



EARLY-STAGE CLINICAL TRIALS IN QUEBEC

# The Smart Choice For You

# Smart Thinking for Smarter Results

What do you get when you combine brilliant physician-scientists, cutting-edge infrastructure, clever incentives and today's foremost AI hub? Quite possibly the smartest ecosystem for early-stage clinical trials in the world.

## SMART ENVIRONMENT

World-class clusters in the cities of Montreal, Quebec City and Sherbrooke.

State-of-the-art hospitals and research centres that rank among the best in the world.

A universal system that combines high-quality health care with research and teaching and also simplifies patient recruitment.

An ethnically diverse population that facilitates the conduct of clinical trials in all therapeutic areas.

## SMART INVESTMENT

The lowest overall clinical trial costs in Canada and among all G7 countries.<sup>1</sup>

Tax incentives that can reduce the net cost of R&D projects by almost 35%.<sup>2</sup>

Foreign researchers and experts may benefit from a 5-year tax exemption.

Favourable Canadian exchange rate.

Sources:

<sup>1</sup> KPMG Competitive Alternatives 2016  
Financial Times fDiBenchmark, 2019

<sup>2</sup> Investissement Québec ([investquebec.com](http://investquebec.com))

## SMART RESEARCH

Experts that are internationally recognized for their discoveries and innovations in all therapeutic areas.

A 30-day regulatory review process and a unified ethics review framework for studies conducted in more than one public institution.

A world-leading AI hub, with top global players, more than 20 centres of excellence and more than 30 incubators and accelerators.

**THE PROVINCE OF QUEBEC IS A WORLD LEADER  
IN EARLY-STAGE CLINICAL TRIALS**



**20+**  
public and university  
research centres<sup>3</sup>

**10,000**  
graduates a year in  
health-related programs<sup>3</sup>

**450+**  
companies in the  
life sciences industry<sup>3</sup>

**85+**  
contract research  
organizations<sup>4</sup>

**2,005**  
active clinical trials  
in 2019<sup>5</sup>

Sources:

<sup>3</sup> Investissement Québec ([investquebec.com](http://investquebec.com))

<sup>4</sup> Ministry of Economy, Science and Innovation, 2017

<sup>5</sup> [Clinicaltrials.gov](http://Clinicaltrials.gov), September 2019

Smart innovations begin with smart people. Brilliant, resourceful and passionate people who are constantly looking to improve the health and well-being of their patients.

Meet some of Quebec's top physician-scientists ►

## MULTIPLE MYELOMA

### Dr. Michael Sebag

Hematologist, Research Institute of the McGill University Health Centre (RI-MUHC)  
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## EXPLORING THE MULTIPLE WORLDS OF MYELOMA

Dr. Sebag wants to extend the lives of his patients by pushing the therapeutic boundaries of multiple myeloma. In 2006, during his postdoctoral fellowship at the Mayo Clinic's Comprehensive Cancer Center, the young doctor developed a transgenic mouse model that reproduces the biology of multiple myeloma. Since then, he has been tasked with testing dozens of drugs in humans.

*His most recent initiative, a study involving 120 patients treated with a combination of four drugs, is "the biggest in 10 years to target multiple myeloma in Canada [and] the preliminary results are very encouraging."*

Dr. Sebag's eyes light up when he talks about immunotherapy. "For the treatment of multiple myeloma, everything is moving towards conjugated antibodies, bispecific drugs and CAR-T cells," he says, revealing his interest in participating in clinical studies on the subject.



## HEMATOLOGY-ONCOLOGY

### Dr. Rahima Jamal

Hemato-oncologist and Director, Unit for Innovative Therapies, University of Montreal Hospital Research Centre (CRCHUM)  
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## A PROGNOSIS OF HOPE FOR MELANOMA

Dr. Jamal, who considered becoming a journalist before turning to medicine, found her true calling in the battle against melanoma. In recent years, the clinical investigator initiated two studies that combined chemotherapy with immunotherapy. And thanks in part to her work, we are now better equipped to fight this type of cancer.

*"10 years ago, the median survival of patients was 6 months. Today, it exceeds 20 months! This is a major difference, and it shows above all the importance of clinical studies for patients, from phase I to treatment approval."*

Appointed head of the CRCHUM's Unit for Innovative Therapies in September 2018, Dr. Jamal is working to bring the most promising experimental cancer treatments to patients. Her dream is to find a new therapy, one that would give her patients a second chance. "That's why we do clinical research!"

