Internship Proposal

Proposal By: Márcia Liz | maliz@ibmc.up.pt

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Contact: maliz@ibmc.up.pt

Project Title:
Novel mechanisms underlying neurodegeneration in ATTR-PN

Level:

Master Student

Project Summary:

Transthyretin Amyloid Polyneuropathy (ATTR-PN) is a neurodegenerative disease characterized by the deposition of aggregates of mutated transthyretin (TTR), particularly in the peripheral nervous system, resulting in a dying-back sensory axonopathy. Using an ATTR-PN mouse model we determined that cytoskeleton disruption underlies neurodegeneration in ATTR-PN pathogenesis. We are currently establishing a model of human sensory neurons derived from iPSCs from ATTR-PN. In this proposal we will use the established model to validate cytoskeleton alterations and determine the underlying molecular mechanism in ATTR-PN.

Work to be developed by the student:

- Cultures of iPSCs-derived sensory neurons in microfluidic chambers.
- Perform live imaging of actin and microtubule dynamics, and axonal transport in the human cell model.
- Validation of proteomics data obtained from control and ATTR-PN iPSCs-derived sensory neurons.

References:

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Leung, A., et al., Induced pluripotent stem cell modeling of multisystemic, hereditary transthyretin amyloidosis. Stem Cell Reports, 2013. 1(5): p. 451-63.

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DE INVESTIGAÇÃO
E INOVAÇÃO
EM SAÚDE
UNIVERSIDADE
DO PORTO

Rua Alfredo Allen, 208
4200-135 Porto
Portugal
+351 220 408 800
info@i3s.up.pt
www.i3s.up.pt