Special Issue

Mathematical Modeling for Understanding Viral Infections Within-Host and Between-Host

Message from the Guest Editors

The current COVID-19 pandemic has made it clear that mathematical modeling in conjunction with computational techniques and statistical analysis plays an important role in the qualitative and quantitative understanding of epidemics. Because of the current pandemic, there has been a great and rapid advance in scientific knowledge for these types of epidemic emergencies. Population scale models have provided valuable information for public health authorities at local and national levels, allowing them to assess the effect of different non-pharmaceutical interventions. Moreover, models have been used to analyze the effects of vaccination programs and the appearance of new SARS-CoV-2 variants. At the within-host level, models of viral dynamics have helped to assess the possibility of re-purposing antivirals in order to treat the emerging epidemic. In order to be prepared for the next pandemic, we need to continue to refining mathematical tools for analyzing viral dynamics. Furthermore, a big challenge that we face is the integration of models for within-hosts and between-hosts.

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