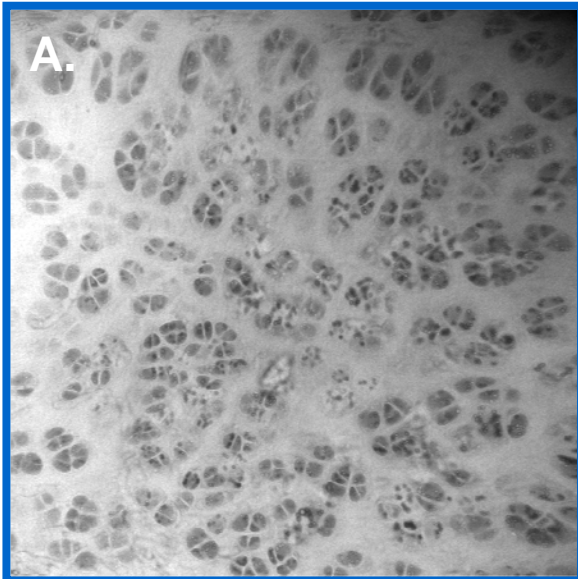
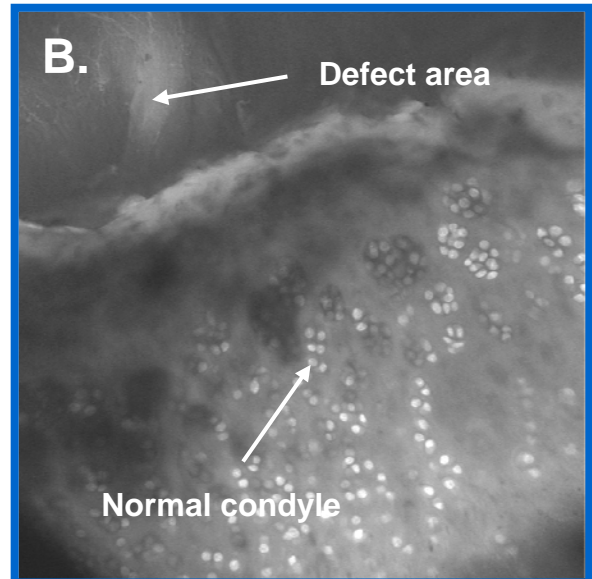


ARTHROSCOPY AND CARTILAGE

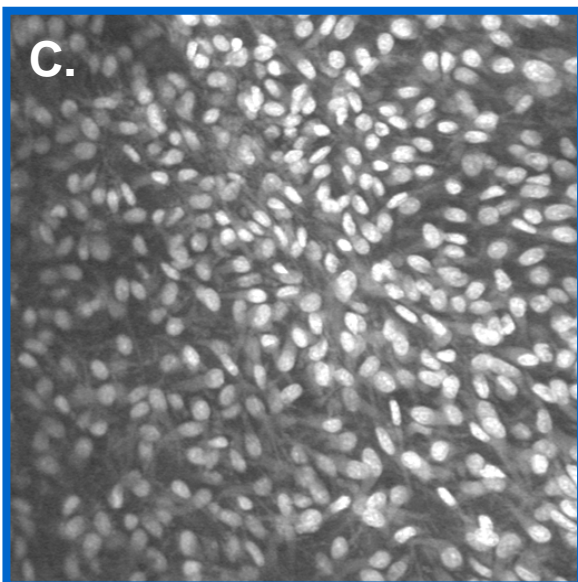
Non-invasive microscopy enables detection of early osteoarthritic changes and the longitudinal study of chondrocyte transplant success



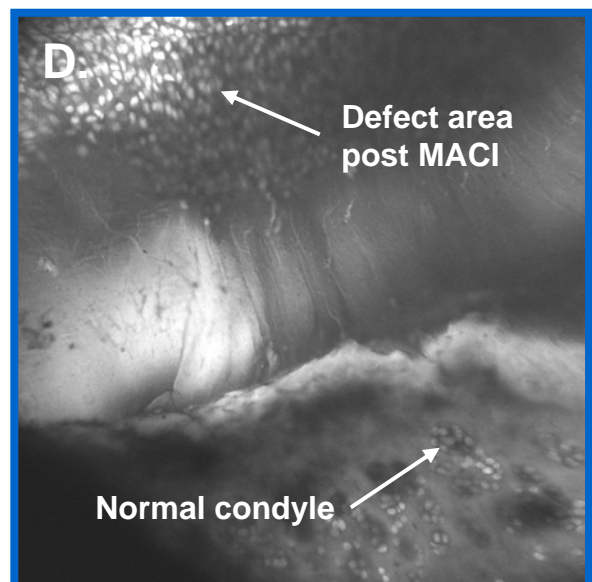
The FIVE1 enables non-invasive *in vivo* imaging of chondrocytes and lacunae in articular cartilage.



In a sheep model of cartilage damage, dramatic changes are observed at the site of tissue injury.



Following Matrix Induced Autologous Chondrocyte Implantation (MACI), there is a dramatic increase in the number of chondrocytes.



The FIVE1 has applications for the assessment of the efficacy of cartilage repair techniques such as MACI.

EXPERIMENTAL METHODS

Sheep knee ligaments were surgically operated to create knee misalignment. Following recovery from surgery, sheep were walked on a treadmill to create damage to the joint. Changes in the cellular morphology of the knee cartilage (trochlear groove of the femur) were examined using confocal microscopy (488 nm excitation, detection above 515 nm) following the topical application of fluorescein sodium (0.5% in PBS, pH 7.4; Figure A) or acriflavine hydrochloride (0.05% in saline; Figures B - D). Chondrocytes contained within small lacunae of articular cartilage could be clearly observed. Matrix Induced Autologous Chondrocyte Implantation (MACI) was performed to repair defects in the articular cartilage.