Special Issue

Engineering 3D Tissue Models: Techniques and Applications in Regenerative Medicine

Message from the Guest Editor

Recently, 3D cell culture systems have been improved with new techniques and formulations that allow the culture of cell lines as well as organoids from primary tissues. In these conditions, tissue-engineered micro-tissues can orient themselves spatially, creating niches enriched in stem or differentiated cells specific to the tissue of origin. These tools allow precise and direct monitoring of physiological and pathological mechanisms and are often much more informative and versatile than in vivo tests. These innovative in vitro models can recapitulate the complexity of the tissue of origin, with different cellular components colonizing a matrix that reproduces the spatial conformation of the tissue vitro by mimicking the in vivo microenvironment without the use of animal models that are usually quite expensive. These tools can be essential for analyzing the physiological behavior of healthy cells and patient cells derived from several diseases such as cancers, metabolic diseases, neurodegenerative disorders, autoimmune diseases, and inherited pathologies allowing for a more accurate personalized medicine approach.

Guest Editor

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