

**Master 2 internship project
Year 2025-2026**

Laboratory/Institute: Grenoble Institut Neurosciences

Director: Dr. E. Barbier

Team: Central nervous system: From development to repair

Head of the team: Dr. H. Nawabi

Name and status of the scientist in charge of the project:

Homaira Nawabi, Inserm DR2, head of the team

HDR: yes ☒ no ☐

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Program of the Master's degree in Biology:

- ☐ Microbiology, Infectious Diseases and Immunology ☐ Biochemistry & Structure
☐ Physiology, Epigenetics, Differentiation, Cancer ☒ Neurosciences and Neurobiology

Title of the project: New molecules to control spinal cord regeneration

Objectives (up to 3 lines): Our objective is to decipher the outcome of new treatments for spinal cords injuries. The candidate will have to analyse the extend of spinal regeneration in control and treated conditions.

Abstract (up to 10 lines): Any injury to the central nervous system (brain, spinal cord) lead to permanent motor, sensory and/or cognitive disabilities. Indeed, CNS axons are not able to spontaneously regenerate. We identified new molecules that allow mature neurons axons growth: we tested them in neuronal culture, organotypic cultures and in a model of optic nerve injury. In the current project, we aim to challenge these finding in a context of mice spinal cord injuries.

Methods (up to 3 lines): Cryostat (tissues sectioning); imaging (epifluorescence/confocal); cell culture; biochemistry (westernblot)

Up to 3 relevant publications of the team:

1- Delpech C, Schaeffer S, Vilallongue N, Benadjal A, Blot B, Excoffier B, Plissonnier E, Albert F, Paccard A, Zagar Y, Castellani V, Belin S, Chédotal A, **Nawabi H**. Axon guidance during CNS regeneration is required for specific brain innervation. **Dev Cell** 2024

2- Schaeffer J, Vilallongue N, Blot B, El Bakdouri N, Decourt C, Plissonnier E, Excoffier B, Paccard A, Diaz JJ, Humbert S, Catez F, Saudou F, **Nawabi H***, Belin S*. Customization of translational complex regulates mRNA-specific translation to control CNS regeneration. **Neuron** 2023

3- Vilallongue N, Schaeffer J, Hesse AM, Delpech C, Paccard A, Couté Y, Belin S, **Nawabi H**. Axon guidance modalities in CNS regeneration revealed by quantitative proteomic analysis. **Nature Communications** 2022

Requested domains of expertise (up to 5 keywords): histology; neuronal circuits; imaging; statistics