

WINNIPEG

**LIFE  
SCIENCES**

GROW STRONGER | HEALTH AND BIOTECH

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**WINNIPEG** WINNIPEG

A close-up photograph of a hand holding a glass test tube. The test tube is filled with a vibrant blue liquid. The hand is positioned on the right side of the frame, with the thumb and index finger gripping the tube. The background is a soft, out-of-focus light blue, suggesting a laboratory or clinical setting. The lighting is bright and even, highlighting the texture of the glass and the skin of the hand.

Over the past 20 years, entrepreneurs within Winnipeg's biotechnology cluster have created more than **25 globally successful companies**, including Valeant Pharmaceuticals, IMRIS Inc., Intelligent Hospital Systems, Medicure Inc. and Cangene Corporation. In 2007, IMRIS successfully raised \$40 million in an initial public offering (IPO) on the Toronto Stock Exchange (TSX), **one of the largest medical device IPOs in TSX history.**

Winnipeg's successful life science industry benefits from the city's vast network of world-leading research institutions, its biocommercialization resources, business incubators, and the city's low factor costs, which are among the lowest in North America. **A highly supportive provincial government** is an active partner with the industry, helping biotechnology start-ups gain access to capital and offering a variety of support resources.

# WINNIPEG'S UNIQUE LIFE SCIENCES SECTOR

As a percentage of the total workforce, Winnipeg has the highest concentration of life science professionals of any city in Western Canada. Winnipeg is home to an established, highly-innovative, and growing life sciences sector, comprised of some of Canada's leading life science companies and research institutions.

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It is estimated that companies in Winnipeg's life sciences sector earned revenues of over **\$600 million** in 2010, employing approximately **3,900 workers**.

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In the province of Manitoba, it is estimated that the revenues of the life sciences sector were approximately **\$900 million** in 2010 and the sector employed about **7,700 workers**.

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The medical device industry in Winnipeg has strengths in magnetic resonance imaging (MRI), devices for cancer treatment, joint replacement, and technologies to remove biofilms. In 2010, the medical device cluster in Winnipeg was comprised of 68 business establishments that are manufacturers of medical measuring and control devices, medical equipment, and medical supplies. It is estimated that these companies employed approximately **800 workers** in 2010.

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The Canadian functional foods and nutraceuticals (FFN) industry earns revenues in excess of **\$3.8 billion** annually and Winnipeg is one of Canada's leading centres for research, development, commercialization, and production of functional foods. Winnipeg's bioactives research and development organizations are leaders in identifying the health effects and properties of bioactives resident in the crops of the Canadian Prairies.

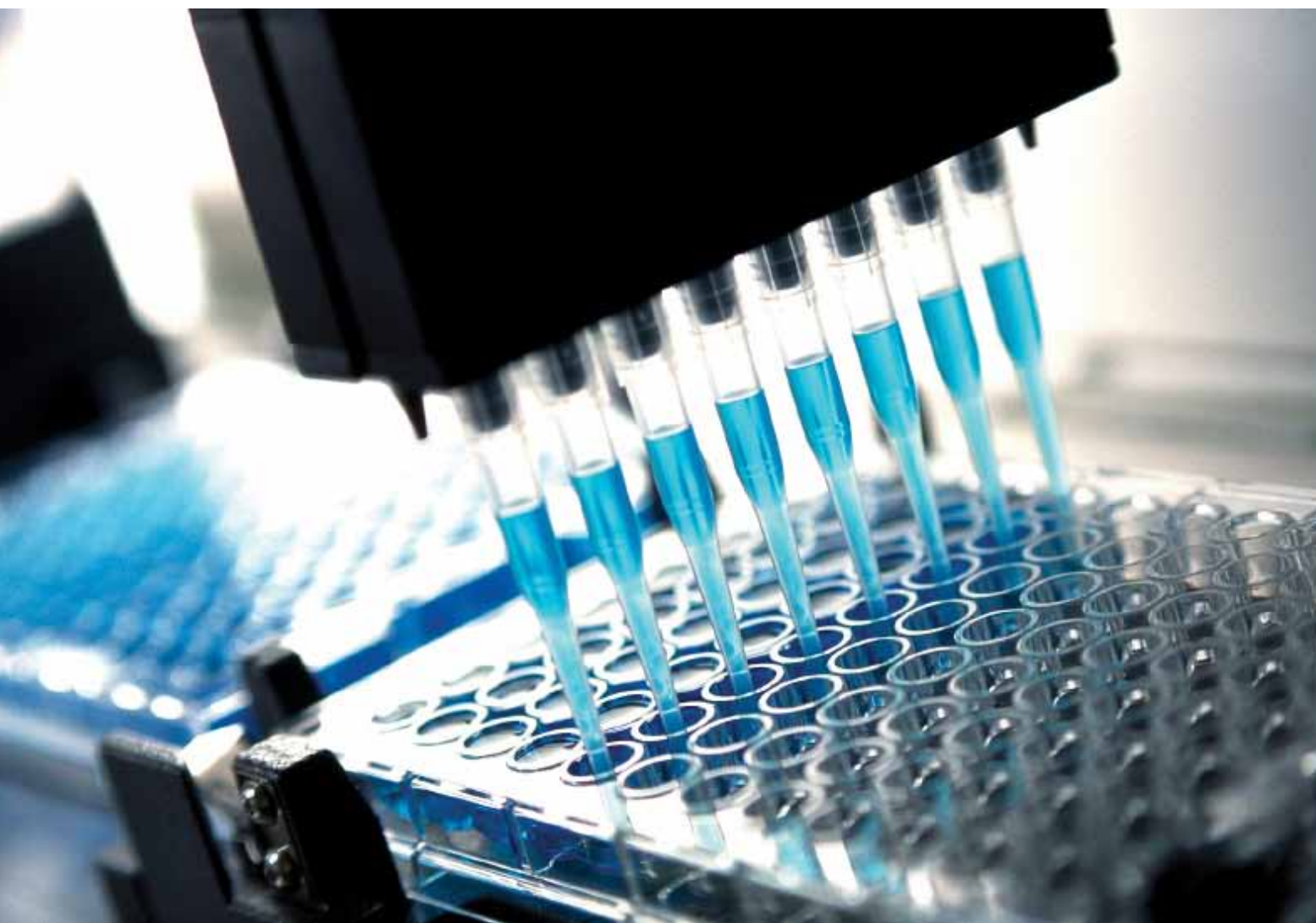
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Winnipeg is home to the largest pharmaceutical manufacturing sector in western Canada, anchored by four large pharmaceutical/medicine manufacturers: **Cangene**, **Apotex Fermentation**, **Valeant Pharmaceuticals** (formerly Biovail), and **Vita Health**. The biopharmaceutical sector also includes innovative start-ups such as **Diamedica** which is developing novel therapeutic products that will dramatically improve the lives of people with Type 1 and Type 2 diabetes. Pharmaceutical manufacturers and distributors in Winnipeg employed a labour force of about 2,100 workers in 2010.

# WINNIPEG'S LIFE SCIENCES SECTOR IS COMPRISED OF FIRMS IN FIVE LIFE SCIENCE VERTICAL INDUSTRIES:

- Medical Devices
- Functional Foods and Nutraceuticals
- Bioproducts  
(also referred to as industrial biotech)
- Health Informatics
- Biopharmaceuticals

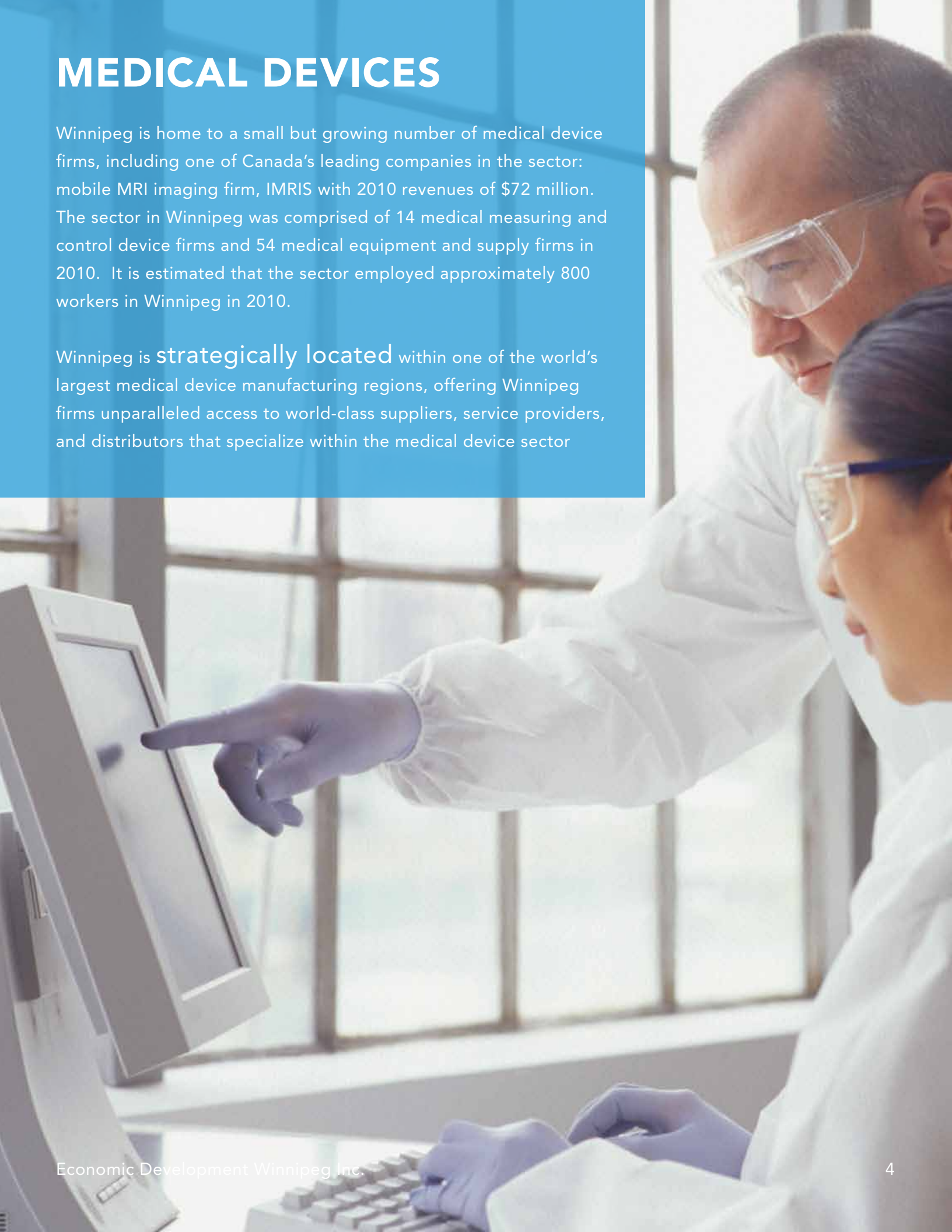
Statistics to describe the sector are limited because of the sector's evolving and emerging nature and because of limitations in the statistical systems used to measure the sector. It is estimated that companies in Winnipeg's life sciences sector earned revenues of more than **\$600 million** in 2010, employing approximately 3,900 workers in Winnipeg. In the province of Manitoba, it is estimated that the revenues of the **life science sector were approximately \$900 million in 2010 and the sector employed about 7,700 workers.**



