

Invest in Canada

2012

Biopharmaceuticals

Canada's competitive advantages

Canada 

Unless otherwise noted, all values in this publication are in Canadian dollars.

Foreign direct investment in Canada's biopharmaceuticals sector

- Canada is one of the top ten countries in the world for attracting foreign companies in the pharmaceuticals industry. (Source: fDi Markets database, fDi Intelligence from the Financial Times Ltd, 2012)
- Over 60 foreign companies have established greenfield foreign direct investment (FDI) projects in pharmaceuticals and biotechnology in Canada between 2003 and 2011. Greenfield FDI is defined as overseas investment in a new physical project or expansion of an existing project which creates new jobs and capital investment and with majority-ownership by the foreign investor. Mergers & acquisitions (M&A) and other equity investments are not included. (Source: fDi Markets database, fDi Intelligence from the Financial Times Ltd, 2012)
- The top ten global pharmaceutical investors all have operations in Canada. (Source: fDi Markets database, fDi Intelligence from the Financial Times Ltd, 2012)
- Over the past two years, pharmaceutical multinationals, including Eli Lilly, GlaxoSmithKline and Merck, have led in the creation of three Canadian-based venture capital (VC) funds ranging from \$50 to \$250 million, emphasizing the tremendous innovation opportunities in Canada.

RECENT INVESTMENT EXAMPLES

Roche

Roche Canada, a subsidiary of Switzerland based Roche, is investing \$190 million over five years in a global clinical development site in Mississauga, Ontario, creating 200 new jobs by 2016. Researchers at this new facility, one of six in the world, will manage operations for all stages of global clinical trial research, significantly contributing to the development of highly innovative medicines.

Merck & Co

In 2011, U.S.-based pharmaceuticals giant Merck & Co invested \$33.2 million to expand its Pointe-Claire, Quebec facility. Merck employs more than 1,400 people across Canada and its manufacturing facility in Quebec has been designated as a Centre of Excellence for the global production of liquids, ointments and creams.

Novartis

Novartis Animal Health, a subsidiary of Switzerland based Novartis, completed a new \$2.8 million research facility in Victoria, Prince Edward Island. The new laboratory, part of the growing biosciences cluster in Prince Edward Island, will support the development of vaccines to prevent viral and bacterial diseases in farmed fish.

Novocol

Novocol Pharmaceutical, a subsidiary of France based Septodont, is investing \$54 million over five years starting in 2012, to expand and modernize its facility in Cambridge, Ontario. The expansion includes the conversion of a production line into an R&D centre, and the acquisition of advanced equipment to help develop new infection control products.

Pfizer

In 2012, U.S. based pharmaceutical company Pfizer invested \$32 million to expand its multivitamin manufacturing facility in Montréal, Quebec. Pfizer also invested \$22 million in 2010 to upgrade its Canadian headquarters in Kirkland, Quebec.

FOREIGN INVESTORS IN CANADA

Abott
Amgen
Astellas Pharma
AstraZeneca
Bayer
Boehringer Ingelheim
Bristol-Myers Squibb
Charles River Laboratories
Eli Lilly
EMD Sereno
Galderma Pharrna
GlaxoSmithKline
Johnson & Johnson
Jubilant Life Sciences
Merck & Co
Novartis
Novocol
Pfizer
Roche
Sanofi
Shire
Spectrum Pharmaceuticals
Takeda Pharmaceutical
Teva Pharmaceutical Industries

