

Special Issue

Molecular Tools in Environmental Microbiology

Message from the Guest Editors

Environmental microbiology continues to face significant technical and analytical challenges. One of the primary obstacles is the extraction of high-quality genomic DNA from complex and inhibitor-rich environmental samples such as soil, feces, sediments, wastewater, and biological fluids. These matrices often contain humic substances, polysaccharides, and other PCR inhibitors that compromise downstream molecular analyses. Another major limitation is the low abundance of target microorganisms within a given environmental sample. The goal of this Special Issue is to present recent advances in molecular methods for studying microorganisms in complex environmental samples. It focuses on overcoming challenges in DNA extraction, PCR inhibition, detection of low-abundance species, and limitations of current sequencing tools and databases. The issue aims to provide practical solutions and highlight innovative tools for accurate microbial identification and functional analysis in environmental microbiology.

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