

Special Issue

Multiscale Mathematical Modeling for Cell Decision-Making in Multicellular Systems

Message from the Guest Editors

Cell decision-making is the process of cells responding to their microenvironmental cues. Cell decision-making phenomena have been well-studied in the context of single cells. However, how cells make decisions in their multi-cellular environment still remains elusive. Statistical physics and information theory offer a unique toolbox to study cell decisions in their multicellular environments since it allows for (1) low-dimensional description of relevant dynamics and (2) coupling between single cell decisions and the corresponding collective behavior at the multicellular level. Eukaryotic or prokaryotic (bacterial) phenotypic plasticity and cell fate determination are prime paradigms of such cell decision-making impacting all aspects of multicellular behavior, such collective migration, tissue development, and tumor growth. In this Special Issue, we intend to shed light on the latest developments on these aspects.

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Deadline for manuscript submissions

closed (16 August 2021)



Entropy

an Open Access Journal
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Impact Factor 2.0
CiteScore 5.2
Indexed in PubMed



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