Biopharmaceuticals innovation in Canada

INNOVATION SNAPSHOT

- Canada's Scientific Research and Experimental Development (SR & ED) tax incentive program is one of the most favourable worldwide. For foreign investors, combined federal and provincial tax credits can be worth up to 30% of qualifying R&D expenditures. (Source: Canada Revenue Agency, Income Tax Interpretation Bulletin, Scientific Research and Experimental Development Expenditures, 2003)
- Pharmaceuticals/Biotechnology is the second largest industry for R&D spending in Canada. (Source: RESEARCH Infosource: Canada's Top 100 Corporate R&D Spenders List 2011, 2012)
- Canada's pharmaceutical industry is supported by a large public research infrastructure, led by the Canadian Institutes of Health Research (CIHR) and the National Research Council of Canada (NRC).
- In 2010-2011, CIHR provided over \$750 million in health research funding. (Source: Canadian Institutes of Health Research Annual Report; accessed October 2012)
- In the 2012 Federal Budget, \$110 million per year was allocated to the NRC to double the support to innovative start-up companies through the Industrial Research Assistance Program (IRAP). (Source: Budget 2012, Chapter 3.1: Supporting Entrepreneurs, Innovators and World-Class Research, 2012)
- Between 2003 and 2011, over 3,000 pharmaceutical related patents were granted by the United States Patent and Trademark Office to inventors based in Canada, and over 1,200 patents were granted in biotechnology related activities. (Source: fDi Intelligence estimates based on United States Patent and Trademark Office, 2012)

Case Study: Thrasos Therapeutics/GlaxoSmithKline Life Sciences Innovation Fund

Thrasos TherapeuticsTM has completed a \$35 million financing for the Phase 2 clinical proof of concept of THR-184, its lead product candidate for the treatment of acute kidney injury (AKI). The round was led by SR One (corporate venture capital arm of U.K.-based GlaxoSmithKline), with funds coming from the GSK Canada Life Sciences Innovation Fund, part of the company's commitment to advance the development and commercialization of scientific innovation in Canada. Five additional new investors and existing investor, SW Co, joined in the round.

Case Study: Centre for Drug Research and Development (CDRD)

The Centre for Drug Research and Development (CDRD) bridges the commercialization gap for promising early-stage technologies coming out of university research in British Columbia. In collaboration with industry partners, CDRD funds early-stage discoveries through the preclinical drug development process in order to reach the license-ready stage, and has received over \$70 million in federal and provincial funding. The CDRD brings together universities and corporate partners, including the University of British Columbia, the University of Alberta, the University of Ottawa, the University of Tokyo, Johnson & Johnson, Pfizer and Roche.

Case Study: Xenon Pharmaceuticals

Xenon, a British Columbia genetics-based drug discovery company, announced in 2012 a joint collaboration with Genentech, a U.S. subsidiary of Roche. The two companies focus on using human genetics for drug development, and have collaborated to discover and develop compounds and companion diagnostics for potential pain treatments. Xenon has a unique genetics approach to

metabolic, neurological, and cardiovascular disease therapies, and will receive up to \$646 million in milestone payments from Genentech in exchange for rights to its products and translational R&D capabilities. (Source: Xenon, Xenon to Collaborate with Genentech on Discovery of Novel Targeted Pain Therapeutics, January 2012)

Case study: Zymeworks

Zymeworks achieved a milestone in its \$187 million commercial research collaboration with Merck, concerning Zymeworks' proprietary Azymetric™ platform for the development of bi-specific antibodies. The Vancouver-based biotechnology company, which focuses on developing antibody therapeutics for the treatment of oncology, autoimmunity and inflammatory diseases, will receive a milestone payment from Merck for its latest breakthrough and will continue translating world-class protein engineering into therapeutics for patients with unmet medical needs. (Source: Zymeworks, Zymeworks Inc. to Receive Milestone Payment from Merck for Bi-specific Antibody Therapeutics Collaboration, September 2012)

LEADING CANADIAN COMPANIES

Angiochem
Apotex
Bioniche Life Sciences
Cangene
Cardiome Pharma
Defyrus
Helix BioPharma
iCo Therapeutics
Immunovaccine
Medicago
Oncolytics Biotech
Soricimed Biopharma
Therapure Biopharma
Theratechnologies
Valeant Pharmaceuticals
Xenon Pharmaceuticals
Zymeworks

Canada's biopharmaceuticals sector

The global therapeutics market is estimated to reach \$1.1 trillion by 2015.

