Decellularized Tissue Engineering Hyaline Cartilage Graft for Articular Cartilage Repair and Its Forward-Looking Study for Space Medicine

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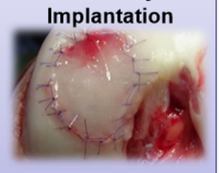
Current Challenges & Treatment Options

Why target knee *joint cartilage*?

- ✓ High prevalence *trauma,diseases, aging, etc*
- ✓ Symptomatic & debilitating
- ✓ No effective long-term treatment strategies

Why is it *challenging*?

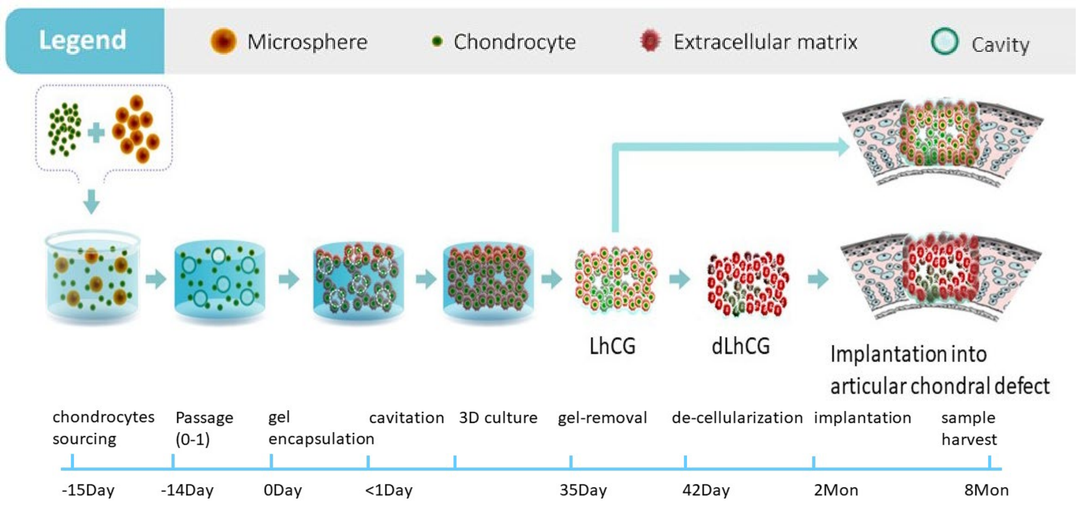
- ✓ No blood vessels/ nerve *incapable of self-repair*
- ✓ Weight-bearing *biomechanical function*
- ✓ Pure **collagen2** *proteoglycan*

Clinical Outcome	First –line Therapy		Second –line Therapy	
	Debridement & Lavage	Microfracture	Osteochondral Grafting	Autologous Chondrocyte Implantation
				
	Remove damage cartilage and washout cartilage debris	Create tiny fractures in the underlying bone to induce repair response	Transfer of osteochondral plugs from another site into the defect	Implantation of *in vitro*-expanded cartilage cells

