



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

**Project Nº 08**

**Title:** Development of immunomodulatory nasal therapies in an animal model of progressive parkinsonism.

**Department/ Laboratory.**

Neuroscience Department, CIMA

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**Summary:**

We seek a motivated and enthusiastic student with a strong interest in 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. Our project places special emphasis on one of the most relevant prodromal symptoms of PD: the olfactory loss that arises even decades before the appearance of the well-known motor symptoms.

In addition to the impact that the olfactory system has on the central nervous system, we know that olfaction can affect the immune system. It has been demonstrated that certain odors have an immunostimulatory capacity. Furthermore, we have shown that the characteristic pathology of PD is found in the olfactory bulb, together with alterations of proteins involved in the immune system in our rat model of progressive parkinsonism.

This study is a radical innovation that exploits this new function of the olfactory system in the olfactory-immune system-brain axis. Specifically, the priority objective is the development of nasal therapies that modulate the immune system at the brain level.

Specifically, the candidate will perform the pharmacological study by immunomodulation in an animal model of progressive parkinsonism.

Methodology: Behavioural animal test, immunohistochemistry, immunofluorescence and cutting-edge techniques such as flow cytometry, proteomics and confocal microscopy.

yes	<input checked="" type="checkbox"/>	<b>Does the project include the possibility of supervised animal manipulation to complete the training for animal manipulator?</b>
no	<input type="checkbox"/>	