

Internship proposition 2025-2026  
**Master 2 GP I<sup>3</sup> (Immunologie et Immuno-Intervention)**

**Lab:** RMeS (Regenerative Medicine & Skeleton) Inserm/Nantes-Univ/ONIRIS – UMR 1229. Director J. Guicheux

**Team:** REJOINT (Regeneration and pathophysiology of joints) Coordinator : J. Guicheux/F. Blanchard

**Name and position of the supervisor:** Christelle Darrieutort-Laffite (PU-PH) and Frédéric Blanchard (DR Inserm)

**Email of the supervisor:** [christelle.darrieutort@chu-nantes.fr](mailto:christelle.darrieutort@chu-nantes.fr); [Frederic.blanchard@univ-nantes.fr](mailto:Frederic.blanchard@univ-nantes.fr)

**Candidate (if internship filled):** Master 2 student

**Title of the internship:** Study of macrophage-tenocyte interactions in tendinopathy

**Summary of the internship proposal:**

Tendon disorders are a major public health problem, caused by repetitive strain injuries that alter tendon structure and function. Current treatments improve symptoms (pain, loss of function), but no treatment is able to restore tendon tissue.

This project aims to improve our understanding of the pathological mechanisms of tendinopathies, by focusing on the interactions between macrophages and tenocytes, the main cells of tendons, in early inflammatory processes, and to explore the role of aberrant activation of the IL-6/JAK-STAT pathway, suspected of inducing pathological differentiation of progenitor cells towards ossifying or fibrosing rather than repairing phenotypes.

Interactions will be studied both *in vitro* and *in vivo*. *In vitro* experiments will be carried out on co-cultures of human macrophages (M1 and M2) and tenocytes. Phenotypes and activation of tenocytes and macrophages will be studied using RT-qPCR, ELISA and Western blot assays, and the involvement of certain signaling pathways (IL-6, JAK-STAT) will be investigated using inhibitors of these pathways (anti-IL6R antibodies, JAK inhibitors). *In vivo* experimentation will be carried out on a mouse model of partial tendon injury. It will allow us to study the impact of different modulators of the immune response on wound healing (macrophage depletion, inhibition of the IL-6 pathway), at different phases of the healing process.

The aim of this research is to better understand physiological and pathological tendon healing processes, in order to propose new treatments for these disorders.

**Profile(s) linked to the project:**

☒ Experimental Biology (*Recherche expérimentale*)

☐ Clinical Research (*Recherche clinique*)

☐ Research in data analysis (*Recherche en analyse de données*)