# MEDICAL DEVICES

Winnipeg is home to a small but growing number of medical device firms, including one of Canada's leading companies in the sector: mobile MRI imaging firm, IMRIS with 2010 revenues of \$72 million. The sector in Winnipeg was comprised of 14 medical measuring and control device firms and 54 medical equipment and supply firms in 2010. It is estimated that the sector employed approximately 800 workers in Winnipeg in 2010.

Winnipeg is **strategically located** within one of the world's largest medical device manufacturing regions, offering Winnipeg firms unparalleled access to world-class suppliers, service providers, and distributors that specialize within the medical device sector





There are over 500 medical device companies in Minnesota

★ MEDICAL DEVICE CLUSTERS

# FUNCTIONAL FOODS AND NUTRACEUTICALS

A unique cluster of companies in Winnipeg are engaged in the development and production of functional foods and nutraceuticals (FFN). Functional foods are similar to conventional foods but are demonstrated to have physiological benefits and/or reduce the risk of chronic disease beyond basic nutritional functions (i.e. they contain a bioactive compound). A nutraceutical is a similar product that is isolated or purified from foods that are generally sold in medicinal forms not usually associated with foods. According to Statistics Canada's Functional Food and Nutraceuticals (FFN) survey, companies in Canada that produce functional foods and nutraceuticals earned revenues of **more than \$21.5 billion** in 2007. Revenues from the sale of functional foods and nutraceutical products (alone) were \$3.7 billion.

The functional foods sector in Winnipeg has grown out of the city's historical strength in food products manufacturing, the province's strength in agricultural production, and the presence of an impressive number of institutions and centres that perform research and development and assist with commercialization of FFNs. **Winnipeg is home to 152 food and beverage manufacturing firms and 46 establishments** that provide support for crop production. Many of these firms produce functional foods. While Winnipeg is responsible for only a small fraction of Canada's food and beverage manufacturing sector, the city's established strength in the sector gives Manitoba-based food firms an advantage in the FFN market.



# BIOPRODUCTS

The bioproducts sub-sector, also known as *industrial biotech*, is an emerging industry in Manitoba. Bioproducts refer to commercial or industrial products other than food, feed, and medicines that are made with biomass. Growing concerns over climate change and the high cost of price fluctuations of oil and natural gas are driving the energy, materials, and chemical industries to explore and capture new opportunities by developing value-added bioproducts. Manitoba produces abundant and inexpensive biomass resources and--with innovation--these resources can be transformed into competitive value-added products. The Province has established the Manitoba Bioproducts Strategy, which has set a goal that bioproducts produced in Manitoba will generate revenues of \$2 billion annually by 2020. In 2010, there were more than 150 establishments in Winnipeg that were engaged in production of chemical products, petroleum products, plastics, and rubber. These and other innovative firms are developing new ways to capture bioproduct opportunities.

For Manitoba's bioproducts and functional food sectors, the province's soils and climatic conditions make it ideally suited for the production of a wide range of crops including cereal grains (wheat, oats, and barley), and oil seeds (canola, flax, and hemp). Winnipeg's bioactives cluster is a leader in identifying the health effects and properties of bioactives resident in the crops of the Canadian Prairies.



# HEALTH INFORMATICS

Winnipeg is home to a cluster of software developers and system integrators that specialize in health informatics. Canada's National Research Council Institute for Biodiagnostics' Biomedical Informatics Group is based in Winnipeg and TRILabs, Canada's largest information and communications technology R&D consortium, performs research in clinical networks, medical informatics, telehealth and medical imaging in Winnipeg. Due to limitations of statistics available, it is difficult to estimate the number of informatics companies in Winnipeg, however there are more than 700 business establishments in Winnipeg that are engaged in computer systems design and related services. These firms employ a highly-skilled workforce of more than 4,600 workers.



# BIOPHARMACEUTICALS

Manitoba is home to four large pharmaceutical manufacturing firms: **Cangene, Valeant, Apotex Fermentation, and Vita Health**. Because of the presence of these large manufacturing firms, the biopharmaceutical manufacturing sub-sector is the largest employer in Winnipeg's life sciences sector. According to the Statistics Canada Canadian Business Patterns Database, there were 13 establishments in Winnipeg that were engaged in pharmaceutical and medical manufacturing and 47 establishments that were pharmaceutical distributors in 2010. These establishments employed a labour force of about 2,100 workers in 2010, of which about 1,500 were employed at pharmaceutical manufacturers and 600 were employed at pharmaceutical distributors.



## A WORLD CLASS LIFE SCIENCE SUPPORT SECTOR

There are nearly 1,400 business establishments in Winnipeg that play a supporting role for the life science sector. This includes nearly 1,200 scientific and technical consulting services establishments, more than 100 medical and diagnostic laboratories, and nearly 100 research and development business establishments that are performing research in the physical science, engineering, or life science fields. Together, these establishments **employed a highly-skilled workforce of 4,000 workers** in 2010.

Many of Winnipeg's R&D institutions are **world-recognized**, including the Canadian Science Centre for Human and Animal Health, a centre with level 4 bio-containment capability for the study of both human and animal disease and the National Microbiology Laboratory (NML) a leading facility in an elite group of 15 centres around the world, equipped with laboratories ranging from biosafety level 2 to level 4. Other centres include The National Research Council's Institute for Biodiagnostics, the Public Health Agency of Canada, Agriculture and Agri-Food Canada's Cereal Research Centre, Canadian International Grains Institute, Manitoba Institute of Cell Biology, Manitoba Institute of Child Health, Richardson Centre for Functional Foods and Nutraceuticals, and St. Boniface Hospital Research Centre.



## WINNIPEG'S STRATEGIC ADVANTAGES IN LIFE SCIENCE

Winnipeg has the highest concentration of life science talent in Western Canada. While smaller than major cities such as Toronto, Winnipeg's life science labour force is world-class, highly active, and growing. There is a critical mass of more than 23,200 natural and applied sciences professionals and technicians working in Winnipeg. This includes:

Over 7,000 engineers and engineering technologists (including bio-engineers),

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Over 1,700 life science professionals and technicians (e.g. biologists), and

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Over 1,300 physical sciences professionals and technicians (e.g. chemists, physicists).

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The North American Free Trade Agreement (NAFTA) and the congruence of US and Canadian laws and regulations helps life science firms to easily serve US markets from Winnipeg.

# HARD WORKING, STABLE LABOUR FORCE

For biotechnology companies, Winnipeg offers a supply of hard-working and stable professionals and technicians. Low attrition rates help Winnipeg's life science firms reduce costs related to workforce turn-over and institutional knowledge loss. On average, **Winnipeggers work more weeks than workers in any other major city in Canada.** In addition, wage rates for life science professionals in Manitoba are competitive with other major cities in Canada.

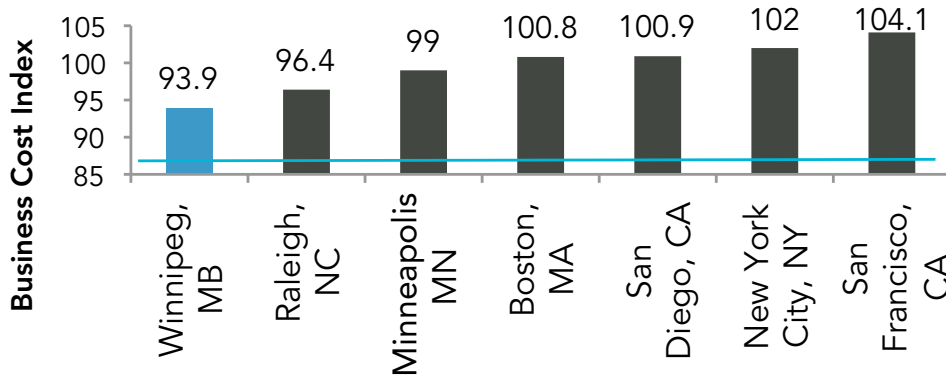
Winnipeg's highly-skilled labour force is supported by three large post-secondary educational institutions that are located in Winnipeg with combined enrollment of **more than 40,000 students**: the University of Manitoba, the University of Winnipeg, and Red River College, Winnipeg's applied technology college.

