

## Market Profile for the Biotechnology Sector in the Canadian Market

### 1.0 MARKET STRUCTURE<sup>1</sup>

#### 1.1 Background

Biotechnology is a large and growing sector in the Canadian economy. It is the second largest biotechnology market (by number of companies and volume of research) behind the US market. There are several biotechnology clusters organised regionally within Canada with the top three clusters in descending order in Toronto, Montreal and Vancouver.

Both the government and private sector have recognised biotech as strategic to the country's economic strength and future in the global marketplace. The industry is growing on the shoulders of Canada's university-based science system, fuelled in a large part by government-initiated or funded research.

The federal government identified biotechnology as a strategic industry about 15 years ago and began instituting key initiatives to support the industry's growth. The government has nurtured a strong network of individual and corporate incentives. International studies of tax incentive programmes usually rate Canada's as one of the top five in the world.

#### 1.2 Market Size<sup>2</sup>

According to preliminary data from Statistics Canada's *Biotechnology Use and Development Survey*, there were 532 innovative biotechnology firms in Canada in 2005, which generated revenues of C\$4.2 billion.

Of these 532 innovative biotechnology firms, more than half were found in the human health sector. This sector also led in terms of biotechnology employment, research and development expenditures, and revenues. Human health biotech accounted for 57 percent of all innovative biotechnology firms in Canada, 70 percent of all biotech revenues and

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<sup>1</sup> While every effort is made to ensure the accuracy of the information contained herein, New Zealand Trade and Enterprise, its officers, employees and agents accept no liability for any errors or omissions or any opinion expressed, and no responsibility is accepted with respect to the standing of any firms, companies or individuals mentioned. New Zealand Trade and Enterprise reserves the right to reuse any general market information contained in its reports.

<sup>2</sup> The information in this section is sourced from Statistics Canada, *Innovation Analysis Bulletin*, May 2007. Statistics Canada defines an innovative biotechnology firm as a firm that uses biotechnology for the purpose of developing new or significantly improved products or processes.

almost 90 percent of all biotech R&D. Agriculture and food processing firms accounted for a further 24 percent of innovative biotechnology firms (and 25 percent of revenue), while environmental biotechnology firms accounted for 10 percent of firms and three percent of revenue in 2005.

Most of the firms in the biotech sector are small. These smaller firms (with fewer than 50 employees) accounted for 75 percent of all innovative biotechnology firms. Medium-size firms (50-149 employees) accounted for about 15 percent and large firms (more than 150 employees) the remaining 10 percent.

### 1.2.1 Regional distribution

The biotechnology industry is concentrated in Quebec and Ontario, with 63 percent of innovative biotechnology firms, and 73 percent of biotechnology-related employees located in these two provinces.<sup>3</sup>

Toronto has the largest cluster of biomedical and biotechnology companies in Canada – over 40 percent of Canada's biotech industry is located in the Greater Toronto Area. In job terms, Toronto has the single largest biomedical and biotechnology cluster of any metropolitan area in North America. The Toronto-based biotechnology companies are renowned worldwide for strengths in bioinformatics and genomics. It is also the fourth-largest medical community in North America, with almost 100 hospitals and research institutes. Key areas of research focused in the Toronto cluster are: biomaterials, biomedical engineering, cancer, cardiovascular disease, central nervous system disorders, human genomics, organ transplantation and women's health. Toronto is also Canada's corporate capital and financial centre, providing an access to a key investment market.

Biotechnology in Montreal is also significant with almost 70 percent of Quebec's biotechnology companies, mostly those related to the pharmaceutical industry. Nearly every large global pharmaceutical company has a presence in Montreal and this cluster leads in research and development in the areas of neurology, oncology, cardiovascular disease, virology, epidemiology and immunology. There are four local universities and 125 public and para-public research centres provide a solid R&D infrastructure.

