

MS1-Title: Non locality and heterogeneity in physiological and pathophysiological systems

MS1- Abstract

In this mini-symposium, we introduce the presence and influence of non-local and heterogeneous mechanisms in physiological and pathophysiological systems. Biological signals communicate in (sub and supra) diffusion processes and linear/nonlinear wave propagation. In many cases, the differentiation between physiological and pathophysiological states need rigorous analysis on non-local and heterogeneous domain, but these are computational challenging. We orchestrate mathematical approaches of model reduction, recurrence of diffusion-reaction, stochastic homogenization, population density method on the following physiological models: cardiopulmonary circulation, phase separation in axon cytoskeleton, reaction-diffusion in angiogenesis, and multi-cellular circadian rhythms.

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