1. Record Nr. UNINA9910422648303321

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Titolo	Microbial communication : mathematical modeling, synthetic biology and the role of noise / / Sarangam Majumdar, Sisir Roy
Pubbl/distr/stampa	Singapore : , : Springer, , [2020] ©2020
ISBN	981-15-7417-0
Edizione	[1st ed. 2020.]
Descrizione fisica	1 online resource (XVII, 175 p. 35 illus., 18 illus. in color.)
Disciplina	589.9
Soggetti	Cell interaction - Mathematical models Bacteriology Bioinformatics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Chapter 1. Introduction -- Chapter 2. Talking about talking microbes -- Chapter 3. Mathematical models of quorum sensing molecular mechanisms -- Chapter 4. Mathematical models of quorum sensing regulated biofilms development -- Chapter 5. Mathematical models of bacterial swarming behaviour regulated by quorum sensing. Chapter 6. Mathematical models of bacterial quorum sensing regulated virulence factors -- Chapter 7. Evolutionary models of bacterial communication systems -- Chapter 8. Pattern formation in bacterial conversation mechanisms -- Chapter 9. Summary of Experimental Results -- Chapter 10. Therapy related mathematical models and quorum quenching -- Chapter 11. Role of noise in microbial communication -- Chapter 12. Electrical communication systems in bacterial biofilms and ion-channels -- Chapter 13. Synthetic biology and microbial communication -- Chapter 14. Role of Noise in Synthetic Biology.- Chapter 15 Noise in Science and Technology Vs Biological System.
Sommario/riassunto	This book introduces the concept of bacterial communication systems from a mathematical modeling point of view. It sheds light on the research undertaken in the last three decades, and the mathematical models that have been proposed to understand the underlying mechanism of such systems. These communication systems are related

to quorum sensing mechanisms and quorum sensing regulated processes such as biofilm formation, gene expression, bioluminescence, swarming and virulence. The book further describes the phenomenon of noise, and discusses how noise plays a crucial role in gene expression and the quorum sensing circuit operationusing a set of tools like frequency domain analysis, power spectral density, stochastic simulation and the whitening effect. It also explores various aspects of synthetic biology (related to bacterial communication), such as genetic toggle switch, bistable gene regulatory networks, transcriptional repressor systems, pattern formation, synthetic cooperation, predator-prey synthetic systems, dynamical quorum sensing, synchronized quorum of genetic clocks, role of noise in synthetic biology, the Turing test and stochastic Turing test.