

## Project description for a laboratory rotation

### Senescence in Pulmonary Fibrosis

Pulmonary fibrosis, a progressive scarring of the lung, is a slowly evolving disease with a rising incidence in industrial countries. With uncharacteristic symptoms early on such as coughing and difficulty breathing, its diagnosis can be extremely challenging and is classically reached only at an advanced stage through a combination of non-specific methods, in particular physical examination and high-resolution CT.

In recent years, it has been shown that a specific subset of cells entering a non-replicative but metabolically active state, so called “senescence”, plays an important role in the progression of the disease. As a result, these senescent cells have notably become a target in experimental treatments. In our group, we investigate changes in senescent cell population during disease progression in cellular and animal models and leverage this novel information to provide new diagnosis and therapy monitoring tools with high clinical translation potential. This is based on the use of novel approaches based on senescence targeted radiotracers for PET imaging.

Within the framework of a laboratory rotation, the student will assist first in experiments aiming at characterizing lung cell changes under pressure from fibrosis inducing reagents, which includes working with cell culture, western blot, MTS, X-gal staining and microscopy of cell morphology. These experiments are part of an ongoing project and thereby can be expanded for motivated students. Further research would be focused on the effect of senolytic treatment to the lung cells, the uptake of senescence targeted radiotracers by these lung cells *in vitro* and ultimately transferring radiotracers from *in vitro* to *in vivo* by performing PET/MRI experiments in a pulmonary fibrosis mouse model.

Interested candidates are welcome to contact Dr. N. Beziere and provide a CV in English:

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