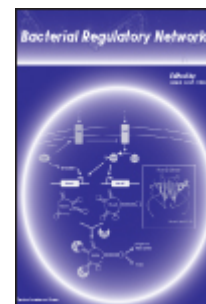


# Bacterial Regulatory Networks



Edited by: **Alain A.M. Filloux**

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Regulatory networks enable bacteria to adapt to almost every environmental niche on earth. Regulation is achieved by a network of interactions among diverse types of molecules including DNA, RNA, proteins and metabolites. The primary role of regulatory networks in bacteria is to control the response to environmental changes, such as nutritional status and environmental stress. A complex organization of networks allows the organism to coordinate and integrate multiple environmental signals.

Renowned authors under the expert guidance of the editor Alain A.M. Filloux, have contributed authoritative, up-to-date reviews of the current research and theories on regulatory networks in bacteria. The volume contains critical reviews written by the leading research scientists in this topical field. The authors fully explore various regulatory networks, discuss variations of common themes and provide fresh insights into bacterial regulatory mechanisms. Topics include: the sigma network in *Escherichia coli*, control of bacterial virulence, ECF sigma factors, quorum sensing, cyclic di-GMP, RNA-mediated regulation, the H-NS regulator, two-component regulatory systems, bacterial chemotaxis, regulation of iron homeostasis, anaerobic regulatory networks, bacterial bistable regulatory networks, and evolution of transcription factors and regulatory networks.

This book is essential reading for everyone interested in gene expression and regulation in bacteria and is a recommended text for all microbiology libraries.

**Chapter 1.**  $\sigma$ -(S)-controlling Networks in *Escherichia coli*. *Eberhard Klauck and Regine Hengge*

**Chapter 2.** Bacterial Virulence Gene Expression Contributed By the Alternative  $\sigma$  Factor,  $\sigma$ (54). *Patricia C. Burrows, Simone C. Wiesler, Zhensheng Pan, Martin Buck and Sivaramesh Wigneshweraraj*

**Chapter 3.** ECF Sigma Factors: from Stress Management to Iron Uptake. *Karlijn C. Bastiaansen, Wilbert Bitter and María A. Llamas*

**Chapter 4.** Quorum Sensing in Gram Negative Bacteria: Signals, Role and Networking. *Zulma R. Suárez-Moreno, Juan F. González, Giulia Devescovi and Vittorio Venturi*

**Chapter 5.** Cyclic di-GMP Signalling and Regulation in Bacteria. *J. Maxwell Dow, Yvonne McCarthy, Karen O'Donovan, Delphine Caly and Robert P. Ryan*

**Chapter 6.** RNA-mediated Regulation of Virulence Gene Expression: Another Layer of Complexity. *Efthimia Lioliou, Cédric Romilly, Thomas Geissmann, François Vandenesch and Pascale Romby*

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**Chapter 8.** Two-component Regulatory Systems in Prokaryotes. *David E. Whitworth*

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**Chapter 12.** Take It Or Leave It: Mechanisms Underlying Bacterial Bistable Regulatory Networks. *Jeroen Siebring, Robin A. Sorg, Martijn Herber, Oscar P. Kuipers*

**Chapter 13.** Evolution of DNA-binding Transcription Factors and Regulatory Networks in Prokaryotes. *Ernesto Perez-Rueda, Nancy Rivera-Gomez, Mario Alberto Martinez-Nuñez and Silvia Tenorio-Salgado*

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