Book Reviews

Dictionary of Marine Natural Products with CD-ROM. Edited by John W. Blunt and Murray H. G. Munro. Chapman and Hall and CRC Press, Boca Raton, FL. 2007. cxix + 2415 pp. 22 × 28 cm. ISBN 978-0-8493-8216-1. $495.00.

The Dictionary of Marine Natural Products is a comprehensive database of marine natural products. It is a subset of the Dictionary of Natural Products (DNP) database. The compounds in the dictionary are classified into nine major structural types: aliphatic natural products, carbohydrates, oxygen heterocycles, simple aromatic natural products, terpenoids, steroids, amino acids and peptides, alkaloids, and polypyrroles. Concise, but very informative, descriptions of each structure type provide readers with clear definitions along with examples of marine natural products. In addition, the section on the classification of organisms gives readers a very general overview of the different organism types.

The Dictionary is arranged alphabetically by entry name. Each entry contains entry name, CAS registry number, structural formula, molecular formula, molecular weight, physical data, derivatives, biological source, and bibliographic references. Many compounds are included as derivatives of main entry compounds, but important derivatives have their own individual cross-referenced entries. This section of the Dictionary has 2008 pages and contains more than 30000 compounds derived from marine organisms. The primary literature has been reviewed up to mid-2006. The Dictionary also includes three printed indices: name index, type of compound index, and type of organism index.

A CD-ROM is included, which allows users to search the entire contents of the Dictionary. The CD-ROM contains searchable indices on 35 text fields as well as structure and substructure search. The software is easy to use, and the search is fast and efficient. Unfortunately, the program can only run on a PC, not a Mac.

Overall, this reviewer is deeply impressed with the huge efforts by both editors to publish the Dictionary of Marine Natural Products. This is an excellent reference book for researchers who are interested in marine natural products.

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Prodrugs: Challenges and Rewards. Parts 1 and 2. Edited by Valentino J. Stella, Ronald T. Borchardt, Michael J. Hageman, Reza Oliyai, Hans Maag, and Jefferson W. Tilley. Springer, New York. 2007.viii + 1464 pp. 18 × 26 cm. ISBN 9780-387-49782-2. $599.00.

This book should be an excellent source of information for those who turn their attention to the use of prodrugs in drug discovery/development. The book will address many questions such as: Are there any literature examples where the problems like ours are addressed by prodrugs? What promoieties have been tried previously for a functional group that we are interested in? What are the likely issues for development if we go with a prodrug strategy? The book illustrates all the important prodrug concepts and approaches that have been described in the literature covering up to 2004.

Part I of this book has two chapters. The primary editor, Valentino Stella, opens Chapter 1 entitled "A Case for Prodrugs". It is an authoritative overview on prodrugs (∼30 pages) justifying the use of such in modern drug discovery programs. Chapter 2 deals with various "problem-solving" prodrug approaches categorized by drug delivery limitations with the active parent molecules such as poor permeability, low solubility, high metabolism (both presystemic and systemic), and inadequate delivery to target tissues (e.g., cancer, liver, colon, brain). A number of experts in each of these areas have contributed to this chapter (∼670 pages). Part 2 of the book is divided into three sections. The first section (∼320 pages) describes a number of prodrug design strategies based on functional groups that the parent molecules have, to which promoieties are attached. This is of particular use to synthetic medicinal chemists. The second section (∼100 pages) focuses on preclinical and clinical evaluation of prodrugs including studies on ADME, formulation, and safety. The third and last section illustrates 25 case studies of marketed prodrugs (∼250 pages). These rewarding stories will certainly trigger future endeavors in prodrug research.

In editorial aspects, there are several occasions that the same prodrugs are exemplified in two or more different chapters. The drawing format of chemical structures is inconsistent throughout the chapters. Some points deserve more detailed descriptions but listed only literature citations. However, these are only minor issues, and they should not minimize the great benefits that this book would bring to the drug-discovery community. Without a doubt, this book will be very handy for anyone who is involved in prodrug discovery programs, whether new or experienced.

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Antisense Drug Technology: Principles, Strategies, and Applications. Second Edition. Edited by Stanley T. Crooke. CRC Press and Taylor & Francis Group, New York. 2007. xvii +825 pp. 18 × 26 cm. ISBN 0-8493-8796-5. $229.95.

The second edition of this book accurately mirrors this rapidly maturing and highly promising branch of medicinal chemistry. This edition is a cutting edge document including up-to-date cited references and a variety of compelling clinical case studies, and it of course retains the superb basic principles and background to antisense drug technologies featured in the first edition.

