

Special Issue

Latest Research on Mesenchymal Stem Cells

Message from the Guest Editor

Mesenchymal stem/stromal cells are found in practically all tissues and play a role in regeneration and homeostasis. They have the ability to self-renew and activate multipotency when stimulated by biochemical signals. The MSC secretome or MSC-derived extracellular vesicles (exosomes and microvesicles, EVs) have been hypothesized as a more important biological mechanism contributing to their function than their differentiation capacity. EVs play a role in cell-to-cell communication, cell signaling, and changing cell or tissue metabolism at the local or global level. MSC-derived exosomes contain, e.g., cytokines and growth factors, signaling lipids, mRNAs.

The contents of MSC exosomes are dynamic, influenced by the MSC tissue of origin, its activity, and its immediate intercellular neighbors. Thus, when MSCs are grown alongside tumor cells or in the in vivo tumor microenvironment, the exosome concentration appears to be altered. MSCs can directly donate mitochondria to recover from cell injury and rescue mitochondrial damage-induced tissue degeneration. This could promote cancer growth and spread by promoting mitochondrial exchange between cancer cells and adjacent stromal cells.

Guest Editor

Prof. Dr. Marcel Costuleanu

Pathophysiology Discipline, Faculty of Dental Medicine, "Grigore T. Popa" University of Medicine and Pharmacy, 700115 Iasi, Romania

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MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
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Prof. Dr. José L. Quiles
Department of Physiology, Institute of Nutrition and Food Technology
"Jose Mataix", Biomedical Research Center, University of Granada,
Avda. Conocimiento s/n, 18100 Armilla, Granada, Spain

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