-6.

This book provides a scientific audience with an overview of the ecological and evolutionary processes that influence local and global biological diversity, with frequent references to the economic value and uses of biodiversity and the social issues concerning the protection of biodiversity. The authors use Chapter 1 to define the various concepts of biodiversity used by nongovernmental organizations, the Food and Agriculture Organization of the United Nations, and the biotechnology and pharmaceutical industries. The interests of these three stakeholders are revisited throughout the text, often illustrating divergent opinions on complex issues.

Chapters 2 through 5 present a good review of the evolutionary and ecological perspectives of biodiversity. After introducing the basic principles of taxonomy and the geographic distribution of biodiversity, the authors highlight the evolutionary processes of adaptation, speciation, and extinction. Biodiversity is presented as the outcome of both equilibrium (e.g., competition, predation, and island biogeography) and nonequilibrium (e.g., disturbance, fragmentation, and temporal variability) ecological processes. The authors also provide examples of the relationships between biodiversity and ecosystem functions.

Chapters 6 through 10 concern the impacts of humans on biodiversity (e.g., overexploitation, changing land use, and invasive species), arguing that long-term benefits from the conservation of biodiversity are often overpowered by short-term economic gains. The authors discuss these impacts in the context of human health, through examples such as the emergence of new pathogens, the development of antibiotic resistance, and the pharmaceutical uses of natural products. The authors summarize several debates regarding the conservation of biological diversity, including

the economic values of ecosystem services and the establishment of protected natural areas versus the sustainable use of biodiversity.

As a broad survey of current topics in biodiversity and conservation, this book is successful; for readers seeking a deeper understanding of specific topics, this text is very limited. Many of the chapters include excellent case studies; however, original source materials are rarely cited. While lists of references and Internet links are provided at the end of the book, many of these are not cited in the text. More frustrating are the frequent misspellings of scientists' names, which will impair any attempts to find additional papers by these authors. Furthermore, the uneven quality of the English translation is at best distracting and sometimes creates factual errors. For example, a translation error in one case study describes the extinction of the Emperor Penguin in the North Atlantic, a species that is alive and well in the Southern Hemisphere. This case study actually refers to the widely known extinction of the Great Auk by overhunting.

Despite the lack of depth and the numerous editorial errors, this book provides an approachable introduction to complex issues related to biodiversity. For example, the pharmaceutical benefits of biodiversity are frequently cited as reasons for conservation; however, conservation efforts can prevent drug discovery programs from accessing these resources. I would recommend this book to natural products chemists interested in understanding the ecological, political, economic, social, and ethical viewpoints surrounding the use and conservation of biological resources.

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