

Special Issue on
The Effect of Tissue-Specific Extracellular Niches on Stem Cell Behaviour

CALL FOR PAPERS

Myriad components of the extracellular matrix (ECM), including its mechanical, chemical, and functional properties, influence resident cells. And vice versa, cells affect their surrounding ECM by modulating the aforementioned tissue-specific properties. This complex interdependency between cells and their ECM bestows each specific tissue type with its own characteristic topography, permeability, elasticity, and functional properties.

These tissue-specific, highly localised microenvironments, also known as niches, provide resident stem cells with specialised protective environments, which enable them to maintain multipotency through minimal metabolic activity. This in turn is moderated by ECM composition. It is well established that alteration of mechanical and biochemical properties of the niche, such as elasticity of the ECM, impact stem cell self-renewal, proliferation, and differentiation.

An understanding of the composition and physical characteristics of extracellular niches in various tissue types is essential for gaining greater insight to the fundamental effects of the cellular microenvironment on resident stem cell population properties, markers, and functions. This is of great interest to researchers in various disciplines, including stem cell biology, tissue engineering, regenerative medicine, biomechanics, mechanotransduction, developmental biology, gerontology, and other related fields. A deeper understanding of these issues will also enable a more targeted approach to treating illnesses in which ECM properties are dysfunctional, such as in musculoskeletal disorders and many cancers.

We invite the authors to submit review articles and, in particular, original research articles.

Potential topics include but are not limited to the following:

- ▶ ECM composition of tissue-specific stem cell niches
- ▶ Differences between ECM proteins secreted by specialised cells types and their multipotent predecessor stem cells
- ▶ Comparative understanding of the mechanical and physical properties of niches in various tissues, including (but not limited to) skin, eye, oral mucosa, cardiac, adipose, bone marrow, and neuronal tissues
- ▶ Resident stem cell markers and ECM proteins
- ▶ The influence of spatial and temporal presentation of cell adhesion ligands and other biomolecules on differentiation
- ▶ Porosity of the ECM and its influence on growth factors and cytokines in directing stem cell differentiation
- ▶ The importance of three-dimensional cell culture models (e.g., hydrogels) for understanding cell-ECM interactions in most tissue types
- ▶ Cell morphology, mechanics, and mechanotransduction
- ▶ Nuclear morphology and its implication in differentiation

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

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Manuscript Due

Friday, 7 April 2017

First Round of Reviews

Friday, 30 June 2017

Publication Date

Friday, 25 August 2017