# INDUCED PLURIPOTENT STEM CELLS IN CARTILAGE REPAIR

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The generation of functional cartilage tissue using stem cells is promising to be an important advance in regenerative medicine. Although progress has been made using adult mesenchymal stem cells, these cells suffer from limited accessibility, senesce upon expansion, donor and clonal variability and the generation of immature tissue. Investigating more potent stem cells such as human induced pluripotent stem cells (hiPSCs) could overcome a lot of those limitations but it also comes with its unique challenges. Whilst similar to embryonic stem cells they show differences in their epigenetic signature, suggesting different signalling requirements for differentiation. In-depth understanding of the signals that regulate cartilage development is paramount for harnessing the power of hiPSCs. We report a simple, chemically defined, efficient, scalable and reproducible protocol for the differentiation of hiPSCs toward chondrocytes that can be used to engineer mature cartilage in vitro and in vivo.

# IMPROVED MR SCORING SYSTEM FOR OUTCOME ANALYSIS OF CARTILAGE REPAIR PROCEDURES

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Articular cartilage and its supporting bone are tightly coupled and should be viewed as a connected unit. New treatments are emerging aiming at the regeneration of the entire osteochondral structure, but MRI evaluation scores are mainly focused on the superficial cartilaginous layer. The aim of this study is to analyze the MRIs obtained after transplantation of an osteochondral scaffold in order to develop a score for the assessment of the imaging appearance of the regenerated tissue quality, both at the cartilage and bone level, and its correlation with the clinical outcome.