**Master 2 internship project**

**Year 2024-2025**

**Laboratory/Institute:** TIMC **Director:** A. Moreau-Gaudry

**Team:** T-RAIG **Head of the team:** A. Baillet/B. Huard

**Name and status of the scientist in charge of the project:**

Marie-Hélène PACLET and Xavier ROMAND

**HDR: yes** 🗹

**Address:** TIMC, team T-RAIG

Faculté de Médecine de Grenoble - Bât. Jean Roget 8ème étage - 38700 La Tronche

**Phone:** 04 76 76 84 51  **e-mail:** MHPaclet@chu-grenoble.fr

**Program of the Master’s degree in Biology:**

🗹Immunology, Microbiology, Infectious Diseases **☐** Structural Biology of Pathogens

**☐** Physiology, Epigenetics, Differentiation, Cancer **☐** Neurosciences and Neurobiology

**Title of the project:**

**Implication of innate immune cells in a mouse model of reactive arthritis**

Objectives (up to 3 lines):

This project aims to study the phenotype of innate immune cells in a murine model of reactive arthritis and to investigate the communication between the different partners of the innate immunity.

Abstract (up to 10 lines):

*Chlamydia trachomatis* is a sexually transmitted obligate intracellular pathogen that causes inflammatory reactive arthritis in humans after genital infection. In order to investigate the role of immune cells in the arthritis development, we use an animal model, the ZAP-70(W163C) - mutant BALB/c (SKG) mice that develop arthritis after vaginal infection with bacteria *Chlamydia muridarum* (*Cmu*) whereas the BALB/c mice do not. The present project will aim to compare the features and the behavior of innate immune cells from SKG and BALB/c mice. Neutrophils will be isolated from mouse bone marrow (SKG and BALB/c) and infected with *Cmu ex vivo*. Cytokine secretion, NOX2 activity and neutrophil phenotype will be analyzed to characterize neutrophil subpopulations. Co-culture (homologous and heterologous) of infected neutrophils with macrophages derived from bone marrow monocytes will be performed. Afterwards, macrophage polarization will be analyzed and cytokine secretion will be measured.

Methods (up to 3 lines):

Cell culture and cell isolation, bacterial culture, cell stimulation, co-culture, bacterial culture, flow cytometry, multiplex analysis, western blot, cell lysate, enzymatic activity

Up to 3 relevant publications of the team:

1) Romand X *et al* - Mediation of Interleukin-23 and Tumor Necrosis Factor-Driven Reactive Arthritis by Chlamydia-Infected Macrophages in SKG Mice(2021) *Arthritis Rheumatol.* 73: 1200-1210.

2) Baillet A. *et al* - High Chlamydia Burden Promotes Tumor Necrosis Factor-Dependent Reactive Arthritis in SKG Mice. (2015) *Arthritis Rheumatol.* 67: 905-912.

Requested domains of expertise (up to 5 keywords):

Innate immunity, inflammation, immunology, biochemistry, cell biology