Bacterial Glycomics

Current Research, Technology and Applications

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Glycomics, the study of glycoconjugate assembly and expression in biological systems, is important in many areas of microbiology. Because glycans play such diverse roles in bacterial physiology, the field of bacterial glycomics is indispensable for the understanding of bacterial pathogenesis, metabolism and cell communities. Progress in bacterial glycomics is advancing rapidly due to improvements in analytical methodologies and the development of new and innovative approaches for glycan isolation, characterization and synthesis. Research in bacterial glycomics could lead to the development of novel drugs, bioactive glycans and glycoconjugate vaccines.

Written by a team of acknowledged experts, this book provides an up-to-date overview of our current understanding of bacterial glycomes, describes the main analytical methods in use and discusses recent and novel applications. The book is divided into three sections. The first section includes overviews of microbial glyconjugates, lipopolysaccharide, capsular polysaccharide, lipoarabinomannan biosynthesis, cell wall metabolism, and glycosylation of bacterial and archaeal proteins. The second section reviews the analytical approaches used in the characterization of the bacterial glycome. The final section describes applications of bacterial glycomics, including metabolic oligosaccharide labeling, the synthesis of bioactive glycans and the potential for glycoconjugate vaccines.

Essential reading for microbiologists working in polysaccharide and carbohydrate research, the book is also recommended for carbohydrate experts, microbiologists, immunologists and researchers in many other fields of life sciences.

Chapter 1. Lipopolysaccharide Biosynthesis. Leslie Cuthbertson
Chapter 2. Biosynthesis of Capsular Polysaccharides and Exopolysaccharides. Anne N. Reid and Leslie Cuthbertson
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Chapter 14. Glycoconjugate Vaccines. Robert Pon

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