

Title:

“An approach to characterization of IVD cell populations and degenerated articular chondrocytes”

Abstract:

The main project of my PhD thesis has the goal of characterizing the cell populations composing the intervertebral disc (IVD) tissue. Broad knowledge is available for markers distinguishing the annulus fibrosus from the nucleus pulposus, however the exact cell composition is not fully defined. Therefore, we decided to try answering this question by performing single cell sequencing of small biopsies of the nucleus pulposus and the annulus fibrosus. The bioinformatic analysis required is very extensive, thus the final data are not available, but some preliminary data will be shown during the talk.

In the secondary project on articular chondrocytes, we are analyzing human samples coming from patients undergoing knee replacement surgery. We aim at characterizing the differences between degenerated and non-degenerated samples on a transcriptomic level, using bulk RNA sequencing. In parallel, patient samples will be used for trying to regenerate cartilage in vitro. The methods will be further described during the talk. Some smaller side projects, like the influence of mechanical unloading on the differential gene expression of bovine articular chondrocytes, are also going to be presented.