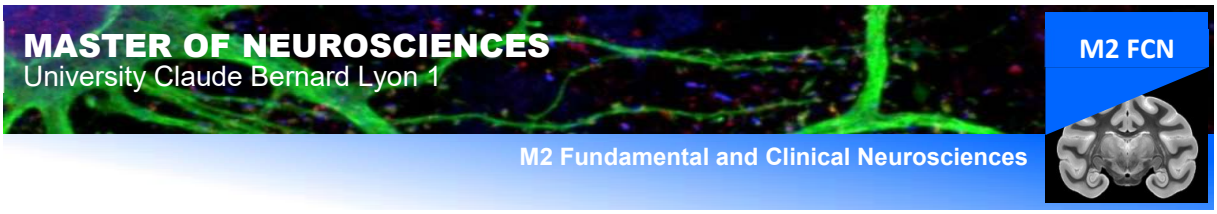

MASTER 2 Fundamental and Clinical Neurosciences

Internship proposal 2023-2024

(internship from January to June 2024)

Host laboratory: *Name + address*
Laboratory of Dr. Frederic Bretzner
CHU de Québec-Université Laval
CHUL, Neurosciences, P-09800
2705, Blvd. Laurier
Quebec City, QC
CANADA, G1V 4G2

Host team : *team name + website*
Laboratory of Dr. Frederic Bretzner
http://www.crchudequebec.ulaval.ca/en/research/researchers/frederic-bretzner/

Internship supervisors : *name + position + email*
Dr. Frederic Bretzner
Professor
frederic.bretzner.1@ulaval.ca

Project title :
Functional contribution of genetically identified neurons of a supraspinal locomotor center to locomotor recovery after spinal cord injury

Project summary : *approx 10 lines*
After partial spinal cord injury in animals and humans, sensorimotor functions recover spontaneously, even without pharmacological treatment or training. Using an animal model, we found that incomplete spinal cord injury in the mouse induces postural adjustments in their contralesional hindlimb (opposite to the injury) and functional recovery of locomotion in their ipsilesional hindlimb (on the injury side). These respective changes are presumably supported by a reorganization of spared neuronal pathways at the spinal and/or brain level. Using a combination of kinematic and electrophysiological techniques with discrete optogenetic or pharmacogenetic manipulations, the goal of this project will be to identify, localize, and characterize the functional contribution of genetically identified neuronal populations of a supraspinal locomotor center to postural and locomotor recovery after spinal cord injury.

Please send your proposal to marion.richard@univ-lyon1.fr for publication on the Master of Neuroscience website.

3-5 recent publications :

Roussel M, Lafrance-Zoubga D, Josset N, Lemieux M, Bretzner F. (2023). Functional contribution of mesencephalic locomotor region nuclei to locomotor recovery after spinal cord injury. Cell Rep Med. 4, 100946.

Thiry L, Roussel M, Lemieux M, Bretzner F. Using mouse genetics to study the developing spinal locomotor circuit. The Neural Control of Movement. Elsevier; 2020. p. 237-267.

Roussel M, Lemieux M, Bretzner F. Using mouse genetics to investigate supraspinal pathways of the brain important to locomotion. The Neural Control of Movement. Elsevier; 2020. p. 269-313.

Lemieux M, Bretzner F. (2019). Glutamatergic neurons of the gigantocellular reticular nucleus shape locomotor pattern and rhythm in the freely behaving mouse. PLoS Biology. 17, e2003880.

Josset N, Roussel M, Lemieux M, Lafrance-Zoubga D, Rastqar A, Bretzner F. (2018). Distinct contributions of mesencephalic locomotor region nuclei to locomotor control in the freely behaving mouse. Current Biology. 28, 884-901. e3.