(Source: IMS Institute for Healthcare Informatics, 2011)

Canada plays a key role in the global biopharmaceutical sector, with unique strengths in R&D, clinical trials and manufacturing. Each of the world's ten largest pharmaceutical companies has operations in Canada, and the majority have chosen Canada as a location for manufacturing and/or R&D. (Source: fDi Markets database, fDi Intelligence from the Financial Times Ltd, 2012) In 2011, Canadian exports of pharmaceuticals and medicines totalled nearly \$6 billion. (Source: Industry Canada, Trade Data Online, 2011) Biopharmaceutical companies in Canada have more than 500 new biopharmaceutical products in development, with 215 products at the phase 2 and 3 stages. (Source: Industry Canada, Life Sciences Industries – Biopharmaceuticals and Pharmaceuticals, 2012) Key biopharmaceutical therapies in development focus on cancer, neurological disorders, inflammation, metabolic disorders, and vaccines.

From discovery to Phase 3 trials, Canada is known for its expertise in research and clinical development. In 2011, the pharmaceutical and biotechnology industry accounted for the second largest proportion of R&D expenditure in Canada. Twenty-one pharmaceutical and biotechnology companies appeared in RESEARCH Infosource's '*Canada's Top 100 Corporate R&D Spenders*', with combined spending of \$1.27 billion. (Source: RESEARCH Infosource: Canada's Top 100 Corporate R&D Spenders List 2011) Top companies, by R&D expenditure, included Apotex, GlaxoSmithKline, Pfizer and Sanofi Pasteur.

Testimonial

"Canada offers a host of advantages including a well-developed infrastructure, a highly educated workforce, excellent quality of life, and a globally competitive tax environment. These are a few of the reasons Sanofi Pasteur has invested over \$500 million in capital projects over the last 10 years and approximately \$100 million in Vaccines R&D annually in Canada."

Mark Lievonen, President, Sanofi Pasteur

CANADA'S KEY STRENGTHS IN BIOPHARMACEUTICALS

Research and development (R&D)

Canada ranks amongst the top ten countries globally for the number of biopharmaceutical research papers published. (Source: Industry Canada, Life Sciences Industries – Biopharmaceuticals and Pharmaceuticals, 2012) Incentives and grants from federal, provincial and local governments, such as SR & ED and provincial level tax support programs, help ensure well-funded collaborative biopharmaceuticals R&D.

Country-wide duty-free manufacturing tariff regime

Canada is the first G-20 country to offer a tariff-free zone for industrial manufacturers, with tariffs on all manufacturing inputs reduced to zero by 2015. In addition, manufacturers can take advantage of these programs from anywhere in Canada, making the entire country a foreign trade zone.

A low cost research and manufacturing base

In KPMG's 2012 Competitive Alternatives Report, Canada ranks second among G-7 countries for clinical trials operations, offering significant cost savings over the U.S. Canada also ranks second when compared to G-7 countries for its cost-effectiveness in establishing and operating a pharmaceuticals manufacturing facility. (Source: KPMG, Competitive Alternatives: KPMG's Guide to International Business Location Costs, 2012)

Logistics and market access

Biopharmaceutical manufacturers can benefit from Canada's highly developed transport infrastructure and duty-free access to U.S. and Mexico. According to the World Bank, Canada has one of the world's best logistics infrastructures. (Source: World Bank, International Logistics Performance Index, 2010)

SKILLS AND RESEARCH

Canada offers biopharmaceutical companies a highly skilled workforce, with almost 27,000 people employed in the pharmaceutical manufacturing industry in 2011. (Source: Statistics Canada, Employment data - CANSIM table 281-0024, 2011)

Canada has a world-class higher education system with 22 Canadian universities ranked in the top 500 universities of the world. (Source: Shanghai Jiao Tong University, Academic Ranking of World Universities, 2011) Canada has an extensive network of academic health institutions and research centres supporting biopharmaceutical training and research; including 17 medical schools, over 45 academic health care organizations, and approximately 13,600 researchers. (Source: Industry Canada, Life Sciences Industries – Biopharmaceuticals and Pharmaceuticals, 2012) Research is led by a number of specialized centres and institutes including;

- Stem Cell and Cancer Research Institute (SCC-RI) (McMaster University- Hamilton, ON)
- Institute for Research in Immunology and Cancer (Université de Montréal – Montréal, QC)
- London Health Research Institute (London, ON)
- University Health Network (UHN) (Toronto, ON)
- Lawson Health Research Institute (London, ON)
- Ottawa Heart Institute (Ottawa, ON)
- Montréal Neurological Institute (McGill University - Montréal, QC)
- The Brain Repair Centre (Halifax, NS)

- University of Ottawa Heart Institute (Ottawa, ON)
- The Centre for Drug Research and Development (CDRD) (Vancouver, BC)

Testimonial

"Bringing a Global Pharmaceutical Development site to Roche Canada is a testament to our skilled and talented workforce, and offers tremendous opportunities to solidify [Canada's] reputation as a global research hub."

