
Stromal cell micropellets for accelerated tissue regeneration

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Cartilage injuries, defects and degenerative joint disorders have limited treatment options due to the minimal regenerative capability of cartilage tissues. Autologous chondrocyte implantation (ACI) technique is the most commonly used technique in cartilage repair.

The harvest of autologous chondrocytes itself is a fundamental step, making this a complex clinical procedure with several drawbacks such as donor site morbidity, limited tissue yield, limited application in older patients and those with degenerative diseases, etc. This calls for the development of better strategies to tackle cartilage repair and regeneration.

Recently, tissue engineering approaches using mesenchymal stromal cells (MSCs) have emerged as a promising alternative, owing to the trilineage differentiation potential of MSCs, which includes chondrogenic differentiation. The project aims to develop a standardized, reproducible, and scalable high-throughput manufacturing process for allogeneic MSCs-derived chondrogenic pellets that can be cryopreserved, enabling off-the-shelf availability for orthopedic clinical applications.
