Master Biologie – UFR Chimie et Biologie

Internship project Master 2 Recherche
Year 2016/2017

Laboratory: Grenoble Institut des Neurosciences - GIN
Team: From Development to Repair
Director: F. SAUDOU
Head of team: H. NAWABI

Name and status of scientist in charge of the project: Homaira NAWABI, PhD, Group leader
HDR yes ☐ no ☒

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Specialty MASTER:
☒ Neurosciences and Neurobiology ☐ Immunology, Microbiology, Infectious Diseases
☐ Integrative Structural Biology ☒ Physiology Epigenetics Development Differentiation

Title of project: Axon guidance during central nervous system regeneration

Objectives (3 lines max): Using our unique model of central nervous system regeneration, our goal is to guide regenerating fibers from the eye to their brain targets to obtain functional recovery after a lesion.

Abstract (10 lines max): Impairment of the central nervous system (CNS) often affects vital functions such as vision, in the case of glaucoma, or motor function, in the cases of multiple sclerosis or spinal cord injuries. Indeed, CNS neurons have limited regenerative capabilities. We have shown that by activating specific pathways within the neuron, we are now able to induce axonal growth after lesion. However those axons are not able to reach their brain targets. Therefore we cannot expect any functional recovery. By using histology and molecular biology approaches we will decipher the expression of guidance cues in the mouse adult optic nerve system. We will next modulate their expression using virus-based technic to promote correct axonal guidance and circuit formation ex-vivo and in vivo. We aim to restore visual function after nerve injury.

Methods (3 lines max): Immunohistochemistry (In-situ, immunofluorescence); Primary neurons and cell line culture; Molecular Biology (cloning, PCR); Microscopy, Mice handling.

Relevant publications of the team (3 max):

Requested domains of expertise (few keywords): Neuroscience; Cellular and Molecular Biology, development (axon guidance)