## Master assignment

## Determining the viscoelastic properties of articular cartilage

As osteoarthritis (OA), a degenerative joint disease, progresses the mechanical properties of articular cartilage, especially the viscoelastic properties, are known to change. While the changes in elasticity, that is the stiffness, of cartilage have been extensively investigated, little is known about the changes in viscous parameters, such as the stress relaxation. Importantly, it has been demonstrated that within 3D microenvironments stress relaxation is determining for chondrocyte cell behavior. This project aims to characterize the viscoelastic properties of non-degenerated and degenerated cartilage tissue in the immediate surrounding of the cells.



Mechanical mapping of tissue showing local variations.

## Techniques/methods applied in the project:

In this project, you will gain expertise in mechanical testing. Depending on personal preferences, you will can also learn how to prepare histological sections, perform fluorescent immunostainings and/or histological stainings, and gain experience in microscopy.

It is possible to perform this assignment in the labs at the University of Twente (Leijten lab) and/or the labs at TU Delft (Koenderink lab).

## Supervision

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