Vancouver is the hub of British Columbia's biotechnology sector, with strengths in the areas of human health and genomics research. It is one of the fastest-growing biotech regions in North America - between 1991 and 2001, 60 biotech companies were founded in Vancouver, placing the city third in North America. Only San Francisco and Boston founded more companies in that period. Vancouver has also witnessed astounding growth in venture capital investment in biotechnology.

Canada also has a number of smaller regional clusters with strengths in agricultural biotechnology, molecular transgenics, plant and animal genomics, bioproducts, and

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<sup>3</sup> *Statistics Canada, Innovation Analysis Bulletin, May 2007.*

functional foods and nutraceuticals. Guelph, Ontario, is a centre of excellence for agri-biotechnology and London, Ontario's, core strengths include advanced robotic surgery, advanced imaging, stem cell research and xenotransplantation immunology. In central Canada there are also emerging clusters in Alberta and Saskatchewan with the largest science project in Canada - Canadian Light Source Synchrotron - recently completed.

There are approximately 82 public biotechnology companies in Canada listed on the Canadian and/or US stock exchanges.

### **1.3 Growth Potential**

All large pharmaceutical and biotech companies have teams which work only in finding technologies and compounds that are complementary to the drug development interests of the company and obtaining rights to them – either by licensing, co-development deals, or by buying the company. It is a priority for New Zealand Trade and Enterprise (NZTE) biotech sector members in Canada to cultivate or develop relationships with the individuals in relevant large companies who drive these deals and who manage the subsequent co-development deals.

In agricultural biotechnology, the demand for genetically modified crop plants is growing in tandem with the need to feed a growing world population, and constricting regulatory controls in Europe means that much of this work will be carried out in the US and Canada.

In the past, cheap energy has meant that North American industrialists and large scale agriculturalists were not concerned with pursuing low-energy, bio-based methods of waste disposal and processing, bioremediation, compound synthesis and polymerisation, but as energy becomes more expensive, alternative energy sources and bio-based technologies are becoming a necessary component of many industries. It is thought that this will have a huge impact on how biotechnology is perceived, and will result in a range of new products and funding possibilities for industrial biotechnology companies.

The natural products market in Canada is significant, partly due to the huge influx of Hong Kong residents after Hong Kong was handed to the Chinese. New Zealand is well-placed to strategically tap into the Canadian natural products markets due to the fact that New Zealand's "clean and green" image plays well in the natural products and personal care markets, and that New Zealand has an excellent reputation in the Canadian market as a provider of top quality natural product ingredients. Further, New Zealand's harmonisation with Australian regulations (which are more stringent than the Canadian regulations) has resulted in many New Zealand natural product companies being competitive in the Canadian market with local companies which have been unable for some reason to comply with the new regulatory standards.

The natural products industry in New Zealand has recognised that it is currently in a strong position to move its products up the value chain, from ingredients to consumer products, in

order to capture the value in a market which grows every year. The natural products sub-sector is one in which New Zealand has tremendous potential in the Canadian market.

NZTE believes that there are untapped opportunities for more collaboration at a research level as well as opportunities for outsourcing of clinical trials and attraction of inward investment. Investment is an area where NZTE will focus on strategic investments by large public biotechnology companies in Canada into New Zealand ventures, rather than attracting Canadian venture capital (VC) equity into New Zealand. Canada has an established risk based equity market but many of the funds have partial government or institutional investor input and therefore they may have provincial or other rules which limit accessibility for New Zealand firms.

## **2.0 COMPETITIVE ENVIRONMENT**

### **2.1 Major Players in the Market**

There are several large biotech corporations that are at the forefront of the Canadian research community. With over 80 public biotech companies, there are several major players that represent attractive partnering targets for NZ companies.

