Cell Biology of Bacteria

Until recently, bacteria were frequently depicted as "bags of enzymes" in which proteins and DNA were distributed relatively haphazardly compared with animal and plant cells. Research performed over the past decade has revolutionized our understanding of bacterial cells, however, revealing that they are in fact highly organized and contain numerous subcompartments.

Written and edited by experts in the field, this collection from *Cold Spring Harbor Perspectives in Biology* includes contributions discussing the three-dimensional organization of the bacterial cell, various subcellular structures found in bacteria, membrane-bounded organelles such as magnetosomes, and the organization of the cell membrane. Other chapters examine the recently identified bacterial cytoskeletal filaments—which turn out to be remarkably similar to their eukaryotic counterparts—as well as the roles of these filaments in morphogenesis and cytokinesis.

Also covered are the extraordinary organization of the bacterial genome and the dynamic mechanisms that couple its replication and partitioning at cell division. In addition, the book reviews the various different multicellular structures bacteria can form, such as biofilms, along with new imaging techniques that promise to reveal even more about their subcellular machinery. It is thus of interest to microscopists and biochemists, as well as all microbiologists and cell biologists interested in how bacteria and other prokaryotes function.

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