

Greater Montréal: Life Sciences & Health Tech Hub







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Top reasons to invest in Greater Montréal's life sciences and health tech sector



Montréal is an Al hub and several projects are related to life sciences



A true **innovation hub** and a critical mass of companies



Market access
Registration deadlines
& improved integration
of innovation



Access to health data for research purposes in an ethical framework



Competitiveness of clinical research



Predictability, concertation and policy coherence



Single-payer healthcare system

A strong and growing metropolis, strategically located in North America



Population

- 4.3 million residents
- 23% of population are foreign-born (34% for the city of Montréal)



Economy

- Best economic growth in Canada in 2018 and 2019
- Best economic growth forecast for Canada in 2022*
- \$2.233 billion in foreign direct investment in 2020 supported by Montréal International



Location

- 82 municipalities, 1 metropolitan area
- A 90-minute flight to Boston and New York City
- Less than a one-hour drive to the U.S. border



Note: * 2019-2022.

Source: Conference Board of Canada, 2021; Statistics Canada, 2020; Montréal International Analysis.



A direct access to 1.5 billion consumers, thanks to free trade agreements

Thanks to **CUSMA**, **CETA**, **CPTPP** and 12 other free trade agreements in force*

Direct access to **1.5 billion consumers** and a **combined GDP** of **US\$50 trillion** (60% of the world's output of goods and services)

Canada is the only G7 country to have a free trade agreement with the United States and the European Union while being part of the CPTPP

*Canada-United States-Mexico Agreement (CUSMA), Comprehensive Economic and Trade Agreement (CETA) and Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP)

Source: World Trade Organization, 2020; World Bank, 2019; Census Bureau, 2020.

01
Life Sciences:
A Strategic Sector for Québec





Québec's ambitious Life Sciences Strategy

Four key objectives

- 1 Increase Investment in research and innovation in all life sciences
- 2 Foster the creation of innovative companies and ensure their growth
- 3 Attract new private investment
- 4 Further integrate innovation into health and social services network

Two priority niches to position Québec internationally

- 1 Precision medicine
- 2 Big Data in the health sector

Two goals

- 1 Attract \$4 billion of private investment in Québec by 2022
- 2 Make Québec one of the Top 5 North American life sciences clusters by 2027



Source: 2017-2027 Québec Life Sciences Strategy.



Many key programs within the national strategy are fostering the industry



Creation of an innovation bureau and the Chief health innovation strategist position



Creation of an innovation support fund



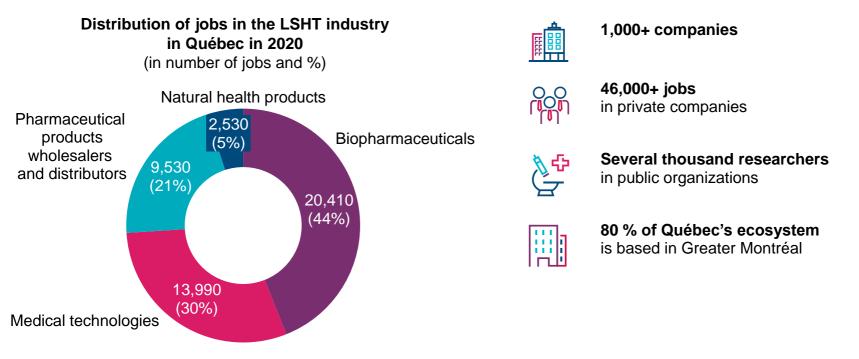
Optimized and accelerated process for the integration of innovative health technologies

O2
A Unique Interconnected & Collaborative Ecosystem





Québec's life sciences and health tech ecosystem is among the largest in North America



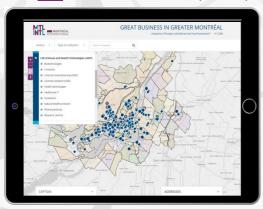
Numerous foreign companies have chosen Greater Montréal to expand their operations



Major hub to boost business partnerships throughout the region

Centre de recherche
Hôpital Maisonneuve-Rosemont
Centre affilié à l'Université de Montréal

