

Special Issue on
**Mechanobiology Microenvironments for Stem Cells in
Repair and Regeneration**

CALL FOR PAPERS

Our body consists of many tissue types to compose the functional organ and system. Cells in these architecture types and microenvironments can sense the mechanical cues for tissue homeostasis, such as the stretch force in aligned tendon and soft tissue in brain. After injury or tissue damage, the endogenous repair mechanism or current surgical procedure will try to close the wound as soon as possible with little attention on mechanical aspect. Although these approaches can quickly close the damaged tissue to prevent bacterial infection, the scar formation and deficit regenerated tissue usually occur to inhibit functional performance.

Mechanical microenvironments can facilitate stem cell differentiations. The soft material promotes neurogenesis, fluid shear stress is important for cardiogenesis and endothelial differentiation, stretch stimulation can benefit muscle and tendon induction, and the compressive force is essential for osteogenesis and cartilage maturation. In addition, the cell-cell interactions in the microenvironments when applying stem cells or progenitor cells to the repairing tissue play pivotal roles in functional restoration. How the mechanical microenvironments participate in and benefit the regenerative mechanism is still not clear. This special issue aims to collect the leading researches that focus on investigating the external forces and microenvironments for cell/tissue remodeling and functional regeneration. We invite authors to contribute original research articles as well as review articles that will illustrate and stimulate the continuing effort to understand the implication of mechanical microenvironment for stem cell programming and promotion of tissue regenerations. The innovations of therapeutic strategies and microenvironmental devices/materials are also welcome.

Potential topics include but are not limited to the following:

- ▶ Stem cell differentiation using mechanical microenvironments
- ▶ Cell-cell interactions during tissue repair and regeneration
- ▶ Application of cell-based therapy for tissue regeneration
- ▶ Stem cell signals in response to mechanical stimulations
- ▶ Stem cell programming and signal cascades during wound repair and regeneration
- ▶ Novel materials for optimize stem cell microenvironment
- ▶ Using microfluidic device to understand host and stem cells interactions

Authors can submit their manuscripts through the Manuscript Tracking System at <http://mts.hindawi.com/submit/journals/sci/mmscr/>.

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