

**CMD InnoCARE (Innovation pour les maladies
Cardiovasculaires, métaboliques et REspiratoires)**
Master 2 Internship proposal (2026-2027)
1 page maximum



Profile(s) linked to the project:

- Experimental Biology (*Recherche expérimentale*)
- Research and Omics Data Analysis (*Recherche et analyse de données omiques*)
- Clinical Research (*Recherche clinique*)

Lab: Institut du Thorax

Team: 4

Name and position of the supervisor: Xavier Prieur, PU

Email of the supervisor: Xavier.prieur@univ-nantes.fr

Candidate (if known):

Title of the internship: Understanding how adipocytes adapt to obesity through organelle communication

Summary of the internship proposal:

Obesity is a major risk factor for cardiometabolic diseases and metabolic dysfunction-associated steatotic liver disease (MASLD). A central hallmark of obesity is adipocyte dysfunction, characterized by impaired lipid storage and release, metabolic inflexibility, and ectopic lipid deposition in peripheral organs. Our team investigates how intracellular organelles communicate to regulate lipid metabolism and maintain adipose tissue health. In particular, we focus on **membrane contact sites (MCS)**, dynamic platforms that physically connect organelles without membrane fusion.

The objective of this internship is to determine how interactions between the **ER, lipid droplets, and mitochondria** regulate adipocyte function and metabolic flexibility in physiological and pathological conditions. Using innovative cellular and mouse models with genetic modulation of specific contact sites, the student will characterize how obesity alters organelle communication and impacts adipose tissue health.

The student will be trained in cutting-edge methodologies, including:

- **Super-resolution microscopy**
- **Proximity ligation assays (PLA)**
- **Proximity labeling approaches** to identify contact site interactomes
- Confocal microscopy and image analysis

This project directly follows two recent studies from the team:

- Combot Y. *et al.* *Cell reports* [10.1016/j.celrep.2021.110213](https://doi.org/10.1016/j.celrep.2021.110213)
- Palard *et al.* **bioRxiv preprint** <https://doi.org/10.1101/2025.09.16.676493>

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