

# **OSTEOCHONDRAL ALLOGRAFT PRESERVATION IN A SERUM-FREE CHEMICALLY-DEFINED MEDIA**

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## **ABSTRACT**

Articular cartilage has a very limited capacity to repair and regenerate because of its avascular nature. Chronic degradation of articular cartilage may result in osteoarthritis, the most common debilitating disease worldwide. Treatment strategies to replace rather than repair the tissue have been developed. Osteochondral allografts (OCAs) allow the transplantation of whole cartilage tissue into a defect with viable chondrocytes that will maintain the cartilage matrix. Fresh OCAs have demonstrated greater than 75% clinical success in the treatment of articular cartilage lesions. Currently allografts are stored at 4°C and used within 28 days, however, FDA mandated disease testing requires 14 days of screening which decreases the effective window for implantation to 14 days. The purpose of this study was to evaluate OCAs tissue viability, biochemical composition, and biomechanical properties when stored up to 56 days in different media preparations at 4°C and 37°C. We were able maintain cell viability, GAG, and HP content for OCAs stored at 37°C for up to 56 days. Also, a preliminary biomarker panel for the media was evaluated. Our work showed that storage in a serum-free chemically-defined media at 37°C can maintain OCAs in storage better than the current tissue banking protocol for storage.