Bench to Bedside: Ligament and Tendon Tissue Engineering

Guest Editor: Dr. Wasim Khan

Aims & Scope:

The musculoskeletal disease burden is a significant health issue around the globe. Although some ligament and tendon injuries and defects heal well, some do not heal satisfactorily and can run a chronic course over months if not years involving many surgical procedures and significantly affect an individual's well-being. The current clinical use of autologous cells or blood products, and allogeneic or synthetic scaffolds to treat extensive defects is not without risks and complications. Tissue engineering of ligaments and tendons has the potential to overcome the limitations of the current treatment options. Tissue engineering applications involve culturing of stem cells within appropriate scaffold materials under conditions that optimize tissue development. Stem cells, progenitor cells, terminally differentiated cells or genetically modified cells can be used. Scaffold materials include polymers or composites which are used to maintain the desirable characteristics of the in

dividual materials, and are routinely used in clinical practice albeit not specifically with stem cells. Preclinical and clinical studies on the use of growth factors to increase tissue formation have had early promising results and these have now started to appear in clinical practice. This special issue will focus on the approaches to and the challenges associated with producing tissue engineered ligament and tendon.

In this special issue of CURRENT STEM CELL RESEARCH & THERAPY, the following topics will be discussed:

- Sources of Adult Mesenchymal Stem Cells for Ligament and Tendon Tissue Engineering
- Differentiation Potential of Adult Mesenchymal Stem Cells for Ligament and Tendon Tissue Engineering
- Optimising Stem Cell Differentiation for Ligament and Tendon Tissue Engineering
- Biomaterials and Scaffolds in Musculoskeletal Tissue Engineering
- The Role of Bioreactors in Ligament & Tendon Tissue Engineering
- Preclinical and Clinical Studies on the use of Stem Cells for Ligament and Tendon Tissue Engineering
- Preclinical and Clinical Studies on the use of Scaffolds for Ligament and Tendon Tissue Engineering
- Preclinical and Clinical Studies on the use of Growth Factors for Ligament and Tendon Tissue Engineering
- Stem Cell Applications and Tissue Engineering Approaches for the Achilles Tendon
- Stem Cell Applications and Tissue Engineering Approaches for the Rotator Cuff Tendon
- Stem Cell Applications and Tissue Engineering Approaches for the Knee Ligaments
- Gene Delivery in Bone Tissue Engineering Using Viral and Nonviral Strategies

Keywords: Stem Cells, Tissue Engineering, Ligament, Tendon, Bioreactors, Biomaterials, Scaffolds, Growth Factors.

Schedule:

Manuscript submission by:	30 March 2014
Peer review due:	30 April 2014
Revision Due:	30 May 2014
Notification of acceptance by the Guest Editor:	15 June 2014
Final manuscripts due:	15 June 2014