1. Record Nr. UNINA9910861096903321

Autore	Wani Mohmmad Younus
Titolo	Nanotechnology Based Strategies for Combating Antimicrobial Resistance / / edited by Mohmmad Younus Wani, Irshad Ahmad Wani, Akhilesh Rai
Pubbl/distr/stampa	Singapore : , : Springer Nature Singapore : , : Imprint : Springer, , 2024
ISBN	981-9720-23-0
Edizione	[1st ed. 2024.]
Descrizione fisica	1 online resource (585 pages)
Altri autori (Persone)	WaniIrshad Ahmad RaiAkhilesh
Disciplina	6,169,041
Soggetti	Medical microbiology Nanobiotechnology Parasitology Medical Microbiology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	1 Antimicrobial resistance: An overview -- 2 Role of Nano-medicine in Overcoming Antimicrobial Resistance: Challenges and Opportunities -- 3 Nanotechnology Based Tools to Overcome Antimicrobial Resistance -- 4 Metal Nanoparticles as Alternative Antimicrobial Agents to Combat Multidrug Resistance Bacteria -- 5 Plant Extract Mediated Synthesis and Antibacterial Potential of Metallic Nanoparticles -- 6 Functionalized Quantum Dots as Antimicrobial Agents -- 7 Antimicrobial peptide-based nanomaterials in combating multidrug-resistant bacteria -- 8 Nanocomposites in Combating Antimicrobial Resistance -- 9 Carbon Nanomaterials as Antimicrobial Agents to Combat Multidrug Resistance -- 10 Polymer-based Nanomaterials Against Multidrug Resistant Bacteria -- 11 Development of nanoemulsion based drug carrier molecules in the fight against multi-drug resistance -- 12 Nanoemulsions as drug Carriers to Combat AMR -- 13 Liposomes as Efficient Drug Delivery Vehicles to Combat Antimicrobial Resistance -- 14 Photodynamic and light-response nanomaterials against multidrug-resistant bacteria -- 15 Applications of ionic liquids as antimicrobials and their impact in nanotechnology -- 16 Nanomaterials in the

development of advanced antimicrobial agents -- 17 Nanomaterials to Abate Antibiotic Resistance During the Management of Dental Diseases -- 18 Nanocomposites of metal nanoparticles and polymer as platform of alternative approach in combating antimicrobial resistance -- 19 Green synthesized nanoparticles to combat multidrug-resistant bacteria -- 20 Antimicrobial nanofibers to fight multidrug-resistant bacteria.

Sommario/riassunto

This book provides a comprehensive overview of recent advances in nanotechnology as an alternative strategy for addressing antimicrobial resistance (AMR). Examining nanotechnology-based methods such as nanoencapsulation, drug delivery, and conjugation, the text highlights their successful application in treating microbial infections with reduced resistance and off-target toxicity. The introductory section outlines AMR and explores diverse mechanisms of microbial resistance, emphasizing the potential of nanotechnology to surmount these challenges. Subsequent chapters investigate the role of specific nanomaterials—metal nanoparticles, metal oxide nanoparticles, functionalized quantum dots, magnetic nanoparticles, bimetallic nanoparticles, nanocomposites, carbon nanomaterials, and polymer-based nanomaterials—in overcoming antimicrobial resistance. Several chapters focus on the efficacy of nanoemulsions as an antimicrobial delivery method, underscoring their inherent antimicrobial properties, capacity to enhance drug solubility, stability, bioavailability, and targeting potential at the organ and cellular levels. The concluding section provides a detailed review of liposomes, dendrimers-based nanoparticles, and micelles as drug delivery vehicles in the context of combating pathogens resistant to antimicrobials.