Role of dopamine-sensitive neurons in brainstem locomotor networks

Record number : OPR-1340

Overview

RESEARCH DIRECTION

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INFORMATION

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ADMINISTRATIVE UNIT(S)

Faculté de médecine et des sciences de la santé

LEVEL(S)

2e cycle
3e cycle

LOCATION(S)

Campus de la santé

Project Description

PROJECT: The locomotor role of dopaminergic cells has traditionally been attributed to their ascending projections to the basal ganglia, which in turn project to brainstem locomotor circuits that control locomotion. However, descending dopaminergic projections to brainstem locomotor circuits have been discovered (Ryczko et al., PNAS 2013, PNAS 2016, Journal of Neuroscience 2017, 2020). In mammals, the role of dopamine-sensitive neurons in the brainstem is not completely understood and has only recently begun to be explored in our laboratory (Juarez Tello et al., 2024, Cell Reports).
The successful candidate will address this question in mice using optogenetics and chemogenetics, movement analysis, calcium imaging through photometry and mini-endoscopy, viral injections, and neuroanatomical approaches. The new knowledge generated should improve our understanding of the relationship between dopaminergic neurons and locomotor neurons and help identify new strategies to enhance locomotor function in Parkinson's disease.
REQUIREMENTS: The candidate should have experience in cellular or molecular biology, physiology, neuroscience, or a related field. The ideal candidate would have experience with mouse behavior, stereotaxic surgery, optogenetics or calcium imaging, viral injections, writing analysis scripts in MATLAB or Python, and a strong interest in motor control.
HOST LABORATORY: Our laboratory has expertise in the neuronal control of locomotion and publishes in high-impact journals (PNAS, Cell Reports, etc.). The laboratory is funded by CIHR, NSERC, and the European Research Council (ERC). We have broad expertise including patch-clamp recordings, calcium imaging, optogenetics, viral injections, mini-endoscopy and photometry, as well as deep learning–based movement analysis.
APPLICATION: Applicants should send a cover letter explaining how they would integrate into the project, a CV, a complete academic transcript, and the names of three references. Please specify where you found the job posting.

Discipline(s) by sector

Sciences de la santé

Neurosciences, Physiologie

Funding offered

To be discussed

Sciences naturelles et génie

Génie biomédical et génie biochimique

The last update was on 8 January 2026. The University reserves the right to modify its projects without notice.