

Microbial Ecological Theory

Current Perspectives



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The vast explosion of high-resolution molecular data in the past few years has provided an unprecedented glimpse into the microbial world. This book synthesises current viewpoints and knowledge on microbial ecological theory. The editors have assembled a collection of essays by a diverse group of well-respected scientists who merge the boundaries of ecology and microbiology to explore some of the central tenets of macro-ecological theory with a microbial perspective. The contributors explore the mainstays of macro-ecology asking questions such as 'do microbes have biogeography?' and 'does a microbial species concept exist?', as well as showing how high-resolution molecular data is informing and underpinning the evolution of microbial ecological theory. The authors demonstrate how the application of macro-ecological theory to the microbial world is not only enhancing our understanding of microbial ecology but also providing a reference point for the development of new theories.

Written for graduate students and academic researchers, the book aims to encourage cross-disciplinary thinking and provide direction and perspective on the still fledgling field of microbial ecological theory. This volume is highly recommended for all microbiology libraries.

Chapter 1. Genome-based and Functional Differentiation: Hallmarks of Microbial Adaptation, Divergence and Speciation?.
Paul Wilmes

Chapter 2. The Human-microbe Coevolutionary Continuum. *Lesley A. Ogilvie, Andrew D.J. Overall and Brian V. Jones*

Chapter 3. Mutualism: Plant-microorganism Interactions. *Penny R Hirsch and Tim H. Mauchline*

Chapter 4. A Bird's Eye View of Microbial Community Dynamics. *Zhanshan (Sam) Ma, Jiawei Geng, Zaid Abdo and Larry J. Forney*

Chapter 5. Species-time Relationships for Bacteria. *Anna Oliver, Andrew K. Lilley and Christopher J. van der Gast*

Chapter 6. Microbial Biogeography: Is Everything Small Everywhere?. *Diego Fontaneto and Joaquín Hortal*

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