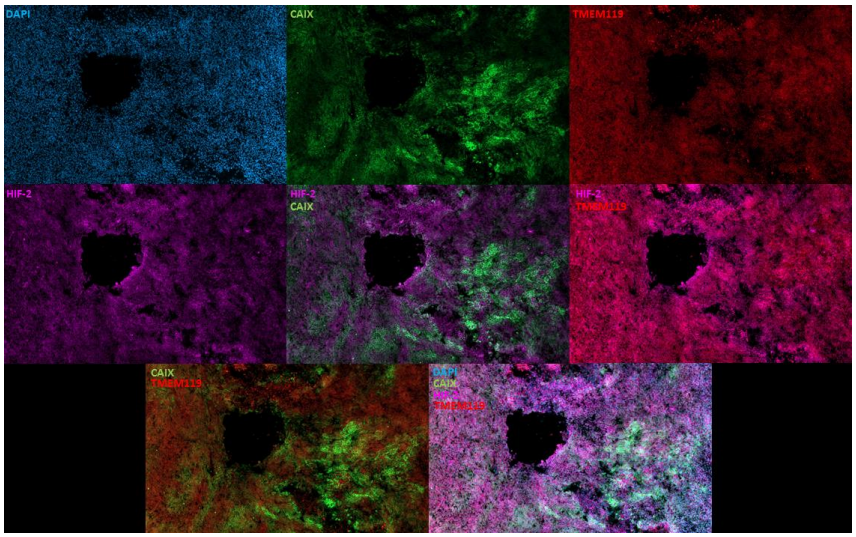
IMMUNOBIOLOGY OF BRAIN TUMOURS.



The main topic of our research focuses on the study of brain tumors, particularly gliomas, and their interaction with immune cells in the microenvironment.

Background: Tumor hypoxia in gliomas is one of the characteristic features that contributes to tumor malignancy and growth through the promotion of immunosuppressive cells such as regulatory T cells, tumor-associated macrophages (TAMs) and myeloid-derived suppressor cells. Most of the infiltrating immune cells in glioma are TAMs, consisting of resident microglia and infiltrating peripheral macrophages, which can comprise up to 40% of the tumor mass. In order to minimize the deleterious effects of hypoxia on GBM survival and malignancy, the regulation of hypoxia-inducible factors (HIFs) has been explored, mainly focusing on glioma initiating cells, but without considering immune cell subsets. It is known that microglia and macrophages actively contribute to the immunosuppressive microenvironment in gliomas, therefore, understanding the mechanisms, and the phenotypes associated with this should be taken into account for the design of new therapeutic approaches. We propose that HIF targeting could represent an attractive potential therapeutic approach, particularly when directed towards microglia and/or macrophages in gliomas. A highly motivated Masters student will be offered a project in the following project areas:

Characterization of the role of HIF-2α in the immunosuppressive response of microglia cells in a hypoxic/tumor context. We will investigate the HIF-2 role in the regulation of mechanism of immunosuppression and immune evasion of the microglia/macrophages cells in glioblastomas

Determining the role of HIF-2α in the metabolic profile of microglia in a hypoxic/tumor context. We will investigate the microglial metabolism change from oxidative phosphorylation to anaerobic glycolysis, under hypoxic and tumor conditions.

Techniques: Cell culture, immunofluorescence, confocal microscopy, western blotting, flow cytometry, qPCR, analysis of human and/or mouse tissue and cells.

Interested students should contact:
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