Growth of Winnipeg's labour force is strengthened by a highly successful immigration and skilled worker attraction policy that has added over 71,000 working age immigrants to Manitoba's population between 1999 and 2009. Winnipeg's progressive immigration policy has helped life science firms attract some of the world's leading talent.

## Among the Lowest Costs of Doing Business in North America

Winnipeg offers one of the most cost-effective places to do business in North America. Winnipeg's low factor costs reduce the cash burn rate for start-ups, helping them make efficient use of scarce resources. Winnipeg has been ranked #1 by IBM-Plant Location International, as the top city in North America for return on investment in medical device manufacturing. According to KPMG Competitive Alternatives, the costs of operating in Winnipeg are lower than any location in western Canada or the western US. KPMG ranked Winnipeg #1 as the lowest-cost location for medical device manufacturing, for pharmaceutical manufacturing, and other precision manufacturing out of 22 cities in the North American Midwest. Compared to other cities, Winnipeg offers one of the highest internal rates of return on investment of any city in North America.

## Costs of Doing Business Index: Winnipeg vs. Major North American Biotech Centres



## Lowest published electricity rates in North America.

Companies that are large and medium-sized consumers of electricity can experience significant savings by establishing their operations in Winnipeg. Winnipeg offers the lowest published electricity rates in North America.

According to the 2010 annual *Comparison of Electricity Prices in Major North American Cities*, published by Hydro Quebec, Winnipeg offers the lowest cost of electricity of major metro areas in the US and Canada. Compared to Winnipeg, the cost of electricity for a mid-sized electricity user (2,500 kW of power demand, 1,170,000 kWh consumption and 65% load factor) is 9 per cent higher in Calgary (AB), 27 per cent higher in Vancouver (BC), 34 per cent higher in Montreal (QC), 80 per cent higher in Edmonton (AB), and more than twice as expensive in Toronto (ON), Halifax (NS), Moncton (NB), and Charlottetown (PE). Compared to cities in the US, the cost of electricity is 6 per cent higher in Houston (TX), 11 per cent higher in Seattle (WA), 68 per cent higher in Detroit (MI), 76 per cent higher in Nashville (TN), and more in other cities. For companies that are very large consumers of electricity, the savings are even greater.



## Accessing Markets

Life science firms distributing from Winnipeg have many cost-effective choices available to move goods: Winnipeg is the only prairie city in Canada with access to three major railways: CN, CP, and BNSF. Manitoba has more than 1,000 for-hire trucking companies including six of Canada's largest trucking companies. Winnipeg's James Armstrong Richardson International Airport is Canada's number one airport for scheduled freighter flights with 24 hour all-weather, reliable operations.

## Organized, Aligned and Connected

The Life Science Association of Manitoba (LSAM) is a highly-active association that connects people, information and ideas; supports the development of human resource capacity; and works to strengthen the business environment for the sector by providing a strong voice for the life science industry in Manitoba.

## A Highly-Supportive Government

Winnipeg's manufacturers benefit from the Manitoba Manufacturing Investment Tax Credit which provides a 10% tax credit applicable against Manitoba corporate income tax payable. Life science companies also benefit from a 50 per cent refundable Manitoba Scientific Research and Experimental Development (SR&ED) Tax Credit on approved R&D expenditures.

For smaller and mid-sized manufacturers, the Province of Manitoba has created a \$30 million Commercialization Support for Business Program that provides financial assistance to share the costs of third party expenses up to a maximum of 50 per cent



# MAGNETIC RESONANCE IMAGING (MRI)

Winnipeg is home to a cluster of expertise in the development and commercialization of magnetic resonance imaging (MRI) equipment and technologies. Key firms include **IMRIS Inc.**, a global leader in the supply of fully integrated, intra-operative imaging systems and **Monteris Medical Inc.**, a medical device firm that employs MRI-guided, focused laser-induced interstitial thermal therapy to coagulate and kill cancer tumours.

“With close proximity to our largest market -- the United States, and a reasonable cost structure, Winnipeg continues to be a very good place for IMRIS to do business.”

- Brad Woods, Director Investor Relations, IMRIS Inc.



# CASE STUDIES: WHY WINNIPEG?

## IMRIS

### 2010 Key Stats

Employees:  
**160**

R&D Staff:  
**40**

Revenues:  
**\$72M**

Revenue Growth:  
**62%**

Gross Margin:  
**43%**

[www.imris.com](http://www.imris.com)

IMRIS provides fully integrated image guided therapy solutions that deliver timely information to clinicians for use during surgical or interventional procedures. Solutions incorporate magnetic resonance imaging and fluoroscopy into multi-purpose surgical suites for specific medical applications. Products are sold globally to hospitals that deliver clinical services to patients in the neurosurgical, interventional neurovascular and cardiovascular markets.

### Why Winnipeg?

**Low Costs** of doing business help IMRIS to operate at attractive margins. In addition to Winnipeg's reasonable costs of living, a high quality of life helps IMRIS to attract leading global talent. Winnipeg's diversified manufacturing sector also offers capacity to support the company's growing assembly, integration and testing facility. Given its location at the geographic centre of North America and its well established transportation and distribution links, Winnipeg offers a solid platform for IMRIS's continued growth and expansion.

**Research & Development Capacity:** Over a quarter of the IMRIS staff is 100% dedicated to research and development. IMRIS's historical ties to the National Research Council - Institute for Biodiagnostics (based in Winnipeg) contributed to the company's early development. Today IMRIS is home to one of the largest private sector image guided therapy research facilities in Canada.





## MRI RESEARCH NETWORK

Cutting-edge research in MRI and other non-invasive surgical technologies is conducted in Winnipeg at the National Research Council Institute for Biodiagnostics, **Canada's most advanced facility** for studying and developing nuclear magnetic resonance and MRI technologies, and at the Dr. Andrei Sakharov MRI Centre, located within the St. Boniface Hospital Research Centre. These centres are active industry partners, supporting the growth of Winnipeg's MRI technologies cluster and establishing spin-off companies to commercialize new MRI technologies.

### **National Research Council Institute for Biodiagnostics (NRC-IBD)**

[www.nrc-cnrc.gc.ca/eng/ibp/ibd.html](http://www.nrc-cnrc.gc.ca/eng/ibp/ibd.html)

NRC-IBD currently has over 20 projects that are focused on using magnetic resonance (MR) in cancer, cardiac and neuroscience research, as well as in the development of new hardware and techniques. NRC has much to offer medical devices companies through its vast expertise across science and engineering disciplines and its state-of-the-art research facilities.

### **Sakharov MRI Centre**

#### **St. Boniface Hospital Research Centre**

[www.sbrc.ca](http://www.sbrc.ca)

St. Boniface Hospital Research Centre is a recognized leader in the MRI field and will soon have one of the largest facilities operating under one program in Canada. The centre operates three MRIs, including an open scanner that is a research tool in support of eventual robotics-guided laser surgery, enabling surgeons to remove brain tumours and tackle other complex surgeries with a degree of precision never before possible.



## WINNING PARTNERSHIP DR. MARK TORCHIA AND MONTERIS MEDICAL

Increasing the ability of healthcare providers to perform intricate diagnostics and treatment procedures in minimally invasive ways is the focus of Dr. Mark Torchia's research. In partnership with Monteris Medical Inc., Dr. Torchia's team is developing a system designed to perform **highly precise tumour surgery** using hyperthermia combined with MRI technology. Using a unique property of MRI to detect temperature differences between healthy tissue and tumour and a small robotic device to control the laser's direction, surgery can be conducted more quickly, less invasively, with reduced risk of anesthetic-related side effects and quicker recovery time.

Monteris Medical Inc. is a medical device venture dedicated to developing new technologies for the treatment of cancers. Monteris' proprietary AutoLITT® technology employs MRI-guided, focused laser-induced interstitial thermal therapy ("the AutoLITT System") to coagulate and kill tumours.



## JOINT REPLACEMENT

Winnipeg offers a cluster of expertise in hip and knee orthopedics through the Concordia Hip and Knee Institute. The institute is a partnership between Concordia Hospital and the University of Manitoba Joint Replacement Group. Recognized as an international leader and innovator in hip and knee replacement healthcare, the Institute is taking patient care to new levels through its program of surgery, rehabilitation and evaluation.

The centre has recently received a \$10-million investment to commercialize specialized joint replacement technology. The project will partner medical professionals with engineers at the new Musculoskeletal Innovation and Product Development Centre (MIPDC), located next to Concordia Hospital. The funding will go towards new equipment for wear-testing and product validation to develop new technologies.

# WHY WINNIPEG? RAPID INNOVATION.

## BOMImed

BOMImed is a manufacturer and distributor of anesthesia, critical care, and warming therapy products. Formed in 1985 as a distribution company, BOMImed has evolved into a manufacturing company, offering innovative products in order to become stronger in the market. Through innovation, BOMImed is developing products that change the way that healthcare is delivered, especially in the area of remote patient monitoring.

### Why Winnipeg?

“Winnipeg is a good high-end test market. We can evaluate products quickly in a place where the philosophy of care is very good. Winnipeg’s also a tight-knit community. You can move quickly.”

- David Olivier, CEO BOMImed

### What else makes BOMImed successful?

“Winnipeg has a great supply of mechanical engineers and software engineers coming from two highly-ranked universities and Red River College.”

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“Location is very important and Winnipeg is in the centre of the continent plus close to Minneapolis. It’s also the head office for a lot of trucking companies—so it makes sense for distribution.”

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“Winnipeg’s cost base is low - but the quality is very high.”

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“It’s a very stable and predictable - but competitive - community. Winnipeg has hard-workers.”

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“For us, Winnipeg has been phenomenal.”

