

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

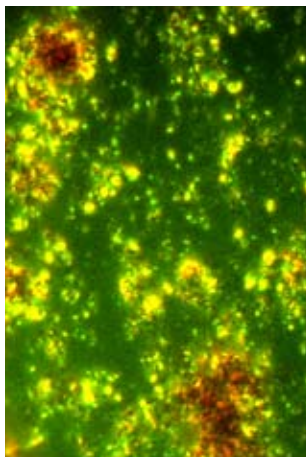
Distinguished scientists from eight different countries and three continents, under the expert guidance of the editors Camille Locht and Michel Simonet, overview the molecular and cellular mechanisms of bacterial pathogenesis. The fifteen chapters are organized into five sections: approaches to the study 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 Kjølter 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*

www.caister.com

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, lipopolysaccharide 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

Extremophiles

Microbiology and Biotechnology

Edited by: RP Anitori

c. 260 pp, March 2012

ISBN: 978-1-904455-98-1, \$319/£159

Current and topical areas of extremophile research. The latest insights into the mechanisms these fascinating organisms use to survive and the most recent and novel biotechnological uses of extremophiles.

Bacillus

Cellular and Molecular Biology

(Second edition)

Edited by: P Graumann

c. 430 pp, February 2012

ISBN: 978-1-904455-97-4, \$360/£180

A valuable reference work providing a comprehensive and up-to-date analysis. Critical reviews on the most recent and topical research.

Brucella

Molecular Microbiology and

Genomics

Edited by: I López-Goñi, D O'Callaghan

c. 288 pp, February 2012

ISBN: 978-1-904455-93-6, \$319/£159

Highly acclaimed *Brucella* scientists comprehensively review the most important advances in the field. Topics include: genetic diversity, proteomic analysis, transcriptomic analysis, and much more.

Emerging Trends in Antibacterial Discovery

Answering the Call to Arms

Edited by: AA Miller, PF Miller

viii + 460 pp, August 2011

ISBN: 978-1-904455-89-9, \$360/£180

A major reference volume on antibacterial research and how it impacts on public health worldwide, the book is essential reading for everyone working in antibacterial research.

Metagenomics

Current Innovations and Future Trends

Edited by: D Marco

xii + 296 pp, September 2011

ISBN: 978-1-904455-87-5, \$319/£159

Innovative and recent advances in theoretical, methodological and applied areas. For researchers and environmental managers, students and teachers.

Nitrogen Cycling in Bacteria

Molecular Analysis

Edited by: JWB Moir

x + 250 pp, July 2011

ISBN: 978-1-904455-86-8, \$319/£159

With contributions from expert authors from around the world, this excellent book provides comprehensive reviews of current nitrogen cycle research.

Helicobacter pylori

Edited by: L Boyanova

vi + 290 pp, July 2011

ISBN: 978-1-904455-84-4, \$319/£159

Current knowledge and recent research for microbiologists, clinicians and advanced students working with *Helicobacter* and for those wishing to enter the field.

Microbial Bioremediation of Non-metals

Current Research

Edited by: A-I Koukkou

x + 280 pp, July 2011

ISBN: 978-1-904455-83-7, \$319/£159

An essential reference resource for everyone interested in the bioremediation of organic pollutants.

Lactic Acid Bacteria and Bifidobacteria

Current Progress in Advanced Research

Edited by: K Sonomoto, A Yokota

x + 286 pp, July 2011

ISBN: 978-1-904455-82-0, \$319/£159

Essential reading for every researcher working with LAB, bifidobacteria and probiotics, from the PhD student to the experienced scientist.

Streptomyces

Molecular Biology and

Biotechnology

Edited by: P Dyson

xii + 258 pp, March 2011

ISBN: 978-1-904455-77-6, \$319/£159

Recent research and development in streptomycetes genomics, physiology and metabolism research.

"a must-read" (David A. Hopwood, John Innes Centre, UK); "a major reference" (Doodys); comprehensive, up-to-date" (Microbiol. Today)

Vaccine Design

Innovative Approaches and Novel Strategies

Edited by: R Rappuoli, F Bagnoli

xii + 380 pp, February 2011

ISBN: 978-1-904455-74-5, \$360/£180

Cutting-edge research in vaccine design and development. Essential reading.

"valuable information" (Doodys); "high-quality illustrations" (Ref. Res. Book News); "recommended" (Microbiol. Today)

Salmonella

From Genome to Function

Edited by: S Porwollik

xii + 300 pp, January 2011

ISBN: 978-1-904455-73-8, \$319/£159

Cutting-edge reviews of *Salmonella* genomics and molecular biology. A timely snapshot of the current state of research.

"a valuable resource" (Doodys); "recommended reading" (Food Sci. Technol. Abstr.)

PCR Troubleshooting and Optimization

The Essential Guide

Edited by: S Kennedy, N Oswald

viii + 236 pp, January 2011

ISBN: 978-1-904455-72-1, \$319/£159

Control, optimize and troubleshoot PCR, reverse transcriptase PCR, real-time PCR and quantitative PCR. An essential book.

"an essential book ... a valuable tool to all those interested in PCR" (Doodys); "an essential guide" Aus. J. Med. Sci.