Research Project Proposal
Academic year 2021-2022
Máster en Investigación Biomédica

Project Nº 35 ASIGNADO

Title: Understanding the tumor microenvironment of pediatric brain tumors

Department/ Laboratory Laboratory where the project will be carried out indicating Department, Area, Faculty, CUN, CIMA etc.
Advanced Therapies for Pediatric Brain Tumor Lab; Dpt.of Pediatrics (CUN) and Program of Solid Tumors (CIMA). Lab 2.03 CIMA

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Summary:

Pediatric high-risk brain tumors remain the leading cause of cancer-related death in children. For the last 30 years, all treatment approaches for the most aggressive types of these tumors have failed, leaving a terrible prospect of survival at five years for these children virtually of zero. Among these tumors, diffuse intrinsic pontine gliomas (DIPG) is the leading cause of pediatric death by a brain tumor, with median survival after diagnosis of only nine months. Despite improvements in their management, the outcome for these children remains dismal. It has been postulated that diffuse intrinsic pontine gliomas (DIPGs) may not establish an immunosuppressive microenvironment as is seen in adult CNS tumors and instead reflect a failure of immune surveillance. In addition, our understanding of the interface between the DIPG cells and their tumor microenvironment is very poor. In this master-work our objective is to characterize the tumor microenvironment of DIPGs as this tumor develops over time. To achieve our aim, this project will involve using DIPG orthotopic immunocompetent modes, evaluating the tumor microenvironment through different techniques including flow cytometry, sorting, and single-cell sequencing.
Moreover, the functionality of the different tumor microenvironment cell populations will be evaluated by performing in vitro experiments. At the end of this project, we will have a clear picture of how the tumor microenvironment, specifically the immune infiltrate, evolves and changes as the tumor grows. In turn, this will allow us to propose better therapeutic approaches.

yes	X	Does the project include the possibility of supervised animal manipulation to complete the training for animal manipulator?
no		