# FUNCTIONAL FOODS AND NUTRACEUTICALS (FFN)

The global nutraceuticals market, including functional foods, is projected to grow from \$187 billion in 2010 to exceeding US\$243 billion by 2015, owing to consumer desire for leading a healthy life and increasing scientific evidence supporting health foods. Rising healthcare costs, an aging populace, and growing beauty affixation are factors expected to stimulate growth in the market for functional food and nutraceuticals--foods that claim to have a health-promoting or disease-preventing property beyond the basic function of supplying nutrients.

**Winnipeg is recognized as a leading research and development centre for functional foods**, and represents a tremendous value-added growth opportunity for Manitoba and the Canadian agri-food industry, serving both domestic and international markets. Canadian firms hold more than 1,000 existing patents in functional foods and there are also more than 1,000 pending patents worldwide.

Manitoba's prairie crops are being identified and tested for health enhancing compounds, transforming them from an agri-food concept to a commercial product that will improve the health of consumers. Manitoba offers immense agricultural production potential and robust food processing capabilities. Manitoba has over 36 million acres of land with agricultural potential and produces approximately **\$4 billion in processed foods annually**.



# WINNIPEG'S CLINICAL RESEARCH IN FUNCTIONAL FOODS AND NUTRACEUTICALS

**THE RICHARDSON CENTRE FOR FUNCTIONAL FOODS AND NUTRACEUTICALS (RCFFN)** leads **functional foods and nutraceuticals research** for the improvement of health and nutrition and supports the **development of an economically viable functional food and nutraceuticals industry** in Manitoba and western Canada. The RCFFN coordinates the multi-disciplinary collaborative R&D efforts necessary for taking bio-actives from identification to ready-for-clinical examination and pre-commercialization. It is the main source for scientific and regulatory information concerning bio-active compounds, nutraceuticals, functional foods and natural health products in western Canada and is a catalyst for the development of plant-based products, increasing the processing of western Canadian agricultural commodities and the capturing of related economic spin-offs.

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**THE FOOD DEVELOPMENT CENTRE (FDC)** is a Special Operating Agency of the Province of Manitoba. Its mandate is to assist the agri-food industry in the **development and commercialization** of conventional and functional foods and natural health products.

The FDC can help steer a product through every stage of development, from initial research through product testing, scale-up, and marketing. The centre assists with product development to take ideas to prototype and beyond. FDC's scientists and food engineers can help food developers to achieve high standards of food safety, quality, and efficiency and can help to evaluate the consumer appeal and safety of new products.

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**THE CANADIAN CENTRE FOR AGRI-FOOD RESEARCH IN HEALTH AND MEDICINE (CCARM)** is dedicated to investigating and understanding the potential **health-related benefits** found in nutraceuticals, functional foods, and natural health products (health food).

From laboratory to in-human research, CCARM conducts clinical research studies (clinical trials) of functional and health food products and nutraceuticals identified by CCARM laboratories as having potential beneficial effects on diseases that are of clinical and financial significance to Canadians.

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# WINNIPEG'S FUNCTIONAL FOODS AND NUTRACEUTICALS ECOSYSTEM

Winnipeg offers an expanding ecosystem of organizations that actively support the Functional Foods and Nutraceuticals sector.

## R&D INSTITUTIONS

Canadian Centre for Agri-Food Research in Health and Medicine (CCARM)  
[www.sbrc.ca](http://www.sbrc.ca)

Canadian International Grains Institute (CIGI)  
[www.cigi.ca](http://www.cigi.ca)

Cereal Research Centre (AAFC)  
[www.agr.gc.ca](http://www.agr.gc.ca)

Food Development Centre  
[www.gov.mb.ca/agriculture/fdc](http://www.gov.mb.ca/agriculture/fdc)

Manitoba Agri-Health Research Network Inc. (MAHRN)  
[www.mahrn.ca](http://www.mahrn.ca)

Richardson Centre for Functional Foods and Nutraceuticals (RCFFN)  
[www.umanitoba.ca/research/rcffn/](http://www.umanitoba.ca/research/rcffn/)

University of Manitoba, Department of Food Science  
[www.umanitoba.ca/afs/food\\_science](http://www.umanitoba.ca/afs/food_science)

University of Manitoba, Human Nutritional Sciences  
[www.umanitoba.ca/faculties/human\\_ecology/departments/hns](http://www.umanitoba.ca/faculties/human_ecology/departments/hns)

University of Manitoba, Faculty of Agricultural & Food Sciences  
[www.umanitoba.ca/afs](http://www.umanitoba.ca/afs)

## RESEARCH SUPPORT

Maxxam Analytics  
[www.maxxam.ca](http://www.maxxam.ca)

Conviron  
[www.Conviron.com](http://www.Conviron.com)

BioChambers  
[www.biochambers.com](http://www.biochambers.com)

## AGRICULTURAL INNOVATORS

BASF Canada  
[www.agro.basf.com](http://www.agro.basf.com)

Brett Young Seeds  
[www.brettyoung.ca](http://www.brettyoung.ca)

Hemp Oil Canada Inc. (HOCl)  
[www.hempoilcan.com](http://www.hempoilcan.com)

Inovatech Egg Products  
[www.inovatech.com](http://www.inovatech.com)

J.H. Hare & Associates/ Nutratech  
[www.hyper-egg.com](http://www.hyper-egg.com)

Kade Research Ltd.  
[www.kaderesearch.com](http://www.kaderesearch.com)

Monsanto Canada Inc.  
[www.monsanto.ca](http://www.monsanto.ca)

Nutri-Pea Limited  
[www.nutripea.com](http://www.nutripea.com)

Prairie Flax  
[www.prairieflax.com](http://www.prairieflax.com)

Viterra  
[www.viterra.ca](http://www.viterra.ca)

Zyme Fast Inc.  
[www.zymefast.com](http://www.zymefast.com)

## FINANCIAL SERVICES, MARKETING, & CONSULTING

ECOMatters Consulting  
[www.ecomatters.com](http://www.ecomatters.com)

Source Nutraceuticals  
[www.sourcenutra.ca](http://www.sourcenutra.ca)

Richardson Centre for Functional Foods and Nutraceuticals (RCFFN)  
[www.umanitoba.ca/research/rcffn/](http://www.umanitoba.ca/research/rcffn/)

Food Development Centre  
[www.gov.mb.ca/agriculture/fdc](http://www.gov.mb.ca/agriculture/fdc)

Hemp Oil Canada Inc.  
[www.hempoilcan.com](http://www.hempoilcan.com)

## RETAIL

Vita Health Products Inc.  
[www.vitahealthstores.ca](http://www.vitahealthstores.ca)

## MANITOBA FFN INGREDIENT AND PRODUCT SUPPLIERS

All Natural Nutritional Products Inc. (ANNP)

Bee Maid Honey  
[www.beemaids.com](http://www.beemaids.com)

Best Cooking Pulses  
[www.bestcookingpulses.com](http://www.bestcookingpulses.com)

Can-Oat Milling Inc.  
[www.can-oat.com](http://www.can-oat.com)

Graham's Groves  
[www.grahamsgroves.com](http://www.grahamsgroves.com)

Hemp Oil Canada Inc.  
[www.hempoilcan.com](http://www.hempoilcan.com)

Keystone Grain  
[www.keystonegrain.com](http://www.keystonegrain.com)

Manitoba Harvest Hemp Foods & Oils  
[www.manitobaharvest.com](http://www.manitobaharvest.com)

Midlake Specialty Food Products  
Nutri-Pea Limited  
[www.nutripea.com](http://www.nutripea.com)

Parent Seed Farms Ltd.  
[www.parentseed.com](http://www.parentseed.com)

Pizzeys's Milling & Baking Company  
[www.pizzeys.com](http://www.pizzeys.com)

Prairie Flax Products Inc.  
[www.prairieflax.com](http://www.prairieflax.com)

Prairie Orchard Farms Inc.  
[www.prairieorchardfarms.com](http://www.prairieorchardfarms.com)

Stonewood Elk Products  
Sun Prime Extracts  
[www.sunprime.ca](http://www.sunprime.ca)

The Great Gorp Project  
[www.gorpbars.com](http://www.gorpbars.com)

Vita Health Company  
[www.vitahealth.ca](http://www.vitahealth.ca)

## NETWORKS

Flax Canada 2015 Inc.  
[www.fc2015.ca](http://www.fc2015.ca)

Flax Council of Canada  
[www.flaxcouncil.ca](http://www.flaxcouncil.ca)

Manitoba Canola Growers Association  
[www.mcgacanola.org](http://www.mcgacanola.org)

Manitoba Pulse Growers Association  
[www.manitobapulse.ca](http://www.manitobapulse.ca)

Manitoba Seabuckthorn Growers Association  
[hatfarm@mts.net](mailto:hatfarm@mts.net)



# BIOPRODUCTS

Canada's Prairies, including Manitoba, Saskatchewan, and Alberta, are home to about a quarter of Canada's 208 bioproduct (or industrial biotech) companies, with combined revenues of more than \$222 million in 2009. These firms employ a skilled workforce of over 1,000 workers and spent more than \$5 million in bioproduct R&D expenditures in 2009.

In Manitoba, there are at least 30 bioproducts-related organizations, which include companies, government partners, industry associations, and research organizations. About half of these organizations are based in Winnipeg.

**Winnipeg is ideally positioned** to capitalize on the emerging revolution of bioproducts. The province offers abundant biomass resources and benefits from an established bioproducts industry. In total, biomass feedstock production capacity in the province is in excess of 18 million tonnes of agricultural and forest lingo cellulosic biomass, cereal grains biomass, and oil seed biomass. The biomass resources, combined with Winnipeg's diversified and highly efficient manufacturing sector, offer **tremendous potential for production** of a vast set of bioproducts including biogas, biofuel, bioenergy, biofibre and other biomaterials.



