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### Evaluation of Human Knee Meniscus Biopsies with Near-Infrared, Reflectance Confocal Microscopy. A Pilot Study

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#### **ABSTRACT**

Knee cartilage biopsy is used to confirm the pathology in both clinical and experimental conditions and often guides diagnosis and therapeutic strategies. Current histopathological techniques are time consuming, induce tissue artifacts and often prevent further evaluation, once the tissue has been fixed. Hence, there is a potential need for a fast and nondestructive imaging technique for unfixed tissue. Near-infrared, reflectance confocal microscopy (CM) allows real-time, virtual sectioning of unstained, bulk tissue samples. This pilot study evaluates the use of CM in the assessment of meniscus histopathology in a series of 26 freshly excised human meniscus samples compared to standard light microscopy of stained sections. CM images of the meniscus show cell and matrix detail, depicting morphologic features of collagen and elastic fibers, vessels and nerve endings. In addition, crystal deposits of gout and pseudogout are also demonstrable. Thus, CM is a novel imaging technique that could enable the pathologist to make a rapid microscopic evaluation of cartilage in a fresh and unfixed fashion.