

# Special Issue

## Stochastic Models in Mathematical Biology

### Message from the Guest Editor

Is biology deterministic or stochastic? Independent from the answer to this question, stochastic models have been applied with great success in all areas of mathematical biology. Applications extend beyond examples such as evolutionary processes or dynamics of biomolecules where the underlying dynamics themselves are considered stochastic. Many biological systems, including ecosystems or neural networks in the brain, are influenced by a variety of processes—each of which, by itself, only has a small impact. The collective impact of these perturbations can be modelled by stochastic differential equations, which enable us to study the dynamics of a deterministic process under stochastic fluctuations. Finally, stochastic models enable us to represent parameter uncertainties in data-driven models obtained using a Bayesian statistics approach or to account for incomplete knowledge. For this Special Issue, we are interested in new approaches for applying stochastic models in biology as well as original applications of existing frameworks. We also invite manuscripts from the emerging field of parameterising stochastic models with experimental data.

### Guest Editor

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### Deadline for manuscript submissions

closed (20 January 2023)



## Mathematics

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### Message from the Editor-in-Chief

The journal *Mathematics* publishes high-quality, refereed papers that treat both pure and applied mathematics. The journal highlights articles devoted to the mathematical treatment of questions arising in physics, chemistry, biology, statistics, finance, computer science, engineering and sociology, particularly those that stress analytical/algebraic aspects and novel problems and their solutions. One of the missions of the journal is to serve mathematicians and scientists through the prompt publication of significant advances in any branch of science and technology, and to provide a forum for the discussion of new scientific developments.

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