1. Record Nr. UNINA9910298343403321

Titolo	Nanomicrobiology : Physiological and Environmental Characteristics / / edited by Larry L. Barton, Dennis A. Bazylinski, Huifang Xu
Pubbl/distr/stampa	New York, NY : , : Springer New York : , : Imprint : Springer, , 2014
ISBN	1-4939-1667-X
Edizione	[1st ed. 2014.]
Descrizione fisica	1 online resource (188 p.)
Disciplina	570 579.3 620115 660.62
Soggetti	Bacteriology Nanotechnology Microbiology Applied Microbiology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Preface -- Nanostructures and nanobacteria -- S-layer structure in bacteria and archaea -- Magnetotactic Bacteria, Magnetosomes and Nanotechnology -- Carboxysomes and their structural organization in prokaryotes -- Bacterial organization at the smallest level: Molecular motors, nanowires, and outer membrane vesicles -- The mechanism of bacterial gliding motility: Insights from molecular and cellular studies in the Myxobacteria and Bacteroidetes -- Nanoparticles formed by microbial metabolism of metals and minerals.
Sommario/riassunto	This book is devoted to nanomicrobiology and the nanosystems of bacteria. The initial chapter discusses some of the controversies in the geochemical and biomedical fields associated with the reports of nanobacteria in the environment. Current knowledge of several internal and surface structures of bacteria is addressed in this book. Included are chapters discussing carboxysomes, S-layers, gliding motility of bacteria, and aggregation of iron to produce nano-magnetite. Information about the activities of outer membrane vesicles produced by Gram-negative bacteria is discussed as a benefit to bacteria that

produce it and some potential industrial applications are presented. A broad review of bacterial-mineral interactions is addressed in a chapter of metallic nanoparticles and colloids production by bacterial reduction of soluble redox active elements. The structures of bacterial nanowires are discussed and their application in extra-cellular electron transport is reviewed. Nanomotor activities of bacteria are discussed as pertains to the mechanics of flagellar rotation, production of energy by ATP synthase, DNA packing, and translocation of proteins across membranes by secretion systems. The rapidly evolving field of nanosystem technology is embracing many areas, and it is the hope that this book will stimulate the use of bacterial nanostructures for future developments in nanotechnology. .