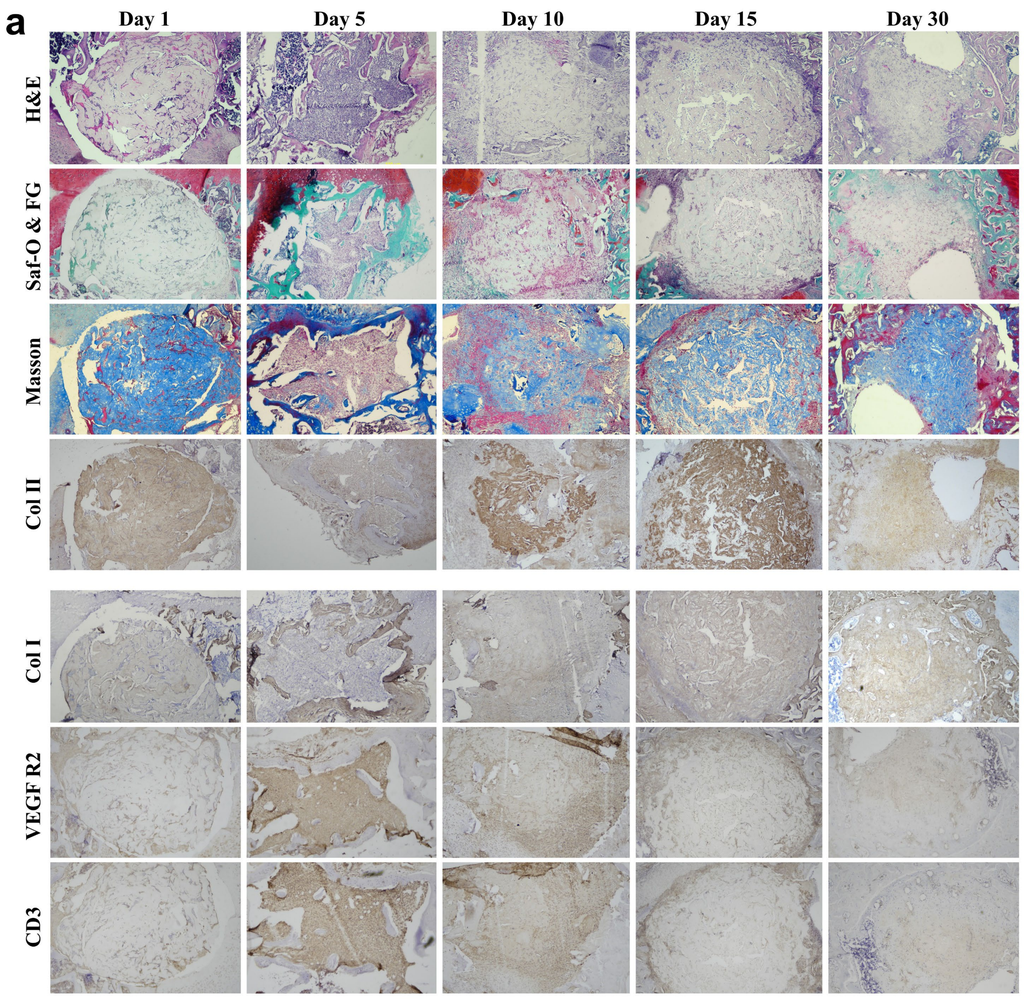
*images from website

d/LhCG (Living Hyaline Cartilage Graft) prototype

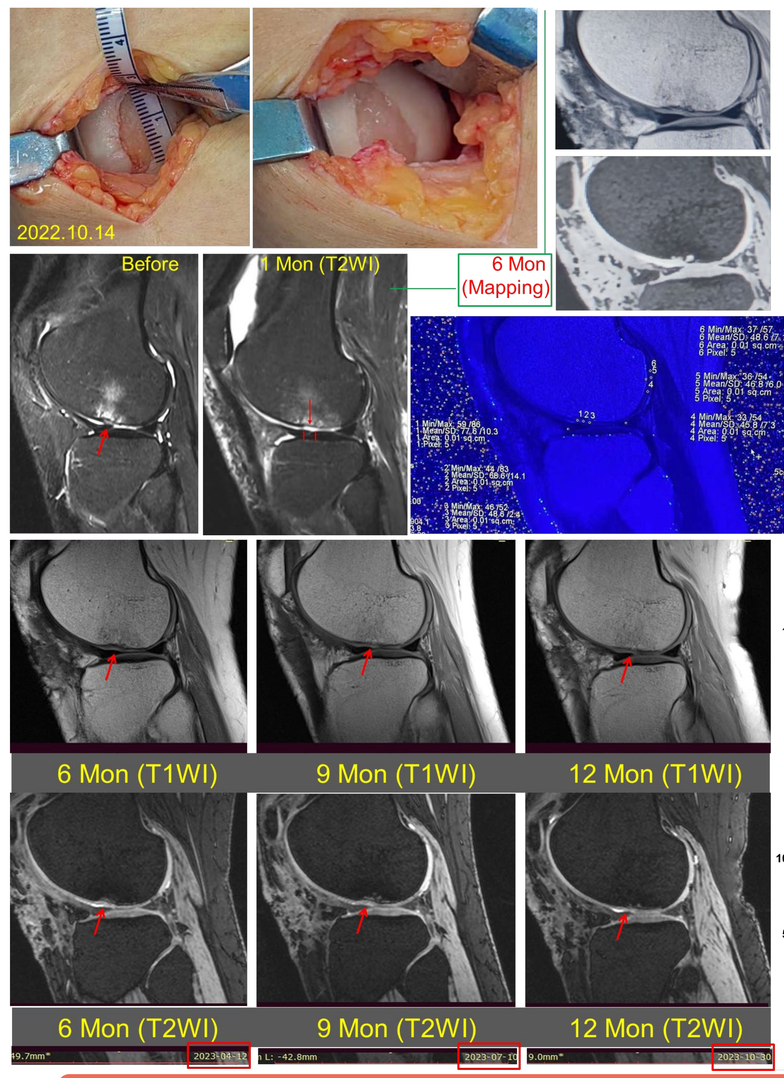
- Man-made living **Joint Cartilage** tissue *for articular engraftment –*
- *beyond critical size (up to >2mm thickness; big area – case by case)*
- **Pure**: free of synthetic materials *only living cells & their own matrices* fibrosis-free *hyaline cartilage phenotype*
- **Well Accepted** by body after implantation *good integration*

