

# Bacterial Pathogenesis

## Molecular and Cellular Mechanisms



Edited by: Camille Locht and Michel Simonet (Lille, France)  
x + 370 pp, Jan 2012, \$360/£180  
ISBN: 978-1-904455-91-2

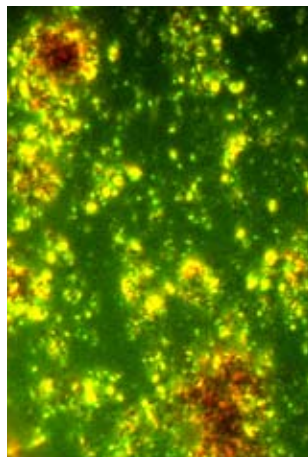
Distinguished scientists from eight different countries and three continents, under the expert guidance of the editors Camille Locht and Michel Simonet, overview the molecular and cellular mechanisms of bacterial pathogenesis. The fifteen chapters are organized into five sections: approaches to the study of bacterial pathogenesis; bacterial adhesion to the cell surface and extracellular matrix of host tissues; poisoning the host by toxins; cellular

invasion by bacterial pathogens; and bacterial evasion of host defences. The authors comprehensively describe the most relevant and up-to-date information on pathogenic features across the bacterial world. Aimed at the entire scientific community from students to senior scientists and physicians, the book is relevant to a broad range of people interested in the mechanisms of bacterial infectious diseases and is a recommended text for all microbiology laboratories.

• SECTION I: Approaches to the Study of Bacterial Pathogenesis. • Chapter 1: Models for Studying Bacterial Pathogenesis. *Richard W. Titball and Olivia L. Champion* • Chapter 2: Strategies for Identifying Bacterial Pathogenicity Genes. *Raphael H. Valdivia* • Chapter 3: Genetic Determinants of Bacterial Pathogenicity. *Gavin K. Paterson and Duncan J. Maskell* • SECTION II: Bacterial Adhesion to the Cell Surface and Extracellular Matrix of Host Tissues. • Chapter 4: Fimbrial Adhesins: Adhesive Molecules on a 'Stalk'. *Hae Joo Kang, Edward N. Baker and Thomas Proft* • Chapter 5: Nonpilus (Non-Fimbrial) Adhesins. *Amanda J. Sheets and Joseph W. St. Geme III* • Chapter 6: Biofilms: the Secret Story of Microbial Communities. *Christophe S. Bernard, Caroline Giraud, Jennifer Spagnolo, and Sophie de Bentzmann* • SECTION III: Poisoning the Host by Toxins. • Chapter 7: Toxins Damaging Cellular Membranes: Paradigms and Molecular Features. *Joseph E. Alouf* • Chapter 8: Toxins Acting on Intracellular Targets: Only Foes or Also Friends?. *Teresa Frisan, Riccardo Guidi, Lina Guerra* • SECTION IV: Cellular Invasion by Bacterial Pathogens. • Chapter 9: Mechanisms of Bacterial Entry Into Host Cells. *Kevin Moreau and Frank LaFont* • Chapter 10: The Bacterial Life in a Vacuole. *Ana Rita Furtado and Agathe Subtil* • Chapter 11: The Bacterial Life in the Cytosol. *Serge Mostowy and Pascale Cossart* • SECTION V: Bacterial Evasion of Host Defences. • Chapter 12: Bacterial Handling of Host Nutrients: the Iron Paradigm. *Klaus Hantke* • Chapter 13: Bacterial Escape from the Complement System. *Marta Biedzka-Sarek and Mikael Skurnik* • Chapter 14: Bacterial Resistance to Antimicrobial Peptides. *John D. F. Hale* • Chapter 15: Bacteria-Induced Host Cell Death. *Scott D. Kobayashi, Kevin M. Rigby and Frank R. DeLeo*

# Microbial Biofilms

## Current Research and Applications



Edited by: Gavin Lear and Gillian D. Lewis (New Zealand)  
c. 240 pp, Feb 2012, \$319/£159  
ISBN: 978-1-904455-96-7

Leading scientists provide an up-to-date review of the latest scientific research on these fascinating microbial communities and predict future trends and growth areas in biofilm-related research. Under the expert guidance of the editors Gavin Lear and Gillian Lewis, authors from around the world have contributed critical reviews on the most topical aspects of current biofilm research. Subjects covered include quorum sensing and social interactions

in microbial biofilms, biofilms in disease, plant-associated biofilms, biofilms in the soil, applications in bioremediation, biofilms in wastewater treatment, corrosion and fouling, aquatic biofilms, microbial fuel cells, and catalytic biofilms. The book is essential for everyone interested in biofilms and their applications. It is also highly recommended for environmental microbiologists, soil scientists, medical microbiologists, bioremediation experts and microbiologists working in biocorrosion, biofouling, biodegradation, water microbiology, quorum sensing and many other areas.

• Chapter 1: Quorum Sensing and Social Interactions in Microbial Biofilms. *Robert J. Goldstone, Roman Popat, Matthew P. Fletcher, Shanika A. Crusz and Stephen P. Diggle* • Chapter 2: Biofilms in Disease. *James D. Bryers* • Chapter 3: The Ecological Significance of Plant-associated Biofilms. *Venkatachalam Lakshmanan, Amutha Sampath Kumar and Harsh P. Bais* • Chapter 4: An Invisible Workforce: Biofilms in the Soil. *Mette Burmølle, Annelise Kjølner and Søren J. Sørensen* • Chapter 5: Biofilms: Applications in Bioremediation. *Gabriele Pastorella, Giulio Gazzola, Seratna Guadarrama and Enrico Marsili* • Chapter 6: Biofilms in Wastewater Treatment Systems. *G.A. Clark Ehlers and Susan J. Turner* • Chapter 7: Corrosion and Fouling. *Steve Flint and Gideon Wolfaardt* • Chapter 8: Biofilms in Freshwater: Their Importance for the Maintenance and Monitoring of Freshwater Health. *Gavin Lear, Andrew Dopheide, Pierre-Yves Ancion, Kelly Roberts, Vidya Washington, Jo Smith and Gillian D. Lewis* • Chapter 9: Extracellular Enzymes in Aquatic Biofilms: Microbial Interactions Vs Water Quality Effects in the Use of Organic Matter. *Anna M. Romani, Joan Artigas and Irene Ylla* • Chapter 10: Energy from Slime? Power from Microbial Fuel Cells. *Koichi Nishio, Atsushi Kouzuma, Souichiro Kato and Kazuya Watanabe* • Chapter 11: Catalytic Biofilms: a Powerful Concept for Future Bioprocesses. *Rainer Gross, Andreas Schmid and Katja Buehler*

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# Bacterial Glycomics

## Current Research, Technology and Applications

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 glycoconjugates, 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.

Edited by: Christopher W. Reid, S.M. Twine, and A.N. Reid (USA)  
c. 260 pp, Feb 2012, \$319/£159  
ISBN: 978-1-904455-95-0