Ronnie Miller, President and CEO, Roche Canada

Biopharmaceuticals clusters

BRITISH COLUMBIA

Industry strengths:

The life science industry in British Columbia contributes an estimated \$482 million to provincial GDP annually, and employs over 12,000 people. (Source: Trade and Invest British Columbia – Life Sciences, 2012) In 2011, British Columbia exported over \$101 million of pharmaceuticals and medicines. (Source: Industry Canada, Trade Data Online, Trade By Product – NAICS code 3254 – Pharmaceutical and Medicine Manufacturing, 2011) The life sciences industry in British Columbia includes more than 100 biopharmaceutical and medical device companies, many of which have emerged from the province's globally recognized research institutions and universities (Source: Work BC, B.C. Economy – Key Economic Sectors, 2012), such as the British Columbia Cancer Agency, the British Columbia Centre for Disease Control, the Centre for Drug Research and Development (CDRD), the University of British Columbia and the University of Victoria.

Biopharmaceutical innovations in British Columbia include Visudyne, the first treatment for age-related macular degeneration, pioneered by Vancouver's QLT, and Angiotech's TAXUS® coated coronary stent. (Source: Trade and Invest British Columbia – Life Sciences, 2012)

Leading companies:

Allon Therapeutics, Amgen, Cardiome Pharma, enGene, iCo Therapeutics, Indel Therapeutics, Innovative BioCeramix, Kardium, Med BioGene, Neovasc, OncoGenex Technologies, Pyng Medical, QLT, Verisante Technology, Xenon Pharmaceuticals, and Zymeworks.

ALBERTA

Industry strengths:

There are more than 200 life sciences companies in Alberta, employing more than 4,000 people in 2010. (Source: bioAlberta/Deloitte, Life sciences in Alberta, State of the Industry 2011) Exports of pharmaceuticals and medicines totalled \$45.3 million in 2011. (Source: Industry Canada, Trade Data Online, Trade By Product – NAICS code 3254 – Pharmaceutical and Medicine Manufacturing, 2011) Alberta's strong research network includes the Alberta Glycomics Centre, Genome Alberta, the University of Alberta, the University of Calgary, and the University of Lethbridge. Alberta researchers are recognized for their work in diabetes, oncology, infectious diseases, immune suppressant therapies, heart research, paediatric care and HIV/AIDS research. Recent innovations in Alberta include an advanced diagnostic for early-stage detection of colorectal cancer (Metabolomic Technologies) and radical new autoimmune disease therapeutics for the treatment of Type-1 Diabetes and multiple sclerosis (Parvus Therapeutics). (Source: bioAlberta, Biozine 2012 Support is available through initiatives such as the new Western Innovation Program, which provides funding to innovative small and medium-sized enterprises in Western Canada. (Source: Budget 2012, Chapter 3.1: Supporting Entrepreneurs, Innovators and World-Class Research, 2012)

Leading companies:

ChemRoutes Corporation, Gilead Sciences, Isotechnika Pharma, Metabolomic Technologies, NAEJA Pharmaceutial, Oncolytics Biotech, Parvus Therapeutics, Resverlogix, and SemBioSys Genetics.

SASKATCHEWAN

Industry strengths:

There are over 50 bio-based research and development companies in Saskatchewan, and more than 770 people employed in life sciences. (Source: Western Economic Diversification Canada - Western Canada's life sciences cluster, 2012) Exports of pharmaceuticals and medicines totalled \$3.8 million in 2011. (Source: Industry Canada, Trade Data Online, Trade By Product – NAICS code 3254 – Pharmaceutical and Medicine Manufacturing, 2011) The province is the hub of Canada's agricultural-biotech industry, focusing on nutraceuticals, plant, and animal genome sciences. Other companies in Saskatchewan are developing vaccines and finding cures for coronary disease, cancer, diabetes and viral infections.

