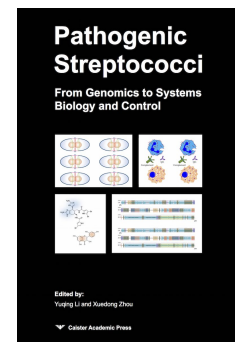


Pathogenic Streptococci

From Genomics to Systems Biology and Control



Edited by: **Yuqing Li and Xuedong Zhou**

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Streptococcus is a diverse genus of Gram-positive bacteria commonly found in multiple locations of their human and animal hosts e.g. the oral cavity and the upper respiratory tract. Many streptococci are commensals thus play a role in colonization resistance of the host. Others, however, are pathogenic and are responsible for a range of invasive and noninvasive diseases with high morbidity and mortality worldwide. Streptococci undergo frequent and extensive horizontal gene transfer leading to the emergence of drug resistant strains. This, combined with the current lack of effective anti-streptococcal vaccines, has led to a huge amount of research into the genomics to systems biology of these important bacteria.

This timely review, edited by Yuqing Li and Xuedong Zhou, provides a comprehensive overview of the current knowledge of the most important hot-topics in streptococcal research. Topics covered include: CRISPR-Cas systems; genetic regulation by small RNAs; signal transduction by cyclic dinucleotide second messengers; the VicRK and ComDE two-component systems; mobile genetic elements; regulation of cell division; application of omics and bioinformatics tools; intragenetic and intergeneric interactions by oral streptococci; the hypervirulent M1T1 clone of GAS; *Streptococcus suis*; adhesion and invasion mechanisms; molecular evolution of pathogenic streptococci; novel antimicrobials; vaccine development.

This volume is essential reading for everyone working with streptococci from the PhD student to the experienced scientist, in academia, the pharmaceutical or biotechnology industries and for those working in clinical environments.

Chapter 1. CRISPR-Cas Systems in Streptococci (Tao Gong, Miao Lu, Xuedong Zhou, Anqi Zhang, Boyu Tang, Jiamin Chen, Meiling Jing and Yuqing Li)

Chapter 2. Genetic Regulation of Streptococci by Small RNAs (Ye Tu, Xiaoyue Jia, Ran Yang, Xian Peng, Xuedong Zhou and Xin Xu)

Chapter 3. Signal Transduction of Streptococci by Cyclic Dinucleotide Second Messengers (Zhengyi Li, Xueqin Zhang, Lei Cheng, Xin Xu, Xuedong Zhou, Hui Wu and Xian Peng)

Chapter 4. Mobile Genetic Elements in Streptococci (Miao Lu, Tao Gong, Anqi Zhang, Boyu Tang, Jiamin Chen, Zhong Zhang, Yuqing Li and Xuedong Zhou)

Chapter 5. The VicRK Two-Component System Regulates *Streptococcus mutans* Virulence (Lei Lei, Li Long, Xin Yang, Yang Qiu, Yanglin Zeng, Tao Hu, Shida Wang and Yuqing Li)

Chapter 6. ComDE Two-component Signal Transduction Systems in Oral Streptococci: Structure and Function (Yue Zu, Wei Li, Qi Wang, Jiahao Chen and Qiang Guo)

Chapter 7. Regulation of Cell Division in Streptococci: Comparing with the Model Rods (Zhenting Xiang, Zongbo Li, Jumei Zeng, Yuqing Li and Jiyao Li)

Chapter 8. Application of Omics and Bioinformatics Tools in *Streptococcus* Research (Min Liao, Ting Tong, Yawen Zong, Xuedong Zhou, Lei Cheng, Ruijie Huang, Biao Ren and Gil Alterovitz)

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