STudent REseArch Mobility Programme (STREAM)
Project proposal

Host University:
Université Paris-Saclay

Field (drop-down list):
Health and welfare

Specified field, subject:
Non-clinical cardiovascular physiopathology and pharmacology

Research project title:
Roles for novel phosphodiesterases in pulmonary arterial hypertension

Possible starting month(s):

Sep	Oct	Nov	Dec	Jan	Fev	Mar	Apr	May	Jun	Jul	Aug
☐	☐	☐	☐	☒	☒	☒	☒	☐	☐	☐	☐

Possible duration in months:

1	2	3	4	5	6	7	8	9	10	11	12
☐	☒	☒	☒	☒	☒	☐	☐	☐	☐	☐	☐

Exact starting and end dates will be discussed between the supervisor and the student

Date of validity: from 02/11/2021 till 02/05/22
Suitable for students in: ☒ Bachelor level ☒ Master level

Prerequisites:

- basic communication skills in english
- experience in writing up a scientific report (previous training, literature review)
- basic MS excel
- interest in non-clinical research in the cardiovascular field

Restrictions:
Training may include experimental procedures on small animals.

Description (maximum 2,000 characters):
Pulmonary arterial hypertension (PAH) is a severe disease with currently no cure. Pharmacological strategies that boost the intracellular cyclic nucleotide (CN) pathways have being improving quality of life of patients. Yet, mortality remains unacceptably high. As potential regulators of CN pathways, novel PDEs have been increasingly characterized and present original research opportunities in the field of PAH.

In contrast to “classic” PDEs (PDE1-6), more recently discovered isoforms (PDE7-11, “novel” PDEs) have for long remained poorly characterized in the cardiovascular system. Recently, selective PDE inhibitors have been characterized and, together with transgenic animals, have accelerated the understanding of their potentially important therapeutical relevance in various disorders. Nevertheless, the roles of these novel PDEs in the vascular tree, and in pulmonary artery in particular, have so far never been thoroughly documented. Encouraged by preliminary data, we hypothesize that these

PDEs may play a relevant role in pulmonary circulation and participate in the progressive development of PAH.
Hence, the global aim of this project is to shed light on the specific contribution of novel PDEs in the pulmonary circulation, and to assess whether interventions that inhibit their function are amenable to being used as a new therapeutic strategy to treat PAH.
More precisely, we will pursue the following goals:
(1) to demonstrate the expression and function of this alternative PDEs in PAH. We will focus on vascular tissue, but also on the right ventricle and immune system, which also undergo physiopathological alterations during PAH;
(2) to establish whether inhibition of novel PDEs alter the key cellular processes that drive the progression of the disease in human cells and tissue;
(3) to investigate whether inhibition of novel PDEs can oppose progression of PAH in animal models.

Research laboratory: Inserm Umr-S1180

Faculty and/or Department: Graduate School “Health & Drug Sciences, Faculté de Pharmacie

Contact person, including position : Dr Boris MANOURY (Assistant Professor)

Contact email: boris.manoury@universite-paris-saclay.fr

Deadline for nomination to reach host university: 30/09/2021

Notification of admission given by the end of: 31/10/2021

Additional information:

- A Master level (6 month-mobility period) would be preferred.
- Opportunity to receive a gratuity for a 6-month-internship