# INVESTMENT IN BIOPRODUCTS

Manitoba's innovative bioproducts firms are experiencing strong growth, with about half of all firms expanding or expecting to expand and open additional establishments in the next two years.

Bioproducts firms located in the Prairie provinces (Manitoba, Saskatchewan, and Alberta), raised more than \$31M in capital in 2009. More than 2/3 of funds were sources from supportive government programs, including \$21M from the Industrial Research Assistance Program (IRAP), offered through the National Research Council. Bioproducts firms in the Prairies also sourced over \$2.5M from Canadian venture capital funds.

## THE MANITOBA BIOPRODUCTS STRATEGY

Growing a strong bioproducts sector is an integral part of Manitoba's commitments to sustainable development and green economy. In 2011, the Province of Manitoba unveiled a Manitoba Bioproducts Strategy designed to help the local bioproducts industry grow to annual revenues of more than \$2 billion by 2020. The strategy is designed to build on Manitoba's strengths in four focus areas:

Sustainable biomass production and supply

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Biofuels and bioenergy

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Biofibres and biomaterials

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Biochemicals

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The strategy calls for establishment of innovation and industry champions; investment in research, innovation and commercialization; creation of a skilled workforce; support for market development; and actions to increase public awareness.

# BIOPRODUCTS

## RESEARCH SUPPORT

Manitoba is the focal point of the emerging natural fibre sector in Canada where flax, wheat and hemp fibres are processed into environmentally friendly products. The Composites Innovation Centre (CIC) located in Winnipeg is Canada's leading centre for composites research for bioproducts. The CIC develops advanced composites technologies and is a driving force behind the province's exploration of biomaterials applications.

The centre leads several initiatives focused on the development and commercialization of biocomposites using biofibres such as hemp and flax to replace the man-made glass and carbon fibres for advanced composite applications in buses, recreational vehicles, sporting goods, and aircraft manufacturing.

### Key Services

Helping to define and plan projects

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Establishing collaborative partnerships

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Identifying and negotiating with project funding agencies

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Managing projects

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Providing supplementary CIC "gap" technical and project resources

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Supplying laboratory services including bio-composites product development, liquid moulding and materials testing

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Performing technology consulting to support project definition and problem solving

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## INFORMATICS

Winnipeg is home to a nearly 800 establishments that are active in computer systems design and related IT design services. Several are active in the informatics sector. Winnipeg is also home to major informatics research organizations including the **NRC Institute for Biodiagnostics' Biomedical Informatics Group** and **TRLabs**, Canada's largest (ICT) R&D consortium, which is active in research and development in support of e-health and 3D digital imaging.



## THE NRC INSTITUTE FOR BIODIAGNOSTICS' BIOMEDICAL INFORMATICS GROUP

in Winnipeg is focused on the development of state-of-the-art methods for managing complex biomedical data, and commercializes the resulting software products. The Biomedical Informatics Group also investigates software engineering methodologies to develop programs that are able to handle large data sets, both for data visualization and data analysis. Current priorities include the analysis of MR data from cancer projects, analysis and display of MR and infrared spectral data in general, and the extension of these methods to data from proteomics (mass spectra) and genomics (microarray gene expression). There is increased focus on disease characterization and modeling the spread of infectious diseases. Medical image registration is another area of current interest.

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Canada's largest information and communications technology (ICT) R&D consortium, **TRLABS** drives the competitiveness of western Canada's ICT industry with the supply of brain power and innovative technologies. Current areas of research include clinical networks, medical informatics, telehealth and medical imaging. From the seeds of ideas to applied research to technology development support, TR Labs' engagement in all aspects of the innovation process delivers sector-leading commercialization rates, in-demand HQP, and maximized ROI for its industry, university, and government members. As a result, the not-for-profit organization is one of the most industry-invested R&D vehicles in Canada.

### Why Winnipeg?

"It's never a problem finding a skilled ICT person in Winnipeg. I work in a lot of verticals including health, financial services, and government and because of Winnipeg's diversified economy I can find people who have experience in a lot of industries."

- Brian Eckhardt, Founder IMT



# BIOPHARMACEUTICALS

Canadian pharmaceutical companies annually spend more than \$1.3 billion a year on health

research, finding discoveries on how diseases work to develop better innovative medicines and vaccines that save lives. Winnipeg's world-class universities and research institutions play an important role in developing the science that leads to breakthrough treatments. Winnipeg's biopharma start-ups are supported by a network of over 100 medical and diagnostic laboratories, and nearly 100 research and development business establishments that are performing research in the physical science, engineering, or life science fields.

## Genomics Research & Development

**GENOME PRAIRIE** is the leading organization for support and management of large-scale genomics research projects in Manitoba and Saskatchewan. With its partners, Genome Prairie has supported more than \$188 million of research activity in plant, animal and human genomics, bioinformatics, instrumentation development and bioethics since its establishment in 2000. Through network establishment and regional priority consultations, Genome Prairie works collaboratively with all levels of government, universities and industry as well as Genome Canada, a not-for-profit organization implementing a national strategy in genomics and related bioscience research to benefit all Canadians.

## Diabetes Research & Development

Winnipeg-based **DiaMedica** is a biopharmaceutical company focused on developing novel therapeutic products that will dramatically improve the lives of people with Type 1 diabetes, Type 2 diabetes and other large unmet diseases. The company's product portfolio protects and proliferates specific cells in specific organs. In addition, DiaMedica's products have demonstrated an ability to dramatically increase the efficiency of insulin by improving insulin sensitivity and glucose infusion rates.



**THE DIABETES RESEARCH GROUP** is involved in both clinical and basic research in the area of diabetes and its complications. They are active in both adult and pediatric research. The clinical research, sponsored by various pharmaceutical companies, is concerned with the efficacy of new therapies for the treatment of diabetes and its complications. The Diabetes Research Group participates in national and international multicentre trials looking at the effects of treatments on co-morbid conditions such as heart attacks and stroke in diabetic patients.

#### **Biopharmaceutical Manufacturing**

Manitoba is home to the only biopharmaceutical manufacturing activity in western Canada – centred around four anchor firms: Cangene, Apotex Fermentation, Valeant Pharmaceuticals and Vita Health. Easy access and close proximity to US markets have motivated many major biopharma firms to set manufacturing facilities in Canada. Manitoba's expertise in Good Manufacturing Practices and reputation as a high-quality, cost-competitive location for North American pharmaceutical manufacturing has spurred ongoing investment in the sector. Valeant recently completed a \$30-million expansion to increase capacity at the firm's production facility in Steinbach, Manitoba, allowing the firm to consolidate operations from several plants into a single one in Manitoba.

Winnipeg's **CANGENE CORPORATION** is a world leader in specialty hyper-immune plasma and biotechnology products, in particular, research and production of antibody products which aid in the fight against some of the world's most deadly biothreats. Cangene had 2010 revenues in excess of \$158M. The majority of Cangene's 800 employees work in the head office location in Winnipeg or in Cangene bioPharma located in Baltimore. Cangene bioPharma currently produces 15 commercial products and since 1990 has contributed to the development and production of more than 185 clinical products, and is a contract manufacturer, providing fill/finish services to pharmaceutical and biotechnology companies. Cangene bioPharma has been inspected and approved by regulatory agencies in the US, EU, and Japan.

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**VITA HEALTH PRODUCTS** currently maintains 220,000 sq. ft. of manufacturing, packaging, and distribution facilities in Winnipeg. Because of Winnipeg's location at the geographic centre of Canada, Vita's supply chain achieves the lowest cycle times through manufacturing, and the fastest, most economical distribution from coast to coast. Vita is a leader in quick-to-market launches, rapid order replenishment and reduced inventory needs that minimize customer costs. Vita produces private label finished goods for all Canadian major retailers in the mass-market, grocery and drug outlets including Wal-Mart, Costco, Loblaws and Shoppers Drug Mart. Vita also partners with a number of the top 20 big pharma companies to produce bulks to their exact specifications. Vita has received the prestigious Bayer® - North American Premier Supplier Award, recognizing Vita's premier supplier performance to Bayer's Health Care division.

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**VALEANT** is the largest publicly-traded drug company in Canada with 2010 revenues of \$1.18 billion. Valeant's 240,000 sq. ft. manufacturing facility in Steinbach, Manitoba employs approximately 600 of the firm's 4,300 workers and holds the world-wide manufacturing mandate for the slow-release drug, Wellbutrin XL. Valeant is a multinational specialty pharmaceutical company with a diverse product portfolio with focus on branded pharmaceuticals, branded generics and over-the-counter products. The firm has a specialization in neurology and dermatology and has manufacturing sites in Canada, Brazil, Poland and Mexico.

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**APOTEX FERMENTATION INC. (AFI)** is a contract manufacturing organization, operating an 87,000 sq. ft. facility located on 4.8 acres in Winnipeg. With a staff of 150, Apotex Fermentation's expertise lies in microbial fermentation of small molecules. Apotex Fermentation provides contract services in research strain development, media optimization and process improvement, purification and isolation. AFI also undertakes scale up of the process and provides global regulatory support. Apotex has the experience to take early stage lab scale processes through optimization and scale up to commercially viable validated processes producing product for clinical trials, formulation and final dosage forms.

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## LIFE SCIENCE RESOURCES

More than **\$150 million** is spent annually on research and development in Winnipeg. Globally-recognized research centres are located in the city, producing research and new technology start-up companies that strengthen and diversify the city's base of life science firms. These institutions attract talent from around the world, offering Winnipeg businesses a highly skilled pool of workers with diverse specializations.

