CMD InnoCARE (Innovation pour les maladies CArdiovasculaires, métaboliques et REspiratoires)

Master 2 Internship proposal (2024-2025)

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Profile(s) linked to the project:
☒ Experimental Biology *(Recherche expérimentale)*
☐ Research and Biological Data Analysis *(Recherche et analyse de données biologiques)*
☐ Clinical Research *(Recherche clinique)*

Lab: L'institux du thorax-UMR1087

Team 3: Vascular and pulmonary diseases

Name and position of the supervisor: Vincent SAUZEAU (Scientist)

Email of the supervisor: vincent.sauzeau@inserm.fr

Candidate (if known):

Title of the internship: Rac1, a new therapeutic target for severe asthma.

Summary of the internship proposal:

Asthma is a chronic airway disease affecting between 6% and 7% of the adult population, and is responsible for almost 1,000 deaths in France each year. In our lab, we recently demonstrated over-activation of the Rac1 protein in bronchial smooth muscle cells (SMCs) from asthmatic mice, responsible for airway hyper-reactivity.
We have also identified Rac1 over-activation in pulmonary inflammatory cells. We hypothesize that increased Rac1 activity in these cells during asthma may contribute to airway remodeling, and could be a new therapeutic target in severe asthma.

This research program will involve confirming and identifying *in vivo* the role of Rac1 in inflammatory cells, and confirming the interest of Rac1 as a therapeutic target in severe asthma. This project will be carried out using *in vivo*, *ex vivo* and *in vitro* approaches, thanks to the analysis of a new experimental model of severe asthma that we have just generated.

In addition, we have recently identified a new specific inhibitor of Rac1. The project will therefore also involve characterizing and optimizing this molecule to validate Rac1 as a new therapeutic target in severe asthma.