Internship proposition
One page max
M2 0HNU 2025-26

Lab: **CRCI2NA**

Team: **7, group EMBRACE (https://www.univ-nantes.fr/eloise-grasset)**

Name and position of the supervisor: **Eloïse GRASSET, chercheuse CNRS**

Email of the supervisor: **Eloise.grasset@univ-nantes.fr**

Candidate: This project is suited for a candidate with a strong background in cell and molecular biology and proficiency in cell culture techniques. Additionally, the research involves the use of murine models to study tumor dissemination in vivo, requiring the candidate to be comfortable working with mice. While prior authorization for animal experimentation would be an advantage, it is not a prerequisite.

Title of the internship:
How carcinoma associated fibroblast promotes luminal breast cancer metastasis.

Summary of the internship proposal:
Luminal breast cancers account for approximately 75% of all breast cancers. While patients diagnosed at a localized stage benefit from effective treatments leading to remission in most cases, the situation is markedly different in the presence of metastases. Currently, no curative treatment exists for disseminated disease, and available therapeutic options only slow disease progression. Understanding the mechanisms underlying tumor dissemination and metastasis formation is therefore a critical challenge for developing new therapeutic strategies. Recent studies have shown that tumor cells do not circulate solely as single cells but also in groups known as clusters, which enhance their survival and ability to colonize distant sites. Our work has identified a key gene that enables individual cancer cells to better survive in circulation and establish secondary tumors (work in progress for publication). However, unlike many other cancers, luminal breast cancers typically retain this gene in its wild-type state. This raises a central question: why do these cells maintain this gene despite the apparent advantage of losing it for dissemination? Our preliminary findings suggest that carcinoma-associated fibroblasts (CAFs) play a key role in inhibiting the protein expression of this gene, thereby promoting the survival of individual cancer cells. This Master 2 project aims to decipher the cellular and molecular mechanisms underlying this inhibition and its impact on tumor dissemination, leveraging innovative approaches such as three-dimensional co-culture systems, organoids, and mouse models.

Option(s) linked to the project:

☐ Hematology
☐ Immunology-Cancerology
☒ Oncology
☐ Nuclear Medicine

Option(s) linked to the profile:

☐ Clinical Research Profile
☒ Experimental Biology Profile
☐ Data Analyst Profile