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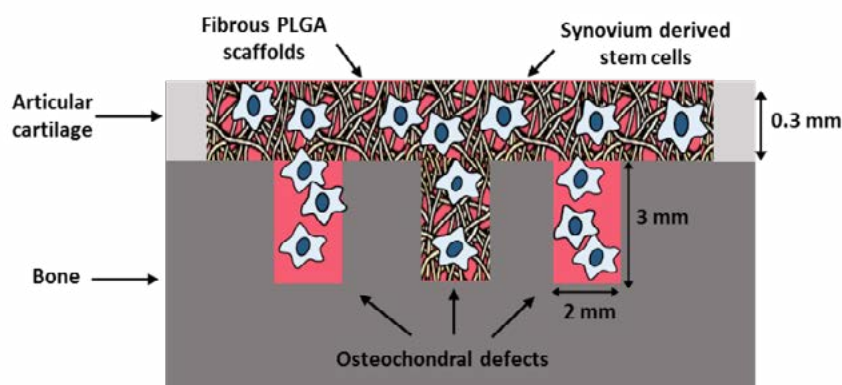
## Articular cartilage regeneration with resident stem cells based therapies in a rabbit osteochondral defect model

Hee Jung Kim and Seung Jin Lee

Ewha Womans University, Republic of Korea

Treatment for cartilage injuries still remains a big challenge due to the trauma or diseases like osteoarthritis. For improvement of therapeutic efficacy on articular cartilage repair, we designed the resident stem cell based therapeutics using bone morphogenetic protein-7 (BMP-7) encapsulated in nanoparticles-releasing poly (D, L-lactide-co-glycolide) (PLGA) fibrous scaffolds. Resident stem cells offered high proliferative ability and kept their chondrogenic function *in vitro*. Controlled BMP-7 release from PLGA microfiber was optimized to stimulate the joint restoration. The micro architectural support of PLGA scaffolds for the cell transplantation and sustained growth factor release was crucial for the cartilage restoration *in vivo*. At 6 weeks, after treatment in a rabbit osteochondral defect, the gross morphological and histological examination of chondrogenesis was significantly improved. Regenerated cartilage showed hyaline cartilage following native cartilage and deposition of glycosaminoglycan, strongly positive stained in safranin-O than a control group. These results indicated that resident stem cell based therapies using fibrous type scaffold on the defect provided the improved therapeutic efficacy and surgical feasibility for the articular cartilage repair, which suggested an effective road to clinical approach.

Image:



**Figure 1:** Schematic of implantation of resident stem cells-seeded fibrous PLGA implant in osteochondral defects.

### Biography

Hee Jung Kim has her expertise and passion in Regenerative Medicine and Stem Cell Therapy. Her specialization is based on Tissue Engineering that creates new pathways for improving healthcare. She has accumulated research achievements from years of experience in research, evaluation, teaching and administration in Ewha Womans University.

heejung6255@ewhain.net

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