Master’s degree in Biology – Chemistry-Biology Department

Master 2 internship project
Year 2020-2021

Laboratory/Institute: Grenoble Institut Neurosciences - GIN
Director: Prof. F. Saudou
Team: Neural progenitors and brain pathologies
Head of the team: Dr S. Humbert

Name and status of the scientist in charge of the project: M. Barnat, CRCN Inserm HDR: no
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Program of the Master’s degree in Biology:
- [ ] Immunology, Microbiology, Infectious Diseases
- [ ] Integrative Structural Biology
- [ ] Physiology, Epigenetics, Differentiation, Cancer
- [ ] Neurosciences and Neurobiology
- [ ] Planta International

Title of the project: Cortical development and Huntington’s disease

Objectives (up to 3 lines):
The objectives are to characterize the role of HTT in cortical progenitors during embryonic brain development and to identify the consequences of its mutation in these processes.

Abstract (up to 10 lines):
Huntington's disease (HD) is a neurological disease characterized by neurodegeneration of the striatum and cerebral cortex in adults. HD is caused by the mutation of the huntingtin protein (HTT) leading to new toxic functions of mutant HTT and the loss of its normal functions. The combined study of the role of HTT and the consequences of its mutation is therefore crucial to understand the pathophysiological mechanisms of HD. Given the adult onset, most studies have focused on these mechanisms in adult neurons. However, HTT plays an essential role during development as revealed by recent data showing that the mutation or deletion during development are sufficient to induce some HD phenotypes in the cerebral cortex. Our team found that HTT, during this developmental windows, is crucial to proper division of cortical progenitors and migration and morphogenesis of newborn neurons. We thus propose to further characterize the role of HTT and the consequences of its mutation during cortical development.

Methods (up to 3 lines):
Murine lines (crossing, genotyping), in utero electroporation, microscopy and videomicroscopy, primary culture (neurons and neuroprogenitors cells), histology (embryonic and post-natal brain sections), immunohistochemistry and immunocytochemistry, molecular biology techniques.

Up to 3 relevant publications of the team:

Requested domains of expertise (up to 5 keywords):
Cellular biology, molecular biology, neurobiology and brain development.