Proposal of Master Research Project / Proyecto fin de Master for the academic year 2025-26

Group name: "Asymmetric division of neural stem cells in development and tumorigenesis" IP name: Ana Carmena

Group web: https://in.umh-csic.es/en/grupos/asymmetric-division-of-neural-stem-cellsin-development-and-tumorigenesis/#info-general

Title of the MRP/TFM: Analysis of asymmetric cell division regulators in the context of an established glioblastoma model system in the *Drosophila* brain. Summary of the Project:

One of the big challenges in Developmental Neurobiology is to understand how the immense variety of neural types that constitute the nervous system is generated. Asymmetric cell division (ACD) is a universal and key mechanism to generate cell diversity during Development, and it is also a crucial process in Cancer and Stem Cell Biology. In fact, disruption of the ACD process has been associated to tumor-like overgrowths. Our lab is currently focused on analyzing in depth the autonomous and non-autonomous mechanisms that regulate asymmetric cell division both during development and also in the context of tumorigenesis. We achieve our research combining Genetic, Cell Biology, Biochemistry, Molecular Biology and Proteomic techniques.

The specific objectives of this TFM project will be:

1. To set up a Drosophila glioblastoma (GBM) model system

2. To establish *Drosophila* stocks to overexpress or downregulate ACD modulators in the context of the *Drosophila* GBM model system.

3. To analyze potential effects of ACD gene expression manipulation in the context of the *Drosophila* GBM model system.

Methods and technology involved in the MRP/TFM Project:

- --Drosophila husbandry and manipulation; establishment of fly crosses.
- --Larval brain dissection.
- --Larval brain fixation and immunofluorescences.

--Brain sample slides preparation and examination under fluorescence microscope.

Member/s of the lab who will act as tutor/co-tutor of the project (if different from the group IP; PhD required to be tutor / co-tutor): Ana Carmena

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