

Special Issue

Mathematical Modeling of Infectious Diseases: Fractional Calculus Approaches and Applications

Message from the Guest Editors

Infectious diseases pose significant challenges to global health, requiring advanced models to understand transmission, evolution, and control. Fractional calculus offers tools to model memory effects, nonlocal interactions, and anomalous diffusion in disease epidemiology. This Special Issue invites research and reviews on fractional calculus applications in infectious disease modeling relevant to medicine and global health. We welcome papers on new models, analytical methods, numerical simulations, and control strategies aligned with the journal's focus. Topics include:

- Fractional models for tropical disease dynamics
- Memory effects and nonlocal interactions in epidemiological models
- Modeling emerging and re-emerging diseases
- Analytical and numerical approaches in fractional epidemiology
- Optimal control and elimination strategies
- Fractional calculus in vector-borne and neglected diseases
- Immunity and vaccination in fractional models
- Sensitivity analysis and parameter estimation in disease models
- Contributions to global health and One Health perspectives.

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About the Journal

Message from the Editor-in-Chief

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manuscripts are peer-reviewed and a first decision is provided to authors approximately 20.6 days after submission; acceptance to publication is undertaken in 3.1 days (median values for papers published in this journal in the first half of 2025).