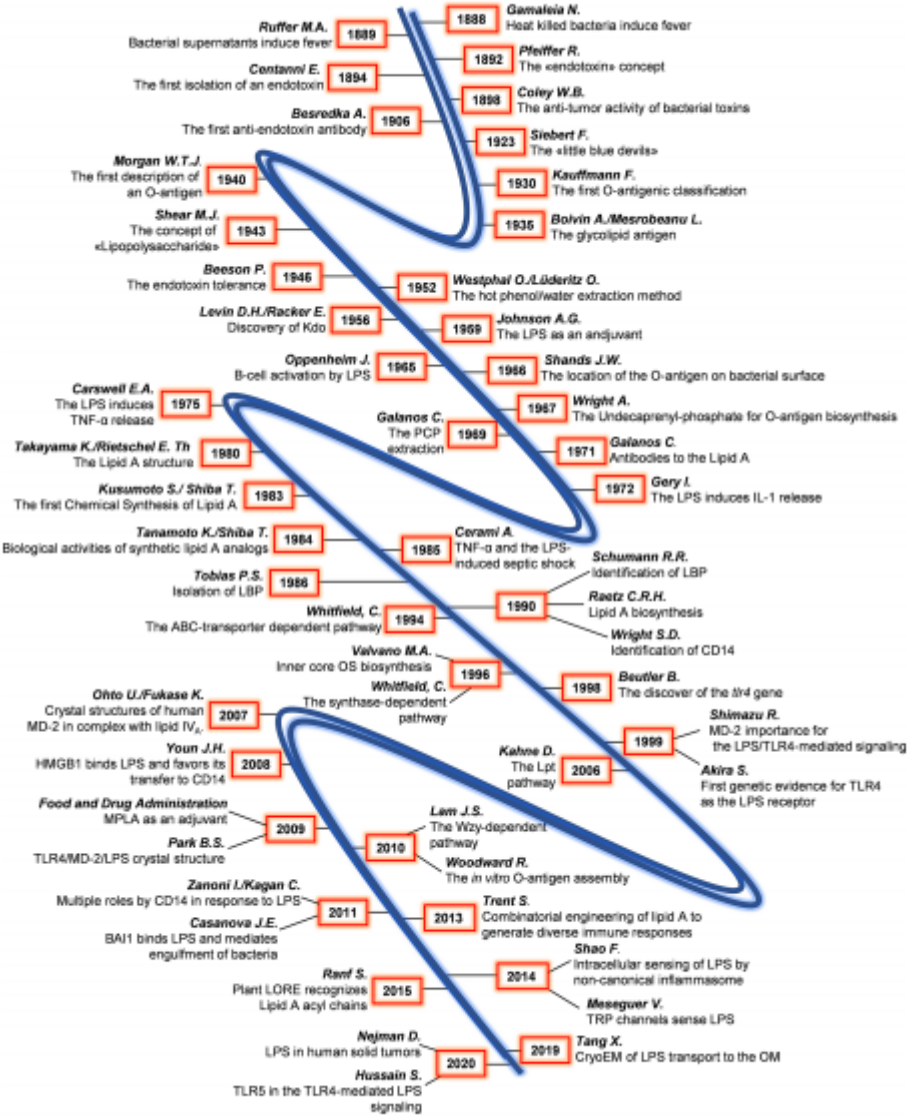
A Journey from Structure to Function of Bacterial Lipopolysaccharides

Description

Lipopolysaccharides (LPSs) are crucial constituents of the outer membrane of most Gram-negative bacteria. They play a fundamental role in protecting bacteria from environmental stress factors in drug resistance, pathogenesis, and symbiosis. LPSs have been thoroughly dissected during the last decades, and massive information on these fascinating biomolecules is now available. Based on a critical appreciation of 300 references, the authors of the review present an update of the current knowledge of LPSs with crucial information on the inherent peculiar carbohydrate chemistry due to often puzzling sugar residues that are uniquely found on them. Then, the reader is driven through the complex and multifarious immunological outcomes that any given LPS can raise, strictly dependent on its chemical structure. Nevertheless, the issues remain unresolved, and they represent the immediate future of LPS research. These critical points need to be addressed to complete the panorama of LPS chemistry, functions, and roles and offering another angle to consider the concept of LPSs from Â« toxic Â» to Â« beneficial molecules Â».

Scheme 1. Timeline of the Key Discoveries Underlying the LPS History, According to the Authors' Opinion[a]



[a]The authors apologize to the colleagues who are not mentioned in the scheme who contributed to LPS history through their seminal work.

Category

1. News