



## Recent Studies of Stochastic Processes in Mathematical Biology

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### Message from the Guest Editors

Dear Colleagues,

Biological systems are characterized by an intrinsic noisy behaviour. This is true at each level of biological complexity, from macromolecules up to organs, apparatuses and whole complex organisms. Let us think of the neuronal system, where the major sources of noise are the randomness of the time sequence of action potentials in presynaptic neurons, the stochastic behaviour of synaptic mechanisms (synaptic noise), and the probabilistic gating of both voltage- and ligand-dependent ion channels (channel noise). In several cases, this intrinsic stochastic behaviour has been shown to enhance the detectability of weak sensorial stimuli through the stochastic resonance phenomenon.

Therefore, to capture the stochastic dynamics and to realistically model such biological systems, it is necessary to make use of mathematical tools based on stochastic processes.

This Special Issue focuses on stochastic processes applied to biological systems, at different complexity scales, with special regard (but not limited) to the nervous system.

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*Guest Editors*





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