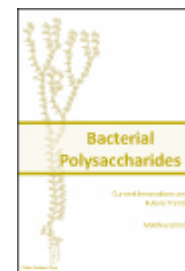


Bacterial Polysaccharides

Current Innovations and Future Trends



Edited by: **Matthias Ullrich**

School of Engineering and Science, Jacobs University Bremen, 28759 Bremen, Germany

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Bacterial polysaccharides represent a diverse range of macromolecules that include peptidoglycan, lipopolysaccharides, capsules and exopolysaccharides; compounds whose functions range from structural cell-wall components (eg peptidoglycan), and important virulence factors (eg Poly-N-acetylglucosamine in *S. aureus*), to permitting the bacterium to survive in harsh environments (eg *Pseudomonas aeruginosa* in the human lung). Polysaccharide biosynthesis is a tightly regulated, energy intensive process and understanding the subtle interplay between the regulation and energy conservation, polymer modification and synthesis, and the external ecological functions is a huge area of research. The potential benefits are enormous and should enable for example the development of novel antibacterial strategies (eg new antibiotics and vaccines) and the commercial exploitation to develop novel applications.

In this timely book a cohort of experienced and authoritative experts review the most important innovations in research on and biotechnological applications of bacterial polysaccharides. The book takes an interdisciplinary view that examines this fascinating subject area in detail from molecular biology, genome-, transcriptome- and proteome-wide perspectives, and looks at the ecological aspects and systems biology approaches. Hence the book provides a sound basis for future research directions including high efficiency applications of bacterial polysaccharides in medicine, the food industry, and renewable energy production. Topics include: peptidoglycan, lipopolysaccharide, arabinogalactan, capsule gene expression in *Escherichia coli*, immune response to polysaccharides, polysaccharides from periodontopathic bacteria, role in dental plaque, biofilms, levan, amylovoran and much more. Essential reading for everyone with an interest in bacterial polysaccharides, from the PhD student to the experienced scientist, as it provides a timely review of the current and most topical areas of research.

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Chapter 2. Genetics and Regulation of Bacterial Lipopolysaccharide Synthesis. *Mikael Skurnik and José Antonio Bengoechea*

Chapter 3. Mycobacterial Cell Wall Arabinogalactan: A Detailed Perspective on Structure, Biosynthesis, Functions and Drug Targeting. *Suresh Bhamidi, Michael S. Scherman and Michael R. McNeil*

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