Click here to visit our interactive map of companies



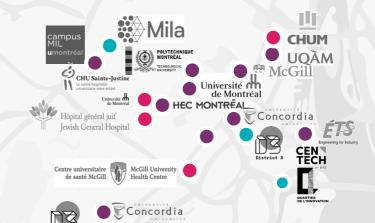








Trudeau International Airport



Innovation centre - fall 2020



- Industrial park / innovation cluster
- University Hospital Centre
- University

Strong venture capital funding from various players in Québec

- More than US\$2.7 billion in VC investments between 2018 and 2020 in Montréal
- 6 of the 10 most active VCs in Canada in 2020 are based in Montréal
- Example of funding for life sciences companies:

VENTUS THERAPEUTICS	raised US\$185 M (2021)
Mayacare	raised US\$37 M (2020)
NVENTUS	raised US\$100 M (2021)
THERAPEUTICS	raised US\$60 M (2020)
REPARE THERAPEUTICS	raised US\$82.5 M (2019)
Milestone. PHARMACEUTICALS	raised US\$80 M (2018)
♡ Dialogue	raised US\$30 M (2020)



World-renowned scientific excellence centres and infrastructure

Montréal is reputed for its **collaborative approach** (Research – Industry – Government)

Recent major investments in **cutting-edge infrastructure**:



500,000 ambulatory visits/year



220,000 ambulatory visits/year



80,000 ambulatory visits/year



Montréal has developed an internationally acclaimed expertise in several fields



Oncology



Cardio vascular and metabolic diseases



Neuroscience and mental health



Infectious diseases



Aging



Cellular therapy, regenerative medicine

Rare diseases



Medical imaging and cytometry



Precision medicine (genetics, genomics and proteomics)



Big data and artificial intelligence

Examples of flagship programs to accelerate discovery, development and commercialization

Pharma/biotechs



adMare BioInnovations: Life Sciences & Health Technology Innovation Hub including the adMare Innovation Centre, hosting subcontractor research organizations, biotech companies and consultants



IRICoR: Accelerating discovery and commercialization of highly innovative therapies in oncology by strong partnerships with industry



CQDM: Development of breakthrough tools and technologies that enhance biopharmaceutical R&D productivity



C3i: One-stop shop for the development, translation and commercialization of ground-breaking cancer immunotherapies treatments



CATALIS: Office mobilizing all stakeholders involved in early clinical research in Quebec

HealthTech



Transmedtech Institute: Transdisciplinary and intersectoral open innovation ecosystem or living lab – To develop next generation medical technologies



CENTECH: The ÉTS business incubator and accelerator, ranked among the 20 top performing university incubators in the world. One of two key sector is medical device



DISTRICT 3: Startup accelerator and entrepreneurial community located within Concordia University



MEDTEQ: Consortium for industrial research and innovation in medical technology



Health Tech Campus/Campus des technologies de la santé (CTS): Accelerator for medical technology companies

A developed network of centres of excellence to train GMP workforce and implement best practices



- Center of expertise for applied research in the pharmaceutical sciences: College Centre for Technology Transfer supporting SMEs with their pharmaceutical projects, process scale-up leading to clinical trials and commercialization as well as technical trainings programs
- Joint-venture between the John Abbott College and Cégep Gerald Godin, both offering a three-year pharmaceutical production Diploma of collegial studies as well as continuing education and customized technical training
- Recipient of a \$250K grant from the city of Montréal in June 2021 to create a college certification training for biopharmaceutical production of advanced therapies focusing on vaccines, CGT, and blood products



- Canadian network focused on advancing cell and gene therapy manufacturing under GMP through the deployment of standards for training to implement best practices
- Recently launched the Canadian Advanced
 Therapies Training Institute (CATTI) in
 partnership with CCRM in Toronto, a centre of
 training developing and scaling e-learning and on site GMP training programs
- Facilitates an unprecedented capacity in Canada for efficient and rapid upskilling of the required workforce
- Advanced therapies: vaccines production and cell, tissue and gene therapies
- **50+ hours** of interactive training content available

The INRS Armand-Frappier Research Centre, a hub for infectiology research and training in Québec

- Centre for research, training, and technology transfer in the fields of disease detection and prevention with a view to promoting human, animal, and environmental health
- The only Canadian university research institution part of the Institut Pasteur International Network
- A new Level 3 laboratory (CL3), accredited by the Public Health Agency of Canada, which propels research on numerous pathogens
- A National Experimental Biology Laboratory (NEBL), one of the few animal facilities in Canada that can accommodate large animals
- 35 researchers
- 215+ graduate students and postdoctoral fellows
- \$8.6M in research projects in 2020-2021
- 60+ patents issued or pending





