![Universidad de Navarra | M' PROGRAMAS MÁSTER]

Research Project Proposal
Academic year 2020-2021

Máster en Investigación Biomédica

Project Nº 35
Title: Study of the early synaptic changes in Parkinson's disease

Department/ Laboratory *Laboratory where the project will be carried out indicating Department, Area, Faculty, CUN, CIMA etc.* *Neuroscience program, CIMA*

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Summary *Short summary of the project with a **maximum extension of 250 words**, including the goals and the methodology that will be used.*

We seek a motivated and enthusiastic student with strong interest in brain and neuroscience to perform a research project in our multidisciplinary team at CIMA-Universidad de Navarra.

The biggest challenge in Parkinson's disease (PD) is to detect neuronal degeneration before motor manifestations. The synapse is the most active neuronal compartment and synaptic failure could be the first step in the degeneration of dopaminergic cells. Alpha-synuclein (a-syn) is mostly abundant at the presynaptic level where its aggregation is a key factor for the synaptic failure counting for abnormal synaptic plasticity and reduced neurotransmitter release.

Our aim is to study the dopaminergic synapse in the mesocortical and nigrostriatal pathways in an early stage animal model of progressive parkinsonism by overexpression of mutated alpha-synuclein. Our final goal is to understand the synaptic dysfunction to validate this model as a useful tool for development of new treatments focused on synaptic abnormalities.

Specifically, the candidate will perform the study of synaptic alterations in the striatum and frontal cortex related to behavioural and cognitive disorders in an animal model of progressive parkinsonism.

Methodology: Behavioural animal test (motor and cognitive), immunohistochemistry, immunofluorescence and cutting-edge techniques such as flow cytometry, proteomics and confocal/multiphoton microscopy.

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