Special Issue

Artificial Intelligence in Infectious Diseases: From Pathogen Recognition to Personalized Medicine

Message from the Guest Editors

Artificial intelligence (AI) is revolutionizing the management of infectious diseases by bridging pathogen detection and personalized treatment strategies. Advanced machine learning models excel in analyzing vast datasets, enabling rapid identification of pathogens through genomic sequencing or imaging. For instance, AI-powered algorithms can detect subtle patterns in microscopy images or predict viral mutations, accelerating diagnostics and outbreak tracking.

Beyond pathogen recognition, AI enhances disease surveillance by integrating real-time data from global health databases, social media, and environmental sensors to forecast epidemics. During the COVID-19 pandemic, AI models predicted viral spread and optimized resource allocation, demonstrating their public health utility.

This Special Issue covers the following topics:

AI approaches for predicting host–pathogen interactions at the molecular level;
Tools for predicting disease severity and patient outcomes;
Machine learning for faster and more accurate infectious disease diagnostics;
AI applications in vaccine design, development, and monitoring.

Guest Editors

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About the Journal

Message from the Editor-in-Chief

The worldwide impact of infectious disease is incalculable. The consequences for human health in terms of morbidity and mortality are obvious and vast but, when infections of animals and plants are also taken into account, it is hard to imagine any other disease that has such a significant impact on our lives—on healthcare systems, on agriculture and on world economics. *Pathogens* is proud to continue to serve the international community by publishing high quality studies that further our understanding of infection and have meaningful consequences for disease intervention.

Editor-in-Chief

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