Research facilities located in the province include the NRC Plant Biotechnology Institute, the Agriculture and Agri-food Canada Saskatoon Research Centre and the Vaccine and Infectious Disease Organization (VIDO) at the University of Saskatchewan. VIDO is credited with five world firsts in animal vaccine research.

Leading companies:

Ade Therapeutics, Bayer, Novozymes BioAg, and Phenomenome Discoveries.

MANITOBA

Industry strengths:

There are more than 70 life sciences companies and R&D institutions in Manitoba, employing over 4,200 people. (Source: Western Economic Diversification Canada - Western Canada's life sciences cluster, 2012) Manitoba's strengths in biopharmaceutical R&D and production, medical research, medical diagnostics, and agricultural biotechnology have made it a major presence in the life sciences industry. With exports of \$395 million in 2011 (Source: Industry Canada, Trade Data Online, Trade By Product – NAICS code 3254 – Pharmaceutical and Medicine Manufacturing, 2011), Manitoba is the largest exporter of pharmaceuticals and medicines in Western Canada. Specific cluster capabilities include cardiovascular and respiratory diseases, infectious diseases, neuroscience, metabolism and nutrition, cell biology and gene technology, and plant breeding.

Manitoba's National Microbiology Laboratory level 4 containment facilities are a global centre of excellence in the identification and management of infectious diseases. In addition to the University of Manitoba, other facilities include St. Boniface Hospital Research centre and the International Centre for Infectious Diseases. The headquarters of the Public Health Agency of Canada is also located in Manitoba.

Leading companies:

Apotex Fermentation, Cangene, DiaMedica, Kane Biotech, Medicure, and Valeant Pharmaceuticals.

ONTARIO

Sector strengths:

Ontario's therapeutics industry employs approximately 15,000 people and generates \$5.4 billion in annual revenue. Exports of pharmaceuticals and medicines totalled \$4.3 billion in 2011. (Source: Industry Canada, Trade Data Online, Trade By Product – NAICS code 3254 – Pharmaceutical and Medicine Manufacturing, 2011) Ontario has a mix of small firms, Canadian industry leaders and large multinationals that include six of Canada's top ten pharmaceutical companies by revenue. In North America, Ontario ranks fourth for total number of life sciences-related FDI projects and third for number of establishments (2011). With 25 academic hospitals employing 70,000 people, including 10,000 researchers, Ontario is the third largest biomedical research centre in North America. Home to six medical schools and leading universities such as the University of Toronto, Western University and the University of Ottawa, the province offers access to highly skilled graduates and an advanced research infrastructure. Ontario's leading-edge researchers contribute prominently to several international research consortia: the International Cancer Genome Consortium, the International Barcode of Life, the International Regulome Consortium and the Structural Genomics Initiative. Biopharmaceutical companies located in the province benefit from an extensive research network including the MaRS centre and the Ontario Network of Excellence (ONE) program. In addition, the Ontario Cancer Institute, Ontario Institute for Cancer Research, the Ontario Genomics Institute and the Brain Institute have been created to support the translation of Ontario's leading-edge science into globally-competitive commercial opportunities.

Leading companies:

Amgen, Amorphix Life Sciences, Apotex, AstraZeneca, Bayer, Bioniche, Eisai, Eli Lilly, GlaxoSmithKline, Helix BioPharma, Jennerex Biotherapeutics, Johnson & Johnson, Roche, Sanofi Pasteur, Septodont, SGS Life Science Services, and Variation Biotechnologies.

QUEBEC

Sector strengths:

Quebec's biopharmaceutical sector is comprised of almost 150 companies employing 21,000 people. (Ministry of Economic Development and Trade, Ministry of Research and Innovation: Québec Biopharmaceutical Strategy, 2010) Exports of pharmaceuticals and medicines totalled over \$1 billion in 2011. (Source: Industry Canada, Trade Data Online, Trade By Product – NAICS code 3254 – Pharmaceutical and Medicine Manufacturing, 2011) Activities are largely focused on therapeutic research and a number of companies have products reaching clinical development phases. The government of Quebec has committed an estimated \$123 million to the sector through the 'Quebec Biopharmaceutical Strategy', which provides development support for biotech and biopharmaceutical firms. (Source: Ministry of Economic Development and Trade, Ministry of Research and Innovation: Québec Biopharmaceutical Strategy, 2010) Quebec is also home to the Quebec Consortium of Drug Discovery (CQDM), to facilitate drug discovery programs in partnership with the public and private sector.

