



IEEE Transactions on Molecular, Biological, and Multi-scale Communications

Special Issue on “Section II: Molecular Communications for Diagnostics and Therapeutic Development of Infectious Diseases”

Call for Papers

Infectious diseases have affected humans for centuries and continue to pose as one major challenge for healthcare going forward. The recent viral COVID-19 infectious disease has transformed our lives dramatically. Besides a large number of deaths, the virus can also affect the health of the general population. Recent historical events have proven that various types of coronaviruses can have a tremendous impact, and examples of these include the Severe Acute Respiratory Syndrome (SARS) and the Middle East Respiratory Syndrome (MERS), which also showed a high mortality rate. Besides coronaviruses, there are numerous types of infectious diseases that continue to affect people. A number of diseases that have been around for centuries do not currently have cures, one notable example being HIV. The consequence of the spreading of these infectious diseases, which sometimes can evolve into pandemics, can and will affect the global economy. Besides traditional fields such as immunology and virology, novel multi-disciplinary approaches will be required to tackle infectious diseases with much needed diverse and innovative points of view.

This special issue, is a follow on from Section I special issue, and will also focus on developing molecular communication abstractions, models, simulation, and experiments for diagnosing and treating infectious diseases. This may include characterizing the infection process and the propagation behavior of the virus, all the way to new mechanisms for developing therapeutic treatments using communication and information theory as tools. Prospective authors are cordially invited to submit their original manuscript on topics including but not limited to:

- Molecular Communications modeling of infectious disease propagation
 - o Bacteria

- Fungi
- Parasites
- Viruses
 - Coronavirus (e.g., SARS-CoV-1, SARS-CoV-2, MERS-CoV)
 - Filovirus (e.g., Ebola)
 - Flavivirus (e.g. Dengue, Zika)
- Modeling Molecular Communication Systems of innate and adaptive immune response for infectious diseases
- Propagation models of infectious, transmissible, and communicable diseases
 - Modeling the airborne or mosquito-borne propagation or interspecies transmission of viruses
 - Modeling the propagation of antimicrobial drug resistance
- Molecular Communication Treatment techniques for infectious diseases
- Using phenotypic data for enhancing Molecular Communication Models for the development of therapeutic agents
- Microfluidic Molecular Communication Analysis techniques for infectious disease
- Using Molecular Communication binding models for designing therapeutic vaccines
- Use of nano-biology/medicine/technology and novel materials, which utilize Molecular Communication, to improve infectious disease diagnostics
- Molecular Communication simulation and modeling platforms for infectious diseases.
- Experimental platforms such as multi-organ-on-chips to speed up drug discovery using molecular communication and data analytics

Important Dates

Manuscript Submission Deadline: 5th September 2020

First Notification: 15th November 2020

Acceptance Notification: 15th January 2020

Final Manuscript Due: 15th February 2020

Publication Date: Second Quarter 2021

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