## MAJOR INSTITUTIONS

**THE CANADIAN SCIENCE CENTRE FOR HUMAN AND ANIMAL HEALTH:** The centre is a major laboratory with level 4 bio-containment capability for the study of both human and animal disease. It is home to Canada's leading public health infectious disease laboratory, the **National Microbiology Laboratory** (NML) ([www.nml-ilm.gc.ca](http://www.nml-ilm.gc.ca)) which is a leading facility in an elite group of 15 centres around the world, equipped with laboratories ranging from biosafety level 2 to level 4 designed to accommodate the most basic to the most deadly infectious organisms. The centre employs a labour force of 400 highly skilled staff.

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**THE NATIONAL RESEARCH COUNCIL'S INSTITUTE FOR BIODIAGNOSTICS**, in Winnipeg: The institute is the most advanced facility in Canada for studying and developing non-invasive diagnostic tools such as NMR and MRI technologies. Currently, 200 researchers, staff, affiliated collaborators and students are engaged in about \$15 million worth of R&D and technology transfer.

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**THE UNIVERSITY OF MANITOBA** is a powerhouse for life science research with faculties in medicine, biosystems engineering, agricultural and food science, biological sciences, and other fields related to the life science sector. UM is comprised of 26,000 students, 8,000 faculty and staff and over 180,000 alumni.



# BIOTECH COMMERCIALIZATION

Winnipeg offers a robust network of resources for commercialization of biotechnology.

The **NRC CENTRE FOR THE COMMERCIALIZATION OF BIOMEDICAL TECHNOLOGY** (NRC-CCBT) is a 5,500 m<sup>2</sup>, \$12M commercialization centre located adjacent to the NRC Institute for Biodiagnostics. The NRC-CCBT is designed as a model for public-private sector partnerships in commercialization, which is a key element of NRC's cluster strategy being pursued at NRC locations across Canada. The centre houses Biomedical Commercialization Canada Inc. (BCC), a non-profit organization dedicated to nurturing biomedical commercialization by providing resources to help innovators, entrepreneurs and start-up companies build science and technology based business opportunities. Currently, BCC is mentoring a number of biomedical and technology-based client companies and has forged relationships with the biomedical sector nationally and internationally. The collaboration between NRC partners (NRC-IBD, CISTI and IRAP) and BCC has created a pipeline to take research innovations from idea to market.

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**THE KLEYSEN INSTITUTE FOR ADVANCED MEDICINE** is a new \$25M clinical research facility, where HSC's dedicated scientists and clinicians can access the innovative technology they need to conduct research and perfect techniques that will have a direct impact on patient care. Featuring state-of-the-art tools and technology the Institute is committed to advancing the understanding and treatment of disease and will focus on neurosciences, infectious diseases, advanced imaging and medical informatics.

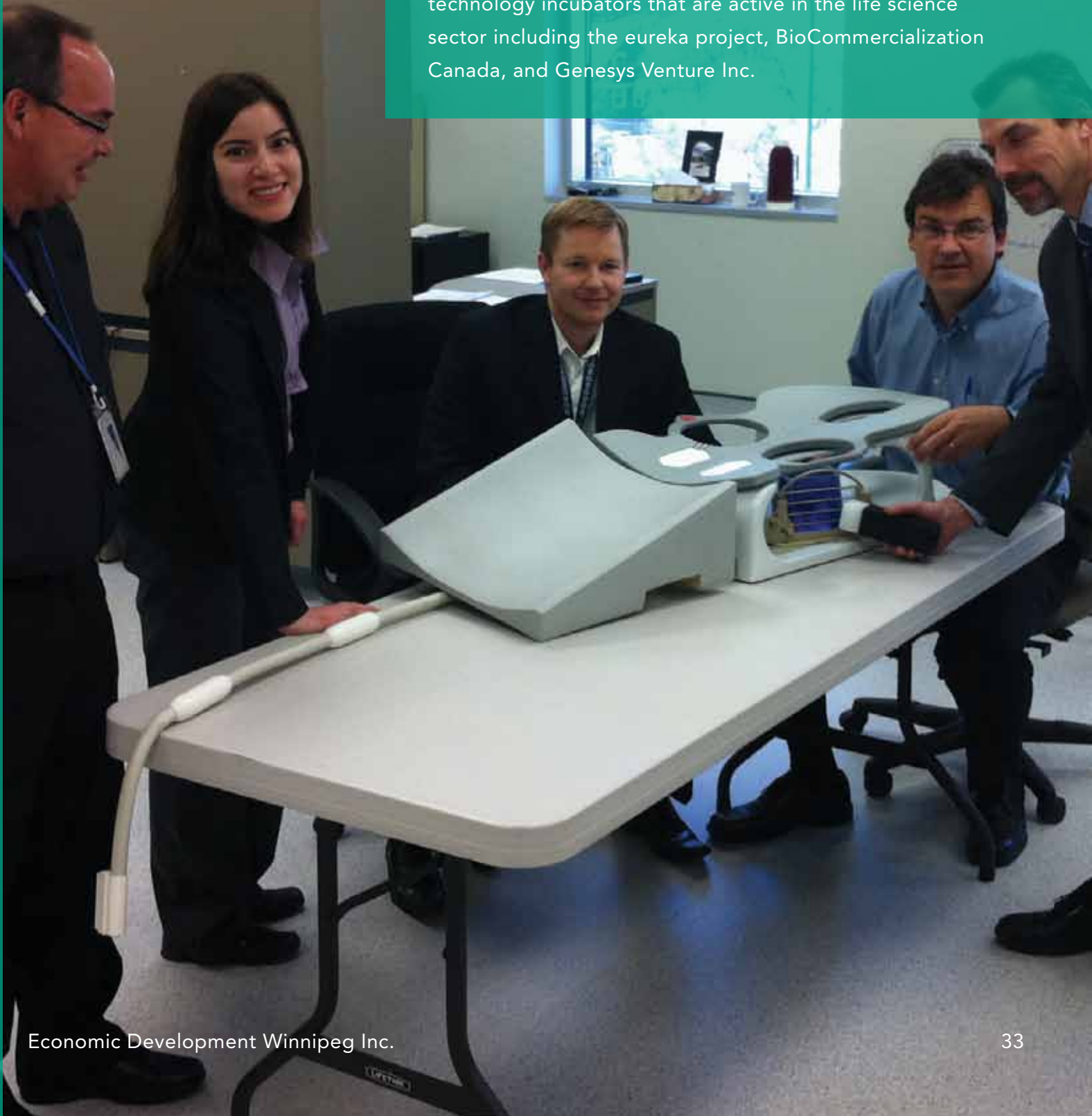
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**THE UNIVERSITY OF MANITOBA'S TECHNOLOGY TRANSFER OFFICE** (TTO) is one of Canada's most productive intellectual asset programs. The TTO oversees an Intellectual Property estate of more than 400 patents covering 300 university developed technologies.

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# LIFE SCIENCE INCUBATORS

Statistics show companies that begin life in an incubator have a 70 to 80 per cent survival rate after five years, compared to 15 per cent for start-ups that are not developed in an incubator. Winnipeg offers three technology incubators that are active in the life science sector including the eureka project, BioCommercialization Canada, and Genesys Venture Inc.





**THE EUREKA PROJECT** is an incubator for high-tech and life science small businesses in Winnipeg. The business incubator exists to nurture and help support small companies needing help to find investors, draw upon experts' knowledge and establish a customer base in an effort to become globally competitive. The incubator underwent a \$3.2 million expansion in 2009 to double its capacity. The expansion increased its physical space by about 50 per cent to 10,000 square feet which will allow the program to double the number of companies residing at the centre from 10 to 20. Funding for the expansion came from the Government of Canada and the Province of Manitoba.

[www.eurekaproject.ca](http://www.eurekaproject.ca)

**BIOMEDICAL COMMERCIALIZATION CANADA INC.** (BCC) is a private sector, not-for-profit business incubation program for entrepreneurs, start-ups, or businesses in the science and technology industry. BCC receives funding from the National Research Council's Industrial Research Assistance Program (NRC-IRAP) and the Province of Manitoba to provide business incubation services. BCC provides business mentoring, coaching, active participation, networking, infrastructure, and finance and investment services. BCC's incubation program has the goal of helping their member companies enter the market, secure investment, or get acquired. BCC is located in Winnipeg, Manitoba at the Centre for the Commercialization of Biomedical Technology.

[www.biomedcanada.com](http://www.biomedcanada.com)

**GENESYS VENTURE INC.** (GVI) provides the expertise, experience and energy required to start-up and manage emerging health and biotechnology ventures. Founded by renowned bio-entrepreneur Dr. Albert D. Friesen, the GVI team has extensive experience to offer its clients. The GVI concept is an enhanced technology-based business incubator, developing a partnership with the technology holders and/or investors to help ensure successful start-up and provide strategic direction to research and business activities.

[www.genesysventure.com](http://www.genesysventure.com)

# THE LIFE SCIENCE ENTREPRENEUR ECOSYSTEM

Winnipeg is an ideal location for life science entrepreneurs. The Canadian and provincial governments are highly supportive and Winnipeg entrepreneurs benefit from a thriving network of life science research and development institutions. Low costs of business reduce an entrepreneur's cash-burn rate and Winnipeg offers a **diverse labour force pool** for life science occupations. In addition, there are over 150 service providers that are active in supporting life science start-up companies.

“Winnipeg has a very good experienced scientific workforce. We have no difficulty finding scientists and researchers.”



## More than 150 Service Providers Supporting Entrepreneurs

Engineering & Design

Legal Expertise

IP Protection

OEM Manufacturing

Fabrication & Machining

Patent Services

Equity & Venture Capital

Business Planning

Formal Mentoring Programs

Cost-Shared Funding Options

Assistance for Preferred Groups

Tax Credits & Rent Abatements

University R&D Support

Industry Associations

Professional & Social Networks

International Business Services

## CASE STUDY: WINNIPEG SUCCESSFUL START-UPS

### PROPRIETARY TECHNOLOGY FOR A \$20B+ MARKET

Formed in Winnipeg in 2001, Kane Biotech is a biotechnology company focused on the development and commercialization of products that prevent and remove microbial biofilms. DispersinB® the Company's lead product is being developed for the wound care market by preventing and removal of bacterial biofilms on chronic wounds.

