Book Reviews

Medicinal Chemistry. An Introduction. Second Edition. By Gareth Thomas. John Wiley & Sons Ltd., Chichester, West Sussex, U.K. 2008. xxiv + 621 pp. 19 × 25 cm. ISBN 0470025980. $60.00.

This introduction to medicinal chemistry emphasizes the interdisciplinary nature of rational drug discovery. Accordingly, the chapters are organized by biochemical and pharmaceutical fields rather than by drug classes. College level introductory chemistry prepares the reader for the clear description of biological systems as they pertain to the identification of pharmacological targets, the understanding of drug−receptor interactions, and the prediction of therapeutic or toxic response.

Chapters address physicochemical considerations regarding drug candidate bioavailability, approaches to identifying lead compounds and quantitative structure−activity relationships in drug design, the hit efficiencies offered by combinatorial syntheses and high-throughput screening, detailed membrane theory, receptors and their messengers, enzymes as mechanistically based targets, nucleic acids often focused on antimicrobial action, and pharmacokinetic modeling/metabolism. These chapters are followed by a special topic, nitric oxide, and the book ends with a discussion of the pharmaceutics of drug development, including a perspective on the pharmaceutical industry. Thought-provoking questions close each chapter, with answers found just before the thorough index. Recommended textbooks are used in lieu of primary literature citations.

Select synthetic pathways illustrate analogue approaches to drug optimization, and asymmetric syntheses underscore the importance of stereoselectivity in a clean pharmacological effect. Antibiotics are frequently used as representative therapeutic agents for which semisynthetic drug design is shown to enhance activity or generate prodrugs. Classical drug examples are relied on extensively. With pharmacogenomics having come of age, the drug metabolism chapter missed an opportunity to bring drug design to bear on personalized medicine, and there was no consideration of efflux transporter systems on substrate bioavailability.

The many strengths of this introductory text include its seamless integration of biochemistry and pharmacology to direct drug discovery, where historical natural product leads are shown to have evolved to present day computer-based in silico drug design. The book communicates fundamental scientific principles and terminology as appropriate to launch a career in doctoral fields such as pharmacy, pharmacology, and medicinal chemistry.

Kennerly S. Patrick

Department of Pharmaceutical and Biomedical Sciences
South Carolina College of Pharmacy
Medical University of South Carolina
Charleston, South Carolina 29425

JM800676E

10.1021/jm800676e