Non-technical summary of the project

Osteoarthritis (OA), or degenerative joint disease, affects millions of people worldwide. We are currently lacking surrogate markers of the early stages of the articular cartilage degradation occurring in patients with OA. Conventional radiographic measurements provide diagnostic information for patients with an advanced stage of the disease. Conventional MRI is a robust, non-invasive imaging modality for OA but it does not provide functional information related to the cartilage. On the contrary, sodium ($^{23}$Na) MRI at ultra-high field (7T) can provide early, functional changes in joint cartilage seen in OA.

The radiology department of the Stanford University and the CRMBM in Aix-Marseille University are among the few centers in the world with an access to a 7T whole body scanner.

The purpose of the present project is to determine whether ultra-high field $^{23}$Na MRI can provide quantitative and functional information in cartilage related to OA for diagnostic and prognostic purposes.