DeBio
DEPARTMENT OF BIOLOGY

UNIVERSITÀ DEGLI STUDI DI PADOVA

Pre/Postdoctoral Research Fellow Position available

A two-year fellowship is available in the lab of Laura Civiero at the Department of Biology, Padova. The project, granted by the Spastic Paraplegia Foundation, aims to find novel therapeutic approaches in Hereditary Spastic Paraplegia caused by mutations in the lysosomal pump ATP13A2.

Background: ATP13A2 mutations are causally linked to ultra-rare, devastating, early-onset neurodegenerative disorders, including Hereditary Spastic Paraplegia. Neuroprotective or neurorestorative strategies that stop or slow down the unrelenting degenerative process are eagerly awaited. ATP13A2 plays a key role in controlling the endo-lysosomal and autophagic pathways. Coherently with its function on degradative pathways, several ATP13A2-linked cellular and animal models have detected the accumulation of toxic products. Moreover, diffuse neuroinflammation and reactive glia have been associated with ATP13A2-related disorders. Of note, glial phenotypic changes precede age-related motor dysfunction in ATP13A2 null animals. Therefore, targeting glial cells in combination with restoring the lysosomal function could positively impact disease outcomes.

Project goal: To test a series of anti-inflammatory drugs in well-characterized zebrafish larvae harboring a non-functional form of ATP13A2. Drugs that revert motor phenotype will be selected and tested for their effectiveness in reducing inflammation and gliosis in ATP13A2-depleted fishes. The most promising compounds will be applied to brain organotypic slices from ATP13A2 knock-out rats in combination with acidic nanoparticles and nanoemulsions, chemical formulations that restore lysosomal pH and function in several models of lysosomal impairment. The long-term perspective of the project will be a Proof-of-Principle study in human iPSC-derived astrocytes and microglia and live animals.

We closely collaborate with Benjamin Dehay in Bordeaux, France. Ben studies the role of lysosomal dysfunction in neurodegeneration and he is a leading expert on ATP13A2 biology. He already developed neuroprotective/disease-modifying therapeutic strategies including nanoparticles aimed at restoring lysosomal levels and function in vitro and in vivo.

Here, we are looking for a highly motivated candidate who would work in a stimulating environment on a project that is already ongoing and yielded promising results. Any experience with experiments using zebrafish would be appreciated.

Starting date: October 2023

If you are interested, please contact

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