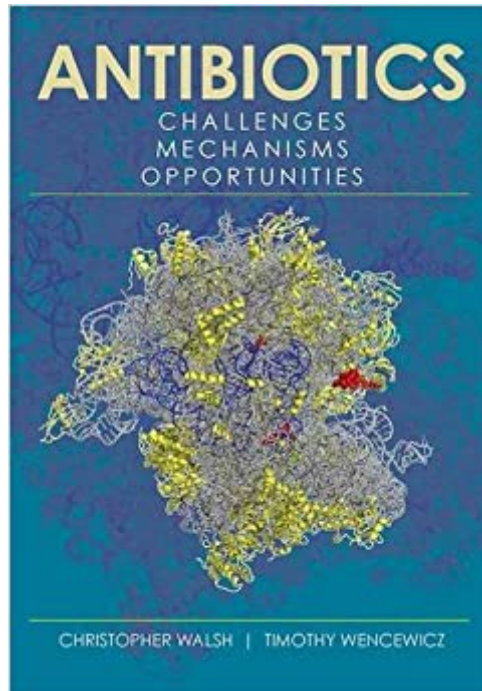




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Antibiotics: Challenges, Mechanisms, Opportunities



Synopsis

A chemocentric view of the molecular structures of antibiotics, their origins, actions, and major categories of resistance. *Antibiotics: Challenges, Mechanisms, Opportunities* focuses on antibiotics as small organic molecules, from both natural and synthetic sources. Understanding the chemical scaffold and functional group structures of the major classes of clinically useful antibiotics is critical to understanding how antibiotics interact selectively with bacterial targets. This textbook details how classes of antibiotics interact with five known robust bacterial targets: cell wall assembly and maintenance, membrane integrity, protein synthesis, DNA and RNA information transfer, and the folate pathway to deoxythymidylate. It also addresses the universe of bacterial resistance, from the concept of the resistome to the three major mechanisms of resistance: antibiotic destruction, antibiotic active efflux, and alteration of antibiotic targets. *Antibiotics* also covers the biosynthetic machinery for the major classes of natural product antibiotics. Authors Christopher Walsh and Timothy Wencewicz provide compelling answers to these questions: What are antibiotics? Where do antibiotics come from? How do antibiotics work? Why do antibiotics stop working? How should our limited inventory of effective antibiotics be addressed? *Antibiotics* is a textbook for graduate courses in chemical biology, pharmacology, medicinal chemistry, and microbiology and biochemistry courses. It is also a valuable reference for microbiologists, biological and natural product chemists, pharmacologists, and research and development scientists.

Book Information

Hardcover: 477 pages

Publisher: Amer Society for Microbiology; 1 edition (February 5, 2016)

Language: English

ISBN-10: 1555819303

ISBN-13: 978-1555819309

Product Dimensions: 7.2 x 0.9 x 10.1 inches

Shipping Weight: 2.2 pounds (View shipping rates and policies)

Average Customer Review: 5.0 out of 5 stars 2 customer reviews

Best Sellers Rank: #429,191 in Books (See Top 100 in Books) #28 in [Books > Medical Books](#) > [Pharmacology](#) > [Clinical](#) #137 in [Books > Textbooks](#) > [Medicine & Health Sciences](#) > [Medicine](#) > [Basic Sciences](#) > [Microbiology](#) #351 in [Books > Textbooks](#) > [Medicine & Health Sciences](#) > [Medicine](#) > [Basic Sciences](#) > [Pharmacology](#)

Customer Reviews

This book provides all the information needed to understand antibiotic genetics, biochemistry, mechanism of action and resistance. Most importantly, Walsh & Wencewicz are optimistic of the prospects of the discovery of novel therapeutic agents obtained by the manipulation of strains and biosynthetic pathways. This beautifully written book deserves to be read and implemented by everyone, especially the pessimists who believe that the antibiotic era has ended. In *Antibiotics: Challenges, Mechanisms, Opportunities*, Walsh & Wencewicz provide the definitive, ultimate compendium of everything antibiotic. --Julian Davies, Professor of Microbiology and Immunology, Life Sciences Institute, University of British Columbia Vancouver

"A chemocentric view of the molecular structures of antibiotics, their origins, actions, and major categories of resistance. *Antibiotics: Challenges, Mechanisms, Opportunities* focuses on antibiotics as small organic molecules, from both natural and synthetic sources. Understanding the chemical scaffold and functional group structures of the major classes of clinically useful antibiotics is critical to understanding how antibiotics interact selectively with bacterial targets. This textbook details how classes of antibiotics interact with five known robust bacterial targets: cell wall assembly and maintenance, membrane integrity, protein synthesis, DNA and RNA information transfer, and the folate pathway to deoxythymidylate. It also addresses the universe of bacterial resistance, from the concept of the resistome to the three major mechanisms of resistance: antibiotic destruction, antibiotic active efflux, and alteration of antibiotic targets. *Antibiotics* also covers the biosynthetic machinery for the major classes of natural product antibiotics. Authors Christopher Walsh and Timothy Wencewicz provide compelling answers to these questions: [[What are antibiotics? [[Where do antibiotics come from? [[How do antibiotics work? [[Why do antibiotics stop working? [[How should our limited inventory of effective antibiotics be addressed? *Antibiotics* is a textbook for graduate courses in chemical biology, pharmacology, medicinal chemistry, and microbiology and biochemistry courses. It is also a valuable reference for microbiologists, biological and natural product chemists, pharmacologists, and research and development scientists. "

Anyone wishing to learn how antibiotics work and how some bacteria can elude their actions will find much in this book. While many authors are good at "presenting" scientific information, the authors of *ANTIBIOTICS: CHALLENGES, MECHANISMS & OPPORTUNITIES* excel at "explaining" and "conceptualizing" all you might ever wish to know about one of the great triumphs of the molecular life sciences. After decades at the forefront of this field, this book's senior author, Professor Chris Walsh, has done it again. *Antibiotics* masterfully portraying the history, the bioorganic

chemistry, the enzyme chemistry, and key cellular events that underpin antibiotic action. Those who have already taken a university-level biochemistry course will be prepared to appreciate this book, but ANTIBIOTICS is more likely to become the standard text for one-semester specialty courses in pharmacology and biological chemistry departments. This reviewer will adopt the book as a go-to reference in a seminar course for gifted third-year undergrads who have already earned early admission to the University of Florida College of Medicine. Learning the intricacies of antibiotics from this impeccable book is likely to foster a commitment to life-long learning. If there is any flaw at all in this book it is the publisher's use of low-density paper, which too often reveals text and images on the obverse face of each page. That said, one must commend the authors and publisher for keeping the price in range for most graduate students.

Great book; amazing illustrations. The reference work on this important topic.

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