

Tentative Outline

Special Thematic Issue for Current Stem Cell Research & Therapy

Title of thematic issue: Cells named “Mesenchymal Stem Cells”: Blurred image of development origin, cellular niche and traits with development of regenerative therapy over and above

Guest Editor: Drenka Trivanović

Aims & Scope:

Annotated as misnomer, the term “mesenchymal stem cells” (MSCs) is used for cultured fibroblastic cells from virtually every tissue or organ. Based on skeletal stem cell concept, this term first described bone marrow MSCs, grown from a multipotent clonogenic progenitors which *in vivo* form heterotopic ossicles, miniature bone organs and hematopoietic microenvironment. Currently, many nonepithelial and nonhematopoietic tissues, seen as outcomes of a hypothetical “mesengenic process”, are recognized as sources of distinct classes of tissue-specific committed progenitors/MSCs. These progenitors possibly have different developmental origin, vicinity with blood vessels and transcriptomic signature. Beside poorly selective isolation based on plastic adherence, an extensive *ex vivo* amplification of MSCs loaded with inter- and intra- colony heterogeneity fosters heterogenic populations growth under untrustworthy laboratory conditions quite different from native tissue cues missing any chemical and physical gradient. Propagated from multiple colony-forming units, MSCs are defined by a limited range of nonspecific surface markers and non-rigorous assays for multipotency, without transplantable clonal progeny proving. Despite questionable engraftment and short-time survival after injection, non-progenitor functions of MSCs, such as trophic, immunomodulatory and message-secreting, move them to clinical trials. So, it is not understood how *in vivo* undefined cells drift away from the hypothesis in basic science toward “stem cell-based” players in regenerative medicine. This thematic issue aims to collect knowledge about experienced MSC physiology and their potential useful properties along with critical end view based on all aforementioned concerns. Authors are encouraged to discuss novel approaches for overcoming these problems.

Keywords: stem cell physiology, commitment, paracrine activity, regenerative medicine

Subtopics:

The subtopics to be covered within this issue are listed below:

- Developmental places of MSCs within stem cell zones in different tissues.
- Maintenance and commitment of MSCs in dependence on surrounding/differentiated cells and niche components.
- Genotype-phenotype map in bulk MSC population during *in vitro* culture.
- Non-progenitor functions of MSCs: indications for therapy.

Schedule:

- ✧ Manuscript submission deadline: February 1st, 2018
- ✧ Peer Review Due: March 1st, 2018
- ✧ Revision Due: April 1st, 2018
- ✧ Announcement of acceptance by the Guest Editors: May 1st, 2018
- ✧ Final manuscripts due: May, 1st, 2018

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