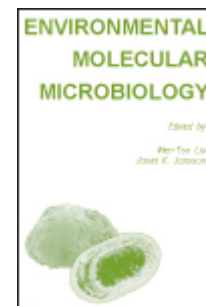


# Environmental Molecular Microbiology



*Edited by: Wen-Tso Liu and Janet K. Jansson*

*University of Illinois at Urbana-Champaign, Urbana, Illinois 61801, USA and Lawrence Berkeley National Laboratory, Berkeley, CA 94720, USA (respectively)*

**Published:** January 2010. **Pages:** viii + 232

**Hardback:** ISBN 978-1-904455-52-3 £159, \$319

**Published by:** Caister Academic Press [www.caister.com](http://www.caister.com)

Molecular biology has revolutionized the study of microorganisms in the environment and improved our understanding of the composition, phylogeny, and physiology of microbial communities. The current molecular toolbox encompasses a range of DNA-based technologies and new methods for the study of RNA and proteins extracted from environmental samples. Currently there is a major emphasis on the application of omics approaches to determine the identities and functions of microbes inhabiting different environments.

This book highlights the current state-of-the-art of environmental molecular microbiology. International experts have contributed chapters that describe the various technologies and their applications in environmental microbiology. The first half of the book focuses on the microbial diversity and phylogeny of microorganisms in the environment and describes the molecular toolbox currently available for the study of the composition and diversity of microbial communities and their functions. Topics include the use of the 16S rRNA gene as a phylogenetic marker, metagenomics, metaproteomics, microarrays, and molecular fingerprinting. The second half focuses on the application of these approaches in various environments including soil, marine water, plants, humans and wastewater treatment. The last chapter of the book discusses the genetics and environmental implications of microbial biofilms.

An essential book for advanced students, research scientists, environmental agencies and industries involved in any aspect of environmental microbiology.

**Chapter 1.** Microbial Diversity and Phylogeny: Extending from rRNAs to Genomes. *James R. Cole, Kostas Konstantinidis, Ryan J. Farris and James M. Tiedje*

**Chapter 2.** Genomics and Metagenomics: History and Progress. *Karen E. Nelson, Peter A. Bryan and Bryan A. White*

**Chapter 3.** Metaproteomics: Techniques and Applications. *Brian D. Dill, Jacque C. Young, Patricia A. Carey and Nathan C. VerBerkmoes*

**Chapter 4.** Nucleic-Acid-based Characterization of Community Structure and Function. *James Prosser, Janet K. Jansson and Wen-Tso Liu*

**Chapter 5.** The Use of Microarrays in Microbial Ecology. *Gary L. Andersen, Zhili He, Todd Z. DeSantis, Eoin L. Brodie and Jizhong Zhou*

**Chapter 6.** The Soil Environment. *Kornelia Smalla and Jan Dirk van Elsas*

**Chapter 7.** Plant-associated Microbial Communities. *George A. Kowalchuk, Etienne Yergeau, Johan H.J. Leveau, Angela Sessitsch, Mark Bailey*

**Chapter 8.** Marine Environments. *Alexander H. Treusch, Ulrich Stingl and Stephen J. Giovannoni*

**Chapter 9.** Human Environment. *Johan Dicksved, Liping Zhao and Janet K. Jansson*

**Chapter 10.** Wastewater Treatment. *Satoshi Okabe and Yoichi Kamagata*

**Chapter 11.** The Impact and Molecular Genetics of Bacterial Biofilms. *Shuwen An, Yi-Hu Dong, Calvin Boon and Lian-Hui Zhang*

## Order from:

Caister Academic Press, c/o Book Systems Plus <http://www.caister.com/order>

☞ **MALDI-TOF Mass Spectrometry in Microbiology**

**Edited by:** Markus Kostrzewa and Sören Schubert (Published: 2016)

☞ ***Aspergillus* and *Penicillium* in the Post-genomic Era**

**Edited by:** Ronald P. de Vries, Isabelle Benoit Gelber and Mikael Rørdam Andersen (Published: 2016)

☞ **The Bacteriocins: Current Knowledge and Future Prospects**

**Edited by:** Robert L. Dorit, Sandra M. Roy and Margaret A. Riley (Published: 2016)

☞ **Omics in Plant Disease Resistance**

**Edited by:** Vijai Bhadauria (Published: 2016)

☞ **Acidophiles: Life in Extremely Acidic Environments**

**Edited by:** Raquel Quatrini and D. Barrie Johnson (Published: 2016)

☞ **Climate Change and Microbial Ecology: Current Research and Future Trends**

**Edited by:** Jürgen Marxsen (Published: 2016)

☞ **Biofilms in Bioremediation: Current Research and Emerging Technologies**

**Edited by:** Gavin Lear (Published: 2016)

☞ **Microalgae: Current Research and Applications**

**Edited by:** Maria-Nefeli Tsaloglou (Published: 2016)

☞ **Gas Plasma Sterilization in Microbiology: Theory, Applications, Pitfalls and New Perspectives**

**Edited by:** Hideharu Shintani and Akikazu Sakudo (Published: 2016)

☞ **Virus Evolution: Current Research and Future Directions**

**Edited by:** Scott C. Weaver, Mark Denison, Marilyn Roossinck and Marco Vignuzzi (Published: 2016)

☞ **Arboviruses: Molecular Biology, Evolution and Control**

**Edited by:** Nikos Vasilakis and Duane J. Gubler (Published: 2016)

☞ ***Shigella*: Molecular and Cellular Biology**

**Edited by:** William D. Picking and Wendy L. Picking (Published: 2016)

☞ **Aquatic Biofilms: Ecology, Water Quality and Wastewater Treatment**

**Edited by:** Anna M. Romání, Helena Guasch and M. Dolors Balaguer (Published: 2016)

☞ **Alphaviruses: Current Biology**

**Edited by:** Suresh Mahalingam, Lara Herrero and Belinda Herring (Published: 2016)

☞ **Thermophilic Microorganisms**

**Edited by:** Fu-Li Li (Published: 2015)

☞ **Flow Cytometry in Microbiology: Technology and Applications**

**Edited by:** Martin G. Wilkinson (Published: 2015)

"an impressive group of experts" ([ProtoView](#))

☞ **Probiotics and Prebiotics: Current Research and Future Trends**

**Edited by:** Koen Venema and Ana Paula do Carmo (Published: 2015)

☞ **Epigenetics: Current Research and Emerging Trends**

**Edited by:** Brian P. Chadwick (Published: 2015)

"this is one text you don't want to miss" ([Epigenie](#)); "up-to-date information" ([ChemMedChem](#))

☞ ***Corynebacterium glutamicum*: From Systems Biology to Biotechnological Applications**

**Edited by:** Andreas Burkovski (Published: 2015)

"Without question a valuable book" ([BIOSpektrum](#))

☞ **Advanced Vaccine Research Methods for the Decade of Vaccines**

**Edited by:** Fabio Bagnoli and Rino Rappuoli (Published: 2015)