A sample of the key companies includes;

QLT Inc (BC) – cancer, eye disease

Anormed (BC) – cancer, HIV, infectious diseases

Aspreva Pharmaceuticals (BC) - pharmacogenomics

Biomira (AB) – cancer (non-small cell lung and breast cancers especially)

BioNiche LifeSciences (QC) – cancer, human and animal health products

Cangene Corporation (MB) – infectious diseases, hypoimmune plasma products, biosecurity

Inflazyme Pharmaceuticals (BC) - chronic inflammatory and autoimmune disorders

Agrisoma (SK) - chromosome based gene delivery and expression technology

Phenomenome Discoveries (SK) – proprietary metabolomics, biomarkers

Prairie Plant Systems (SK) - plant biotech, pipfruit breeding, medicinal marijuana

Neuromed Technologies Inc. (BC) – chronic pain and neurological disorder treatment via calcium channel blockers

Cardiome Pharma Corp (BC) – cardiovascular drug development

ID Biomedical (BC) – vaccines, infectious diseases.

Angiotech (BC) – drug coated devices (stents)

Biovail Corp. (ON) – pharmaceutical company specialising in cardiovascular, pain management and CNS disorders

Oncolytics Biotech (AB) – metastatic solid tumours (cancer).

Inex Pharmaceuticals (BC) – cancer

## 2.2 Marketing Strategies

### 2.2.1 Major Conferences

Bio 2008, San Diego, June 17-20 2008, [www.bio2008.org](http://www.bio2008.org)

In North America, the BIO industry conference, held every year in a different US city, is a significant event for the sector. The conference attracts around 15,000 delegates and most biotech and pharma companies are represented at the conference. Pathfinder companies are encouraged to attend and, in addition to attending the conference, which is an invaluable way to obtain a concept of how vast and complex the North American biotech industry is, companies are encouraged to work with NZTE staff in Canada before the conference in order to target relevant companies which are attending BIO, and pursue meetings with the companies. Canadian companies and provincial government delegations attend BIO, and it is an excellent starting point for a New Zealand company to initiate relationships with US and Canadian companies.

BioPartnering North America, Vancouver, February 3-5, 2008, [www.techvision.com/bpn/](http://www.techvision.com/bpn/)

Held every year in February in Vancouver, this is a much targeted conference with less focus on sessions and information exchange and much more focus on deals and partnering opportunities. Set up as a venue for self-directed meetings, companies can go online in the months leading up to the conference to use online tools to search for compatible companies of interest from Canada and the US, as well as some international delegates, and pre-arrange a meeting schedule.

BioContact Quebec, October 2007, [www.biocontact.qc.ca/english/default.html](http://www.biocontact.qc.ca/english/default.html)

Held in Montreal each year, this is an excellent forum for meeting with Quebec-based and other Canadian biotech companies.

## 3.0 REGULATORY OVERVIEW

Although Canada enjoys the lowest cost structure in the G7, New Zealand firms still face increased costs if they choose to set up an operation in Canada. By partnering in a targeted and strategic way, however, these barriers can be overcome and NZTE more often recommends a partnering strategy for approaching the Canadian biotechnology market.

For pharmaceutical and other biotechnology products, the regulatory environment in Canada is complex. Rather than address the issues in this document, NZTE has commissioned a report on the key elements of the Canadian regulatory environment for medical devices, human biologic and therapeutic drugs, natural health products, cosmetics and animal health (veterinary) drugs. This report is available from the NZTE biotechnology sector team on request.

Other key issues which constrain New Zealand companies' ability to effectively access the market include:

- **Regulations** – regulations governing human and animal health products in the US and Canada are notoriously stringent. It is well known that the average cost of taking a human drug through development to market is more than a million US dollars. This is simply not possible for any New Zealand biotech company. In order to take products to market, New Zealand companies will have to partner with large companies with significant resources. It is NZTE's job to ensure that New Zealand companies are made aware of potential partnering opportunities and to catalyse them as far as possible.
- **Lack of access to private funds** – it is unusual to find a North American VC company that is willing to lead an investment in a New Zealand company (for reasons of distance). Venture Capitalists are extremely cautious and like to be able to attend board meetings and be within visiting proximity of the companies they fund. The only way that New Zealand companies will find access to US funds is to open an incorporated US "front door" to manage product development, or to attract funds via a local venture fund (Australian or New Zealand) which can lead a consortium containing foreign investment.
- **Lack of access to public funds** – US public funding bodies and charitable institutions support a lot of scientific research and can provide seed funding for early stage biotech start-ups. New Zealand companies do not have access to this money unless they have a US partner with which to apply for grants.
- **Intellectual property issues** – New Zealand scientists and companies have only very recently begun to take the protection of their intellectual property as a valuable resource seriously. As a result, many companies do not have freedom to operate around technologies which they were first to develop. This will continue to be an issue for NZTE biotech staff.
- **Lack of resources** – North American market entry is expensive and requires time and dedication. It is difficult for New Zealand companies to appreciate this and, as a result, a failed market entry can result in an unnecessary retrenchment and loss of business confidence.
- **Lack of experienced life science business management** – although New Zealand has an amazing number of excellent scientists, they are not matched by counterparts with life science-specific business development experience, especially those with international experience and connections.
- **Scale of market** - while more manageable than the US or Europe, Canada is still significant and New Zealand needs to distinguish itself from the pack to get attention here.
- **Visibility** – New Zealand has a great image in Canada and is well known as a country with a strong affinity for Canada but New Zealand biotechnology is less well known – although this is improving.
- **VC market** – access to the risk-based VC market is limited due to some provincial regulations, however, investment opportunities do exist.
- **Labelling** - for biotechnology products focused on the consumer market (e.g. natural health products with bioactive ingredients) there are issues to be considered around consumer product labelling and packaging, as all products for the consumer market must have bilingual labels in both official languages (English and French). This does not

represent an insurmountable barrier but is a cost of doing business for New Zealand companies focused on the consumer market for health products.

## 4.0 RECOMMENDED STRATEGIES

The primary strategy for New Zealand companies entering this market has been to seek opportunities to partner with larger Canadian biotechnology companies where complementary research and product synergies exist. Another area of focus is in attracting funding for clinical trials or joint research. QLT Inc., one of the largest public biotechnology companies in Canada, completed part of its cancer trials in New Zealand collaborating with Auckland University. NZTE is seeking to develop more strategic relationships of this sort between New Zealand companies and their larger Canadian counterparts.

Biotechnology is an area where companies will find it difficult to approach the market in isolation and NZTE has a role to play in developing networks and partners for New Zealand companies as well as assisting companies to negotiate the regulatory, and other, hurdles that exist.

## 5.0 MARKET RESOURCES AND CONTACTS

### 5.1 Government

BioPortal (the Canadian government's biotechnology portal) - [www.bioportal.gc.ca](http://www.bioportal.gc.ca)

Canadian Food Inspection Agency: Office of Biotechnology - [www.inspection.gc.ca/english/sci/biotech/bioteche.shtml](http://www.inspection.gc.ca/english/sci/biotech/bioteche.shtml)

Canada's Biotechnology Strategy - [www.hc-sc.gc.ca/sr-sr/biotech/role/strateg\\_e.html](http://www.hc-sc.gc.ca/sr-sr/biotech/role/strateg_e.html)

### 5.2 Industry

AG-West Biotech Inc. - [www.agwest.sk.ca](http://www.agwest.sk.ca)

BioAtlantech - [www.bioatlantech.nb.ca](http://www.bioatlantech.nb.ca)

BioEast - [www.bioeast.ca](http://www.bioeast.ca)

BioNova - [www.bionova.ns.ca](http://www.bionova.ns.ca)

BioteCanada - [www.biotech.ca](http://www.biotech.ca)

Bio Québec - [www.bioquebec.com](http://www.bioquebec.com)

LifeSciences British Columbia - [www.lifesciencesbc.ca](http://www.lifesciencesbc.ca)

Toronto Biotechnology Initiative - [www.torontobiotech.org](http://www.torontobiotech.org)

#### **Prepared by:**

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