Biofilms are estimated to be responsible for 80% of all human infections and cost industry, cities and hospitals in excess of \$500 billion each year. They develop on surfaces such as wounds, catheters, prosthetic implants, teeth, lungs and the urogenital tract. Biofilms are both pervasive and costly. The healing of chronic wounds alone costs the United States health care system \$20 billion per year.

### Why Winnipeg?

"Winnipeg has a very good experienced scientific workforce. We have no difficulty finding scientists and researchers."

Gord Froehlich, President and CEO



## EDUCATION AND TRAINING

Winnipeg is home to two world-class universities, the **University of Manitoba** and the **University of Winnipeg** as well as the province's leading applied sciences college, **Red River College**.

The University of Manitoba is the province's largest university with over 20 faculties, including faculties in the areas of engineering, business, biological sciences, agricultural & food sciences, ecology, and other life science areas. The university is comprised of a faculty and staff of 8,000 and offers educational programs to over 26,000 students.

### **(BIO) ENGINEERING**

The Faculty of Engineering offers several undergraduate programs, with majors in electrical, computer, biosystems, and civil as well as options to concentrate in aerospace and manufacturing. The **Department of Biosystems Engineering** at the University of Manitoba prepares students for careers in the fields of environmental engineering, bioprocess engineering, biomedical engineering, and agriculture and natural resources. The Department of Electrical and Computer Engineering is responsible for two undergraduate programs in Computer Engineering and Electrical Engineering, with more than 250 students. The department is also very active in graduate teaching and research with more than 50 Ph.D. candidates and more than 120 students pursuing the M.Sc. degree. Co-op options allow students work experience prior to graduation. Enhanced by partnerships with entities such as TRILabs, and guided by world-renowned researchers, there are many research opportunities for graduate students.



## AGRICULTURAL AND FOOD SCIENCES

The Faculty of Agricultural and Food Sciences prepares graduates for careers in all sectors of the agri-food industry, offering bachelor of science degrees in agriculture, agribusiness, agroecology, and food science. Students in the **Plant Biotechnology Program** study the sciences and advanced biotechnologies used in the improvement, protection and utilization of agricultural and horticultural crops.

## HUMAN ECOLOGY

Programs offered in **Human Nutritional Sciences** focus on the role of nutrition in health and disease prevention, the application of nutrition to diverse human needs and lifestyles, and the importance of nutrition and food policies for community health. The department offers a four year undergraduate degree program leading to a bachelor of science in human nutritional sciences. Graduate programs leading to masters or doctoral degrees are also offered.

## CHEMICAL BIOSCIENCES TECHNOLOGY, MEDICAL LAB, MAGNETIC RESONANCE IMAGING

The chemical biosciences program incorporates various elements of quality systems training throughout existing curriculum and produces about 30 graduates per year. With a two-year diploma, graduates are well prepared for a career in life science industries and research institutions because of strong basic sciences supported by enhanced regulatory awareness.

## INTELLECTUAL PROPERTY AND COMMERCIALIZATION MANAGEMENT Certificate in Intellectual Property and Technology Commercialization Management (IPTCM).

In Partnership with the Technology Transfer Office (TTO), the University of Manitoba offers the IPTCM certificate, which consists of a blend of courses in intellectual property, technology commercialization, and management. The certificate consists of four core courses and two elective courses.

A photograph of a large, multi-story stone building with a prominent tower and arched windows, likely a university building. The building is partially obscured by a large tree in the foreground. The sky is blue. A blue semi-transparent overlay covers the left side of the image, containing text.

# UNIVERSITY OF WINNIPEG

Consistently ranked in the Top 10 in the country on an annual basis by both Maclean's magazine and The Globe and Mail newspaper, the University of Winnipeg is a leader in academic excellence, aboriginal education, environmental studies and sustainability, and theatre and the arts. More than 9,000 undergraduate and graduate students attend courses at the University of Winnipeg, which employs a faculty and staff of more than 700.

The University of Winnipeg's Faculty of Science offers programs in applied **computer science, biochemistry, biology, chemistry, engineering** and other fields. The university also offers undergraduate business programs through the faculty of business and economics. The university offers several masters degree programs including programs that lead to a master of science in applied computer science and society and a master of science in bioscience, technology and public policy.





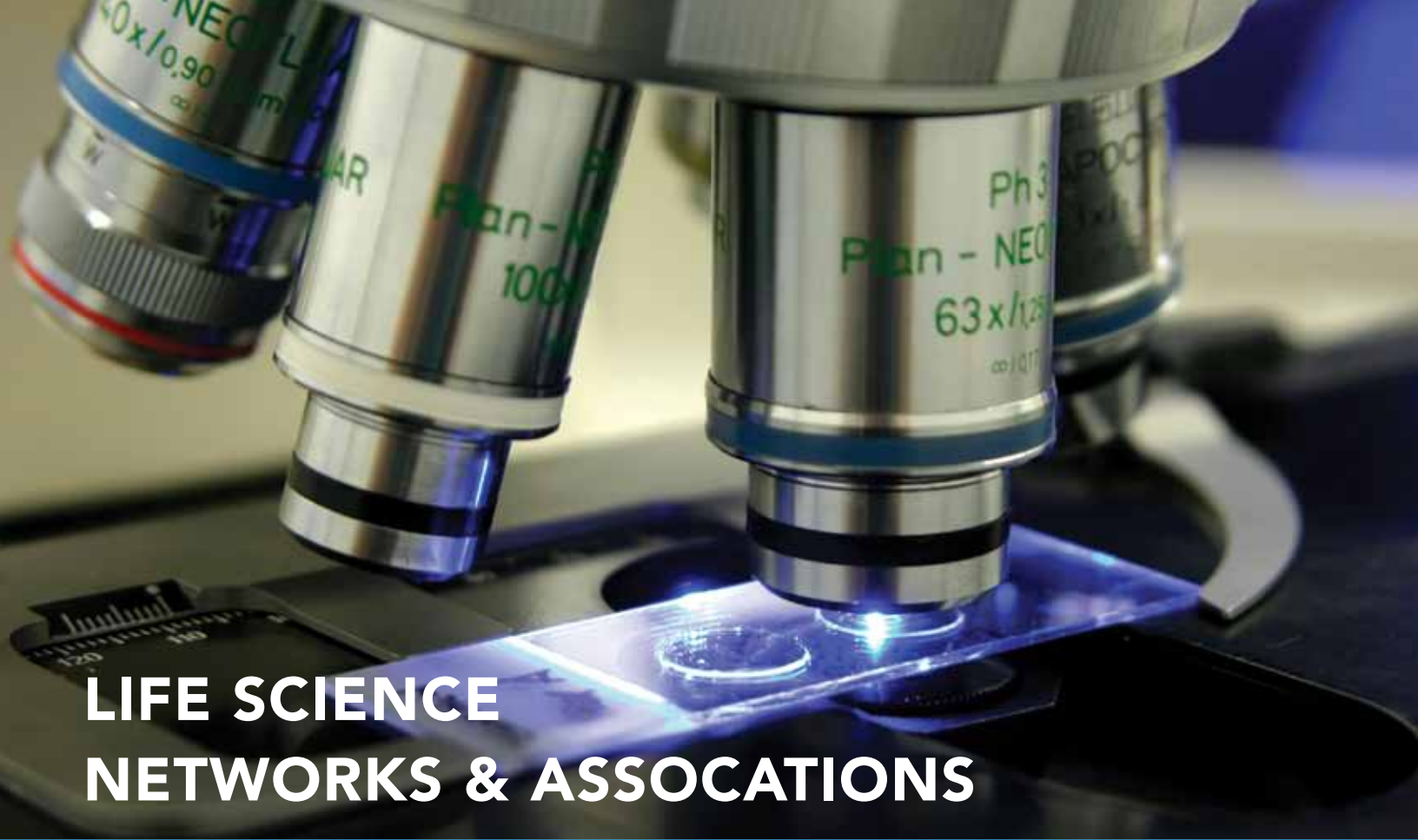
# RED RIVER COLLEGE

Red River College (RRC) is Manitoba's largest institute of applied learning with 32,000 enrollments across more than 110 programs. RRC works closely with industry and employers to ensure that graduates have the right skills and knowledge to contribute successfully in the workplace. RRC has identified biotechnology and life science as one of six applied research focus areas based upon existing expertise, sectoral demand, and external partnership synergy. **Successful partnerships have helped graduates to achieve a 97% graduate employment rate.**

## PHARMACEUTICAL MANUFACTURING

At the Red River College (RRC) Notre Dame campus, the pharmaceutical manufacturing program in the School of Life Science and Community Services operates a 1,000 square foot pharmaceutical manufacturing facility. The program offers a one-year post-graduate diploma in QA/QC in the pharmaceutical industry.

The college takes an entrepreneurial approach to meeting the needs of community, business, and industry. RRC is home to a vast pool of knowledge and expertise that is readily available to help organizations arrive at practical, innovative solutions that deliver results.



# LIFE SCIENCE NETWORKS & ASSOCIATIONS

Winnipeg is home to a number of professional associations and industry groups which have an interest in growing the sector or advancing a life science-based agenda. As the capital of Manitoba, Winnipeg is also home to several government agencies which are an integral component of the life sciences sector in Manitoba.

The Life Science Association of Manitoba is the leading voice and organizational nucleus for the life science sector of Manitoba. LSAM focuses on attentive, proactive and timely services and programs to over 90 member organizations.

