

# Bioscience in Prince Edward Island

March 2010

## INDUSTRY HIGHLIGHTS

- The bioscience cluster in PEI focuses on research associated with bioactives and the treatment of disease; fish health products; bioproducts; and nutraceuticals.
- The PEI government identifies bioscience as a growth sector for the Island economy and offers the Bioscience Tax Holiday program to encourage growth in this area. The program offers approved businesses rebates of corporate income tax for up to 10 years.
- The National Research Council (NRC) officially opened the NRC Nutrisciences and Health Institute in Charlottetown on February 16, 2007. This is a \$13.5 million state-of-the-art facility for research and development in the bioscience sector.
- According to the Island Innovation and Technology Association of PEI human resource strategy, approximately 55% of those employed in the bioscience sector were not originally from PEI.
- Novartis International (parent company of Novartis Animal Health in Charlottetown), is based in Switzerland and is one of the largest health care companies in the world. Novartis manufactures drugs such as Diovan (for hypertension), Gleevec (for leukemia treatment), and Ritalin (AD/HD).
- According to the Biotechnology Association of Canada, the top three challenging issues that bioscience firms in Canada face include: 1) raising capital; 2) product development; and 3) attracting and retaining key employees. A key success factor for companies in this sector is accessibility to an experienced talent pool.

### Did you know...???

*...there are 25 firms in the bioscience sector in PEI, employing over 800 people?*

*...that there are over 200 persons with PhDs in bioscience?*

*... there have been nearly 25 major research projects launched since 2000, with combined value of over \$130M?*

*...the Atlantic Veterinary College completed a \$45M expansion?*

*...that the value of R&D at UPEI rose by 450% over the past 5 years?*

*...that BioVectra employs 115 people?*

*... Holland College offers a two-year diploma program in Bioscience Technology?*

*...that Phytterra Yeast Inc. produced the world's first and only yeast strain that reduces the formation of a cancer causing substance that is produced in wine fermentation?*

# INDUSTRY STAKEHOLDERS

## PRIVATE SECTOR COMPANIES and PARTNERS

**Aqua Bounty Canada**  
Research & Development: fish species

**Ark Biomedical Canada**  
Manufactures microwave plasma defrosters

**Atlantic AgriTech**  
Provides contract research services

**BioMolecular Pharma**  
Designs pharmacologic agents for a range of disorders

**BioVectra**  
Development partners for pharmaceutical products

**Chemaphor**  
Develops carotenoid compounds for non-pharmaceutical use

**Dimole**  
Develops PCR tests for early detection of plant disease agents

**Functional Technologies**  
Develops urea-degrading yeast products

**Genzyme Diagnostics PEI**  
Manufactures diagnostic reagents & rapid tests

**Global Vetnostics**  
Provides histopathology services to vet labs, remotely

**Island Abbey Foods**  
Uses patented technology to produce unique food products

**LISI Atlantic Development**  
Conducts research in the treatment of cancers/disease

**Maritime Pulse Drying**  
Provides contract drying of bioactives & food ingredients

**Murphy's Animal Health**  
Specialized drug formulation delivery systems for animals

**Nature's Crops International**  
Supplier of organic, non GM, & expeller pressed oils

**Nautilus Biosciences Canada**  
Develops drug leads derived from marine organisms

**Neurodyn**  
Produces products for detection of neurological diseases

**Novartis Animal Health Canada**  
Manufactures vaccines for the aquaculture industry

**Phytterra Bio**  
Produces bioactive compounds & hydrogen

**Phytterra Yeast**  
Develops advanced urea-degrading yeast products

**Phytcultures Ltd.**  
Transfers and adapts plant tissue culture technology

**SolarVest**  
Produces microalgae oils for salmon feed-nutraceutical apps.

**Stirling Products Canada**  
Natural bioactive extracts for immune health

**Tekmash Technology & Innovation**  
Provides patented extraction technology for various applications

**Tube-Fab**  
Fluid delivery systems for industrial, medical, commercial industries

**Viro Technologies Inc.**  
Conducts molecular virology research and development

### BIOSCIENCE RESEARCH PARTNERS

Agriculture and Agri-Food Canada Crops and Livestock Centre  
Atlantic Centre for Bioactives Valuation  
Atlantic Swine Research Partnership  
Canadian Food Inspection Agency  
Holland College  
PEI Food Technology Centre  
Atlantic Veterinary College  
University of Prince Edward Island



