

Special Issue

Advances in Microbial Adaptation and Evolution

Message from the Guest Editors

This Special Issue highlights current advances in microbial adaptation by integrating mechanistic, ecological, and evolutionary perspectives. We welcome studies that probe how selective pressures shape genetic and regulatory architectures; how stress responses transition into heritable evolutionary change; and how pleiotropy, epistasis, and environmental complexity drive or constrain adaptive outcomes. Key questions include: When is adaptation predictable versus contingent? How do regulatory networks facilitate evolvability? What costs accompany adaptive gains? And how do long-term dynamics differ from short-term acclimation?

We invite submissions that explore microbial adaptation through experimental evolution, genomics, transcriptomics, systems biology, and high-resolution phenotyping. Topics of interest include regulatory adaptation, antimicrobial and metal stress evolution, niche specialization, cross-protection and trade-offs, host-microbe evolutionary dynamics, and adaptation to physicochemical surfaces or microenvironments. Both original research and synthetic perspectives are encouraged, particularly those linking mechanistic insight with evolutionary consequence.

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About the Journal

Message from the Editor-in-Chief

"Microorganism" merges the idea of the very small with the idea of the evolving reproducing organism is a unifying principle for the discipline of microbiology. Our journal recognizes the broadly diverse yet connected nature of microorganisms and provides an advanced publishing forum for original articles from scientists involved in high-quality basic and applied research on any prokaryotic or eukaryotic microorganism, and for research on the ecology, genomics and evolution of microbial communities as well as that exploring cultured microorganisms in the laboratory.

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