## NEUROLOGY

### Dr. Angela Genge

Neurologist and Director, Clinical Research Unit  
Montreal Neurological Institute and Hospital  
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#### A WINNING STATE OF MIND

Dr. Angela Genge is a fighter who is always on the lookout for clinical trials for patients with amyotrophic lateral sclerosis (ALS) or any other rare neurodegenerative disease for which there is no satisfactory therapeutic option.

*“When I started, my patients didn’t have access to clinical trials. I thought it was unfair. So I just pursued biopharmaceutical companies, both large and small, to bring their trials to Canada.”*

Her biggest dream? To have The Neuro become THE best place in the world to conduct phase I clinical trials in neuroscience. And, by the looks of it, she is definitely on the right track, because patients from across Canada and several other countries travel to Montreal to participate in numerous studies on amyotrophic lateral sclerosis (ALS) and rare neurodegenerative diseases such as Duchenne muscular dystrophy, certain forms of dementia, and amyloid neuropathies.



## PEDIATRIC HEMATOLOGY-ONCOLOGY

### Dr. Michel Duval

Head of the Hematology-Oncology  
Department and clinical researcher,  
CHU Sainte-Justine Research Center  
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#### STEM CELL LEARNING... FOR KIDS

A cure for everyone! These words define Dr. Michel Duval’s profound motivation to conduct experimental protocols with his young patients. Because even today, “too many of them do not respond to the treatments we have for them.”

*“I am a clinician who treats patients, but also a researcher who tries to improve treatments. I try to bring discoveries from the lab to patients.”*

The Sainte-Justine University Hospital stands out for the innovative design of its clinical trials in oncology and for its research platforms that accelerate discoveries with bedside application. In this context, the clinical researcher is working on the development of immunotherapy based on plasmacytoid dendritic cells (pDC). This novel approach aims to stimulate the innate immune system to increase the effectiveness of hematopoietic stem cell transplantation.

## RARE DISEASES

### Dr. John Mitchell

Pediatric Endocrinologist, Research Institute  
of the McGill University Health Centre (RI-MUHC)  
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#### A RARE DOCTOR FOR RARE DISEASES

Originally from Kamloops, British Columbia, Dr. Mitchell chose Quebec to further his expertise in genetics. He is particularly interested in orphan diseases, especially phenylketonuria and the group of diseases associated with lysosomal dysfunction.

*“In the case of neurodegenerative diseases, we have no other option than to try experimental treatments in young people. And sometimes the outcome is positive.”*

The researcher cites as an example a treatment for Morquio syndrome, a disease with a high prevalence in Quebec. He participated in the phase II-III studies of Biomarin’s Vimizim, the world’s first enzymatic replacement therapy for Morquio syndrome and mucopolysaccharidosis type IV carriers.

“It’s very rewarding,” he says. “The treatment slows the progression of the disease and improves the patient’s quality of life in terms of mobility and pain reduction.”



## ONCOLOGY

### Dr. Wilson H. Miller

Director, Clinical Research Unit  
Jewish General Hospital, Lady Davis Institute  
for Medical Research  
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#### MOLECULAR WAR AGAINST CANCER

Dr. Miller is a visionary and a rare expert in the use of molecular therapy to kill cancer cells. A native of Kansas City, he chose to settle in Quebec more than 25 years ago because he found the ideal conditions for his research work at the Jewish General Hospital and at McGill University.

*“My main interest is to find new drugs that will transform cancer treatment.”*

A pioneer in early clinical trials in oncology, Dr. Miller participated in all trials for ipilimumab, the first immunotherapy treatment. He contributed to the development of other immune checkpoint inhibitors, including PD-1 inhibitors.

The molecular oncologist is also pushing the boundaries of targeted gene therapy with the WHINTER study, which aims to improve the survival of patients with advanced cancer by identifying the genes that are responsible for tumour growth in each patient.

## CARDIOLOGY

### Dr. Jean-Claude Tardif

Director, Montreal Heart Institute Research Centre  
Scientific Director, Montreal Health Innovations  
Coordinating Centre (MHICC)  
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#### STRAIGHT FROM THE HEART

Dr. Tardif is a leading authority on atherosclerosis. He has contributed to the development of intravascular ultrasonography, established one of the largest clinical trial coordination centres in Canada (the MHICC), authored more than 600 scientific articles, and received the Order of Canada. He also acts as a consultant for some twenty large pharmaceutical companies.

