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Nota di contenuto	1. Microbes: The Most Friendly beings? -- 2. Evolution of MDRs -- Quorum sensing mediated processes -- 3. Biofilms: Maintenance, Development and Disassembly of Bacterial Communities are determined by QS cascades -- 4. Quorum sensing in pathogenesis and virulence -- 5. Quorum sensing in Nitrogen fixation -- 6. Quorum sensing in competence and sporulation -- 7. How important is the absolute configuration to bacteria quorum sensing and quorum quenching -- Quorum sensing systems in microbes -- 8. Quorum sensing systems in Pseudomonas -- 9. Quorum sensing systems in Escherichia coli: Interkingdom, inter and intra species dialogues, and a suicide inducing peptide -- 10. Quorum sensing systems in

Acinetobacter baumannii -- 11. Quorum sensing systems in Aeromonas spp -- 12. Rhizobial extracellular signaling molecules and their functions in symbiotic interactions with legumes -- 13. Quorum sensing systems in Clostridia -- 14. Quorum sensing systems in Enterococcus -- 15. Quorum sensing systems in Bacillus -- Detectors for Quorum sensing signals -- 16. Quorum sensing biosensors -- 17. Caenorhabditis elegans as an in vivo non-mammalian model system to study quorum sensing in pathogens -- 18. Strategies for silencing bacterial communication -- Natural quorum sensing inhibitors -- 19. Silencing bacterial communication through enzymatic quorum sensing inhibitors -- 20. Fungal quorum sensing inhibitors -- 21. Marine organisms as source of quorum sensing inhibitors -- 22. Plant quorum sensing inhibitors: Food, medicinal plants, others -- Synthetic quorum sensing inhibitors -- 23. Synthetic quorum sensing inhibitors: Signal analogues -- 24. Synthetic quorum sensing inhibitors blocking receptor signalling or signal molecule biosynthesis in Pseudomonas aeruginosa -- 25. Development of quorum sensing inhibitors targeting the fsr system of Enterococcus faecalis -- Alternative strategies as quorum sensing inhibitors -- 26. An alternative strategy as quorum sensing inhibitor: Pheromone-guided antimicrobial peptide -- 27. Alternative strategies to target quorum sensing (QS): Combination of QS inhibitors with antibiotics and nano technological approaches -- 28. Heterologous expression of quorum sensing inhibitory genes in diverse organisms -- Biotechnological applications of quorum sensing inhibitors -- 29. Potential applications of quorum sensing inhibitors in diverse fields -- 30. Biotechnological applications of quorum sensing inhibitors in aquacultures -- 31. The Battle: Quorum sensing inhibitors vs evolution of bacterial resistance.

Sommario/riassunto

Microbial relationships with all life forms can be as free living, symbiotic or pathogenic. Human beings harbor 10 times more microbial cells than their own. Bacteria are found on the skin surface, in the gut and other body parts. Bacteria causing diseases are the most worrisome. Most of the infectious diseases are caused by bacterial pathogens with an ability to form biofilm. Bacteria within the biofilm are up to 1000 times more resistant to antibiotics. This has taken a more serious turn with the evolution of multiple drug resistant bacteria. Health Departments are making efforts to reduce high mortality and morbidity in man caused by them. Bacterial Quorum sensing (QS), a cell density dependent phenomenon is responsible for a wide range of expressions such as pathogenesis, biofilm formation, competence, sporulation, nitrogen fixation, etc. Majority of these organisms that are important for medical, agriculture, aquaculture, water treatment and remediation, archaeological departments are: Aeromonas, Acinetobacter, Bacillus, Clostridia, Enterococcus, Pseudomonas, Vibrio and Yersinia spp. Biosensors and models have been developed to detect QS systems. Strategies for inhibiting QS system through natural and synthetic compounds have been presented here. The biotechnological applications of QS inhibitors (QSIs) in diverse areas have also been dealt with. Although QSIs do not affect growth and are less likely to impose selective pressure on bacteria, however, a few reports have raised doubts on the fate of QSIs. This book addresses a few questions. Will bacteria develop mechanisms to evade QSIs? Are we watching yet another defeat at the hands of bacteria? Or will we be acting intelligently and survive the onslaughts of this Never Ending battle?