Universidad de Navarra

Facultad de Ciencias

MÁSTER EN INVESTIGACIÓN BIOMÉDICA

Research Project Proposal

Academic year 2025-2026

Project Nº 40
Title: *Neurochemical profiles of prigmented neurons in the mouse spinal cord*
Department/ Laboratory *Laboratory of Gene Therapy for Parkinson's Disease, CNS Gene Therapy program, Center for Applied Medical Research (CIMA), University of Navarra*
Director 1: *Jose Luis Lanciego* **Contact:** *jlanciego@unav.es* **Codirector:** **Contact:**
Summary The development of engineered capsid variants of adeno-associated viruses (AAVs) with the capacity of bypassing the blood-brain barrier (BBB) upon systemic delivery has recently witnessed great progress. In this regard, a novel AAV serotype capsid variant known as AAV9-P31 has been recently introduced (Nonnemacher et al., 2020, PMID: 33553485). By targeting a mouse-specific BBB receptor, this capsid penetrates the BBB very efficiently following endovenous delivery, thus inducing a whole-brain transduction (Bunuales et al., 2024, PMID: 39039204). Preliminary data from our team, obtained upon systemic delivery of this capsid variant encoding the human tyrosinase gene (AAV9-P31-hTyr), revealed a time-dependent pigmentation of neurons throughout all levels of the mouse spinal cord (cervical, thoracic, and lumbar). Since such a population of pigmented neurons was not described before, here we sought to characterize their neurochemical profiles. Experiments will be conducted in FVN mice, injected with AAV9-P31-hTyr into the retro-ocular vein plexus, which will be euthanized eight months post-viral delivery. Coronal sections (40 mm-thick) taken at representative levels of the spinal cord will be obtained in a sliding microtome and processed with multiple immunohistochemical stains, enabling the full characterization of their neurochemical signatures.
<table><tr><td>yes</td><td>x</td></tr><tr><td>no</td><td></td></tr></table>Does the project include the possibility of supervised animal manipulation to complete the training for animal manipulator?