



Understanding microbial biofilms : fundamentals to applications /

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Monografía

Understanding Microbial Biofilms: Fundamentals to Applications focuses on the microbial biofilms of different environments. The book provides a comprehensive overview of the fundamental aspects of microbial biofilms, their existence in nature, their significance, and the different clinical and environmental problems associated with them. The book covers both the fundamentals and applications of microbial biofilms, with chapters on the introduction to the microbial community and its architecture, physiology, mechanisms and imaging of biofilms in nature and fungal, algal, and bacillus biofilm control. In addition, the book highlights the molecular and biochemical aspects of bacterial biofilms, providing a compilation of chapters on the bacterial community and communication from different environments. Finally, the book covers recent advancements in various aspects of microbial biofilms including the chapters on their biotechnological applications. All the chapters are written by experts who have been working on different aspects of microbial biofilms

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Descripción física: 1 online resource

Nota general:

Section A: Introduction to biofilms 1. Marine biofilms: Bacterial diversity and dynamics 2. Cyanobacterial biofilms: Perspectives from Origin to Applications 3. From understanding bacterial interactions to developing bactericidal surfaces: Applications of analytical techniques 4. Microbial biofilms: Unravel their potential for agricultural applications under agro-ecosystem 5. Chemotaxis and rhizobacterial biofilm formation in plant-microbe interaction 6. Scanning electron microscopy and variable-pressure SEM application in biofilm imaging 7. Aspects of biofilms on medical devices

Section B: Biofilms in nature 8. Metagenomic analysis of electroactive microorganisms in corrosion: Impact of the corrosive biofilms in the oil industry 9. Biofilms in dairy industry 10. Microalgal biofilm and their prospective application for wastewater treatment and biofuel production 11. Biochemical and molecular mechanisms of sulfate-reducing bacterial biofilms 12. Biofilms and their role in corrosion in marine environments 13. Natural biofilms: Structure, development, and habitats

Section C: Biofilm lifestyle of various microorganisms and its control 14. Role of biofilms in hospital-acquired infections (HAIs) 15. Implication of *Vibrio* biofilms in human and seafood sector 16. *Candida*: Biofilm formation and antifungal resistance 17. Removal and control of biofilms in wounds 18. Microbial biofilms: A persisting public health challenge 19. Biofilms in antibiotic resistance and pathogenesis in relation to foodborne infection and control strategies 20. Biofilms associated with biomedical implants and active therapies

Section D: Molecular and biochemical aspect of microbial biofilms 21. Influence of bacterial cell wall modulating genes and enzymes on biofilm formation with special emphasis on the role of DD-carboxypeptidases 22. Role of small regulatory RNAs in microbial pathogenesis and biofilm formation: Emerging role as potential drug targets 23. Genetic basis of biofilm formation and their role in antibiotic resistance, adhesion, and persistent infections in ESKAPE pathogens 24. The emergence of predominance in the constitutive microflora of dairy membrane biofilm 25. Molecular basis of cariogenic biofilm and infections

Section E: Biofilms and pathogenesis 26. *Salmonella* biofilm and its importance in the pathogenesis 27. Mycobacterial biofilm: Structure and its functional relevance in the pathogenesis 28. *Streptococcus pneumoniae* biofilms and human infectious diseases: A comprehensive review 29. Oral biofilms: Architecture and control 30. Molecular mechanisms of *Acinetobacter baumannii* biofilm formation its impact on virulence, persistence, and pathogenesis 31. Polymicrobial biofilms: Impact on fungal pathogenesis 32. Molecular mechanism of biofilm formation of pathogenic microorganisms and their role in host pathogen interaction 33. Pathogenic biofilm in environmental and industrial setups and their public health threats 34. Biofilm formation: A well-played game in bacterial pathogenesis

Section F: Application of microbial biofilms 35. Plant growth promoting rhizobacteria and their biofilms in promoting sustainable agriculture and soil health 36. Antagonistic *Bacilli* as a prospective probiotics against pathogenic biofilms 37. Use of bacterial biofilms to produce high added-value compounds 38. Biofilms as sustainable tools for environmental biotechnologies: An interdisciplinary approach 39. Use of biofilm bacteria to enhance overall microbial fuel cell performance 40. Industrial applications and implications of biofilms

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