Book Reviews

New Drug Discovery & Development. By Daniel Lednicer. John Wiley & Sons, Inc., Hoboken, New Jersey. 2007. xii + 190 pp. 16 × 24 cm. ISBN-10 0-470-00750-8. $89.95.

The book "New Drug Discovery & Development" is deceptively titled, whereas "A Concise History of Modern Drugs" may have been a more appropriate title. Nevertheless, Dr. Daniel Lednicer has written a book that should be of interest to graduate students and postdoctoral scientists seeking to embark on a career in the pharmaceutical industry, as well as others seeking a background on the discovery and development of today's extensive pharmacopoeia. The book is written in a scientifically conversational style with an emphasis on keeping the scientific jargon to a minimum; one does not need a Ph.D. in medicinal chemistry to understand the drug discovery principles or chemical structures. In fact, an appendix on the nomenclature and meaning of chemical structures is included for those readers without a strong or current knowledge of organic chemistry. The final chapter also takes the reader through the myriad of preclinical, toxicology, and ADME (absorption, distribution, metabolism, and excretion) assays typically encountered and through the clinical trial and marketing approval process, describing some of the changes in the regulatory process that have occurred over the past 70+ years. This chapter will be of interest (and perhaps should be read first) to those outside of the pharmaceutical industry.

Dividing the book into eight "therapeutic areas", Dr. Lednicer traces the history of drug development in the antibiotic, antiviral, antihypertensive, lipid reduction, analgesic (centrally active and nonopioid), steroid, and histamine fields from the initial discovery of the chemical compounds that affect these areas through some of the most recently approved drugs in these classes. The last two chapters deviate from the typical formula, as research in steroids and histamine blockers has led to compounds with biological efficacy across multiple disease states. An emphasis is placed on the initial discoveries in these therapeutic areas, such as the penicillins, and new mechanisms to treat a particular disease state, like the discovery of the bacteria protein synthesis inhibitor linezolid (Zyvox) or the bile acid sequestering agents. Less attention is paid to the development of additional marketed drugs in each class, as these products are often lumped into statements such as "at least eight drugs in this [phenothiazine] class carry FDA approval." The scant attention paid to these follow-on compounds results in a lost opportunity to discuss the reasons and virtues for the development of "me-too" drugs. For example, atorvastatin (Lipitor) was the fifth statin drug to reach the marketplace and it possesses unique properties that make it the world's biggest selling drug with more than $12 billion in sales but is mentioned briefly in Chapter 4 almost solely for its structural complexity. A reader from outside the pharmaceutical industry may also come to the conclusion that modern drug discovery has focused only on these eight therapeutic areas, as the development of drugs such as insulin, paclitaxel (Taxol), imatinib (Gleevec), warfarin, heparin, clopidogrel (Plavix), and gabapentin for the treatment of diabetes, cancer, arterial and venous thrombosis, and epilepsy is largely excluded from the discussion. Additional chapters covering additional disease states would have driven home the impact that drug discovery and the resulting pharmaceutical agents have had on global health, longevity, and lifestyles.

Overall, this book is a very enjoyable trip through pharmaceutical history. While not intended to be a complete and thorough review of the therapeutic area, several chapters include a discussion of drugs that have been as recently approved as 2005−2006. The reader will occasionally trip over a noticeable number of misspellings, incorrect chemical structures, and editorial miscues. For example, the structures of isoproterenol and DCI in Figure 6 in Chapter 3 are missing a vital N atom referred to in the accompanying text, and Figures 6 and 7 in Chapter 6 are identical, leaving the reader to guess at the correct structures of naproxen, flurbiprofen, and ketoprofen. Marketed drugs are only rarely referred to by their more widely known brand names, making it somewhat difficult for the informed reader to make the connection between omeprazole and Prilosec or between fluoxetine and Prozac. However, I believe that this book provides a good place to start for those wanting to gain a historical overview of the past 70+ years of drug discovery research.

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