The province is home to a world-class research infrastructure supporting biopharmaceutical innovation, with major university research centres in Montréal, city of Québec, and Sherbrooke. Universities maintain extensive research strengths in genomics, through centres such as McGill University, the Génome Québec Innovation Centre, and the Beaulieu-Saucier Pharmacogenomics Centre at the Montréal Heart Institute. Leading research organizations include the Institute for Research in Immunology and Cancer (IRIC), the Groupe de recherche universitaire sur le médicament

(GRUM), the Montréal Neurological, Institute for Cellular Therapy, and the McGill Cancer Research Group (GRCM). Further research facilities include four faculties of medicine and several hospital research centres.

Leading companies:

Abbott, Bristol-Myers Squibb, Charles River Laboratories, Æterna Zentaris, Galderma, GlaxoSmithKline, Jubilant Life Sciences, Medicago, Merck, MethylGene, Novartis, Nuvo Research, Pfizer, ProMetic Life Sciences, Pharmascience, Roche, Sanofi Pasteur, and Theratechnologies Life Sciences.

NOVA SCOTIA

Sector strengths:

Nova Scotia's life sciences industry includes 50 companies and employs 1,100 people across a range of sectors. Exports of pharmaceuticals and medicines totalled \$12.4 million in 2011. (Source: Industry Canada, Trade Data Online, Trade By Product – NAICS code 3254 – Pharmaceutical and Medicine Manufacturing, 2011) The industry is primarily based in the Greater Halifax area, with a number of leading companies involved in the development of therapeutic products.

The province has a number of research centres to facilitate and promote health related research and training; centres include the Brain Repair Centre and Dalhousie University Medical School. Halifax is known for its expertise in neuroscience research, which has led to significant work in the area of neuroprotective treatments including its namesake Halifax Protocol, the international standard for brain repair using cell implantation.

Leading companies:

GlaxoSmithKline, Immunovaccine, and Kytogenics Pharmaceuticals.

Canada's cost advantages

Advantage:

COMPETITIVE SALARY COSTS

Canada offers cost savings in terms of salaries paid to clinical laboratory technologists and medical scientists when compared to Basel, Munich, London (U.K.), Stockholm, Shanghai and U.S. locations.

Clinical laboratory technologist and medical scientist annual labour costs (\$)

This chart shows the annual labour costs for a clinical laboratory technologist and medical scientist. Labour costs include employee salary plus statutory employer social security contributions. Private health care costs are also included for U.S. and Canadian cities.

Location	Medical scientist (\$)	Clinical laboratory technologist (\$)
Warsaw	66,840	30,317
Edinburgh	98,027	61,216
Singapore	105,185	65,109
Monterrey	105,877	39,303
Dublin	109,929	66,741
Montréal	111,729	74,798
City of Québec	117,765	77,350
Stockholm	122,872	83,662
Mexico City	124,603	43,794
Vancouver	125,568	79,945
Toronto	132,452	83,205
Raleigh	133,128	84,105
Munich	142,833	96,946
San Diego	148,450	90,344
London (U.K.)	166,842	89,557
Northern New Jersey	176,506	102,393
Basel	183,061	129,917
Boston	186,528	107,167
Shanghai	226,790	83,852

Source: fDi Benchmark Database, fDi Intelligence from the Financial Times Ltd (2012)

Advantage:

COMPETITIVE INDUSTRIAL COSTS

Canada is a cost competitive location in terms of industrial rent with some cities offering among the lowest rates of all the competitor locations. Industrial rents in Canadian cities are less than half the cost of London (U.K.), Singapore and Basel.

Industrial rent per square foot per annum (\$)

This chart shows the cost per square foot of prime industrial space in each location.

