

Research Project Offer

Centre de recherche Azrieli
CHU Sainte-Justine



Level

☐ Undergrad (internship) ☐ Masters ☒ Doctorate ☐ Postdoctorate

Francine M. Ducharme, MD, MSc, FRCP(c)
Professor, Department of Pediatrics and Social
and Preventive Medicine
Université de Montréal

Team

Cristina Longo, PhD
Assistant Professor
Faculty of Pharmacy
Université de Montréal

Recherche Axis Infectious Diseases and Acute Care

Duration 4-5 years

Start Date As soon as possible

Location Centre de recherche Azrieli du CHU Sainte-Justine

Date of posting October 28, 2025

Pharmacogenomics of neuropsychiatric side effects associated with montelukast

Research laboratory presentation

The clinical laboratory of Dre Ducharme, clinician-researcher and clinical epidemiologist, focuses on various clinical studies testing the efficacy and safety profile of various interventions in pediatric asthma. Cristina Longo, PhD, is a pediatric epidemiologist, assistant professor at the Université de Montréal, and investigator at the Centre de recherche Azrieli du CHU Sainte-Justine. The overarching goal of her research program is to bridge the gap between epidemiological methods, big data, and the clinic to optimize asthma outcomes in children through precision medicine and technology-enhanced care.

Research project description

Asthma is the most common chronic disease in children. Asthma treatments are highly effective, and some are not without side effects. Montelukast has been associated with neuropsychiatric side effects that are possibly related to a genetic polymorphism.

The primary objective of the research program is to identify genetic polymorphisms associated with the occurrence, presentation and progression over time of neuropsychiatric side effects in the Canadian population.

The project will consist of (i) developing and validating a questionnaire to be completed by children and adults who have been treated with montelukast in order to identify the occurrence and if so, the description and evolution of side effects in order to assess the imputability of these effects to the drug according to the Naranjo scale; (ii) developing a protocol and consent form for submission to

the *Canadian Pharmacogenomics Network for Drug Safety* (CPNDS); and (iii) recruiting participants through the various Canadian hospitals participating in the CPNDS as well as through social media for completing the questionnaire and collecting their DNA for analysis. (iv) analysing the pharmacogenomic study in relation to the occurrence and presentation of adverse drug events.

Expertise and skills required

- Hold a master's degree in pharmacy, pharmacogenomics, pharmacoepidemiology, computational biology, biostatistics, epidemiology, or related fields;
- Excellent academic record and research abilities;
- Experience in data analysis (experience with clinical, biomedical, or admin data, statistical models, and presentation of results);
- Proficiency in R, Python, PLINK, and/or SAS software are assets;
- Prior knowledge in the fields of pharmacovigilance and/or pharmacogenomics are assets;
- Excellent scientific presentation and writing skills;
- Proficiency in English, both spoken and written (bilingualism is an asset).

Please note that CHU Sainte-Justine is a French-language institution and workplace. While applications from non-French speakers are welcome, learning French is strongly encouraged to facilitate integration and collaboration.

Study Program

The selected candidate must apply for admission to, and be accepted for, a PhD degree in the Faculty of Pharmacy (Option: Médications et Santé des Populations) or in the Department of Social and Preventive Medicine of the School of Public Health, at the Université de Montréal.

Funding

Funding of CA\$30,000 per year will be awarded to the applicant, until they obtain independent financial support from granting agencies or foundations.

Submit your application

Candidates must send the required documents to Dr. Francine M. Ducharme at francine.m.ducharme@umontreal.ca and Dr. Cristina Longo at cristina.longo.1@umontreal.ca

Please provide:

- Curriculum vitæ
- Most recent transcripts
- Cover letter
- References

Address

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Equity, diversity and inclusion

The CHU Sainte-Justine subscribes to the principle of equal access to opportunities and invites women, members of visible and ethnic minorities, persons with disabilities and Indigenous people to apply. We would appreciate it if you could inform us of any disabilities that would require technical and physical accommodation adapted to your situation during the selection process. Please be assured that we will treat this information as confidential.

Studies at the Centre de recherche Azrieli

Pursue your graduate or postdoctoral studies at the **Centre de recherche Azrieli du CHU Sainte-Justine**, and be one of the 700 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 Centre de recherche Azrieli

The **Centre de recherche Azrieli du CHU Sainte-Justine** is a leading mother-child research institution affiliated with Université de Montréal. It brings together more than 300 research investigators, including over 160 clinician-scientists, 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

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