

Internship proposition
(One-page max)
Master 2 GP Medicine 4R (Repair, Replace, Regenerate, Reprogram)



Lab: TaRGeT UMR 1089

Team:

Name and position of the supervisor: Allwyn Pereira, PhD (Ingénieur de recherche)

Email of the supervisor: allwyn.pereira@univ-nantes.fr

Candidate (if internship filled): Alix Lebreton

Title of the internship: Characterising the cell state dynamics of human iPSC derived microglia

Summary of the internship proposal:

The pathogenesis of age-related macular degeneration (AMD) involves a plethora of processes, which include chronic/dysregulated inflammation, sub-retinal deposition of lipids, and oxidative stress alongside abnormal changes in the extracellular matrix. Microglia are the tissue resident macrophages of the retina, which are capable of responding to all the processes mentioned above and thus play an important role in the progression of AMD. The response of microglial cells to pathogenic or damage associated signals is characterised by a cell state transition, which has been well documented at the transcriptomic level.

The goal of this project will be to test of ability of human iPSC derived microglial cells to respond to damage associated signals such as ATP and interferon gamma by undergoing a cell state transition. The transition of microglial cells towards an inflammatory phenotype will be assessed by microscopy, flow cytometry and gene expression analysis. Furthermore, the reversibility of the inflammatory cell state will be assessed by treating the activated microglial cells with anti-inflammatory cytokines such IL-4, IL-10 as well as conditioned medium from homeostatic microglial cultures.

The candidate will be trained to employ cell and molecular biology techniques, image analysis and flow cytometry. The candidate will also be integrated in lab meetings and journal clubs.

Profile(s) linked to the project:

- Experimental Biology (*Recherche expérimentale*)
- Clinical Research (*Recherche clinique*)