

Brainstem control of locomotion in salamanders and mice.

Prof. Ryczko, Dimitri

Université de Sherbrooke (QC, Canada)

Our core interest is to better understand how brainstem circuits control locomotor initiation and speed in quadrupeds. In mice, we use optogenetics and calcium imaging to identify the role of genetically defined cell types in the brainstem. We recently found that optogenetic activation of glutamatergic neurons in the cuneiform nucleus increases locomotor activity in a mouse model of Parkinson's disease. We also work with salamanders, which recover voluntary locomotion after a full spinal transection by regrowing their nervous system. We use deep learning-based analyses to capture the recovery of swimming and walking movements, and our aim is to identify some of the brainstem cells that control of locomotion before and after regeneration.

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