

Modic Changes in Low Back Pain

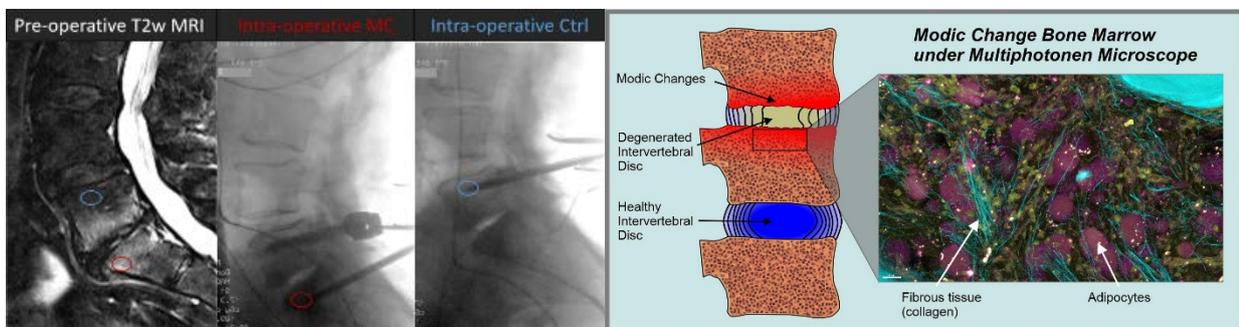
Center for Experimental Rheumatology, University Clinic Rheumatology

University Hospital Zurich and Balgrist University Hospital Zurich

Prof. Oliver Distler & Dr. Stefan Dudli

We are seeking motivated students to work on this clinically highly relevant basic research topic. This project is suitable as MD Thesis, Master of Science for Medical Students, or Master of Science of students with a biological track.

This project investigates why more sensory nerve endings are found in Modic changes (MC), a painful and highly prevalent, yet poorly understood spinal pathology. In-vitro sprouting of sensory nerves will be quantified in co-culture with human bone marrow aspirates from human MC and control aspirates.



Description

Modic Changes are vertebral bone marrow lesions adjacent to degenerated intervertebral discs and associate with back pain. Despite the high prevalence of Modic changes, there is no targeted treatment for Modic changes because the pathobiology is largely unknown. It is known that the bone marrow of Modic changes contains more sensory nerve endings. We need to understand why there are more sensory nerves in Modic changes in order to develop pain effective treatments for Modic Changes. The project is in close collaboration with the Department of spine surgery at Balgrist University Hospital.

Goal

Our goal is to understand why there are more sensory nerve endings in Modic changes. We will investigate this with in-vitro co-culture of nerve fibers with bone marrow aspirates from Modic changes and healthy control bone marrow. Nerve sprouting will be quantified microscopically and quantified with image analysis tools. Sprouting efficiency will be correlated to bone marrow proteome (bone marrow proteome will be analyzed in parallel).

Tasks: 50% lab work, 30% method development, 20% documentation

Contact Details

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Project start

Immediately or on agreement.