Special Issue

Mesenchymal Stem Cell Application in Regenerative Medicine: From Mechanisms to Therapeutic Approaches

Message from the Guest Editors

Mesenchymal Stem Cells (MSCs), firstly identified as non-hematopoietic multipotent stem cells with the ability to differentiate into cell types from the three embryonic sheets, are now very well established as source of cells with great therapeutic potential, specifically for tissue regeneration and repair associated-diseases. The therapeutic properties of MSCs have been examined in both preclinical and clinical settings for the treatment of various disorders, including cardiovascular, neurodegenerative, immune, lung, liver, kidney and orthopedics diseases. MSCs are immuno-privileged, and this feature make these cells a useful tool to be applied in the field of cell therapy. In addition, MSCs possess immunomodulatory, trophic, angiogenic and antioxidative properties, and all of these effects appear to be in part mediated by the production of a functional secretome. Indeed, in many in vitro and in vivo disease models, MSC-derived products have been identified as responsible for therapeutic effects. Therefore, it becomes crucial to further characterize and define the mechanisms by which MSCs exert their function.

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