

POST-DOC / Ph.D. STUDENT POSITION – MELOCHE LAB

Two research positions are available in the Laboratory of Signaling and Cell Growth headed by Dr Sylvain Meloche and located at the Institut de Recherche en Immunologie et Cancérologie (IRIC) affiliated to Université de Montréal (<http://www.irc.ca/>).

The laboratory uses an interdisciplinary approach that combines molecular and cellular biology, functional genomics/proteomics, mouse genetics and chemical biology to understand how signal transduction pathways control cell fate of normal and cancer cells. Defining the importance and interconnection of these signaling events will further our understanding of the malignant transformation process and aid in the identification of new cancer targets for preclinical validation. Current research of the laboratory is focused on understanding the regulation and pathophysiological functions of members of the MAP kinases and SRC-family kinases, which are essential regulators of cell proliferation and differentiation. Several members of these protein kinase families have been shown to play causative roles in developmental disorders and various cancers. The laboratory has developed several models of genetically-engineered mice and chemical tools to study the role of these enzymes in cancer. Specifically, the team is actively involved in large-scale drug discovery projects aimed at developing novel small molecule inhibitors of ERK3/4 and YES kinases.

Specific projects:

- 1) Investigating the role of SRC-family kinases (SFKs) in immunogenic cell death and anti-tumor immunity
In addition to sustaining chronic proliferation, oncogenic signaling pathways also contribute to tumorigenesis by facilitating immune surveillance escape. Our preliminary findings suggest that SFKs regulate anti-tumor immune responses in specific cancers. Questions to address include: defining the role of different SFK members on immune cell populations using specific genetic and pharmacological tools; defining the role of SFKs in immunogenic cell death; investigating the role of SFKs in anti-tumor immunity in various mouse models of cancer; testing the pharmacological potential of SFK inhibition in combination with immunotherapy.
- 2) Investigating the role of ERK3/ERK4 signaling in cellular invasion and metastatic progression using cellular and mouse models of cancer
Accumulating evidence points to an important role of the atypical MAP kinases ERK3 and ERK4 in cancer development and progression. Genetic depletion of ERK3 reduces metastatic dissemination of lung and breast cancer cells. Among the questions we want to address are: defining the role of ERK3/ERK4 signaling in epithelial-mesenchymal transition; defining the role of ERK3/ERK4 in metastatic progression and cellular dormancy; elucidating the signaling network of ERK3/ERK4 driving cancer progression using a multi-omic approach. Validating the translational potential of ERK3/ERK4 using a novel generation of chemical inhibitors.

Candidates should have a degree in biochemistry, molecular biology, immunology, or related fields. Experience in molecular and cellular biology, immunology, or omics research is desirable. Interested individuals should send their full CV, a letter of motivation and the names of two references to:

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