Internship Proposition
(one page max)

Master 2 GP Immunology & ImmunoIntervention (I^3)
2026-2027

Lab: Inserm U1229 Regenerative Medicine and Skeleton (RMeS)
Team: REJOINT, group StratOA

Names and positions of the supervisors: Marie-Astrid Boutet, CRCN, group leader; co-supervisors Mathilde Le Mercier, PhD student and Julien De Lima, IE.
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Candidate (if internship filled): /
Title of the internship: Characterization of the pathogenic role of synovial macrophages in osteoarthritis.

Summary of the internship proposal:

Osteoarthritis (OA) is the most prevalent rheumatic disease, affecting over 500 million people worldwide. It is a chronic and disabling condition characterized by progressive cartilage degradation, bone remodeling, and synovial inflammation (synovitis). Increasing evidence highlights synovitis as a key driver of OA initiation and progression, with synovial macrophages playing a central role in disease pathogenesis. Our previous work identified distinct subpopulations of synovial macrophages that may represent selective therapeutic targets. We hypothesize that specific resident macrophage subsets actively contribute to OA progression through their interactions with other joint cells and could be modulated for therapeutic benefit.
The aim of this project is to better characterize the role of these resident synovial macrophages and their crosstalk with key joint cell types.
During this internship, the student will:

- Characterize the spatial distribution of macrophage subpopulations in synovial tissues from human, canine, and murine biocollections using immunofluorescence and RNAscope.
- Develop 2D and 3D co-culture models to investigate interactions between macrophages, synovial fibroblasts, and chondrocytes and assess the functional impact of target modulation using siRNA approaches in these in vitro/ex vivo systems.
- Contribute to in vivo studies evaluating the therapeutic potential of siRNA-loaded lipoplexes in murine models of OA.

This project will provide new insights into OA pathophysiology and support the development of innovative and potentially personalized therapeutic strategies.

Option(s) linked to the project:

☐ Clinical Research Profile (Recherche Clinique)
☐ Data Analyst Profile (Recherche et Analyse de Données Omiques)
☒ Experimental Biology Profile (Recherche Expérimentale)

Form to be sent by email to : gpi3@univ-nantes.fr