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Book Review

Real World Drug Discovery. A Chemist's Guide to Biotech and Pharmaceutical Research. By Robert M. Rydzewski. Elsevier Press, Oxford, U.K. 2009. xvii + 515 pp. 19 × 25 cm. ISBN 978-0-046617-0. $77.95.

The author of this book is a medicinal chemist with broad industrial experience in the synthetic and biotech sectors. Quoting Jared Diamond's dictum that "a single author (of a multidisciplinary field) will have to sweat copiously in order to assimilate material from many disciplines, and will require guidance from many colleagues", Rydzewski acknowledges the input of a large number of important researchers to his efforts. As explained in his preface, the purposes of his treatise are to present new researchers "with a basic overview of how modern industrial drug discovery works", to introduce the relevant scientific disciplines, and "to provide some practical insights into common problems in drug discovery", and possible solutions. In my opinion, he has achieved these goals in an excellent manner.

The volume is divided into 11 chapters; an idea of the panoramic outlook of the entire monograph can be gained from the content of Chapter 1, The Drug Discovery Business to Date, which contains the following sections. Introduction, The Past, Pharma Roots, Biotech is Born, The Genomics Revolution. Current Economics—Problems: Cost of Drug Development, The Productivity Gap, Market Withdrawals, Generic Competition. Current Economics—Solutions: Pharma Profits and Market Expansion, Mergers and Acquisitions, Biotech Clinical Candidates to Pharma, Academic Contributions, Global Outsourcing, Blockbusters and Orphan Drugs, Repurposing, Chiral Switching, Combination Therapeutics, Reformulation, Summary, References.

The remaining chapter titles (this reviewer's comments are in brackets) further reflect the wide scope of this treatise: (Chapter 2) The Drug Discovery Business to Come; (Chapter 3) Industrial [e.g., intellectual property] Considerations; (Chapter 4) How Things Get Done: The Project Team; (Chapter 5) Project Considerations; (Chapter 6) Hit Generation; (Chapter 7) Turning Hits into Drugs; (Chapter 8) Initial Properties [e.g., optimization of potency, selectivity, etc.]; (Chapter 9) ADME and PK Properties [and their optimization, including a discussion of drug metabolism]; (Chapter 10) Toxicity-Related Properties [and strategies to reduce toxicity]; (Chapter 11) A Career in Drug Discovery [what do employers want, what to look for, performance evaluation, promotions, etc.].

This well-priced publication is attractively printed and produced by the publisher. It has many crisp structural formulas and clear illustrations, some in color. The text is written in a breezy, informal, but informative style. It is documented with hundreds of timely references, ranging from Heraclitus (d. 470 B.C.) to Kitty Carlyle Hart (d. 2007), and is accessible from a comprehensive index. I was dismayed to see Perkin's unsuccessful 19th century attempt to synthesize quinine from aniline (1856) elevated to the status of a major root of medicinal chemistry. In fact, the historic roots of medicinal chemistry lie in the 20th century. They comprise, first, the work of Paul Ehrlich and second, the efforts to prepare simplified derivatives of pharmacologically active natural products, beginning with the synthesis of procaine as a local anesthetic analogue of cocaine (1905), ending with the introduction of lanatoprost as an antiglaucoma analogue of $PGF2_a$ (1996), and branching into the biotech era of the 21st century. This book is enthusiastically recommended to graduate faculty and students, to postdocs, recent graduates, young workers in the pharma industry, to anyone who would like a one-volume review of modern industrial drug discovery, and to the libraries that serve these groups.

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