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Nota di contenuto	Novel Antimicrobial Agents and Strategies; Contents; List of Contributors; Preface; Chapter 1 The Problem of Microbial Drug Resistance; 1.1 Introduction; 1.2 History of the Origins, Development, and Use of Conventional Antibiotics; 1.3 Problems of Antibiotic Resistance; 1.4 Multiple Drug-Resistant (MDR), Extensively Drug-Resistant (XDR), and Pan-Drug-Resistant (PDR) Organisms; 1.5 MDR Mechanisms of Major Pathogens; 1.6 Antimicrobial Stewardship Programs; 1.7 Discussion; Acknowledgment; References; Chapter 2 Conventional Antibiotics -- Revitalized by New Agents; 2.1 Introduction 2.2 Conventional Antibiotics2.3 The Principles of Combination Antibiotic Therapy; 2.4 Antibiotic Resistance Breakers: Revitalize Conventional Antibiotics; 2.4.1 -Lactamase Inhibitors; 2.4.2 Aminoglycoside-Modifying Enzyme Inhibitors; 2.4.3 Antibiotic Efflux Pumps Inhibitors; 2.4.4 Synergy Associated with Bacterial Membrane Permeators; 2.5 Discussion; Acknowledgments; References; Chapter 3 Developing Novel Bacterial Targets: Carbonic Anhydrases as

Antibacterial Drug Targets; 3.1 Introduction; 3.2 Carbonic Anhydrases; 3.3 CA Inhibitors; 3.4 Classes of CAs Present in Bacteria
3.5 Pathogenic Bacterial CAs3.6 -CAs in Pathogenic Bacteria; 3.7 -CAs in Pathogenic Bacteria; 3.8 -CAs from Pathogenic Bacteria; 3.9 Conclusions; References; Chapter 4 Magainins -- A Model for Development of Eukaryotic Antimicrobial Peptides (AMPs); 4.1 Introduction; 4.2 Magainins and Their Antimicrobial Action; 4.3 Magainins as Antibiotics; 4.4 Other Antimicrobial Uses of Magainins; 4.5 Future Prospects for Magainins; References; Chapter 5 Antimicrobial Peptides from Prokaryotes; 5.1 Introduction; 5.2 Bacteriocins; 5.2.1 Microcins -- Peptide Bacteriocins from Gram-Negative Bacteria
5.2.2 Lanthibiotics -- Post-translationally Modified Peptides from Gram-Positive Bacteria5.2.3 Non-modified Peptides from Gram-Positive Bacteria; 5.3 Applications of Prokaryotic AMPs; 5.3.1 Food Biopreservation; 5.3.2 Bacteriocinogenic Probiotics; 5.3.3 Clinical Application; 5.3.4 Applications in Dental Care; 5.4 Development and Discovery of Novel AMP; References; Chapter 6 Peptidomimetics as Antimicrobial Agents; 6.1 Introduction; 6.2 Antimicrobial Peptidomimetics; 6.2.1 Peptoids; 6.2.2 -Peptides; 6.2.3 Arylamides; 6.2.4 -Peptoid--Peptide Hybrid Oligomers
6.2.5 Oligourea and 4-Peptide-Based Oligomers6.2.6 AApeptides; 6.2.6.1 -AApeptides; 6.2.6.2 -AApeptides; 6.3 Discussion; Acknowledgments; References; Chapter 7 Synthetic Biology and Therapies for Infectious Diseases; 7.1 Current Challenges in the Treatment of Infectious Diseases; 7.2 Introduction to Synthetic Biology; 7.3 Vaccinology; 7.3.1 Genetic Engineering and Vaccine Development; 7.3.2 Rational Antigen Design Through Reverse Vaccinology; 7.4 Bacteriophages: A Re-emerging Solution?; 7.4.1 A Brief History of Bacteriophages
7.4.2 Addressing the Problem of the Restricted Host Range of Phages

Sommario/riassunto

By integrating knowledge from pharmacology, microbiology, molecular medicine, and engineering, researchers from Europe, the U.S. and Asia cover a broad spectrum of current and potential antimicrobial medications and treatments. The result is a comprehensive survey ranging from small-molecule antibiotics to antimicrobial peptides and their engineered mimetics, from enzymes to nucleic acid therapeutics, from metallic nanoparticles to photo- and sonosensitizers and to phage therapy. In each case, the therapeutic approaches are compared in terms of their mechanisms, likelihood to induce resistance