



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

Project Nº 36

Title: Armed Oncolytic viruses for the treatment 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:

Diffuse intrinsic pontine glioma (DIPG) is a very aggressive tumor with the worst prognosis of all pediatric brain tumors. Despite improvement in the therapeutic management of these patients, the overall 5-year survival is still less than 1%. Therefore, it is clear we need to seek and implement innovative strategies to fight this disease. Currently, the spotlight in cancer treatment is on immunotherapy, a promising approach that has brought hope to many patients. However, DIPGs are "cold" tumors, which means they are barely noticeable to the patient's own immune system.

Consequently, the lack of a basal anti-tumor immune response is a major drawback for immunotherapeutic-based treatments for DIPG. Thus, it is mandatory to "warm" these tumors to implement successful immunotherapy for DIPGs. Delta24-RGD is an oncolytic adenovirus that is being tested in clinical studies for the treatment of brain tumors, including DIPGs. Delta24-RGD selectively replicates in tumor cells and triggers an inflammatory environment that "warms" and unmasks the tumor to the immune system. As a result, Delta24-RGD mediates the establishment of an anti-cancer immune response that could eventually be potentiated by immunostimulatory molecules.

The objective of this master is to construct and characterize an oncolytic virus encoding immunostimulatory genes as a comprehensive approach against DIPG invigorating innate and adaptive arms of the anti-tumor immune response in a single treatment. The dual anti-tumor effect of this virus (oncolysis and immunostimulation) will be assessed in relevant in vitro and in vivo DIPG models. Molecular biology, cellular biology and immunology techniques will be employed

Table with 2 columns and 2 rows regarding supervised animal manipulation. The first row has 'yes' and 'X'. The second row has 'no' and an empty cell.