### GOVERNMENT PARTNERS

Industry Canada  
Atlantic Canada Opportunities Agency  
Foreign Affairs and International Trade Canada  
National Research Council-Industrial Research Assistance Program  
National Research Council Institute for Nutrisciences and Health  
PEI Development of Innovation and Advanced Learning



## INDUSTRY TRENDS AND CHARACTERISTICS

### *Aging of the population a key market driver*

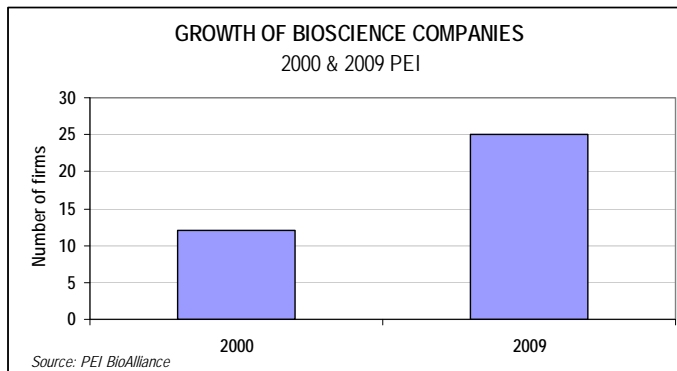
The aging of the “baby boomers” is identified as a key market trend driving bioscience research and development in the areas of human health and nutrition. In PEI, there are companies in the business of extracting ingredients from plants, and developing compounds for use in the treatment of cancers; producing products for early detection and prevention of neurological disease; and providing value-added services in the development of nutraceutical and functional foods.

### *PEI bioscience cluster: a model of collaborative networking*

The Prince Edward Island BioAlliance is an open network of bioscience businesses; research and academic institutions; and government agencies dedicated to building the bioscience sector in PEI. There is emphasis on collaborative initiatives in research, business, education, and supporting infrastructure. The focus of the bioscience cluster is on bioactive compounds and their application to human, animal, and fish health and nutrition.

### *The number of bioscience firms in PEI doubled over the past decade*

The bioscience sector in PEI experienced rapid growth over the past 10 years. In 2000, there were about 12 companies involved in bioscience activity in the province, and in 2009, that number more than doubled to 25 firms.

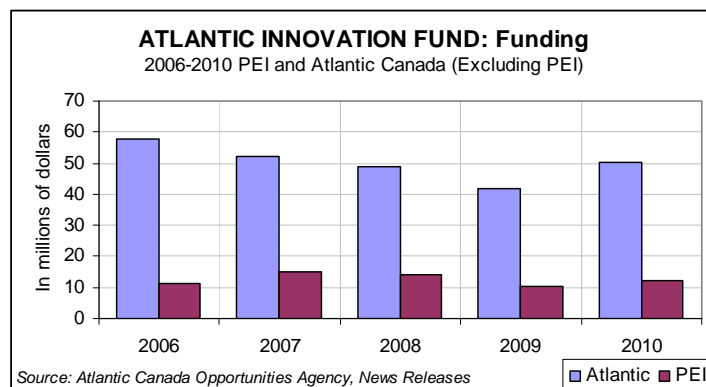


Employment also expanded at an accelerated rate, nearly doubling in just five years. In 2005, there were approximately 452 workers in the sector, and in 2009, just over 800 persons were employed. In its *Island Prosperity Strategy*, the Government of Prince Edward Island identified the bioscience sector (along with information technology, aerospace

and renewable energy) as a priority sector poised to drive economic growth in the province moving forward. Government’s strategy calls for a 5-year, \$200 million investment in people, innovation and infrastructure.

