

Antibiotics

Current Innovations and Future Trends

Edited by

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Preface

Antibiotics have played a most crucial role in the improvement of human health and have doubled life expectancy since the start of the 20th century. Between 1940 and 1970, there was an explosion of antibiotic discoveries and their use in human medicine. However, since 1970, there has been a rapid drop in the introduction of new antibiotics and a sad departure by many large pharmaceutical companies from antibiotics as commercial products. This has been accompanied by a dangerous rise in resistance to present antibiotics by pathogenic microbes, which is especially evident in hospitals. Thus, we are now experiencing a crisis in the antibiotic field and something must be done to correct this problem. We hope this book will aid in this noble effort. The authors of the chapters define what an antibiotic is, describe the producing microorganisms, explain why we need new antibiotics and point out applications

for antibiotics, both old and new. Also provided are chapters on antibiotic resistance, dormant pathogens, toxicity, overuse and new sources, including animal venoms, endophytes, hot springs and caves. Recent developments are described, such as new targets and technologies for finding new antibiotics. These include the use of silent gene clusters and combinatorial biosynthesis. Compounds such as peptides, antiviral agents and core structures are described, as well as the current pipeline of antibiotics. We hope that this book will reignite the much needed efforts to discover new antibiotics, especially by biotechnology companies and academic laboratories which constitute the new hope for solving the predicament in which the antibiotic field is in today. An extra bonus would be the re-entry of some pharmaceutical companies into the hunt for new antibiotics.

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