LSAM's activities are focused in four key strategic goals:

To be a connector for people, information and ideas;

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To support the development of Manitoba's human resource capacity;

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To strengthen the business environment for our members; and

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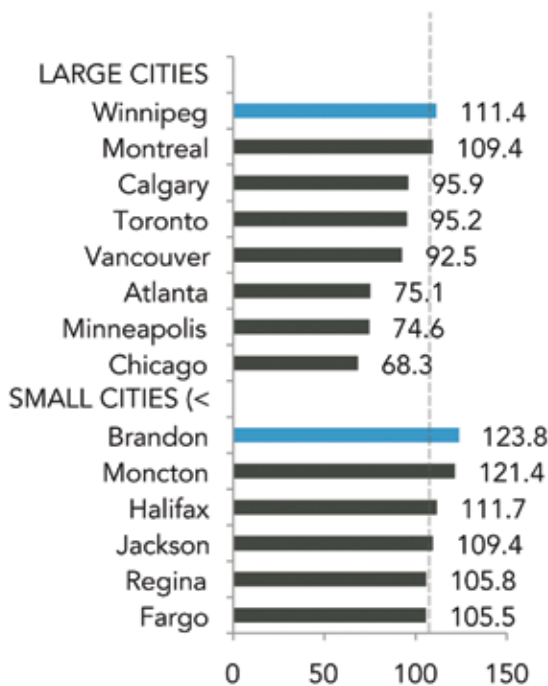
To provide a strong voice for the life science industry in Manitoba.

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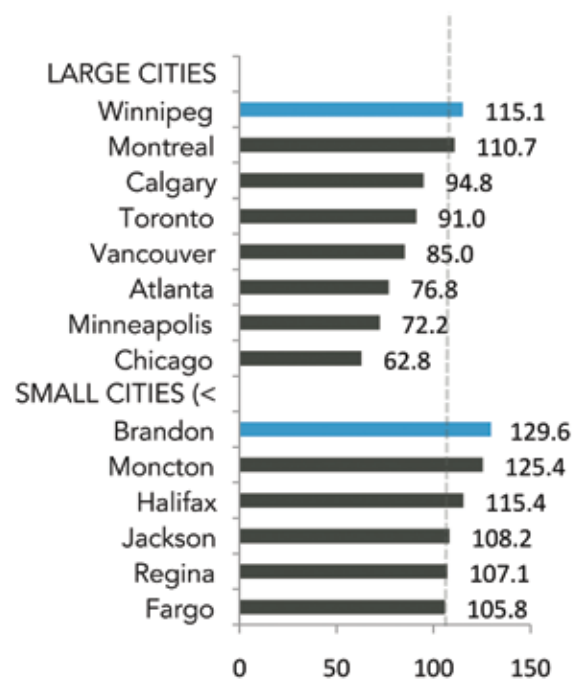
# OVERALL COMPETITIVENESS

Overall competitiveness is compared by calculating internal rates of return, which are commonly used by business in making investment and location decisions. A higher internal rate of return indicates a city is more competitive than others. Internal rates of return for each city are calculated using start-up costs and cash flow over a 20-year period, specific to a smaller and a larger manufacturing firm, then discounted using applicable Canadian and US commercial interest rates. The following charts illustrate the combined impact of taxes and costs on the internal rates of return for the representative smaller and larger manufacturing corporations in the selected jurisdictions.

**Figure 2: Internal Rate of Return  
Small Manufacturing Firm**



**Figure 3: Internal Rate of Return  
Large Manufacturing Firm**



Source: Manitoba Finance 2011

Manitoba maintains a **highly competitive overall business cost and tax environment** for both smaller and larger firms engaged in manufacturing and processing. The internal rates of return for both Winnipeg and Brandon are above the overall average of the cities included in the study. Among cities with populations over 500,000, **Winnipeg has the highest internal rate of return** for both smaller and larger manufacturing firms. Brandon has the highest internal rate of return, overall, for all cities compared.

# R&D TAX INCENTIVES, GRANTS, AND OTHER FINANCIAL SUPPORT

The Province of Manitoba offers a variety of financial support products to businesses. More information on the Manitoba's many programs is available at [www.manitoba.ca/business](http://www.manitoba.ca/business).

In addition, the Province has a history of helping businesses in Manitoba to gain access to capital through grants, loans, loan guarantees, refundable tax credits, equity investments and other similar forms of support. Contact Economic Development Winnipeg Inc. to learn more about the opportunities that may be applicable to your business. [www.economicdevelopmentwinnipeg.com](http://www.economicdevelopmentwinnipeg.com)

## INDUSTRIAL RESEARCH ASSISTANCE PROGRAM (IRAP)

The National Research Council-Industrial Research Assistance Program (NRC-IRAP) is Canada's premier innovation assistance program for small and medium-sized enterprises (SMEs). It is a vital component of the NRC, a cornerstone in Canada's innovation system, regarded world-wide as one of the best programs of its kind. Through expert technical and business advice, financial assistance, access to business information, contacts, and national and international networks, the program provides customized solutions to some 10,000 SMEs annually. NRC-IRAP operates on a shared-risk model, providing cost-shared financial assistance for research and development projects that meet both the firm and project assessment criteria. [www.nrc-cnrc.gc.ca/eng/ibp/irap.html](http://www.nrc-cnrc.gc.ca/eng/ibp/irap.html)

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## MANUFACTURING TAX CREDIT

The Manitoba Manufacturing Investment Tax Credit provides (MITC) a 10% tax credit applicable against Manitoba corporate income tax payable. This credit is for new and used manufacturing buildings, machinery and equipment used directly in the manufacturing process. Qualified investments must be made prior to December 31, 2014.

The amount deductible against Manitoba income tax will be the lesser of the 10% investment tax credit or the Manitoba Corporate Income Tax otherwise payable. Unused investment credits can be carried forward up to 10 years, or carried back up to three years. This allows firms without taxable income to take immediate advantage of the MITC.

Beyond these incentives there are a variety of incentives available to manufacturers in Manitoba including grants, loan guarantees, wage subsidies, and equity investments.

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# R&D TAX INCENTIVES, GRANTS, AND OTHER FINANCIAL SUPPORT

## SR&ED

The tax environment in Manitoba encourages industry to continuously develop new and innovative products and processes. The Manitoba Research and Development Tax Credit and the federal Scientific Research and Experimental Development Tax Credit (SR&ED) provide Manitoba companies with considerable leverage for their R&D investments. Studies by the Conference Board of Canada comparing the R&D tax incentives among the world's industrialized countries have repeatedly found that combined federal and provincial R&D tax incentives in Canada are the "most generous and stable offerings in the industrialized world.

"To encourage research and development in Manitoba, the Research and Development Tax Credit provides a 20% partially refundable tax credit. Eligible corporations must incur qualifying scientific research and development expenditures (as defined for federal income tax purposes) in Manitoba. The credit is fully refundable for eligible R&D expenditures incurred in Manitoba after 2009 under an eligible contract with a qualifying research institute, which includes post-secondary institutions and persons approved for this purpose by the Minister of Innovation, Energy and Mines. The credit is partially refundable up to 50 per cent on R&D expenditures incurred after 2011.

The amount deductible against Manitoba income tax will be lesser of the Manitoba R&D Tax Credit and the Manitoba Corporate Income Tax otherwise payable. Any unused credit will be available for carry-forward for up to 10 years and carry-back for up to three years. For more information on the Manitoba Research and Development Tax Credit, please visit the Manitoba Department of Finance at: [www.gov.mb.ca/finance/ccredits.html](http://www.gov.mb.ca/finance/ccredits.html)

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# R&D TAX INCENTIVES, GRANTS, AND OTHER FINANCIAL SUPPORT

## **NATIONAL RESEARCH COUNCIL'S (NRC) INDUSTRIAL RESEARCH ASSISTANCE PROGRAM (IRAP)**

IRAP provides cost-shared financial support to qualified small and medium-sized enterprises in Canada to help them develop technologies for competitive advantage. NRC total expenses through the IRAP in 2009-10 were in excess of \$1 billion, of which more than \$280 million was in direct grants. Contact: [www.nrc-cnrc.gc.ca/eng/index.html](http://www.nrc-cnrc.gc.ca/eng/index.html) or [publicinquiries.irap-pari@nrc-cnrc.gc.ca](mailto:publicinquiries.irap-pari@nrc-cnrc.gc.ca)

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## **SCIENTIFIC RESEARCH & EXPERIMENTAL DEVELOPMENT TAX AND FINANCE CENTRE**

Canada offers some of the world's richest R&D tax incentives, but many businesses are not taking advantage of them as a valuable source of capital. The finance centre offers the expertise needed to identify and manage R&D tax claims.

Contact: <http://www.cra-arc.gc.ca/txcrdt/sred-rsde/menu-eng.html>

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## **THE MANITOBA COMMERCIALIZATION SUPPORT FOR BUSINESS PROGRAM**

The Manitoba Commercialization Support for Business Program supports entrepreneurship, commercialization, and business development by offering a comprehensive suite of financial assistance and services across the business lifecycle. The program targets entrepreneurs and businesses seeking to start-up, expand, or modernize a business in Manitoba.

The program provides financial assistance to cost share arms-length third party expenses up to a maximum of 50 per cent. The Government of Manitoba's total contribution to funded projects will not exceed 50 per cent of eligible/approved costs. Total government support from all levels of government (federal, provincial, municipal), including tax rebates, cannot exceed 75 per cent of total project costs.

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WINNIPEG  
**LIFE  
SCIENCES**

GROW STRONGER | HEALTH AND BIOTECH

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ECONOMIC  
DEVELOPMENT  
**WINNIPEG INC.**

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