

2nd International Conference on

Systems & Synthetic Biology

August 18-20, 2016 London, UK

MicroRNAs: Potential biomarkers and therapeutic targets in osteoarthritis

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Osteoarthritis (OA) is the most common form of arthritis and ageing-related joint pathology associated with degradation of the articular cartilage, synovial inflammation/fibrosis, subchondral bone remodeling and osteophyte formation. This disease results from alterations in the joint tissues that lead to pain, loss of motion and instability. The economic burden associated with this disease is substantial. Specific mechanisms associated with the joint destruction and associated pain during OA is largely unknown. Due to the lack of biomarkers, it is impossible to identify patients exhibiting early stages of OA, leading to severe joint destruction. Furthermore, due to poor understanding of the underlying disease mechanisms, no disease-modifying therapies to treat OA exist. MicroRNAs (miRNAs) are small non-coding RNAs that are expressed as primary stem loop precursors and undergo maturation by enzymatic processes. It is estimated that miRNAs regulate more than 60% of all coding genes and play pivotal roles in pathophysiological processes; including cell proliferation, differentiation, genomic stability, metabolism, apoptosis and aging. In this lecture, I will talk about how we employed a combination of gene expression analyses, computational biology and in vitro biological functional assays to identify panel of microRNAs as potential biomarkers and therapeutic targets in osteoarthritis.

Biography

Mohit Kapoor is a Senior Scientist at the Krembil Research Institute, University Health Network in Canada. He leads the Cartilage Biology and Joint Restorative Medicine Research within the Arthritis Program at the University Health Network. He has published over 60 research article, reviews and book chapters in high impact journals. He is a recipient of several prestigious Research and Fellowship Awards from various research organizations across the globe. He is also an Editor of book on osteoarthritis that was recently published in 2015 and sits on Review Panel of various research funding organizations.

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