### *Atlantic Innovation Fund (AIF) a key driver supporting R&D in Atlantic Canada, PEI*

The AIF was established in 2001 to enhance to promote R&D and new business opportunities to Atlantic Canada. These innovative R&D projects bring together the region’s universities, businesses and research institutions to conduct leading-edge research to grow Atlantic Canada’s economy. In 2010, the Atlantic Canada Opportunities Agency announced funding of \$12.3 million for seven projects concentrated in Prince Edward Island-the majority of which in bioscience projects. Since 2006, a total of \$343 million has been invested through the AIF in Atlantic Canada-in about 145 projects, 30 of which (21%) in PEI.



## **INDUSTRY CHALLENGES**

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*(The following summaries were derived from industry consultations)*

### ***Access to capital: bioscience a very capital intensive sector***

Bioscience firms require considerable investment long before a product is approved for market. Depending on the product, a number of years might pass before a firm will realize any financial return from its investment. Access to capital (i.e. highly specialized equipment) is identified as a key constraint to growth in the bioscience sector, particularly for start-up firms.

### ***Regulatory constraints in the commercialization of bio products***

The bioscience sector is subject to stringent regulatory processes prior to commercialization (i.e. introducing products to market). The Canadian Food Inspection Agency for example works with Health Canada for regulating products derived from biotechnology in Canada.

### ***Skills shortages of senior level professionals, a global challenge***

A significant challenge that is global in scope is the recruitment of senior level professionals in the field of biotechnology. Attracting and retaining key employees is identified as one of the top three challenges facing bioscience firms in Canada.

## **INDUSTRY INITIATIVES**

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*(The following summaries were derived from industry consultations)*

### ***Establishment of a “research incubator” to help start-up companies develop***

The NRC in Charlottetown is equipped with an industry partnership facility (i.e. an “incubator”) which provides new start-up companies access to specialized facilities, research expertise, networking and other resources, to help grow and develop their business. According to the National Research Council of Canada, research incubators not only attracts new innovative firms but also helps them stay in business.

### ***Establishing PEI as an attractive business destination***

Prince Edward Island is being marketed as an attractive place to do business for biotechnology firms around the world. A number of advantages to doing business in PEI were identified and include: access to state-of-the-art facilities and other resources; business incentives (i.e. tax holiday); relatively low business costs (i.e. lower wages and other operating expenses compared to other jurisdictions); and a positive economic and fiscal climate.

### ***Infrastructure investment: Bioscience business park and business Incubator***

In 2009, the Government of Prince Edward Island announced plans to construct a \$30 million, 60,000 square foot BioCommons business park in the province. The BioCommons will house a state-of-the-art biotechnology incubator that will assist companies in the storage and commercialization of bioscience products. The business park is expected to attract larger companies to the province, lured by the provision of state-of-the-art facilities and access to specialized equipment.

### ***First wave of MBA graduates in Biotechnology Management***

The University of Prince Edward Island (UPEI) offers an executive MBA program with two specialized streams of study: *Biotechnology Management & Entrepreneurship* and *Innovative Management*. UPEI will be graduating its first class of the MBA program in 2010 which will offer the bioscience sector a new supply stream of professionals specializing in product commercialization.