*“We will conduct clinical research at a much lower cost by accelerating the recruitment of targeted patients and maximizing the likelihood that they will remain in the study. If a company needs patients with a specific metabolic profile or genetic abnormality, we can do it. That’s quite unique around the world.”*

His next challenge? To reinvent clinical research by establishing an artificial intelligence (AI) unit to operate, among other things, a biobank containing the gene sequencing information of 30,000 patients and clinical trial data involving more than 100,000 patients.



## NEPHROLOGY

### Dr. Jean-Philippe Lafrance

Nephrologist, Maisonneuve-Rosemont Hospital  
Research Centre  
Associate Professor, Department of Pharmacology  
and Physiology, Université de Montréal  
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#### THE FEARLESS DATA HUNTER

When he’s not hiking through Quebec’s wilderness or bicycle touring with his family, Dr. Lafrance is either doing research, teaching or monitoring kidney disease patients.

*“Our strength in phase I clinical trials is that we have a large number of kidney disease patients. We have a brand new Dialysis Unit, the largest in Quebec on a single site, serving a population of 535,000. We follow 450 to 475 patients with severe renal failure.”*

Pharmacokinetic testing is an important market for phase I clinical trials. The expertise of Maisonneuve-Rosemont Hospital’s nephrology research team is in high demand, now that the U.S. Food and Drug Administration (FDA) requires companies to test the safety of investigational drugs in patients with renal failure. In 2017, Dr. Lafrance and his team successfully conducted a safety study on bremelanotide, a female “Viagra,” in pre-dialysis patients.

## METABOLIC IMAGING

### Dr. André Carpentier

Director of the Diabetes, Obesity and Cardiovascular Complications Research Axis  
Centre for Research at the CHUS (CRCHUS) –  
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## THE BODY FAT DETECTIVE

Thanks to his lipid imaging techniques, Dr. André Carpentier can track the breakdown of dietary fats in the body. And now he wants to apply his methods to the development of drugs for metabolic syndrome and type 2 diabetes.

*“I am extremely interested in developing partnerships with industry to address the metabolic conditions that lead to this disease in clinical trials.”*

After several successful collaborations with various industrial and academic partners in multicentre clinical research in cardiometabolic disease and endocrinology, Dr. André Carpentier’s team also completed a proof of concept project with the European company Uniqure for the development of Glybera®, a gene therapy to correct hyperchylomicronemia associated with lipoprotein lipase deficiency.



## HEMATOLOGY-ONCOLOGY

### Dr. Maxime Chénard-Poirier

Hematologist and Oncologist  
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## THE RIGHT PROTOCOL FOR THE RIGHT PATIENT

Dr. Maxime Chénard-Poirier did a postdoctoral fellowship at the Royal Marsden Hospital in London to familiarize himself with phase I clinical trials in oncology, followed by additional training in digestive cancers. Now, he is motivated by one thing: offering solutions to patients who have exhausted available therapeutic options.

*“We’re looking for controlled growth, to make sure everything is done just right. It’s important for the development of the drug and even more so for the safety of the patient.”*

In his opinion, the CHU de Québec is well positioned to increase early-stage clinical trials in collaboration with industry. “We try to select patients based on specific criteria that increase their chances of responding to experimental treatments. Providing the right protocol, to the right patient, is key,” he explains.

## INTERNATIONALLY ACCLAIMED FIELDS OF EXPERTISE

Oncology

Cardiovascular and  
metabolic diseases

Neuroscience and  
mental health

Infectious diseases

Aging

Pediatrics

Nephrology

Regenerative medicine  
and cell therapy

Genomics and  
precision health

Health care technology

Big data and artificial  
intelligence

## WORLD-RENOWNED RESEARCH CENTRES

Centre for Research  
at the CHUS



CHU de Québec-Université  
Laval Research Centre



CHU Sainte-Justine  
Research Center



Jewish General Hospital,  
Lady Davis Institute  
for Medical Research



Maisonneuve-Rosemont  
Hospital Research Centre



Montreal Heart Institute  
Research Centre



Montreal Neurological  
Institute and Hospital



Research Institute  
of the McGill University  
Health Centre



University of Montreal  
Hospital Research Centre





# Intelligent by Design

CATALIS Quebec Clinical Trials is a non-profit partnership dedicated to the advancement and operational excellence of early-stage clinical research in Quebec. Our mission is to promote the province's unique expertise in order to accelerate the development of innovative drugs for patients.

## EARLY-STAGE CLINICAL TRIALS IN QUEBEC

Discover the possibilities at [clinicaltrialsquebec.com](http://clinicaltrialsquebec.com)

With the financial support of:

Québec 

 **QUEBEC CLINICAL TRIALS**  
The Smart Choice