

Special Issue

Marine Microbial Systems: From Molecular Mechanisms to Biotechnological Innovations

Message from the Guest Editors

The marine realm harbors Earth's most phylogenetically diverse microbial communities. These microbial systems have evolved extraordinary adaptive strategies to thrive across extreme gradients of pressure, temperature, and salinity, while playing fundamental roles in global carbon/nitrogen cycling and ecosystem resilience. Their unique biological features—from piezophilic enzymes to bioactive secondary metabolites—represent an untapped frontier for both basic science and applied biotechnology. This Special Issue will highlight cutting-edge research on marine microbial systems, with particular focus on the following:

- Novel adaptive mechanisms at molecular/genomic levels;
- Functional biodiversity spanning uncultured phyla;
- Ecosystem-scale interactions and biogeochemical impacts;
- Evolutionary innovation in extreme environments.

The Special Issue aims to bridge the gap between basic research and translational applications, showcasing how molecular understanding of marine microorganisms can drive innovations in medicine, agriculture, energy, and environmental sustainability.

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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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