

CRUCIATE LIGAMENT PATHOGENESIS
AND ITS ROLE IN THE
INITIATION AND PROGRESSION OF OSTEOARTHRITIS

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ABSTRACT

The pathogenesis of cruciate ligament disease and how it may be linked to the initiation and progression of osteoarthritis were investigated using *in vitro* and *in vivo* models. Normal and diseased tissues were initially evaluated to identify genes that may be involved in this disease process. Structural, degradative and inflammatory genes were found to be expressed differentially in these tissues. Gene expression data corresponded well to protein expression when investigated. The role of mechanotransduction in ligament health was investigated. Strain amplitude and duration were found to affect these differentially expressed genes. The Pond-Nuki model was utilized to investigate and confirm the role of these genes *in vivo*. A novel method of matrix metalloproteinase detection was compared to traditional techniques and found to be superior to techniques currently utilized in the literature. Further investigation of these genes and molecules in cruciate ligament pathogenesis is warranted.