



**MASTER'S DEGREE IN BIOMEDICAL RESEARCH**

**Research Project Proposal**

Academic year 2023-2024

**Project Nº 11**

**Title:** Role of microglial SIRT2 enzyme in neurodegenerative diseases

**Department/ Laboratory** *Pharmacology and Toxicology Department. Faculty of Pharmacy and Nutrition.*

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**Summary**

Numerous recent studies in developing, adult, and diseased brains suggest that microglia are critical for neuronal health and homeostasis. In fact, more and more authors are defending the key role of microglia and, therefore, neuroinflammation, in the etiology and development of neurodegenerative diseases. In this context, it is essential to decipher and understand in detail the different functions of microglia as well as to identify possible targets to modulate their activity. Sirtuin 2 (SIRT2) is one of seven members of the sirtuin family that have recently attracted much interest for its potential role in regulating metabolism and longevity. It is highly expressed in the central nervous system in all cell types (neurons, astrocytes, microglia and oligodendrocytes) and its pharmacological inhibition has been proposed as an interesting strategy for the treatment of neurodegenerative diseases. This project aims to describe the specific role that SIRT2 plays in microglia and in the modulation of neuroinflammation. For this purpose, primary cultures of microglia and transgenic mice in which SIRT2 has been specifically deleted in the microglia will be used, and the consequences of this deletion will be evaluated when exposed to different pro- and anti-inflammatory stimuli. The student will learn to work with primary cultures and will carry out numerous laboratory techniques (western blot, qPCR, immunohistochemistry, ELISA tests and flow cytometry).

yes	x
no	

Does the project include the possibility of supervised animal manipulation to complete the training for animal manipulator?