National Research Council (NRC), a biomanufacturing leader

- Canada's largest R&D team in human health with 340+ researchers
- Montréal, NRC's biomanufacturing hub with the Biotechnology Research Institute
- Major investment in cutting-edge facilities:
 - \$126M (2020): construction of dedicated biomanufacturing facilities
 - \$44M (2020): construction of a clinical trial materials facility compliant with good manufacturing practices (GMP)
- Expertise in cell bioprocesses and lines, development of biological products and vaccines, etc.
- Provides technical training and funding for industrial R&D partnerships

Source: Government of Canada, "NRC facilities - Biologics Manufacturing Centre", 2021; Government of Canada, "NRC facilities - Human health therapeutics research facility – Montreal: Royalmount", 2021; Government of Canada, "Biomanufacturing: Projects underway", 2021; NRC, "Strategic Plan, 2019–2024"

Clinical Research Canada: an HTA country



Canada is on the list of the **Health Technology Assessment Countries**of the World Health Organization with
two HTA including one in Québec





Opportunity for scalable development, as Canada boasts a diverse population ideal for clinical research



03
Montréal,
a True Al Hub
for Life Sciences





Montréal is home to Canada's Al cluster headquarters



Canada's Al supply chain supercluster



Québec's Al organization fostering the development of Québec's Al ecosystem



Other health-related Canadian superclusters



a cross-industry collaboration in healthcare, communications, technology



The Innovative
Manufacturing supercluster:
manufacturing 4.0



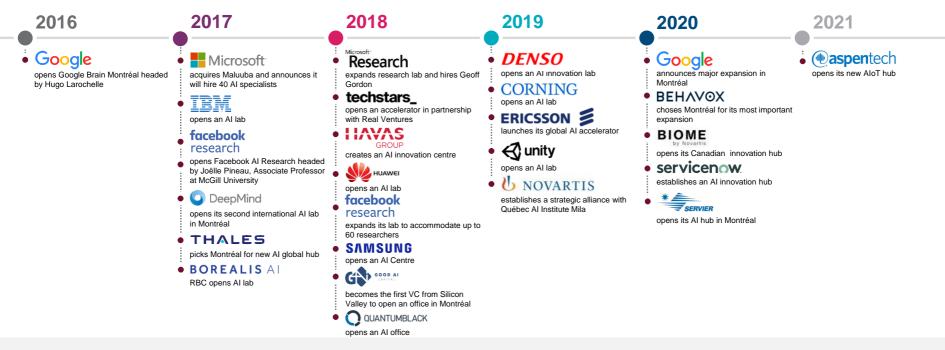
Mila, a thriving AI hub in the Mile-Ex neighbourhood

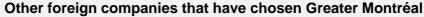
- With 600+ researchers, Mila is the world's largest academic research lab specialized in deep learning and reinforcement learning
- A collaborative ecosystem of AI researchers, startups and major companies
- Examples of global strategic partners within Mila:





A few of the world leaders developing their AI expertise in Montréal



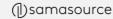
























Examples of Montréal-based companies using AI in healthcare



IMAGIA: developing radiomics biomarkers and clinical decision support systems



Diagnos: early detection of critical health issues through the use of Al



My Intelligent Machines: accelerating post genomic research by leveraging AI & bioinformatics



Mr Young: Al-powered chatbot designed to help cope with anxiety



QUANTUMBLACK: using data, analytics, and design to optimize how drugs are brought to market



Myelin: Al synthesis of ASD scientific data



InVivo AI: facilitating accurate toxicity screening in the earliest phases of drug discovery



Innovie Health: Al solution to drive the most accurate care management strategy for healthcare system



Corstem: medical imaging analysis and computer vision, using machine learning



Arctic Fox AI: Al-assisted radiology for Alzheimer's and related dementias



Informed experiments: distilling the complexity of gene interaction networks with AI algorithms to accelerate cancer research



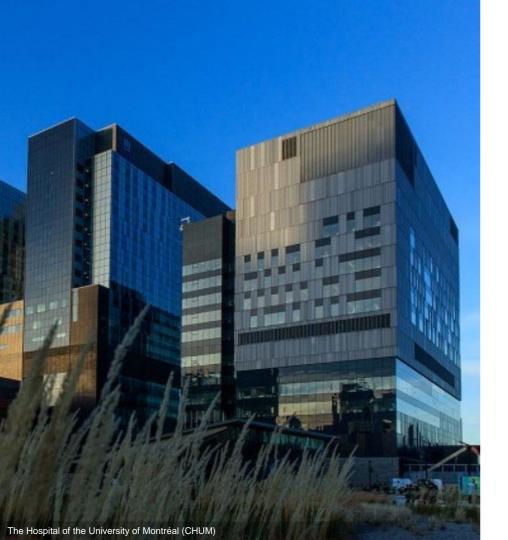
BIOS: developing neural interfaces to enable AI-based treatments on organs and nerve systems throughout the body