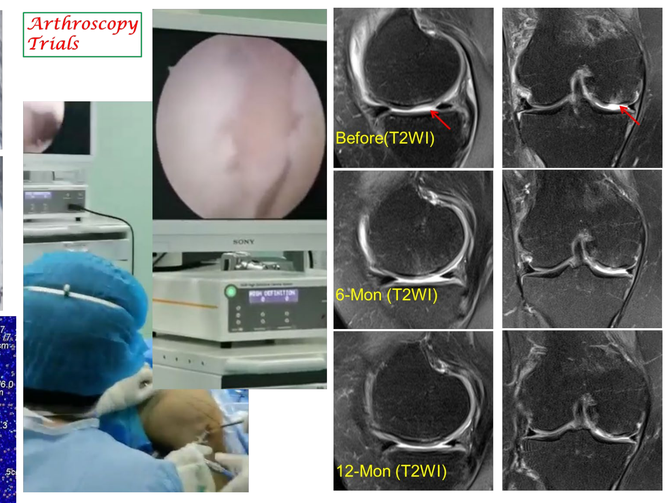


In-situ osteochondral regeneration by dLhCG

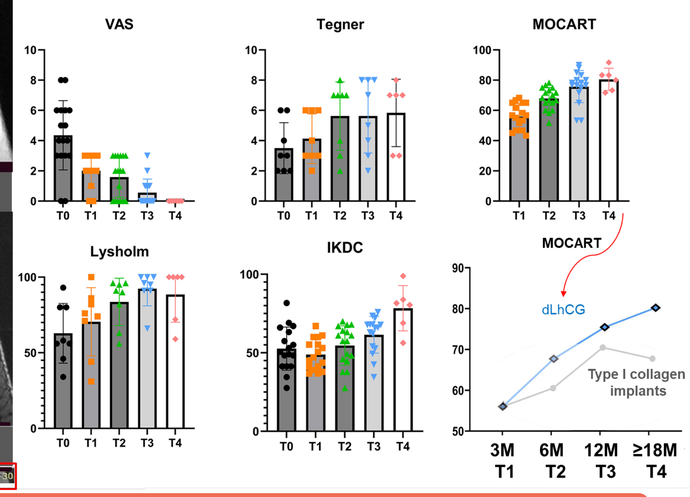


dLhCG Application: First Clinical Trials/Ongoing Clinical Trials





Ongoing Clinical Trials



Space Experiments of dLhCG for Articular Cartilage Regeneration

