



UNIVERSITÉ
LAVAL

Laval University
2325, Rue de l'Université
Québec, QC G1V 0A6
Phone: (418) 656-2131
Website: www.ulaval.ca/en



CERVO Brain Research Centre
2601, Ch. de la Canardière
Québec, QC G1J 2G3
Phone: (418) 663-5741
Website: www.cervo.ulaval.ca/en

PhD Position Opportunity - Laval University - Québec, Canada

Dissecting the contribution of the cortico-striatal and tegmental pathways to stress responses

The Labonté lab is opening a PhD position for a highly motivated PhD student interested in studying the contribution of cortico-accumbal and cortico-tegmental neuronal circuits in behavioral stress responses in males and females. Our lab already showed that these two neuronal pathways contribute differently to the expression of stress responses in males and females. Our results suggest that the different functional roles of these two neuronal pathways are driven by different gene programs. The aim of this project is to define how these circuit-specific transcriptional programs mediate the behavioral impact of chronic stress by changing the morpho-functional properties of both neuronal circuits in males and females.

To do so, the successful candidate will become familiar with the use of different mouse models of depressive and anxiety-like behaviors including social defeat, chronic variable stress and social isolation paradigms. The candidate will use trans-sectional viral strategies to label cortico-accumbal and tegmental neuronal populations. The sex and pathway-specific behavioral impact of gene programs will be assessed using virally mediated gene transfer with similar trans-sectional viral approaches in transgenic mice. Behavioral studies will be paired with morpho-functional assessments using neuronal reconstruction, electrophysiology and Ca^{2+} imaging in living animals along with circuit-specific molecular determination using qPCR, western blotting and RNAseq. Of particular interest, our lab owns unique human molecular profiles that provide highly translational findings relevant to clinical populations.

The successful candidate will oversee the animal, functional and molecular experiments, write scientific manuscripts and present results in national and international conferences. Applicants should have a solid background in animal behavior, molecular techniques and neuroanatomy as well as a strong enthusiasm for neurosciences. Knowledge of Matlab, R or Python coding is an advantage but not required. The successful applicant will join the program of Neuroscience at Laval University in Québec City and will integrate a multidisciplinary team of experts in molecular, cellular and integrative neuroscience located at the CERVO Brain Research Center.

The CERVO Brain Research Center is a leading multi-disciplinary research and training environment with >40 laboratories and over >250 trainees and staff pursuing basic and clinical neuroscience research. It offers transdisciplinary environment with state-of-the-art facilities aiming to understand the Central Nervous System at the molecular, cellular, systems and clinical levels in normal and pathological states. The CERVO is located in Québec City, one of the oldest cities in North America and a UNESCO World Heritage travel destination. As a cultural center of North America, Québec City is also a truly affordable city with an European flair. The city is embedded in a region rich in nature that offers an abundance of outdoor summer and winter activities. The CERVO is a fully bilingual environment and, while several options to learn French are available, the English language is prioritized in the lab.

Applicants are required to send a motivation letter, their CV, past degrees' transcripts with three reference contacts at the following email address: benoit.labonte@fmed.ulaval.ca.

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