# ***OCCUPATIONAL HIGHLIGHTS***

## ***Scientific and Technical Occupations in the bioscience sector***

<p><b><u>Chemists (NOC 2112)</u></b>  <i>conduct research and analysis in support of industrial operations, product and process development, quality control, environmental control, medical diagnosis and treatment, biotechnology and other applications.</i></p> <p>Titles specific to bioscience:          Analytical Chemist    Biochemist    Chemistry Researcher</p>	<p><i>Employment Outlook to 2011 is Good.</i></p> <p>Average annual income: \$52,981          Employed (2006 Census): 70          Age composition:15-24(0%);25-54(100%);55+(0%)</p>
<p><b><u>Biologists and Related Scientists (NOC 2121)</u></b>  <i>conduct basic and applied research to extend knowledge of living organisms, to manage natural resources, and to develop new practices and products related to medicine and agriculture.</i></p> <p>Titles specific to bioscience:          Microbiologist    Virologist    Molecular Biologist</p>	<p><i>Employment Outlook to 2011 is Good.</i></p> <p>Average annual income: \$63,285          Employed (2006 Census): 40          Age composition:15-24(0%);25-54(50%);55+(50%)</p>
<p><b><u>Other Professional Engineers (NOC 2148)</u></b>  <i>includes specialized engineering occupations which are not classified elsewhere.</i></p> <p>Titles specific to bioscience:          Biomedical Engineer</p>	<p><i>Employment Outlook to 2011 is (n/a)*.</i></p> <p>Average annual income: \$66,076          *Employed (2006 Census): n/a          Age composition:15-24(na%);25-54(na%);55+(na%)</p>
<p><b><u>Chemical Technologists and Technicians (NOC 2211)</u></b>  <i>provide technical support and services or may work independently in chemical engineering, chemical and biochemical research and analysis, industrial chemistry, chemical quality control and environmental protection.</i></p> <p>Titles specific to bioscience:          Chemical Analyst    Chemical Technician</p>	<p><i>Employment Outlook to 2011 is Good.</i></p> <p>Average annual income: \$46,220          Employed (2006 Census): 145          Age composition:15-24(10%);25-54(90%);55+(0%)</p>
<p><b><u>Biological Technologists and Technicians (NOC 2221)</u></b>  <i>provide technical support and services to scientists, engineers and other professionals working in fields such as microbiology, cell and molecular biology, health sciences, or may work independently in these fields.</i></p> <p>Titles specific to bioscience:          Biological Laboratory Technologist    Microbiology Technologist</p>	<p><i>Employment Outlook to 2011 is Good.</i></p> <p>Average annual income: \$47,473          *Employed (2006 Census): 70          Age composition:15-24(30%);25-54(40%);55+(30%)</p>

## **INDUSTRY PARTNERS AND COMPANIES**

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### **Local**

#### **Innovation PEI**

94 Euston Street, 2nd. Floor, PO Box 340  
Charlottetown, PE, Telephone (902) 368-6300 Fax  
(902) 368-6255, [www.innovationpei.com](http://www.innovationpei.com)

#### **PEI Department of Innovation and Advanced Learning**

Shaw Building, 5th Floor, 105 Rochford Street, P.O.  
Box 2000, Charlottetown, PE, C1A 7N8, Telephone:  
(902) 368-4240, [www.gov.pe.ca/ial](http://www.gov.pe.ca/ial)

*Island Prosperity: A Focus for Change*

[http://islandprosperity.com/Island\\_Prospersity.pdf](http://islandprosperity.com/Island_Prospersity.pdf)

#### **PEI BioAlliance**

National Bank Tower, 134 Kent Street, Suite #405,  
Charlottetown, PEI, Canada C1A 8R8 Telephone:  
(902) 367-4400, Fax: (902) 367-4404,  
[www.peibioalliance.com](http://www.peibioalliance.com)

#### **The Innovation and Technology Association of PEI**

P.O.Box 241 Charlottetown, PE C1A 7K4, Tel: (902)  
894-4827, Fax: (902) 894-4867, [www.itap.ca](http://www.itap.ca)

*Bioscience Human Resource Strategy for Prince  
Edward Island*

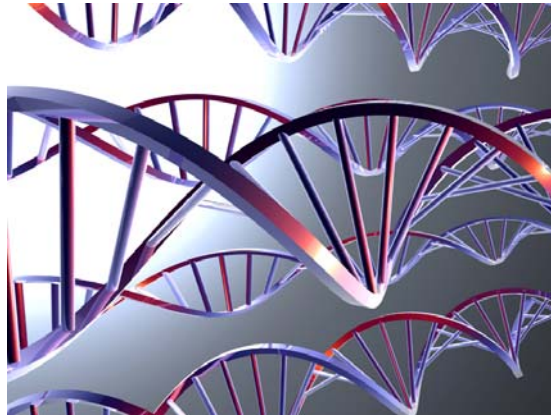
### **National**

#### **National Research Council of Canada**

1200 Montreal Road, Bldg. M-58, Ottawa, Ontario  
Canada K1A 0R6, Phone: 1-877-672-2672), Fax: (613)  
952-9907, [www.nrc-cnrc.gc.ca](http://www.nrc-cnrc.gc.ca)

#### **BioTech Canada**

130 Albert Street, Suite 420, Ottawa, Ontario K1P  
5G4, Phone (613) 230-5585, Fax (613) 563-8850,  
[www.biotech.ca](http://www.biotech.ca)



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