Precision analytics: predictive analytics and cloud computing to handle large datasets



Zilia: combines imaging, spectrometry and AI for the detection of biomarkers involved in ocular, neurological and systemic conditions



Key initiatives at CHUM to facilitate data access and the use of Al

Data lake project CITADEL

- The Centre for the Integration and Analysis of Medical Data (CITADEL) of the Centre hospitalier de l'Université de Montréal (CHUM) is one of the initiatives adopted to facilitate learning, teaching and communication:
 - 20 integrated information systems
 - 19.4 million episodes of care
 - 3.6 million patient data

School of AI in Healthcare (SAIH)

- Devoted to the study of the social, legal and ethical implications of Al in the health sector
- Doctors and researchers at the CHUM are pursuing
 80 projects involving artificial intelligence

Q4
A Deep and Growing Pool of Highly Qualified Talent





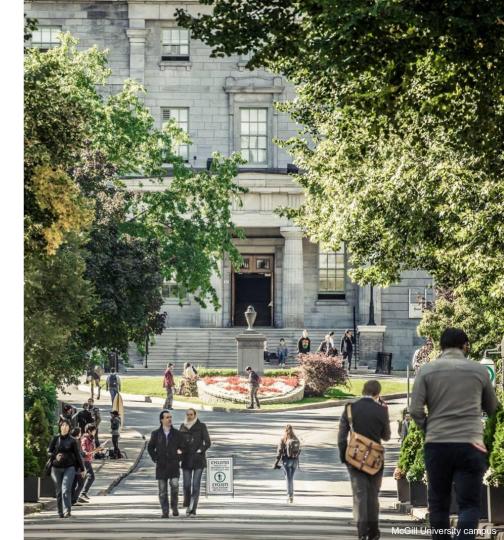
The best student city in the Americas and Canada's university capital

- Canada's university capital:
 15 university institutions and 60 colleges
- 320,000 post-secondary students, including more than 200,000 university students and 35,500 international university students
- 1st in Canada for university research funding with \$1.34+ billion yearly



Best student city in the Americas tied with Boston QS Best Student Cities Rankings 2022

W McGill	POLYTECHNIQUE MONTRÉAL TECHNIQUOGICAL UNIVERSITY	UNIVERSITÉ DE SHERBROOKE	Concordia
UQÀM	UNIVERSITÉ TÉLUQ	École nationale d'administration publique	ETS Le génie pour l'industrie
Université de Montréal	Université du Québec Institut national de la recherche scientifique	HEC MONTRĒAL	LES CÉGEPS DU QUÉBEC



A large pool of university students in life sciences and STEM-related programs* in Québec



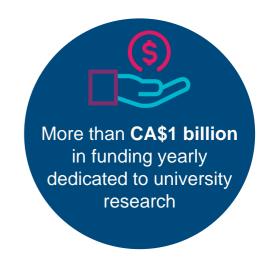
More than **50,000**

university students (80% in Greater Montréal)



More than 16,000

graduates (80% in Greater Montréal)



^{*} STEM-related programs include computer engineering and computer science, mathematics, probabilities and statistics, electrical engineering and mechanical engineering. Source: Ministry of Education and Higher Education, 2020; compilation by Montréal International: Research Infosource Inc., 2018.

A pool of highly qualified workers

Life sciences and STEM-related occupations in Greater Montréal	Employees in 2019
Life sciences professionals (including chemists, chemical engineers and biologists, etc.)	12,800
Other engineers (including Industrial, manufacturing and computer engineers	15,900
Computer and information systems professionals	96,700
Mathematicians and statisticians	3,200
Total	134,500



05

Attractive Operating Costs and Incentives





Competitive operating costs among the 20 largest metro areas in Canada and the U.S.

1st clinical trials and life sciences R&D centre¹

1st Software development centre

2nd bio-pharma manufacturing²

2nd medical devices manufacturing plant

Source: fDi Benchmark, 2020.



