



MÁSTER EN INVESTIGACIÓN BIOMÉDICA
Research Project Proposal
Academic year 2026-2027

Project Nº 45	
Title: <i>Immunomodulation for the treatment of Parkinson's disease</i>	
Department/ Laboratory <i>Laboratory where the project will be carried out indicating Department, Area, Faculty, CUN, CIMA etc.</i>	
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Summary <p>Parkinson's disease (PD) is a complex neurodegenerative disease with no cure. Neuroinflammation lies at the intersection of the major risk factors, including age, genetics and environment of the disease. However, it remains unclear whether the immune system and inflammatory processes are causal components of PD, whether glial and immune cells contribute to or protect against neuronal death, and at which stages of the neurodegenerative process they exert their main effects.</p> <p>We hypothesize that early activation of the immune system is necessary to establish a neuroreparative environment in the ventral midbrain. The objectives of this project are:</p> <ol style="list-style-type: none"> 1. To characterize the relationship between the dopaminergic degeneration and the inflammatory response in the α-synuclein overexpression mouse model (AAV9-Syn mice). The student will generate the experimental models, perform motor behavior analysis and assess immune cells using flow cytometry and histological techniques. 2. To evaluate the effect of an immunomodulatory therapy on the nigrostriatal pathway using the techniques described above. 3. To analyze single cell RNA sequencing data from immune cells infiltrating the brain. The student will classify and perform a bioinformatic analyses of brain-infiltrating immune cells under different experimental conditions. 	
yes	X
no	
Does the project include the possibility of supervised animal manipulation to complete the training for animal manipulator?	