Formulaire de stage
Parcours M2 GGBS 2020-21

Laboratoire : L'institut du thorax research unit
Inserm UMR 1087 / CNRS UMR 6291
N° d'équipe : Équipe 5

Nom-Prénom de l'encadrant : Daniel Mauvoisin
Courriel de l'encadrant : daniel.mauvoisin@univ-nantes.fr

Titre du stage: Role of lysine malonylation in temporal regulation of mitochondrial network morphology.

Résumé du projet proposé :

Circadian (*about a day*) rhythms are central in health and diseases. They originate from the circadian clock (CC) that anticipates daily environmental changes. In mammals, the CC is molecular and present in virtually all cells. Hence, hepatocytes and, to a greater extent, the liver own an intrinsic CC.

The CC regulates rhythmic hepatic metabolism and abnormal feeding schedules, such as those observed in high fat diet condition, affect this rhythmicity contributing to metabolic diseases.

The team has provided evidence that the CC controls the mitochondrial morphology and function to adjust rhythmic metabolism. Of note, loss of this mechanism through genetic disruption of the hepatic CC triggers metabolic disease. However, the molecular mechanisms implicated remain elusive.

The project will analyze the role of a post-translational modification (PTM), lysine malonylation, which we recently identified as modulated by the molecular CC.

During this internship, we propose:

(1) To analyse and compare the effect of mitochondrial malonylation modulation on the mitochondrial network connectivity in hepatic cell culture experiment.
(2) To test whether overnutrition affects mitochondrial network structure and function using a malonylation dependant mechanism.
(3) To validate the observed results *in vivo* using a mouse tissue bank available in the lab.

The team :

The candidate will join an interdisciplinary team that uses innovative approaches to study metabolic regulation. The team is part of *l' institut du thorax* and the project is bankrolled from 2020 to 2024.

Mauvoisin.D: https://bit.ly/DM-ITX **Team** https://bit.ly/ITX_TeamV

The candidate :

The candidate will be motivated to explore and work with **both** new experimental (cell culture, microscopy, qPCR) and bioinformatic (tools such as R and ImageJ to perform rhythmicity and mitochondrial network analyses) approaches to analyse the data he/she will be generating.

Do not hesitate to contact Daniel Mauvoisin for more of information about the internship.