Location	Unit value
Raleigh	3.8
Shanghai	4.7
Toronto	4.9
Montréal	5.0
Boston	5.3
Monterrey	5.4
Mexico City	5.6
Northern New Jersey	5.8
City of Québec	6.7
Warsaw	7.7
San Diego	8.0
Dublin	8.0
Vancouver	8.4
Munich	8.5
Edinburgh	11.4
Stockholm	14.4
Basel	16.5
Singapore	17.3
London (U.K.)	20.1

Source: fDi Intelligence based on Cushman & Wakefield (Q4 2011)

Canada's competitive advantages

Advantage:

ABUNDANT SUPPLY OF RESEARCHERS

Canada has over 4,400 researchers per million people, higher than Germany, U.K., Switzerland, Ireland, China and Mexico, and comparable to the U.S, indicating a highly concentrated research base. (Note: Researchers in R&D are professionals engaged in the conception or creation of new knowledge, products, processes, methods, or systems and in the management of the projects concerned. Postgraduate PhD students (ISCED97 level 6) engaged in R&D are included.)

Number of researchers in R&D per million people

This chart shows the number of researchers in R&D per million people.

Location	Unit value
Sweden	5,257
U.S.	4,673
Canada	4,470
Germany	3,979
U.K.	3,794
Switzerland	3,320
Ireland	3,230
China	863
Mexico	384

Source: UNESCO Institute for Statistics (most recent year available 2007-2010)

Advantage:

AVAILABILITY OF SKILLED LABOUR FORCE

Skilled workforce availability is the top factor cited by foreign companies investing in the biopharmaceuticals sector. (Source: fDi Markets database, fDi Intelligence from the Financial Times Ltd based on FDI projects in biotechnology and pharmaceuticals sectors, 2012) According to corporate executives, Canada has a high availability of skilled scientists and engineers, essential for biopharmaceutical operations, ranking seventh globally in the World Economic Forum's Global Competitiveness Report.

Availability of scientists and engineers

This chart shows the availability of scientists and engineers. (1 = non-existent, 7 = widely available)

Location	Unit value
Sweden	5.6
U.S.	5.5
Canada	5.4
Singapore	5.3
Switzerland	5.1
U.K.	5.1
Ireland	4.9
China	4.7
Germany	4.5
Poland	4.1
Mexico	3.9

Source: World Economic Forum Global Competitiveness Report 2011-12

Advantage:

A LEADING DESTINATION FOR CLINICAL RESEARCH

Most Canadian cities have well-established infrastructure for clinical research; Toronto has more active clinical trial sites than London (U.K.) and San Diego, while Montréal and Vancouver both have significantly more active sites than competitor cities in Europe, Asia and North America.

Number of active clinical trials

The chart shows the total number of clinical trials open in each location.

Location	Unit value
Boston	1,910
Toronto	1,064
London (U.K.)	920
San Diego	819
Montréal	772
Northern New Jersey	689
Vancouver	586
Shanghai	344
Stockholm	324
Singapore	263
Raleigh	230
Munich	199
Basel	160
Dublin	160
Monterrey	148
Warsaw	147
Edinburgh	136
Mexico City	136

Source: www.clinicaltrials.gov (accessed December 2012)

Advantage:

LIFE SCIENCES INNOVATION

Canadian cities have high levels of life science innovation, as reflected by the number of biotechnology and pharmaceutical related patents granted across Canadian cities.

Number of biotechnology and pharmaceutical patents

This chart shows the estimated number of biotechnology and pharmaceutical related patents granted between 2003 and 2011 by the United States Patent and Trademark Office to inventors based in selected cities.

Location	Unit value
San Diego	4,025
Boston	1,132
Basel	662
London (U.K.)	602
Raleigh	578
Northern New Jersey	563
Toronto	478
Montréal	444
Vancouver	441
Munich	306
Shanghai	280
Stockholm	208
Singapore	168
City of Québec	124
Edinburgh	76
Dublin	69
Warsaw	65
Mexico City	11
Monterrey	2

Source: fDi Intelligence estimates based on the United States Patent and Trademark Office (2012)

Advantage:

FAVOURABLE CORPORATE INCOME TAX

Canada offers attractive corporate income tax levels. Companies locating in Canadian cities pay lower corporate income taxes than the U.S., Mexico and Germany.