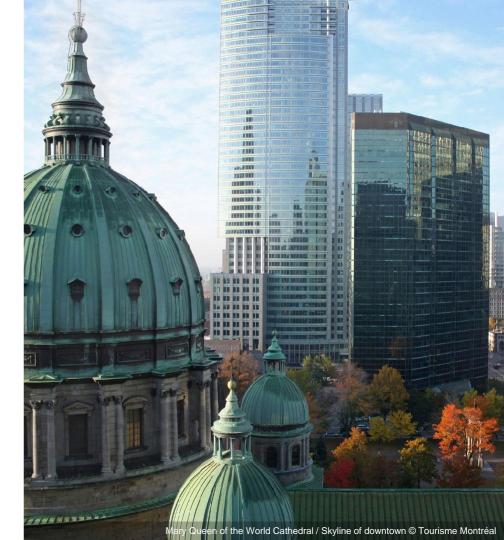
^{1:} Research, discovery, design, development or testing of biotechnology or pharmaceutical related products and/or medical devices.

^{2:} Companies in this industry develop and manufacture therapeutic products and in vitro diagnostics using biotechnology.

Québec offers corporations an attractive tax treatment

Comparison of corporate effective tax rate (%) Selected Canadian provinces and U.S. States, 2021

Québec (Montréal)	26.50%
Ontario	26.50%
Massachusetts	27.32%
California	27.98%
New Jersey	28.11%
Illinois	28.51%
New York	34.64%



Advantageous salaries for pharma companies

Median annual salaries* (US\$) for seven typical occupations in pharma

	Montréal	Toronto	Raleigh	Chicago	Boston	Newark	San Francisco
Laboratory Technician	\$43,144	\$45,999	\$47,043	\$52,770	\$57,904	\$55,750	\$62,112
Laboratory Supervisor	\$65,066	\$69,318	\$76,291	\$86,913	\$91,064	\$93,936	\$101,127
Scientific Researcher	\$66,609	\$70,967	\$77,654	\$88,356	\$92,564	\$95,576	\$102,818
Pharmaceutical Detailer	\$67,589	\$71,946	\$87,509	\$91,903	\$101,244	\$99,874	\$108,007
Laboratory Head	\$73,911	\$78,875	\$82,156	\$92,862	\$100,224	\$96,082	\$117,247
Biochemist	\$81,293	\$86,506	\$101,658	\$112,220	\$116,355	\$124,745	\$128,745
R&D Manager (technical)	\$106,358	\$112,837	\$144,945	\$148,619	\$161,382	\$172,031	\$177,461

^{*} Base salaries based on 5 years of experience, for the pharmaceuticals industry (NAICS 3254). Currency exchange based on the monthly average of May 2021: US\$1.00 = CA\$1.2126. Source: Economic Research Institute Inc., June 2021.

Advantageous salaries for medtech companies

Median annual salaries* (US\$) for ten typical occupations in medtech

	Montréal	Toronto	Raleigh	Dallas	Minneapolis	San Diego	Boston	San Francisco
Quality Assurance Specialist	\$53,226	\$56,865	\$64,008	\$66,835	\$69,898	\$70,235	\$76,867	\$81,966
Clinical Liaison	\$54,887	\$58,662	\$63,651	\$68,292	\$69,685	\$72,026	\$74,789	\$83,097
Project Management Specialist	\$55,615	\$59,646	\$63,363	\$67,690	\$67,293	\$69,523	\$76,853	\$82,299
Regulatory Affairs Specialist	\$62,505	\$66,982	\$73,888	\$78,783	\$77,122	\$80,116	\$88,644	\$94,956
Manufacturing Engineer	\$68,290	\$72,564	\$83,694	\$91,962	\$88,976	\$93,911	\$97,815	\$104,287
Field Service Manager	\$72,362	\$76,404	\$91,794	\$96,812	\$96,483	\$99,235	\$108,584	\$118,101
Mechanical Engineer	\$76,023	\$80,536	\$95,517	\$104,745	\$100,393	\$106,178	\$110,255	\$118,086
Project Leader	\$78,257	\$83,523	\$102,382	\$108,053	\$105,484	\$110,388	\$118,172	\$128,516
Software Developer	\$77,046	\$81,550	\$99,087	\$104,234	\$100,897	\$106,539	\$111,951	\$125,225
Production Manager	\$83,956	\$89,461	\$105,907	\$113,545	\$109,576	\$113,695	\$122,580	\$133,606

^{*} Base salaries based on 5 years of experience, Medical Device Manufacturing (NAICS 3391). Currency exchange based on the monthly average of May 2021: US\$1.00 = CA\$1.2126. Source: Economic Research Institute Inc., June 2021.

