Special Issue

Tailored Therapies and Targeted Diagnostics: The Role of AI in Precision Medical Microbiology

Message from the Guest Editor

The field of medical microbiology has undergone a transformative shift with the integration of artificial intelligence (AI), machine learning (ML), automation, and high-throughput screening (HTS) technologies. These advancements have revolutionized pathogen detection, identification, and drug discovery, enabling faster, more accurate, and scalable diagnostic and therapeutic solutions. AI-driven image and data analysis, utilizing deep learning and self-supervised models, has enhanced diagnostic precision by enabling pre-screening, classification, and quantification of specimens tailored to specific patient profiles. These technologies are now integral to clinical decision support systems, predicting infection risks, detecting pathogens early, and optimizing laboratory workflows. We invite contributions that highlight novel methodologies, clinical applications, and solutions to overcome current limitations, fostering the development of autonomous, AI-enhanced diagnostic ecosystems for rapid clinical decision-making and the discovery of new interventions.

Guest Editor

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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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