Conférence

CRCHUM

Université de Montréal

AXE NEUROSCIENCES

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Deciphering molecular mechanisms of axonal vulnerability and resilience

Axons are highly vulnerable neuronal compartments in which degeneration often precedes cell death in injury and neurodegeneration. Emerging evidence, including ours, suggest that axons harbor specialized transcriptomes and local translation machinery that enable rapid proteomic adaptation to stress, injury, and synaptic remodeling. Defining the molecular programs that determine axonal integrity and whether axons regenerate or undergo irreversible degeneration upon injury is crucial to halt neurodegeneration. Our team discovered that the human mRNA most severely impacted by TDP-43 loss of function encodes the neuronal growth associated factor stathmin-2 whose loss disrupts axonal stability and regenerative capacity, leading to failed functional recovery and impaired neuromuscular reinnervation. To uncover mechanisms of axonal resilience, we propose to combine multimodal spatial transcriptomics with in vivo and in vitro injury models, enabling single-axon resolution analysis of transcriptional states and axon–glia interactions. This integrative approach aims to identify molecular signatures and therapeutic targets to promote regeneration and prevent degeneration.

Vendredi 1er mai 2026
9h à 10h

R05.212B, CRCHUM
Ou via Zoom :

https://us06web.zoom.us/j/86570135720?pwd=pikaP3cLribb5rZZad24qVZZCub1jg.1
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Séminaire organisé par Christine Vande Velde

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