Low mandatory benefit costs for employers

Examples of mandatory benefit costs for employers, 2021

Total benefits in % of gross annual salary	13,58 %	10,60 %	9,54 %
Total cost	56 790,50 \$	110 604,95 \$	136 919,95 \$
Total benefit costs	6 790,50 \$	10 604,95 \$	11 919,95 \$
Workforce Skills Development and Recognition Fund - Québec Training Law 1% (1% of their total payroll in training for employers with total annual payroll over \$2M)	500,00 \$	1 000,00 \$	1 250,00 \$
Commission de la santé et sécurité du travail (Occupational health and safety board) (0.42% in service sector, max. sal. of \$83,500)**	210,00 \$	350,70 \$	350,70 \$
Commission des normes du travail (Labour standards board) (0.07%, max. sal. of \$83,500)	35,00 \$	58,45 \$	58,45 \$
Health Services Fund (max. 4.26% if global salary total is more than \$6,5M)	2 130,00 \$	4 260,00 \$	5 325,00 \$
Employment Insurance (employee: 1.18%, employer: 1.65%, max. sal. of \$56,300)	826,00 \$	930,08 \$	930,08 \$
Québec Parental Insurance Plan (employee: 0.494%, employer: 0.692%, max. sal. of \$83,500)	346,00 \$	577,82 \$	577,82 \$
Québec Public Pension Plan (employee: 5.9%; employer: 5.9%, max. \$3,427.90)	2 743,50 \$	3 427,90 \$	3 427,90 \$
Gross annual salary*	\$50,000	\$100,000	\$125,000

Note: *Paid vacation represents a minimum of 4% of salary and is included in gross salary. Some rates apply up to a maximum insurable revenue.

Source: Revenu Québec, 2021.

^{**}The rate for the service sector (65110 - Bureau de courtage; bureau de services professionnels; bureau offrant des services de soutien administratif) is 0.42%. The average premium rate in 2021 is \$1.77 per \$100 of payroll.

Various incentives tailored to your project



- Strategic Innovation Fund
- <u>Canada Economic Development</u> for Québec regions
- Tax credit on SR&ED
- Mitacs Acceleration program for talent
- Support for technology innovation



Québec

- **ESSOR Fund for Major Projects**
- Tax credits for Large Investment Project
- Refundable Tax credit on R&D
- Tax Credit for Investments and Innovations (C3i)
- <u>Deduction for the Commercialization of Innovations (IDCI)</u>
- Financial assistance for job creation and training
- Tax holiday for foreign experts and researchers



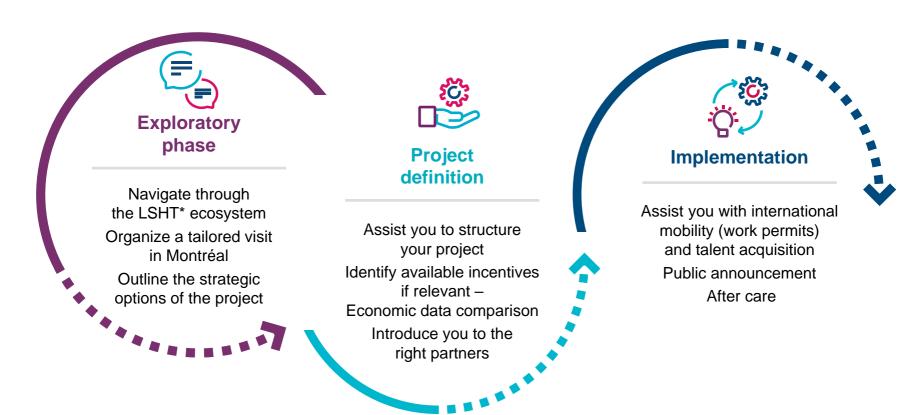
06

Montréal International's Personalized, Free and Confidential Services





Your development in Montréal: Montréal International can assist you through the whole process





Contact us



Montréal International Montréal International

380 Saint-Antoine Street West Suite 8000 Montréal, Québec H2Y 3X7

t +1 514-987-8191 www.montrealinternational.com

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