Corporate tax (%)

This chart shows the corporate income tax rates payable by corporations. Figures are expressed as tax payable as a percentage of companies' gross profit.

Location	Unit value
Dublin	12.5%
Singapore	17%
Warsaw	19%
Basel	21.2%
London (U.K.)	24%
Edinburgh	24%
Vancouver	25%
Shanghai	25%
Stockholm	26.3%
Toronto	26.5%
Montréal	26.9%
City of Québec	26.9%
Munich	29.5%
Mexico City	30%
Monterrey	30%
Raleigh	39.5%
Boston	40.4%
San Diego	40.7%

Source: KPMG (Country and Canadian Provinces, 2012); The Tax Foundation (U.S. States, 2011)

Advantage:

OUTSTANDING QUALITY OF LIFE AT AN AFFORDABLE COST

Canadian cities offer the highest quality of life in the world. Vancouver was rated the most liveable city in the world by the Economist Intelligence Unit in 2011 and also tops the fDi Intelligence index. Canadian cities are highest ranking when considering both quality of life and cost of living.

Attractiveness of cities

This chart shows the overall attractiveness of cities based on combining their quality of life and cost of living, with a 50% weight attached to each.

Location	Unit value
Vancouver	100.0
Munich	97.5
Mexico City	96.3
Montréal	95.4
Toronto	94.9
Stockholm	87.9
Dublin	87.0
City of Québec	86.7
Warsaw	85.7
Edinburgh	81.4
Singapore	78.5
Monterrey	76.7
Boston	74.8
London (U.K.)	74.3
San Diego	72.4
Shanghai	71.4
Basel	69.1
Northern New Jersey	67.8
Raleigh	63.4

Source: fDi Intelligence from the Financial Times (2011) Vancouver=100

Invest in Canada to achieve global excellence

Financial stability

For the fifth consecutive year, the World Economic Forum has declared Canada's banking system to be the soundest in the world.

Source: Global Competitiveness Report 2012-2013, World Economic Forum (WEF)

A strong growth record

Canada led all G-7 countries in economic growth, on average, over the past decade (2002 - 2011).

Source: World Bank

A highly educated workforce

Canada's workforce is the most highly educated among members of the Organization for Economic Co-operation and Development (OECD), with half of its working-age population having a tertiary level education.

Source: Education at a Glance 2012, OECD

A welcoming business environment

Canada is the best country for business in the G-20.

Source: Forbes Magazine, November 2012

Low business costs and tax rates

Canada's combined federal-provincial statutory general corporate income tax rate of 26% is below the level of most other G-7 countries, and about 13 percentage points lower than that of the United States.

Source: Department of Finance Canada and the OECD Tax Database 2012

Scientific research and experimental development

Canada offers one of the most generous R&D tax incentives in the industrialized world, with combined federal and provincial credits that can currently save firms, up to 30 cents on a dollar invested in R&D in Canada. R&D-intensive sectors in Canada also enjoy the lowest costs in the G-7, with a cost advantage that is 10.7 per cent lower than that in the United States.

Source: Department of Finance Canada and KPMG Competitive Alternatives, 2012

NAFTA

The North American Free Trade Agreement (NAFTA) gives investors access to a vast lucrative market of nearly 461 million consumers and a combined continental GDP of about US\$18 trillion.

Canada is the first among G-20 members to make itself a tariff-free zone for manufacturers by eliminating tariffs on manufacturing inputs and machinery and equipment.

Source: World Bank, World Development Indicators Database, 2012, and Department of Finance Canada

A great place to invest, work, and live

In 2011, Canadians enjoyed the second highest standard of living in the G-20, as measured by gross domestic product (GDP) per capita, according to the World Bank. Along with being one of the most multicultural countries in the world, home to world-class universities, offering a universal health care system and clean and friendly cities, Canada ranked second among G-7 countries in 2011 on the United Nations Human Development Index.

Source: Statistics Canada; United Nations Human Development Report, 2011; World Bank

Content is based on the latest available information at time of publication.

Invest in Canada

Foreign Affairs and International

Trade Canada

111 Sussex Drive

Ottawa, Ontario, K1N 1J1

CANADA

vp.investincanada.com

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