Relationship Between Patient Demographics and Osteoarthritic Chondrocyte Metabolism in an *in vitro* Model

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Introduction:

Osteoarthritis (OA) is the most prevalent musculoskeletal condition among adults in America and is characterized by the progressive loss of articular cartilage from the joint surface. The pathophysiology of OA is poorly understood, and there is considerable variation in the development and progression of OA clinically. Previous studies have indicated that chondrocytes may maintain the OA phenotype during initial *in vitro* chondrocyte culture, and that the metabolism of OA chondrocytes differs significantly from that of normal and injured chondrocytes during primary culture. However, it is not clear if patient demographics such as age, sex, BMI, smoking status, history of diabetes mellitus, or use of prior treatments affect the metabolism of the chondrocyte during initial *in vitro* culture. Therefore, this study was designed to determine if patient-specific demographics contribute to the variability of OA chondrocyte metabolism during *in vitro* culture.

Methods:

With IRB approval and patient consent, cartilage tissue normally discarded during surgery was collected from patients undergoing total knee arthroplasty. Chondrocytes from these tissues were grown to near-confluence, media was changed, and the cells were cultured for 3 days. After 3 days, a sample of the media was collected. Media were analyzed for cytokines, degradative enzymes, inflammatory markers, and matrix molecules. A Kruskal-Wallis or Mann-Whitney Rank Sum test, depending upon group variable, was used to determine significant differences between demographic groups, with significance set at $p<0.05$.

Results:

Data collection and analysis for this study are ongoing and will be presented on the poster.