



CHU Sainte-Justine  
Research Center  
Mother and Child  
University Hospital Center

Université  
de Montréal

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Project title	Neuroprotective strategies to prevent long-term cognitive deficits induced by cerebellar injury		
Study level(s)	<input checked="" type="checkbox"/> MSc	<input checked="" type="checkbox"/> PhD	<input type="checkbox"/> Postdoctorate
Principal investigator(s)	<a href="#">Dre Sophie Tremblay</a>		
Project duration	2-5 years		
Start date	January 2020		

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### Research project description

Cerebellar growth is highly vulnerable during the third trimester of pregnancy and could be affected by diverse direct insults leading to cerebellar growth failure and atrophy in premature infants. We have developed a novel translational mouse model of preterm cerebellar hemorrhagic and/or inflammatory insults.

This project aims to establish if microgliosis is a major contributor to the long-term cognitive deficits induced after cerebellar insults (CBI) in preterm and whether systemic immunomodulators administered post-insult may modulate microglial responses and favor a pro-repair microglial phenotype to protect cerebellar development and to prevent neurological deficits. Objectives of this project are:

- **Objective 1:** To determine if microglia depletion will prevent long-term cognitive deficits induced by CBI.
- **Objective 2:** To determine if microglia depletion will preserve regional brain volumes in adult mice, including cerebellar volumes, after CBI.
- **Objective 3:** To explore a new neuroprotective approach by modulating the tumour necrosis factor alpha (TNF-  $\alpha$ ) pathway to improve extreme preterm long-term cognitive outcomes following perinatal CBI.

### Required training and profile

Applicants must have completed a bachelor or a master in neuroscience, biomedical sciences or related fields.

### Conditions of internship

Stipends will be given in accordance to amounts determined by provincial funding agencies if applications by the candidate are unsuccessful.



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### Submit your application

Candidates must send the required documents to **Sophie Tremblay** at [sophie.tremblay@recherche-ste-justine.qc.ca](mailto:sophie.tremblay@recherche-ste-justine.qc.ca).

### Please provide:

- ✓ Curriculum vitae
- ✓ Most recent transcripts
- ✓ Cover letter
- ✓ References (2)

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### Reference:

Tremblay S, Richter L, Pai, A, Vafaei R, Ellegood J, Lerch JP, Goldowitz D. Systemic Inflammation combined with neonatal cerebellar haemorrhage aggravates long-term structural and functional outcomes in a mouse model.  
*Brain, Behavior and Immunity*. 2017. Nov 66:257-276. doi: 10.1016/j.bbi.2017.07.013. Epub 2017 Jul 27.

### Studies at the CHU Sainte-Justine Research Center

Pursue your [graduate or postdoctoral studies](#) at the **CHU Sainte-Justine Research Center**, and be one of the 500 students, fellows and interns involved in accelerating the development of knowledge in the field of maternal, child and adolescent health, whether in basic or clinical research. Under the supervision of prominent scientists, especially in leukemia, rare pediatric diseases, genetics, perinatology, obesity, neuropsychology and cognition, scoliosis and rehabilitation, you will have the opportunity to work with multidisciplinary scientific teams and collaborators from all over the world.

### About the CHU Sainte-Justine Research Center

**CHU Sainte-Justine Research Center** is a leading mother-child research institution affiliated with Université de Montréal. It brings together more than 200 research investigators, including over 90 clinician-scientists, as well as 500 graduate and postgraduate students focused on finding innovative prevention means, faster and less invasive treatments, as well as personalized approaches to medicine. The Center is part of CHU Sainte-Justine, which is the largest mother-child center in Canada and the second most important pediatric center in North America. More on [research.chusj.org](http://research.chusj.org)