The second edition begins with a review of the mode of action of antisense oligonucleotides (ASO) followed in Part II by a review of the basics of ASOs themselves, from medicinal chemistry to delivery of the ASOs. In Part III Dr. Crooke and

his team delve into the specifics of hybridization-based drugs, and in particular 2′-*O*-methoxyethyl oligonucleotides, which provide an increase in stability and hybridization affinity over first generation candidates (this is one of the more mature classes of ASOs with some six candidates in clinical trials) and duplex RNA drugs. Part IV addresses other chemical classes of these drugs, and finally Part IV discusses potential therapeutic applications of all of these drug candidates.

At the conclusion of the preface to the first edition of Antisense Drug Technology: Principles, Strategies, and Applications (in 2001), Dr. Crooke stated that "We were arguably at the end of the beginning of this technology." The question that this second edition sets out to answer is, "Where does this technology stand today?" Given that the aptamer "mucagen" is arguably the only new drug to market originating from this technology since the first edition, published in 2001, it could be debated that this branch of medicinal chemistry is *still* at the end of the beginning.

This issue aside, the editor and multiple authors do provide an answer to where this technology stands today, which to my mind reflects reality. That is, antisense drug technology, which is a microcosm of the science of drug discovery/technology itself, is a myriad series of opportunities or candidates that at the beginning of the drug discovery process are all equally promising. These opportunities/candidates are then winnowed down through the power of a variety of iterative studies and finally resolve to a drug candidate (which, by use of the 20/20 aspect of hindsight, may appear to have been an obvious winner) that finally makes it to market.

As with the first edition, this current book will be out of date even before it reaches the book shelves. But this does not detract from what is a valuable resource and moreover a fascinating if focused treatise on the science of drug discovery and more specifically antisense drug technology.

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The Art of Drug Synthesis. Edited by Douglas S. Johnson and Jie Jack Li. John Wiley & Sons, Inc.,Hoboken, NJ. 2007. xv + 276 pp. 18.5 × 26 cm. ISBN 978-0-471-75215-8. $90.00.

Anyone who enjoyed the editors' previous book "Contemporary Drug Synthesis" will want to have a look at this outstanding new book. Among the most useful qualities of this remarkably uniform multiauthored book are the descriptions of the science behind the progression of a first-generation drug to later generations and the corresponding synthetic chemistry from initial laboratory to commercial production routes.

The first chapter entitled "The Role of Medicinal Chemistry in Drug Discovery" is a very brief introduction to drug discovery. The second chapter entitled "Process Research: How Much? How Soon?" provides a useful overview of process chemistry. The remaining 15 chapters describe the synthesis of 54 drugs from 15 therapeutic classes; these are sorted into 3 sections: Cancer and Infectious Diseases, Cardiovascular and Metabolic Diseases, and Central Nervous System Diseases. Chapter titles in these three sections are (Chapter 3) Aromatase Inhibitors for Breast Cancer: Exemestane (Aromasin), Anastrazole (Arimidex), and Letrozole (Femara); (Chapter 4) Quinolone Antibiotics: Levofloxacin (Levaquin), Moxifloxacin (Avelox), Gemifloxacin (Factive), and Garenoxacin (T-3811); (Chapter 5) Triazole Antifungals: Itraconazole (Sporanox), Fluconazole (Diflucan), Voriconazole (Vfend), and Fosfluconazole (Prodif); (Chapter 6) Non-Nucleoside HIV Reverse Transcriptase Inhibitors; (Chapter 7) Neuraminidase Inhibitors for Influenza: Oseltamivir Phosphate (Tamiflu) and Zanamivir (Relenza); (Chapter 8) Peroxisome Proliferator-Activated Receptor (PPAR) Agonists for Type 2 Diabetes; (Chapter 9) Angiotensin AT_1 Antagonists for Hypertension; (Chapter 10) Leading ACE Inhibitors for Hypertension; (Chapter 11) Dihydropyridine Calcium Channel Blockers for Hypertension; (Chapter 12) Second-Generation HMG-CoA Reductase Inhibitors; (Chapter 13) Cholesterol Absorption Inhibitors: Ezetimibe (Zetia); (Chapter 14) Dual Selective Serotonin and Norepinephrine Reuptake Inhibitors (SSNRIs) for Depression; (Chapter 15) $GABA_A$ Receptor Agonists for Insomnia: Zolipidem (Ambien), Zaleplon (Sonata), Eszopiclone (Estorra, Lunesta), and Indiplon; (Chapter 16) $\alpha_2\delta$ Ligands: Neurontin (Gabepentin) and Lyrica (Pregabalin); and (Chapter 17) Approved Treatments for Attention Deficit Hyperactivity Disorder: Amphetamine (Adderall), Methylphenidate (Ritalin), and Atomoxetine (Straterra).

For all of the drugs, both generic (USAN) and brand names are given throughout the book and in a 16-page index. The editors and contributing authors have certainly provided a most useful book for the medicinal and organic chemistry community.

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