Symposium 2: ESB-Korea Joined Symposium

UPDATES ON THE MUSCULOSKELETAL TISSUE REGENERATION

Organizer

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Chair

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Theme

In this combined symposium, 3 speakers from Korea and EU will talk about recent updates including their own data and experiences on the regeneration of bone, cartilage and tendon. Nature shows strong preference for bottom up creation of highly sophisticated strictures. Advances in bioengineering, biochemistry and biology have allowed the development of man-made devices (e.g. fibrous constructs, hierarchical films, injectable hydrogel and cell-assembled tissue engineered systems) that closely imitate native tendon supramolecular architecture and function.
Type I collagen (Col I) is a major component of bone tissues known to promote osteogenic differentiation of human adipose-derived stem cells (hASCs). However, the mechanism of the effects of Col I on osteogenesis associated with matrix metalloproteases (MMPs) is still not clear. hASCs-Col I interaction can enhance osteogenic differentiation by remodelling Col I matrix associated with MMP-13 positive feedback loop.
Gene transfer has been used experimentally to promote chondrogenesis and cartilage regeneration. While viral gene delivery methods have been mainstays currently with enhanced safety features, efficiency has been greatly improved in nonviral delivery. In this symposium, general overview and recent update on nonviral gene transfer to enhance cartilage regeneration will be introduced.

Invited Speakers

Invited speaker 1: Bottom up supramolecular assemblies for tendon repair and regeneration
Dimitrios I Zeugolis
Regenerative, Modular & Developmental Engineering Laboratory and Science Foundation Ireland Centre for Research in Medical Devices National University of Ireland Galway , Galway, Ireland, dimitrios.zeugolis@nuigalway.ie

Invited speaker 2: Remodelling of collagen by matrix metalloproteinase of stem cells followed by osteogenic differentiation and bone tissue formation
Soo-Hong Lee
Department of Biomedical Science, CHA University, Seongnam-si, Korea, lee.soohong@gmail.com

Invited speaker 3: Nonviral gene transfer to enhance cartilage regeneration

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