

Special Issue

Molecular Mechanisms and Ecological Interventions in Zoonotic Pathogens

Message from the Guest Editors

Zoonotic pathogens, which are transmitted between animals and humans, pose significant threats to global health. Research in this field is focused on unraveling the molecular mechanisms underlying pathogen emergence, transmission, and host adaptation. Key areas include exploring viral/bacterial genomics to identify virulence factors, host-pathogen interactions (e.g., receptor binding and immune evasion), and the evolutionary dynamics driving cross-species spillover. Additionally, ecological interventions are designed to disrupt transmission cycles by targeting reservoir hosts, vectors, and environmental drivers. Current studies are exploring wildlife surveillance, habitat management, and One Health strategies incorporating human, animal, and environmental health data. Collaborative, interdisciplinary efforts are critical in addressing the complex interplay among biological, environmental, and anthropogenic factors in zoonotic disease emergence. This Special Issue will highlight the complexity of zoonotic spillover, bridging molecular biology, ecology, and public health. It will advocate for One Health strategies to preempt outbreaks through integrated research and policy.

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Deadline for manuscript submissions

31 May 2026



Pathogens

an Open Access Journal
by MDPI

Impact Factor 3.3

CiteScore 6.8

Indexed in PubMed



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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

Prof. Dr. Hinh Ly

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