Special Issue

Advances in Cell and Tissue Engineering: Biomechanical Modeling and Mechanobiology

Message from the Guest Editors

Most diseases arise due to imbalances in cell and tissue homeostasis, which are affected by cell activity and differentiation. Cells can sense, respond, and adapt to mechanical stimuli, often differentiating between static and dynamic stimuli. Traditional mechanical processes applied to monolayers of cells, intact tissues, or engineered tissue structures can stimulate cell differentiation and promote metabolic changes. Mechanobiological studies can help explain macroscopic pathogenesis from the microscopic level through cellular activities. These studies are further enhanced when coupled with advanced numerical analysis techniques, including but not limited to finite element analysis, computational fluid dynamics, multiphysics modeling, multi-scale modeling, agent-based modeling, network analyses, and artificial intelligence (AI)-based methodologies.

This Special Issue aims to explore the potential of mechanical analyses in the biomedical field to accelerate the understanding of pathogenesis, accelerate drug development, and accelerate the development of novel disease treatments. We welcome numerical studies, experimental studies, and comprehensive reviews.

Guest Editors

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Message from the Editor-in-Chief

As the world of science becomes ever more specialized, researchers may lose themselves in the deep forest of the ever increasing number of subfields being created. This open access journal Applied Sciences has been started to link these subfields, so researchers can cut through the forest and see the surrounding, or quite distant fields and subfields to help develop his/her own research even further with the aid of this multi-dimensional network.

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