Internship proposition
One page max
M2 0HNU 2025-26

Lab: CRCI²NA, Centre de Recherche en Cancérologie Immunologie Intégrées Nantes-Angers

Team: PETRY, Plasticity of the Ecosystem of Tumor after Radiotherapy

Name and position of the supervisor: Noémie Joalland, Postdoctoral Researcher

Email of the supervisor: noemie.joalland@univ-nantes.fr

Candidate: none

Title of the internship:

Deciphering mechanisms behind hyper-replicative stress to tackle glioblastoma aggressiveness after radiotherapy

Summary of the internship proposal:

Gliobastoma (GBM) or grade IV astrocytoma is a brain tumor with a very poor prognosis, with a median survival of around 15 months and a 5-year survival rate of no more than 5%. Standard treatment of GBM patients aggressively combines surgery, chemotherapy and radiotherapy, unfortunately without success. In fact, the tumor systematically recurs around the surgical resection zone, and is highly resistant to treatment. Moreover, GBM tumor cells display a high level of molecular heterogeneity, which favors their adaptation to a stressful microenvironment and the establishment of mechanisms of resistance to radio-chemotherapy. The team recently demonstrated that the aggressiveness of recurrent GBM was linked to the production of a pro-tumor secretome by endothelial cells that had become senescent after radiotherapy. Radiotherapy-induced genomic instability of tumor cells is then amplified, leading to DNA repair defects, anarchic genomic rearrangements and acceleration of fork velocity during replication causing mitotic catastrophes. Our aim is then to define how the secretome of irradiated senescent endothelial cells increases replicative stress, promotes genomic instability in GBM tumor cells and what mechanisms are involved. The aim of the internship will be to test the impact of loss of expression and/or inhibition of replicative stress targets on survival and genomic instability by (video)microscopy. To study different signaling pathways activation as a consequence of DNA damage and DNA damage response mechanisms by Western Blot. Our final goal was to understand how an increased genomic instability may lead to higher GBM aggressiveness and evaluate new therapeutic strategies against this mechanism to treat GBM patient at relapse.

Option(s) linked to the project:

☐ Hematology
☒ Oncology
☐ Immunology-Cancerology
☐ Nuclear Medicine

Option(s) linked to the profile:

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