

Special Issue

Engineering Mesenchymal Stem Cells for Regenerative Medicine

Message from the Guest Editors

Mesenchymal stem cells have emerged as a powerful tool in regenerative medicine due to their multipotency, immunomodulatory properties, and ability to secrete bioactive factors that promote tissue regeneration. This Special Issue focuses on the latest advancements in engineering MSCs to enhance their therapeutic potential, including genetic modifications, biomaterial integration, bioactive factor secretion, and improved protocols for their derivation from tissues, pluripotent stem cells, and direct reprogramming, as well as their characterization and differentiation. We aim to explore novel strategies that optimize MSC-based therapies, address challenges such as immune rejection and viability loss, and accelerate clinical translation. This Special Issue welcomes original research and comprehensive reviews on MSC-based biomaterials, mechanistic insights into MSC differentiation, engineered MSC therapies for specific diseases, advances in cell delivery and storage systems, and the role of secreted bioactive factors in tissue repair.

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